FORUM/SLP 15 OBLATS LIMITED PARTNERSHIP

15 OBLATS AVENUE
STORMWATER MANAGEMENT REPORT

AUGUST 03, 2022

15 OBLATS AVENUE STORMWATER MANAGEMENT REPORT

FORUM/SLP 15 OBLATS LIMITED PARTNERSHIP

2ND SUBMISSION

PROJECT NO.: 221-02976-00
CLIENT REF:
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WSP
SUITE 300
2611 QUEENSVIEW DRIVE
OTTAWA, ON, CANADA K2B 8K2

T: +1 613 829-2800
F: +1 613 829-8299
WSP.COM

REVISION HISTORY

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Prepared by	Reviewed by	Approved By		
MO	LMG	LMG		
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KK	LMG	LMG		

SIGNATURES

PREPARED BY

Kathryn Kerker
Designer, Water Resources

August 3rd, 2022

APPROVED[1] BY

Louis-Marc Girard, P.Eng., PMP
Utility / Drainage Lead

August 3rd, 2022

[1] Approval of this document is an administrative function indicating readiness for release and does not impart legal liability on to the Approver for any technical content contained herein. Technical accuracy and fit-for-purpose of this content is obtained through the review process. The Approver shall ensure the applicable review process has occurred prior to signing the document.

CONTRIBUTORS

CLIENT

Forum/SLP 15 Oblats Limited Partnership	Andrew Levitan

WSP

Water Resources, Designer	Kathryn Kerker
Utility / Drainage, Lead	Louis-Marc Girard

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1 INTRODUCTION

1.1 SCOPE

WSP Canada Inc. was retained by Forum/SLP 15 Oblats Limited Partnership to prepare a Stormwater Management (SWM) report for the proposed retrofit of an existing 4-storey residential building and a 4-storey addition to the north-west consisting of residential units. This SWM report examines the potential water quality and quantity impacts of the proposed development and summarizes how each will be addressed in accordance with applicable guidelines.

1.2 SITE LOCATION

The proposed development is located at 15 Oblats Avenue, Ottawa, Ontario. The subject site is bounded Oblats Avenue to the south, Springhurst Avenue to the north and residential properties to the east and west. The site is located between the Rideau River to the west and the Rideau Canal to the east. The location of the proposed development is illustrated in Figure 1

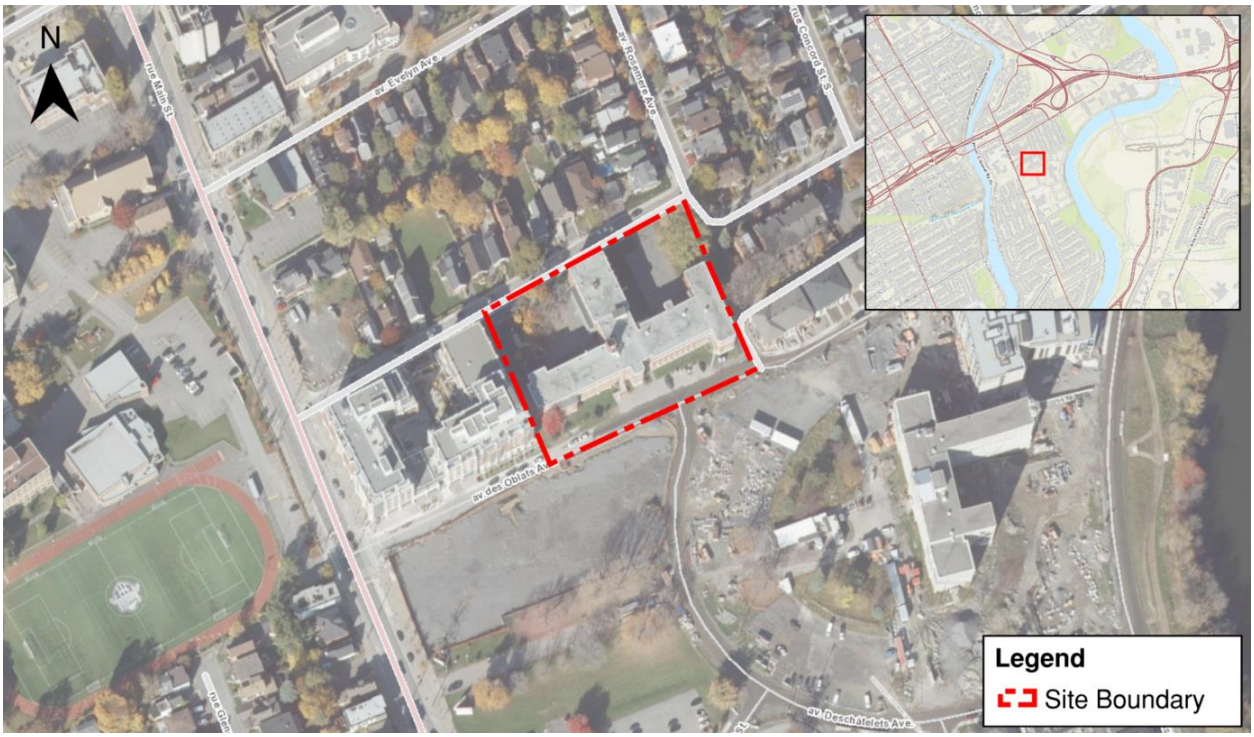


Figure 1: Project Location

1.3 STORMWATER MANAGEMENT PLAN OBJECTIVES

The objectives of the stormwater management plan are as follows:

- → Collect and review background information.
- → Determine the site-specific stormwater management requirements to ensure that the proposals are in conformance with the applicable Provincial, Municipal and Conservation Authority stormwater management and development guidelines.
- → Evaluate various stormwater management practices that meet the applicable SWM and development requirements and recommend a preferred strategy.
- → Prepare a stormwater management report documenting the strategy along with the technical information necessary for the justification and sizing of the proposed stormwater management facilities.

1.4 DESIGN CRITERIA

Design criteria were taken from the Pre-Application Consultation Meeting with the City of Ottawa on May 27th, 2021 (meeting notes included in **Appendix A**). Criteria for the Oblat's development are as follows:

- → **Stormwater Quantity-** control post-development flows (2 to 100-year storm events) to the 2-year pre-development discharge with a runoff coefficient that is the lesser of the actual runoff coefficient or 0.5 per City of Ottawa Standards for a redevelopment.
- → **Storm Quality-** Per correspondence with the Rideau Valley Conservation Authority (RVCA), there are no water quality criteria for this site. Best practices stormwater management approaches will be applied. RVCA correspondence is included in **Appendix B**.

2 PRE-DEVELOPMENT CONDITIONS

2.1 GENERAL

Under existing conditions, 15 Oblats Avenue is currently developed with an existing four (4) storey building, paved parking, and some recreational green space. Vehicular access to the site is via Oblats Avenue to the south and Springhurst Avenue to the north.

Under existing conditions, the site drains to two outlets. The north portion of the site, including the existing building, drains to the existing 1350 mm storm sewer along Springhurst Avenue while the area south of the building drains overland to the existing 375 mm sewer along Oblats Avenue. Ultimately, all runoff from the site discharges to the Rideau River to the east.

Weighted runoff coefficients were based on the pre and post development land use. Runoff coefficients used for different land covers are summarized in Table 1.

Table 1: Runoff Coefficients

LAND USE	RUNOFF COEFFICIENT, C
Pervious area (grass, gardens, etc.)	0.25
Impervious Area (parking, pathways, building, etc.)	0.90

As shown on Figure 2 and summarized in Table 2, the proposed site is an approximately 0.68 ha area composed of building, parking, and landscaped area with runoff coefficients of 0.47 and 0.74 for areas EX-001 and EX-002 respectively. However, as discussed in section 1.4, per City of Ottawa criteria, a runoff coefficient of 0.50 was used when evaluating pre-development peak flows for the area EX-002.

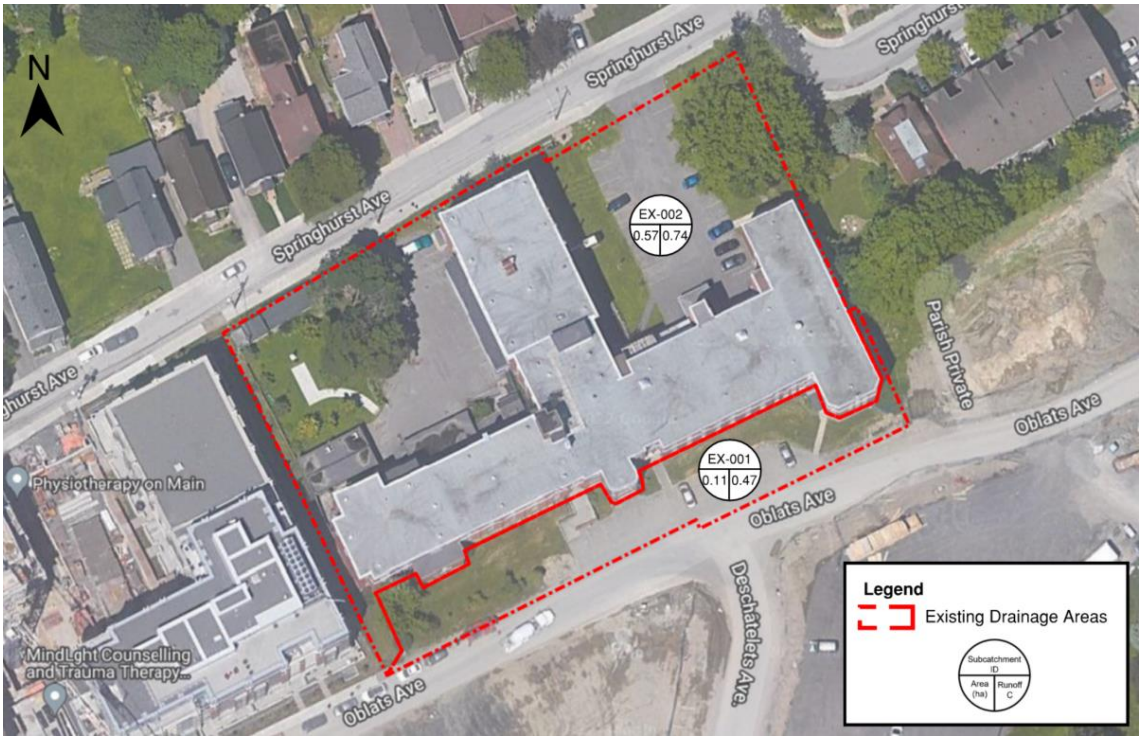


Figure 2: Existing Conditions Catchment Area

Table 2: Existing Land Use Area Breakdown

Catchment ID	AREA (ha)	% COVERAGE OF PROJECT AREA	RUNOFF COEFFICIENT
OF-001 (Oblats Ave)			
EX-001	0.11	16%	0.47
OF-002 (Springhurst Ave)			
EX-002	0.57	84%	0.74*
TOTAL SITE AREA	**0.68**	**100%**	**0.70**

*Runoff Coefficient of 0.50 used in evaluating pre-development peak flows per the City of Ottawa Sewer Design Guidelines (Section 8.3.7.3)

2.2 RAINFALL INFORMATION

The rainfall intensity is calculated in accordance with Section 5.4.2 of the Ottawa Sewer Design Guidelines (October, 2012):

Where;

$$i = \left[\frac{A}{(Td + C)^B}\right]$$

- A, B, C = regression constants for each return period (defined in section 5.4.2)
- i = rainfall intensity (mm/hour)
- Td = storm duration (minutes)

The IDF parameters / regression constants are per the Ottawa Sewer Design Guidelines (October, 2012).

2.3 ALLOWABLE FLOW RATES

As noted in section 1.4, it is required that post development peak flows, up to and including the 100-year storm event, be controlled the 2-year pre-development conditions. Per correspondence with the City of Ottawa (**Appendix B**), the area south of the building (EX-001) will be allowed to continue to drain uncontrolled to Oblats Avenue, while flow to Springhurst Avenue (EX-002) will be controlled to the 2-year pre-development conditions for events up to and including the 100-year.

HydroCAD software was used to calculate the pre-development peak flow rates for the 2 through 100-year storm events, results are summarized in Table 3. Detailed Rational Method calculations is included in **Appendix C**.

Table 3: Pre-Development Peak Flow Rate Calculations (Based on T_d = 10 minutes, C_{OF-001} = 0.47, C_{OF-002} = 0.5)

OUTLET	PEAK FLOW (L/S)					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
OF-001 (Oblats Ave)	10.8	14.7	17.2	22.6	27.2	31.6
OF-002 (Springhurst Ave)	59.7	81.0	95.0	123.8	150.7	175.0
TOTAL	**70.5**	**95.7**	**112.2**	**146.4**	**177.9**	**206.6**

*Runoff coefficients increased by 10%, 20%, and 25% for the 25-year, 50-year, and 100-year storms respectively per the City of Ottawa Sewer Design Guidelines (Section 5.4.5.2.1)

3 POST-DEVELOPMENT CONDITIONS

3.1 GENERAL

The proposed development includes a four (4) storey addition to the northwest corner of the existing building, as well as some landscaping changes throughout the rest of the site. Under proposed conditions the site will continue to be accessed from both Oblats Avenue and Springhurst Avenue.

An estimated area breakdown of the proposed site layout is summarized in Table 4 and shown on Figure 3.

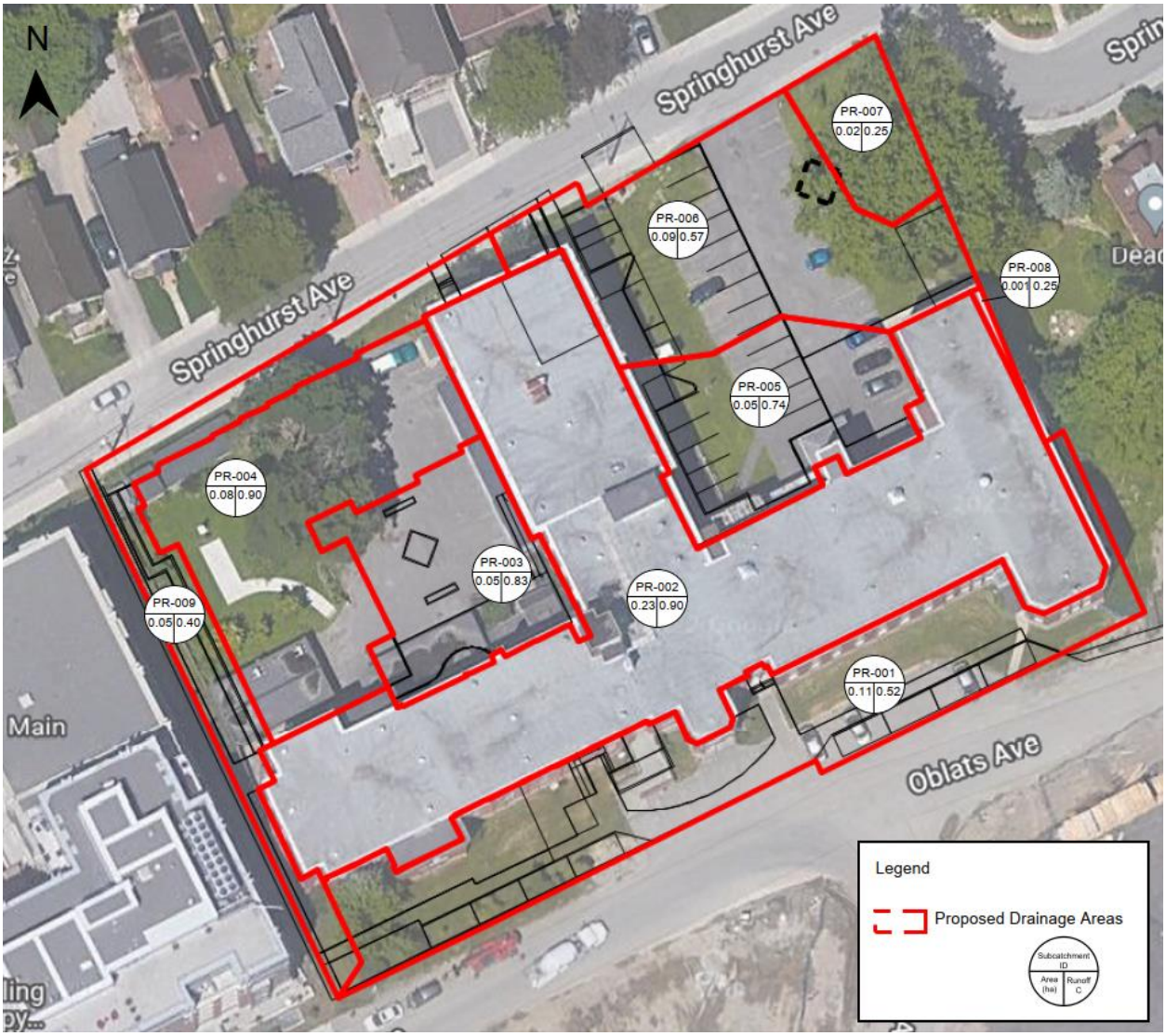


Figure 3: Proposed Conditions Catchment Areas

Table 4: Proposed Land-Use Area Breakdown

Catchment ID	AREA (ha)	% COVERAGE OF PROJECT AREA	RUNOFF COEFFICIENT
OF-001 (Oblats Ave)			
PR-001 (Uncontrolled)	0.11	16%	0.52
OF-002 (Springhurst Ave)			
PR-002 (Controlled)	0.23	34%	0.90
PR-003 (Controlled)	0.05	7%	0.83
PR-004 (Controlled)	0.08	13%	0.90
PR-005 (Controlled)	0.05	8%	0.74
PR-006 (Controlled)	0.09	13%	0.57
PR-007 (Uncontrolled)	0.02	3%	0.25
PR-008 (Uncontrolled)	0.001	0%	0.25
PR-009 (Uncontrolled)	0.05	7%	0.40
Sub Total	0.57	84%	0.77
TOTAL SITE AREA	**0.68**	**100%**	**0.73**

To meet the stormwater management objectives, as defined by the design criteria outlined in Section 1.4, the following components have been proposed:

- → Underground storage unit located under the north-east parking area
- → Flow controlled with a 135 mm orifice plate inlet control device (ICD)
- → Oil and Grit Separator (OGS) for parking area runoff (Hydro First Defense FD-3HC or equivalent)

The application and sizing of these proposed stormwater management facilities is outlined in the following sections.

3.2 WATER QUANTITY

As previously noted, it is required that post development discharge rates for the 2 through 100-year storm events be controlled to the 2-year pre-development conditions. However, per correspondence with the City of Ottawa (**Appendix B**), the 0.11 ha area south of the building (PR-001) will continue to drain uncontrolled to Oblats Avenue.

As summarized in Table 4, of the 0.57 ha area draining to Springhurst Avenue approximately 0.07 ha will drain uncontrolled while the remaining 0.50 ha, including the existing building and proposed addition, will be captured and controlled within the proposed underground storage unit. It should be noted that the controlled areas to OF-002 will be controlled such that the total flow to Springhurst Avenue, including the uncontrolled areas, will meet the 2-year pre-development condition.

HydroCAD software was used to model the behaviour of the proposed SWM system and determine its response under various storm events. The software calculates flow rates and related storage values and identifies the critical duration for different components of the system. For this site, the critical storm duration (100-year) for peak discharge to Springhurst Avenue occurs at 29 minutes, however, the maximum storage utilized occurs at 33 minutes.

It was determined that a 140.4 m^3 storage unit controlled with a 135 mm orifice type ICD is sufficient to meet the quantity control requirements. A summary of the modeling results is provided in Table 5 and Table 6, detailed HydroCAD output is included in **Appendix C**.

Table 5: Summary of HydroCAD Modelling Results – Peak Flows

OUTLET	PEAK FLOW (L/S)					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Existing Conditions						
OF-001 (Oblats Ave)	10.8	14.7	17.2	22.6	27.2	31.6
OF-002 (Springhurst Ave)	59.7	81.0	95.0	123.8	150.7	175.0
TOTAL	**70.5**	**95.7**	**112.2**	**146.4**	**177.9**	**206.6**
Proposed Conditions						
OF-001 (Oblats Ave)	12.0	16.3	19.1	24.8	30.1	34.8
OF-002 (Springhurst Ave)	30.0	36.7	40.8	48.3	53.4	57.6
TOTAL	**42.0**	**53.0**	**59.9**	**73.1**	**83.5**	**92.4**

*Runoff coefficients increased by 10%, 20%, and 25% for the 25-year, 50-year, and 100-year storms respectively per the City of Ottawa Sewer Design Guidelines (Section 5.4.5.2.1)

Table 6: Summary of HydroCAD Modelling Results – Peak Storage

Return Period (Years)	Time of Conc. (min)	Utilized Storage	Total Flow to OF-002	Max Head in Storage Unit	Orifice Flow at Max Head	Allowable 100-yr Flow Rate to OF-002
		(m^3)	(L/s)	(m)	(L/s)	(L/s)
100 (Peak Discharge)	29	140.0	**57.6**	1.92	51.8	**59.7**
100 (Peak Storage)	33	**140.4**	57.5	**1.93**	**51.9**	

3.3 WATER QUALITY

As per Section 1.4, there are no specific quality control criteria for this site. Therefore, best practice stormwater management approaches have been applied.

All building, pathway, and landscaped area will be generally free of typical sediment generating activities and runoff will leave the site effectively unchanged and can therefore be considered clean for the purposes of water quality assessment.

All runoff from the remaining parking area in the north-east corner of the site will be captured within the proposed underground storage unit. A suitably sized OGS unit (Hydro First Defense FD-3HC or equivalent) has been proposed at the outlet of the storage unit to provide 80% TSS removal.

4 CONCLUSIONS

A stormwater management report has been prepared to support the design of a proposed four storey addition to the existing residential building complex at 15 Oblats Avenue. The key points are summarized below.

WATER QUANTITY

Controlled runoff from the site will be detained in a 145 m^3 underground storage unit and released at a controlled rate using a 135 mm orifice type ICD.

WATER QUALITY

Per correspondence with the RVCA, no water quality infrastructure is required. Per best practice, all parking area will be treated with an OGS unit (Hydro First Defense FD-3HC or equivalent) sized to achieve 80% TSS removal.

This report has demonstrated the proposed SWM strategy will address stormwater management related impacts from this project and meet the applicable design requirements.

APPENDIX

A PRE-CONSULTATION MEETING MINUTES

RE: 15 Oblats Ave - SWM Requirements

Jhamb, Nishant <nishant.jhamb@ottawa.ca>
To O'Neill, Meaghan
Cc Blanchette, Erin; Jadallah, Ayham; McCaughey, Stephen

Hello Meaghan,

Based on the high level information, the proposed criteria is acceptable.
I will provide further comments if any when you submit the Site plan control application.

Thank you
Nishant

From: O'Neill, Meaghan <Meaghan.ONeill@wsp.com>
Sent: April 13, 2022 2:18 PM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: Blanchette, Erin <Erin.Blanchette@wsp.com>; Jadallah, Ayham <Ayham.Jadallah@wsp.com>; McCaughey, Stephen <Stephen.Mccaughey@wsp.com>
Subject: RE: 15 Oblats Ave - SWM Requirements

Hi Nishant,

Thank you for your response.

See my responses / additional questions in red below.

Thank you,

Meaghan

Meaghan O'Neill, EIT
Designer, Water Resources
T+ 1 613-690-1151

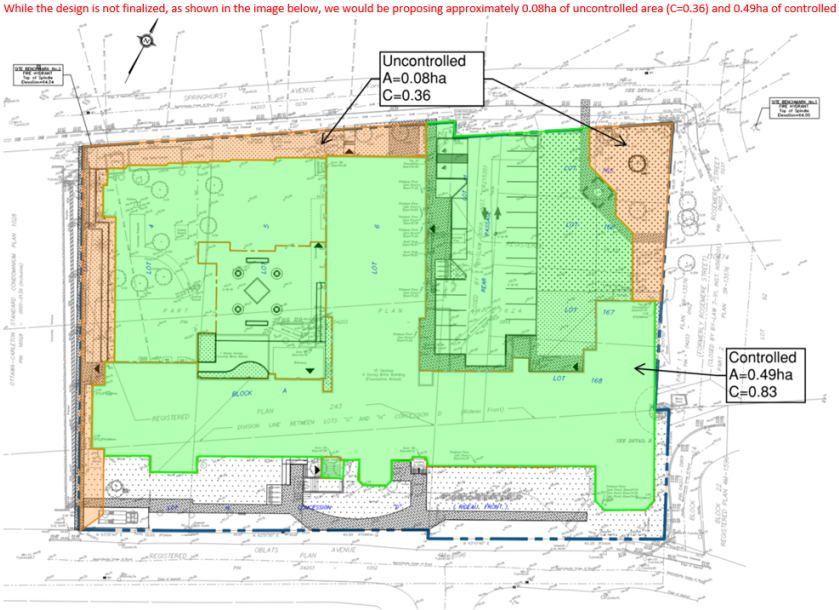
From: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Sent: Friday, April 8, 2022 10:30 AM
To: O'Neill, Meaghan <Meaghan.ONeill@wsp.com>
Cc: Blanchette, Erin <Erin.Blanchette@wsp.com>; Jadallah, Ayham <Ayham.Jadallah@wsp.com>; McCaughey, Stephen <Stephen.Mccaughey@wsp.com>
Subject: RE: 15 Oblats Ave - SWM Requirements

Hello Meaghan, Sorry for the late response

Area in the red can be left uncontrolled and continue to drain towards the ROW.
To clarify, due to some minor changes to landscaping in this area (new path / adjusted parking spaces) there will be a small increase in imperviousness and thus a slight increase in peak flow (Runoff coefficient of 0.52 vs 0.47 in existing conditions). Given the slight increase in runoff in the red area can we assume your previous response to indicate that no SWM control is required for this area?

For the area in the blue, Can you please provide the following info?
What was the 2-year pre development flow (with maximum C=0.5) ?
In existing conditions the area draining to Springhurst Ave (blue area) is an approximately 0.57ha area with a runoff coefficient of 0.74. Thus, using a C=0.5, the 2-yr peak flow is approximately **0.06m3/s** (from HydoCAD).

How much 100-year post development flow(controlled & uncontrolled) are you proposing ?
While the design is not finalized, as shown in the image below, we would be proposing approximately 0.08ha of uncontrolled area (C=0.36) and 0.49ha of controlled area (C=0.83) draining to Spinghurst Ave. The total 100-yr peak flow (including the uncontrolled area) will meet the 2-yr peak flow of 0.06m3/s.



In summary, the existing and proposed peak flows would be approximately as follows:

EXISTING CONDITIONS
Oblats Ave (Red Area):
Area = 0.11 ha
C = 0.47
100-yr flow ~ 0.032m3/s

Springhurst Ave (Blue Area):
Area = 0.57 ha
C = 0.74
2-yr peak flow (C=0.5) ~ 0.06m3/s

PROPOSED CONDITIONS
Oblats Ave (Red Area):
Area = 0.11
C = 0.52
100-yr flow ~ 0.035m3/s

Springhurst Ave (Blue Area):
Area = 0.57 ha
C = 0.77
100-yr peak flow ~ 0.06m3/s

Regards

Nishant Jhamb, P.Eng
Project Manager |Gestionnaire de projet
Planning, Real Estate and Economic Development Department
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 23112, nishant.jhamb@ottawa.ca

JN Jhamb, Nishant <nishant.jhamb@ottawa.ca>
To O'Neill, Meaghan
Cc Blanchette, Erin; Jadallah, Ayham; McCaughey, Stephen
You replied to this message on 4/13/2022 2:17 PM.

Hello Meaghan, Sorry for the late response

Area in the red can be left uncontrolled and continue to drain towards the ROW.

For the area in the blue, Can you please provide the following info?
What was the 2-year pre development flow (with maximum C=0.5) ?
How much 100-year post development flow(controlled & uncontrolled) are you proposing ?

Regards

Nishant Jhamb, P.Eng
Project Manager |Gestionnaire de projet
Planning, Real Estate and Economic Development Department
Development Review - Central Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2424 ext./poste 23112, nishant.jhamb@ottawa.ca

From: O'Neill, Meaghan <Meaghan.ONeill@wsp.com>
Sent: April 06, 2022 11:46 AM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Cc: Blanchette, Erin <Erin.Blanchette@wsp.com>; Jadallah, Ayham <Ayham.Jadallah@wsp.com>; McCaughey, Stephen <Stephen.Mccaughey@wsp.com>
Subject: 15 Oblats Ave - SWM Requirements

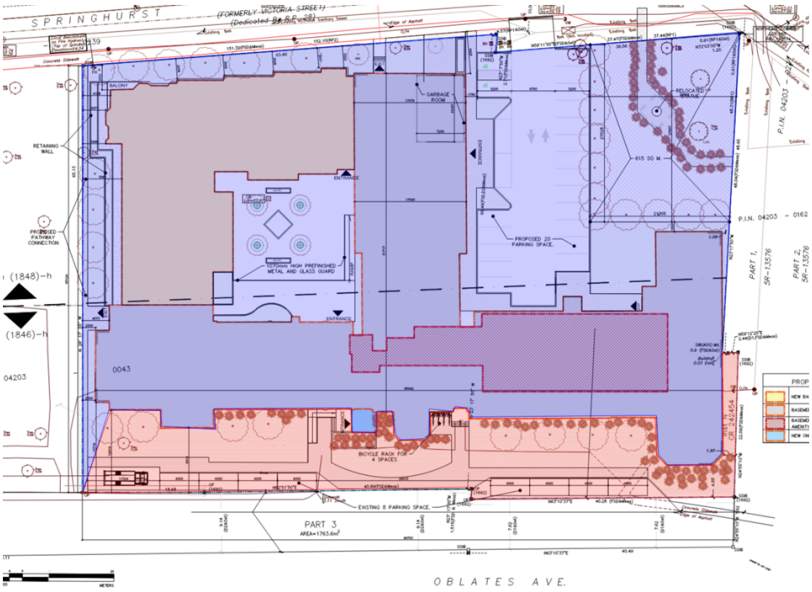
Hi Nishant,

We are in the process of working on the stormwater management design for 15 Oblats Ave and were hoping you could clarify the SWM requirements.

In the pre-consultation meeting notes (minutes attached) it is stated that the SWM requirements is to "control post-development runoff from the subject site, up to and including the 100-year storm event, to a 2-year pre-development level." As shown below, under existing conditions the majority of the site (blue) drains north to the Springhurst Ave sewer, and a small portion of the site (red) drains south to the Oblats sewer. As also shown below, under proposed conditions, existing drainage patterns will be maintained, with the majority of changes made to the area draining to Springhurst Ave (blue) and only minor landscaping changes made on the south side of the building (red).

Existing Drainage Areas:

Proposed Drainage Areas:



Can you clarify if the requirement to controlled to the 2yr pre-development rate is on a sitewide basis? Due to space and grading constraints there would be limited opportunity to capture the area south of the building and no significant changes are being made in this area with all runoff continuing to drain overland to Oblats Ave.

Thank you,

Meaghan

Meaghan O'Neill
Designer, Water Resources
EIT

T+ 1 613-690-1151

WSP Canada Inc.
2611 Queensview Drive, Suite 300
Ottawa, Ontario
K2B 8K2 Canada

wsp.com

APPENDIX

B RVCA CORRESPONDENCE

RE: Stormwater Quality Requirements - 15 Oblats Ave

EL Eric Lalande <eric.lalande@rvca.ca>
To O'Neill, Meaghan

Hi Meaghan,

Based on the proposed addition, the RVCA does not have any additional water quality control requirements, however strongly encourage best management practices be integrated into the design, where feasible.

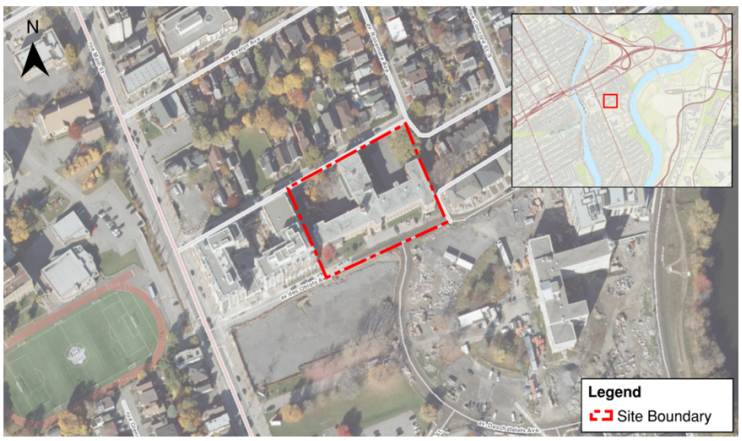
Thank you,

Eric Lalande, MCIP, RPP
Planner, RVCA
613-692-3571 x1137

From: O'Neill, Meaghan <Meaghan.ONeill@wsp.com>
Sent: Wednesday, April 6, 2022 9:02 AM
To: Jamie Batchelor <jamie.batchelor@rvca.ca>; Glen McDonald <glen.mcdonald@rvca.ca>; Eric Lalande <eric.lalande@rvca.ca>; Emma Bennett <emma.bennett@rvca.ca>
Cc: Jadallah, Ayham <Ayham.Jadallah@wsp.com>; Blanchette, Erin <Erin.Blanchette@wsp.com>; McCaughey, Stephen <Stephen.Mccaughey@wsp.com>
Subject: Stormwater Quality Requirements - 15 Oblats Ave

Hello,

We are currently working on a development project within the RVCA boundaries located at 15 Oblats Ave, Ottawa, ON. Please see the image below for the project location as well as the proposed site plan attached. As shown on the image below, the approximately 0.68 ha site consists of an existing 4-storey building, parking areas and small landscaped areas. As shown on the site plan, under proposed conditions the existing building will remain and an approximately 848 sq.m addition will be added to the north-west corner.



As per the pre-consultation meeting notes from May 27th, 2021, the City of Ottawa requested we consult with the RVCA regarding the quality control requirements for this site. Can you provide the quality control criteria for this site?

Thank you,

Meaghan

Meaghan O'Neill
Designer, Water Resources
EIT

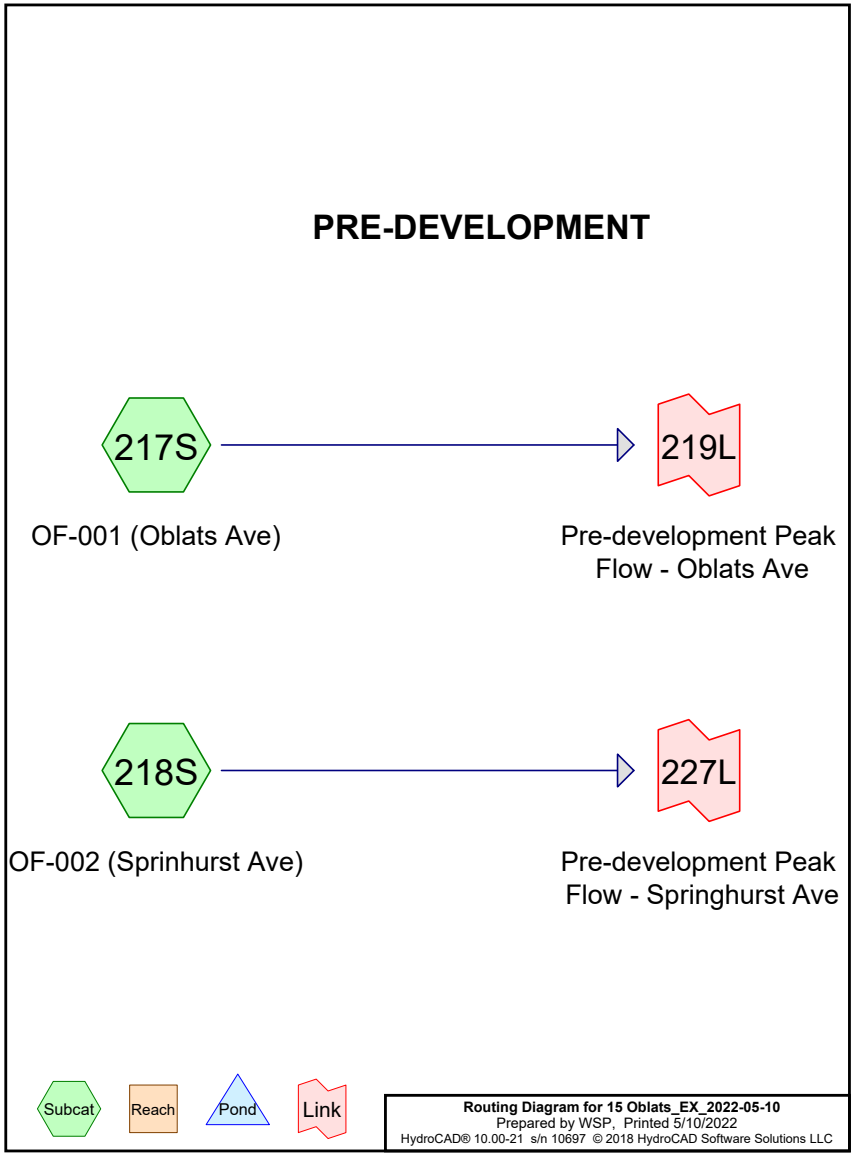
T+ 1 613-690-1151

WSP Canada Inc.
2611 Queensview Drive, Suite 300
Ottawa, Ontario
K2B 8K2 Canada

wsp.com

APPENDIX

C CALCULATIONS & HYDROCAD OUTPUT



Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.47	EX-001 (217S)
5,700.0	0.50	EX-002 (Actual C=0.74) (218S)
6,800.0	**0.50**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 217S: OF-001 (Oblats Ave) Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=6 mm
Tc=10.0 min C=0.47 Runoff=0.01084 m³/s 6.6 m³

Subcatchment 218S: OF-002 (Sprinhurst Runoff Area=0.5700 ha 0.00% Impervious Runoff Depth=6 mm
Tc=10.0 min C=0.50 Runoff=0.05974 m³/s 36.5 m³

Link 219L: Pre-development Peak Flow - Oblats Ave Inflow=0.01084 m³/s 6.6 m³
Primary=0.01084 m³/s 6.6 m³

Link 227L: Pre-development Peak Flow - Springhurst Ave Inflow=0.05974 m³/s 36.5 m³
Primary=0.05974 m³/s 36.5 m³

Total Runoff Area = 6,800.0 m² Runoff Volume = 43.1 m³ Average Runoff Depth = 6 mm
100.00% Pervious = 6,800.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 217S: OF-001 (Oblats Ave)

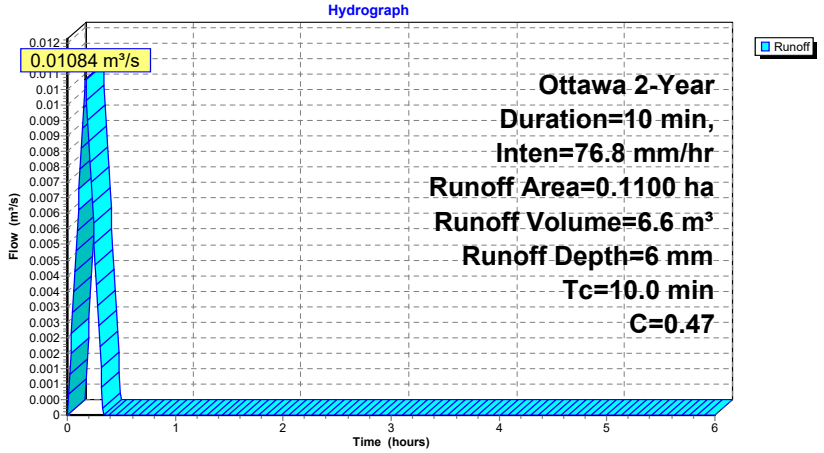
Runoff = 0.01084 m³/s @ 0.17 hrs, Volume= 6.6 m³, Depth= 6 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 2-Year Duration=10 min, Inten=76.8 mm/hr

Area (ha)	C	Description
0.1100	0.47	EX-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 217S: OF-001 (Oblats Ave)



Summary for Subcatchment 218S: OF-002 (Sprinhurst Ave)

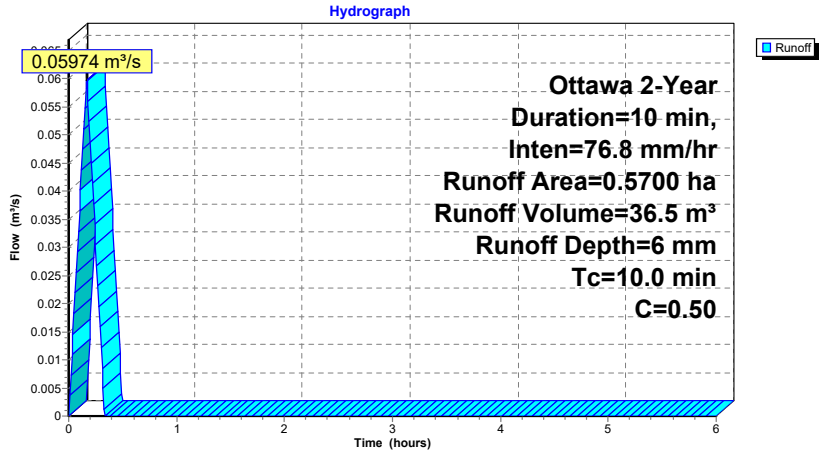
Runoff = 0.05974 m³/s @ 0.17 hrs, Volume= 36.5 m³, Depth= 6 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 2-Year Duration=10 min, Inten=76.8 mm/hr

Area (ha)	C	Description
0.5700	0.50	EX-002 (Actual C=0.74)
0.5700		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					Direct Entry,

Subcatchment 218S: OF-002 (Sprinhurst Ave)

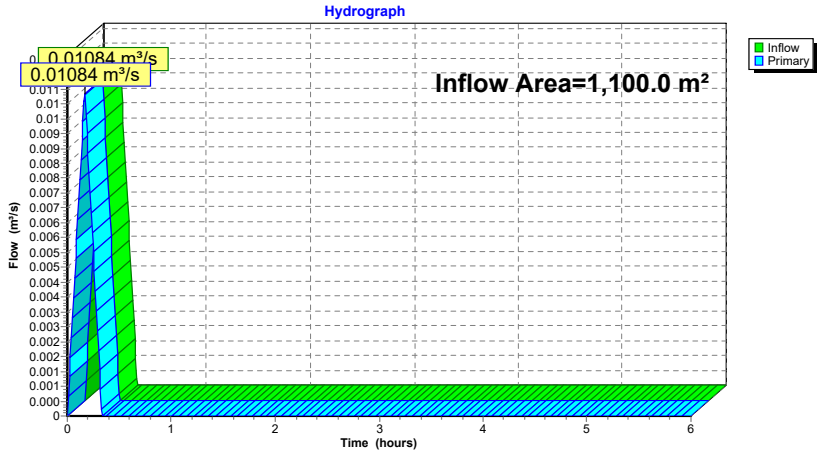


Summary for Link 219L: Pre-development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 6 mm for 2-Year event
Inflow = 0.01084 m³/s @ 0.17 hrs, Volume= 6.6 m³
Primary = 0.01084 m³/s @ 0.17 hrs, Volume= 6.6 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 219L: Pre-development Peak Flow - Oblats Ave

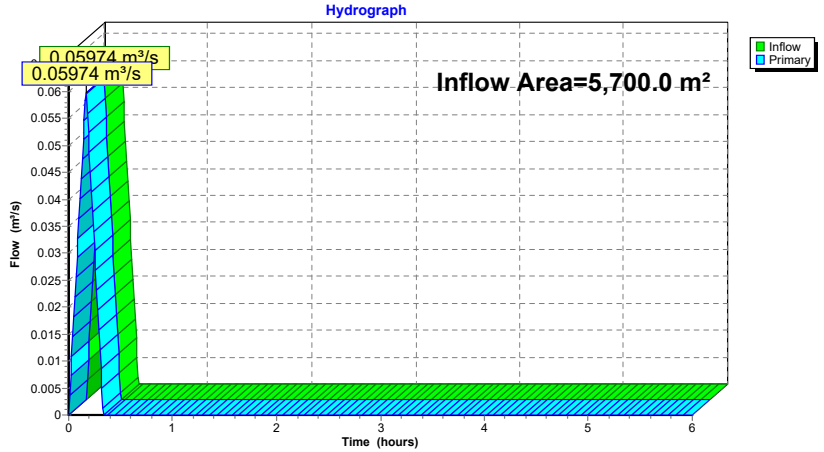


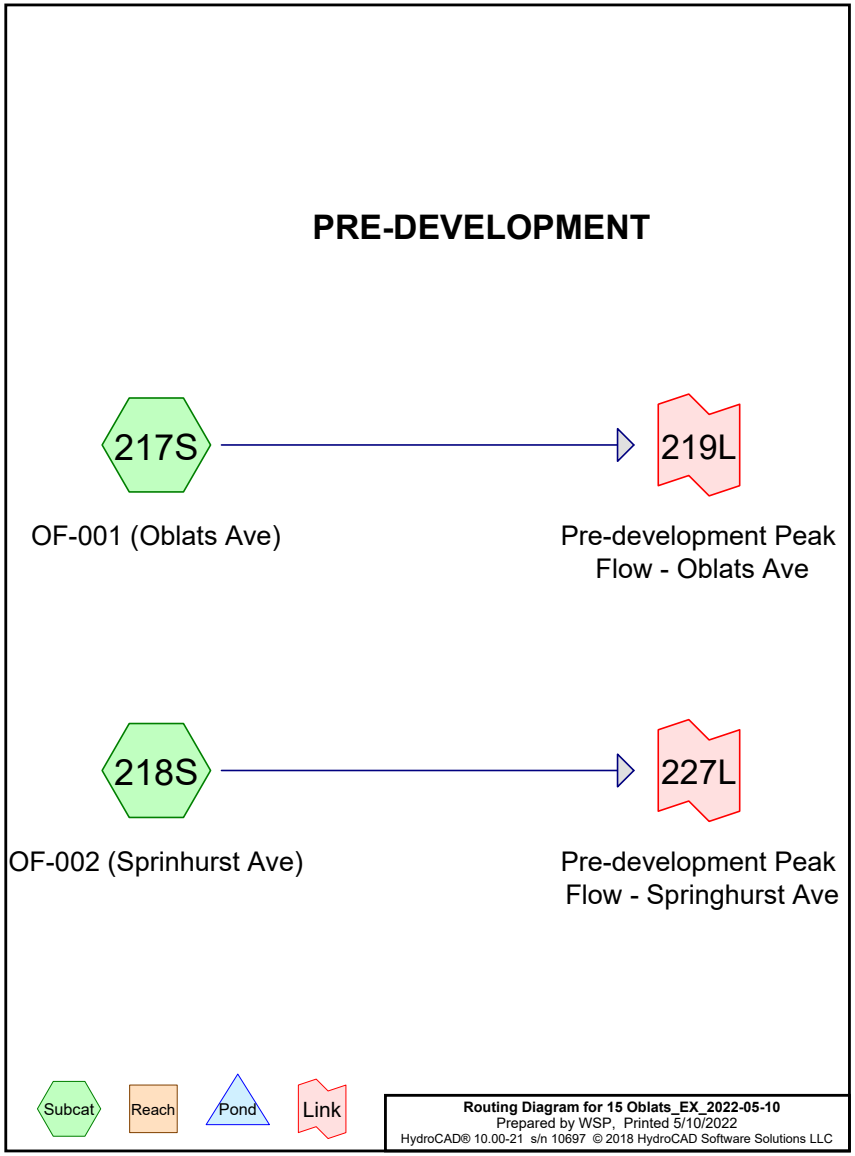
Summary for Link 227L: Pre-development Peak Flow - Springhurst Ave

Inflow Area = 5,700.0 m², 0.00% Impervious, Inflow Depth = 6 mm for 2-Year event
Inflow = 0.05974 m³/s @ 0.17 hrs, Volume= 36.5 m³
Primary = 0.05974 m³/s @ 0.17 hrs, Volume= 36.5 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 227L: Pre-development Peak Flow - Springhurst Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.47	EX-001 (217S)
5,700.0	0.50	EX-002 (Actual C=0.74) (218S)
6,800.0	**0.50**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 217S: OF-001 (Oblats Ave) Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=8 mm
Tc=10.0 min C=0.47 Runoff=0.01470 m³/s 9.0 m³

Subcatchment 218S: OF-002 (Sprinhurst Runoff Area=0.5700 ha 0.00% Impervious Runoff Depth=9 mm
Tc=10.0 min C=0.50 Runoff=0.08104 m³/s 49.5 m³

Link 219L: Pre-development Peak Flow - Oblats Ave Inflow=0.01470 m³/s 9.0 m³
Primary=0.01470 m³/s 9.0 m³

Link 227L: Pre-development Peak Flow - Springhurst Ave Inflow=0.08104 m³/s 49.5 m³
Primary=0.08104 m³/s 49.5 m³

Total Runoff Area = 6,800.0 m² Runoff Volume = 58.4 m³ Average Runoff Depth = 9 mm
100.00% Pervious = 6,800.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 217S: OF-001 (Oblats Ave)

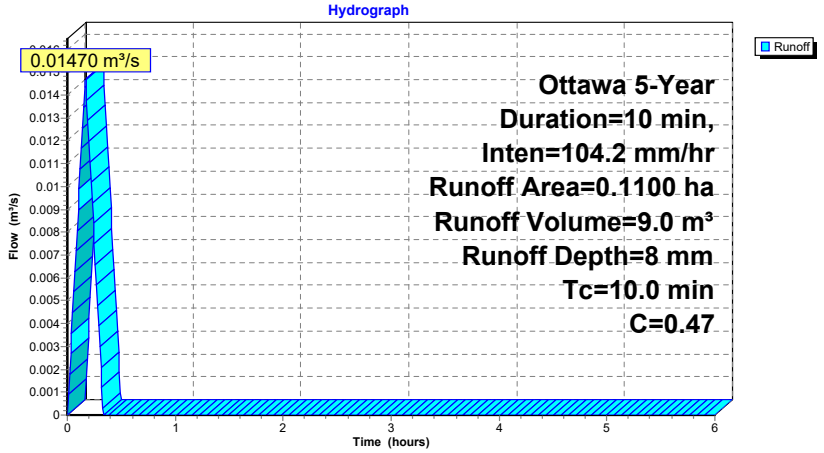
Runoff = 0.01470 m³/s @ 0.17 hrs, Volume= 9.0 m³, Depth= 8 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 5-Year Duration=10 min, Inten=104.2 mm/hr

Area (ha)	C	Description
0.1100	0.47	EX-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 217S: OF-001 (Oblats Ave)



Summary for Subcatchment 218S: OF-002 (Sprinhurst Ave)

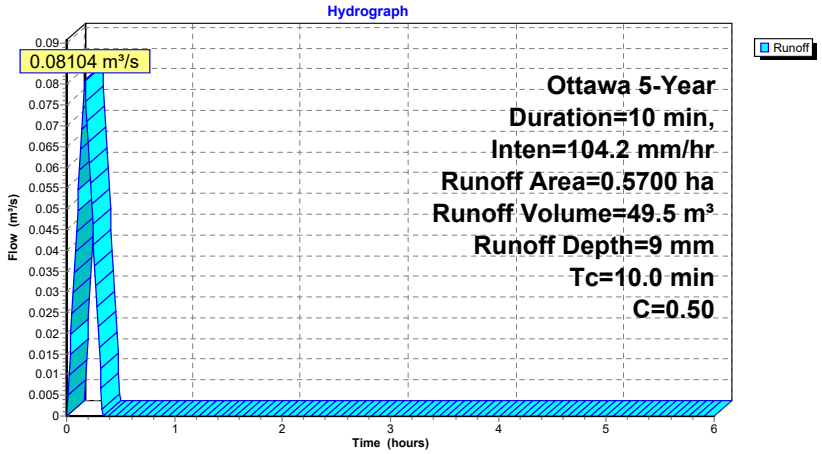
Runoff = 0.08104 m³/s @ 0.17 hrs, Volume= 49.5 m³, Depth= 9 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 5-Year Duration=10 min, Inten=104.2 mm/hr

Area (ha)	C	Description
0.5700	0.50	EX-002 (Actual C=0.74)
0.5700		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					Direct Entry,

Subcatchment 218S: OF-002 (Sprinhurst Ave)

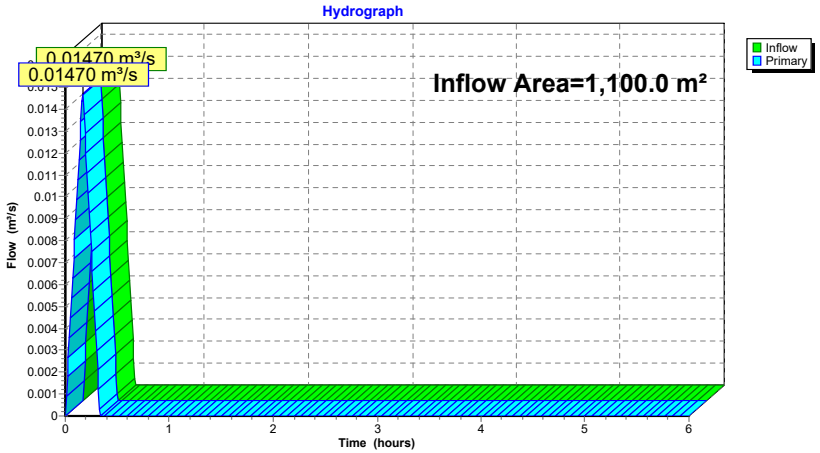


Summary for Link 219L: Pre-development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 8 mm for 5-Year event
Inflow = 0.01470 m³/s @ 0.17 hrs, Volume= 9.0 m³
Primary = 0.01470 m³/s @ 0.17 hrs, Volume= 9.0 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 219L: Pre-development Peak Flow - Oblats Ave

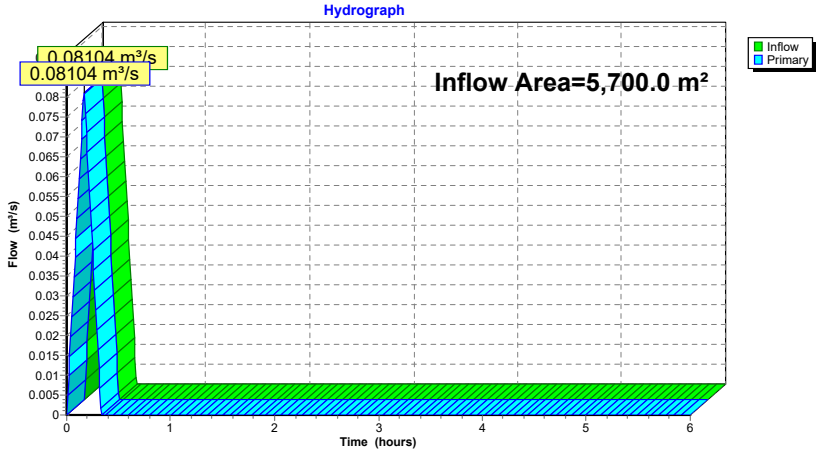


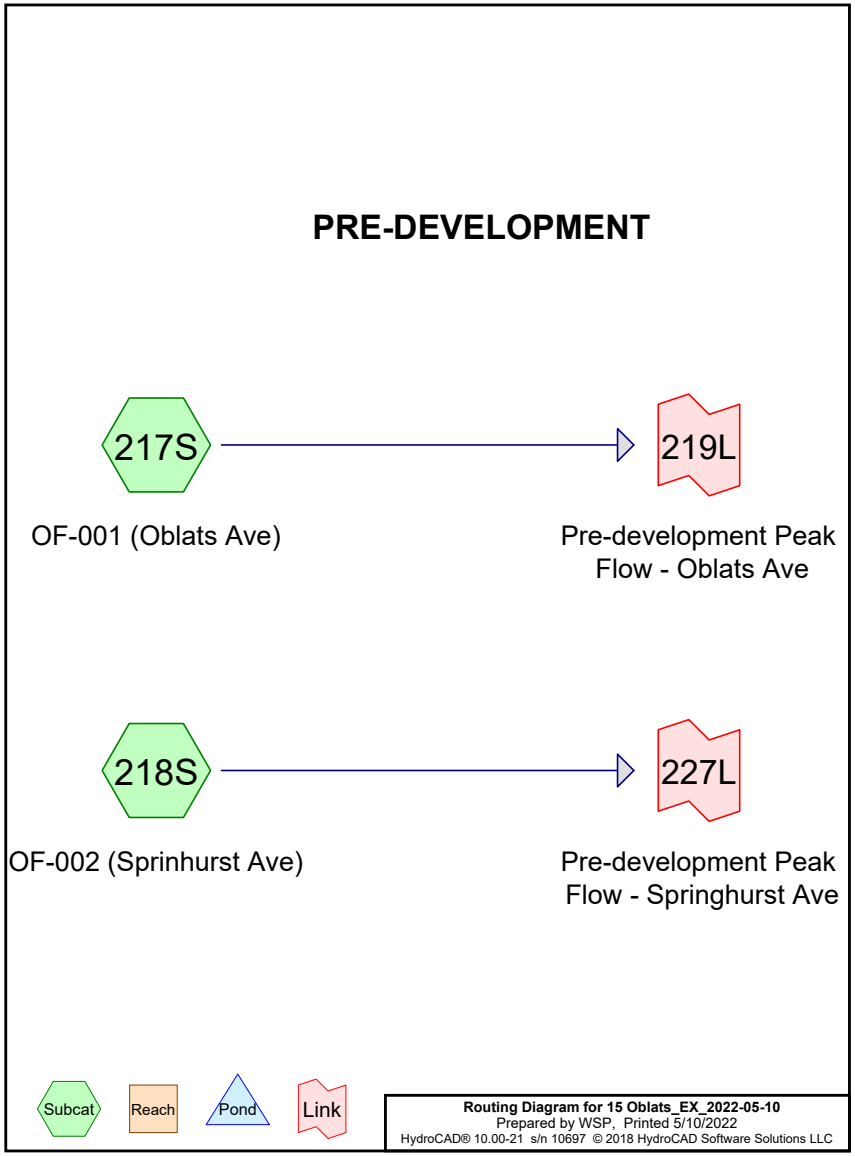
Summary for Link 227L: Pre-development Peak Flow - Springhurst Ave

Inflow Area = 5,700.0 m², 0.00% Impervious, Inflow Depth = 9 mm for 5-Year event
Inflow = 0.08104 m³/s @ 0.17 hrs, Volume= 49.5 m³
Primary = 0.08104 m³/s @ 0.17 hrs, Volume= 49.5 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 227L: Pre-development Peak Flow - Springhurst Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.47	EX-001 (217S)
5,700.0	0.50	EX-002 (Actual C=0.74) (218S)
6,800.0	**0.50**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 217S: OF-001 (Oblats Ave) Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=10 mm
Tc=10.0 min C=0.47 Runoff=0.01723 m³/s 10.5 m³

Subcatchment 218S: OF-002 (Sprinhurst Runoff Area=0.5700 ha 0.00% Impervious Runoff Depth=10 mm
Tc=10.0 min C=0.50 Runoff=0.09500 m³/s 58.0 m³

Link 219L: Pre-development Peak Flow - Oblats Ave Inflow=0.01723 m³/s 10.5 m³
Primary=0.01723 m³/s 10.5 m³

Link 227L: Pre-development Peak Flow - Springhurst Ave Inflow=0.09500 m³/s 58.0 m³
Primary=0.09500 m³/s 58.0 m³

Total Runoff Area = 6,800.0 m² Runoff Volume = 68.5 m³ Average Runoff Depth = 10 mm
100.00% Pervious = 6,800.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 217S: OF-001 (Oblats Ave)

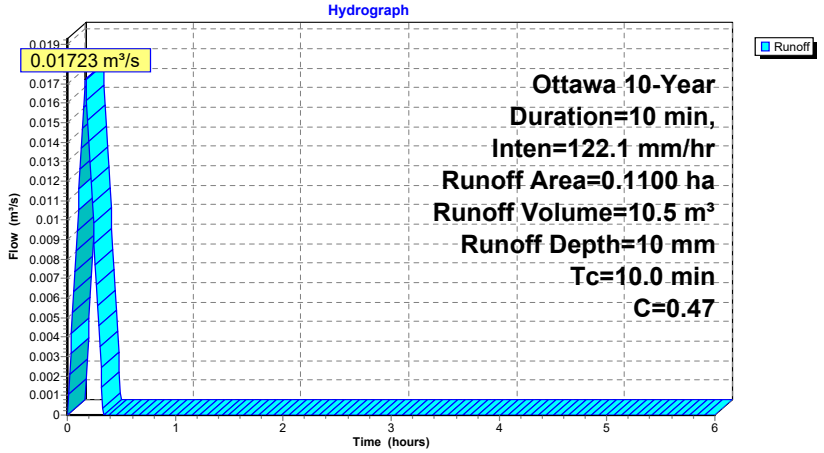
Runoff = 0.01723 m³/s @ 0.17 hrs, Volume= 10.5 m³, Depth= 10 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 10-Year Duration=10 min, Inten=122.1 mm/hr

Area (ha)	C	Description
0.1100	0.47	EX-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 217S: OF-001 (Oblats Ave)



Summary for Subcatchment 218S: OF-002 (Sprinhurst Ave)

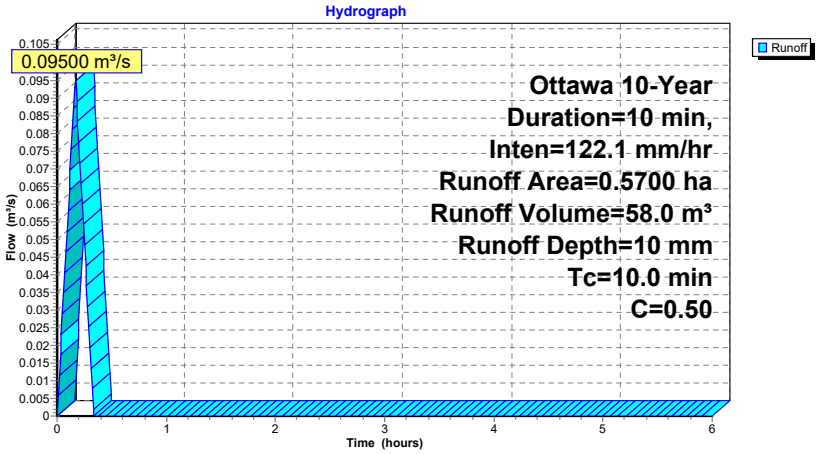
Runoff = 0.09500 m³/s @ 0.17 hrs, Volume= 58.0 m³, Depth= 10 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 10-Year Duration=10 min, Inten=122.1 mm/hr

Area (ha)	C	Description
0.5700	0.50	EX-002 (Actual C=0.74)
0.5700		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					Direct Entry,

Subcatchment 218S: OF-002 (Sprinhurst Ave)

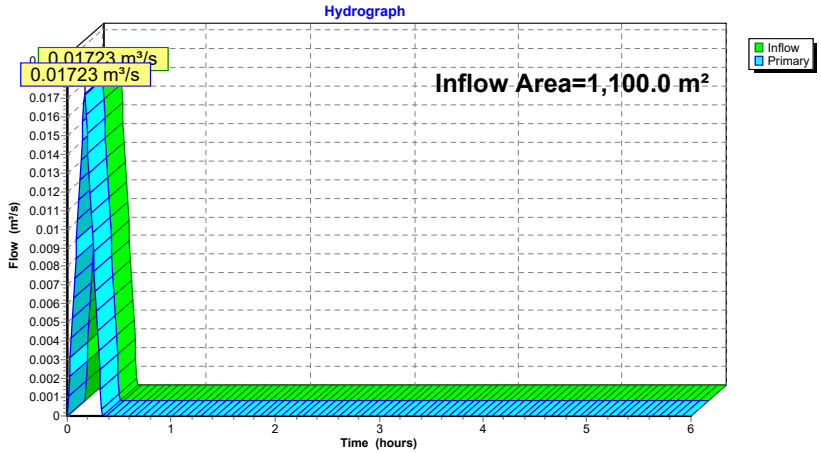


Summary for Link 219L: Pre-development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 10 mm for 10-Year event
Inflow = 0.01723 m³/s @ 0.17 hrs, Volume= 10.5 m³
Primary = 0.01723 m³/s @ 0.17 hrs, Volume= 10.5 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 219L: Pre-development Peak Flow - Oblats Ave

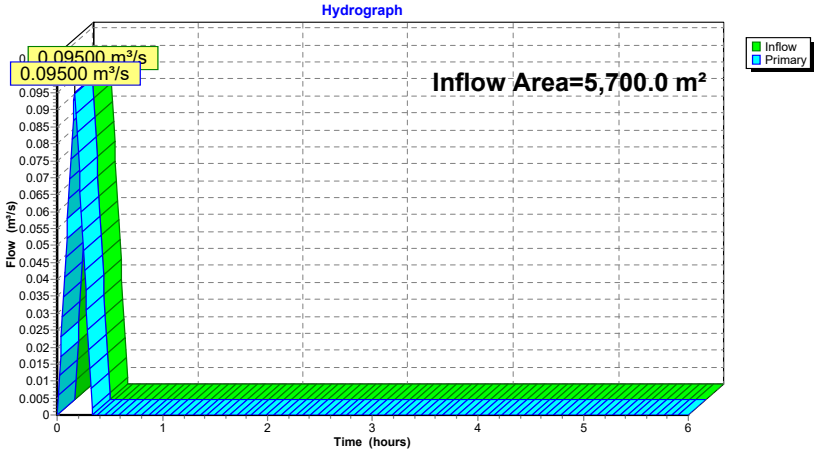


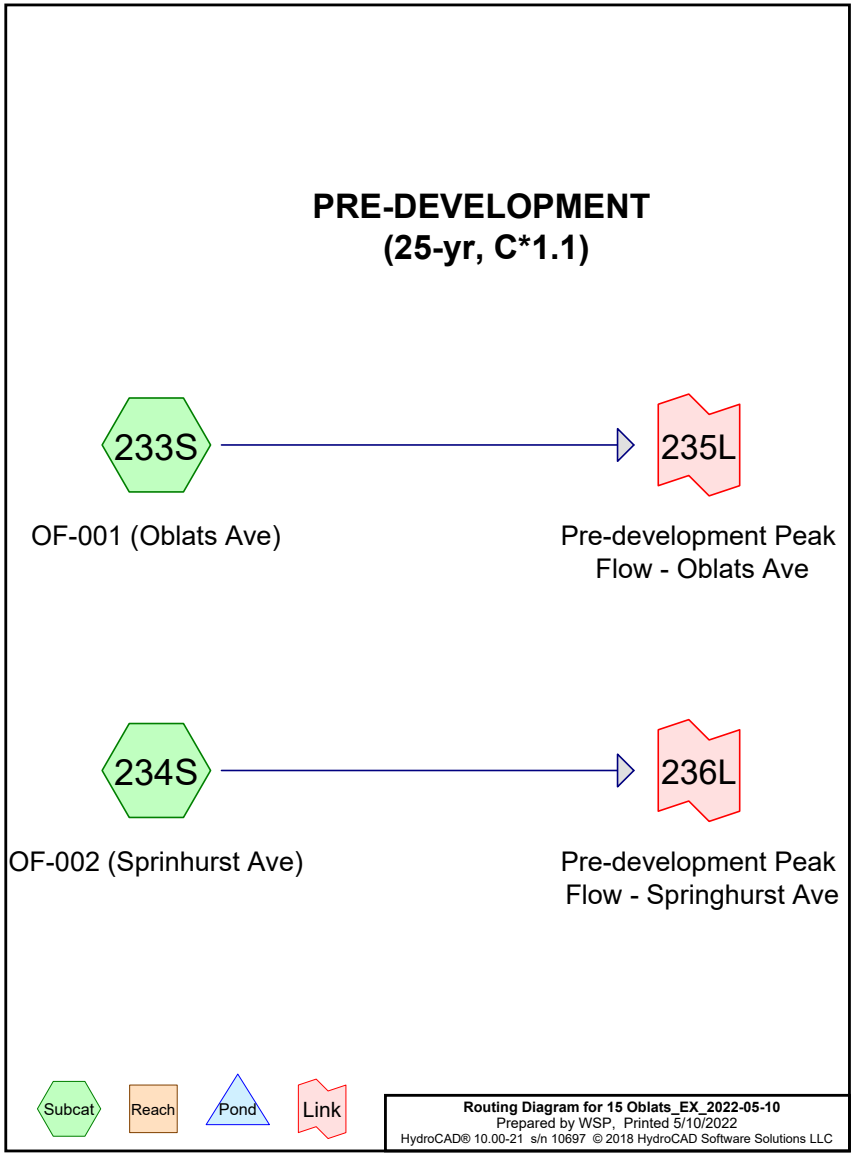
Summary for Link 227L: Pre-development Peak Flow - Springhurst Ave

Inflow Area = 5,700.0 m², 0.00% Impervious, Inflow Depth = 10 mm for 10-Year event
Inflow = 0.09500 m³/s @ 0.17 hrs, Volume= 58.0 m³
Primary = 0.09500 m³/s @ 0.17 hrs, Volume= 58.0 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 227L: Pre-development Peak Flow - Springhurst Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.52	EX-001 (233S)
5,700.0	0.55	EX-002 (234S)
6,800.0	**0.55**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 233S: OF-001 (Oblats Ave) Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=13 mm
Tc=10.0 min C=0.52 Runoff=0.02259 m³/s 13.8 m³

Subcatchment 234S: OF-002 (Sprinhurst Runoff Area=0.5700 ha 0.00% Impervious Runoff Depth=13 mm
Tc=10.0 min C=0.55 Runoff=0.12380 m³/s 75.6 m³

Link 235L: Pre-development Peak Flow - Oblats Ave Inflow=0.02259 m³/s 13.8 m³
Primary=0.02259 m³/s 13.8 m³

Link 236L: Pre-development Peak Flow - Springhurst Ave Inflow=0.12380 m³/s 75.6 m³
Primary=0.12380 m³/s 75.6 m³

Total Runoff Area = 6,800.0 m² Runoff Volume = 89.4 m³ Average Runoff Depth = 13 mm
100.00% Pervious = 6,800.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 233S: OF-001 (Oblats Ave)

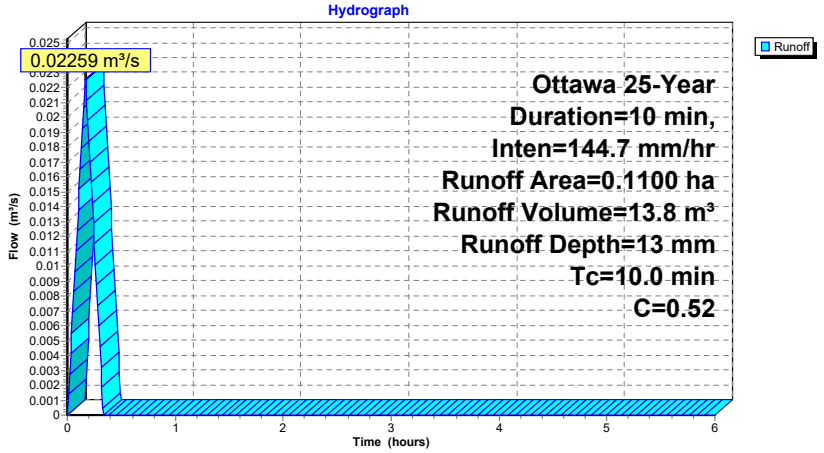
Runoff = 0.02259 m³/s @ 0.17 hrs, Volume= 13.8 m³, Depth= 13 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 25-Year Duration=10 min, Inten=144.7 mm/hr

Area (ha)	C	Description
0.1100	0.52	EX-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 233S: OF-001 (Oblats Ave)



Summary for Subcatchment 234S: OF-002 (Sprinhurst Ave)

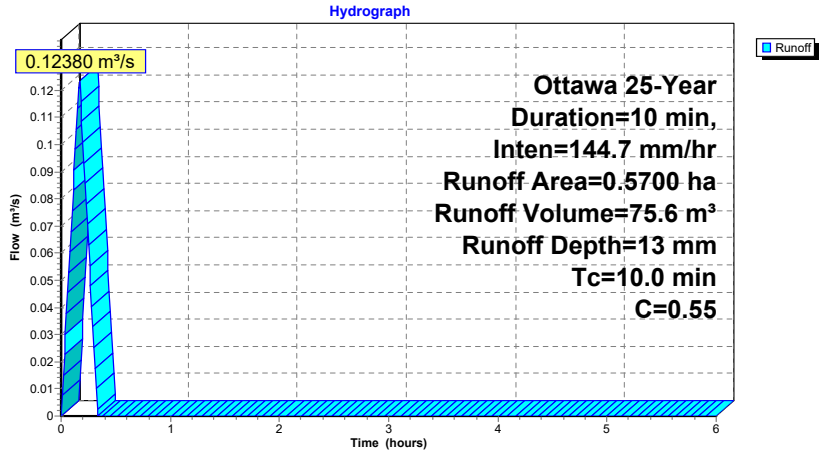
Runoff = 0.12380 m³/s @ 0.17 hrs, Volume= 75.6 m³, Depth= 13 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 25-Year Duration=10 min, Inten=144.7 mm/hr

Area (ha)	C	Description
0.5700	0.55	EX-002
0.5700		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					Direct Entry,

Subcatchment 234S: OF-002 (Sprinhurst Ave)

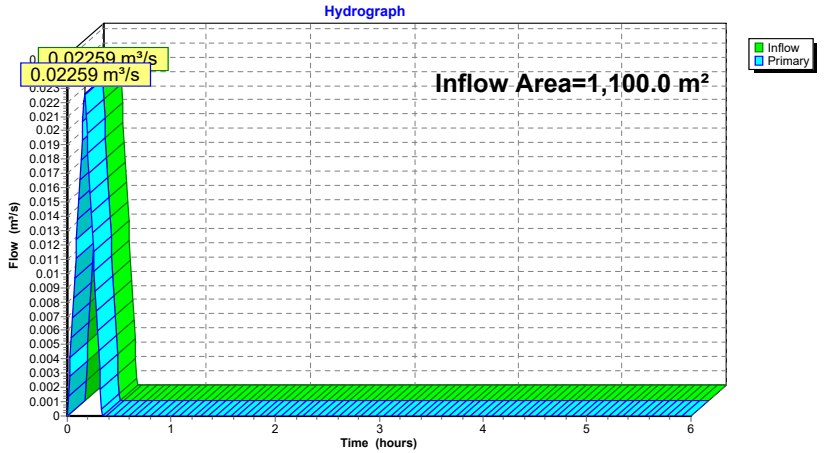


Summary for Link 235L: Pre-development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 13 mm for 25-Year event
Inflow = 0.02259 m³/s @ 0.17 hrs, Volume= 13.8 m³
Primary = 0.02259 m³/s @ 0.17 hrs, Volume= 13.8 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 235L: Pre-development Peak Flow - Oblats Ave

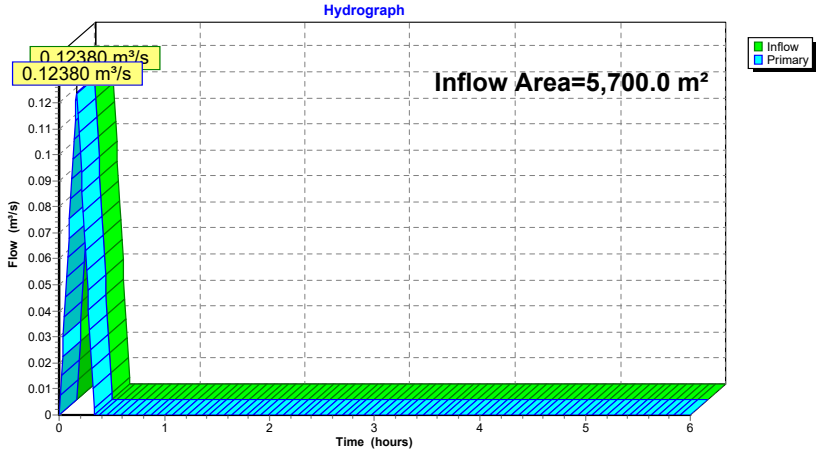


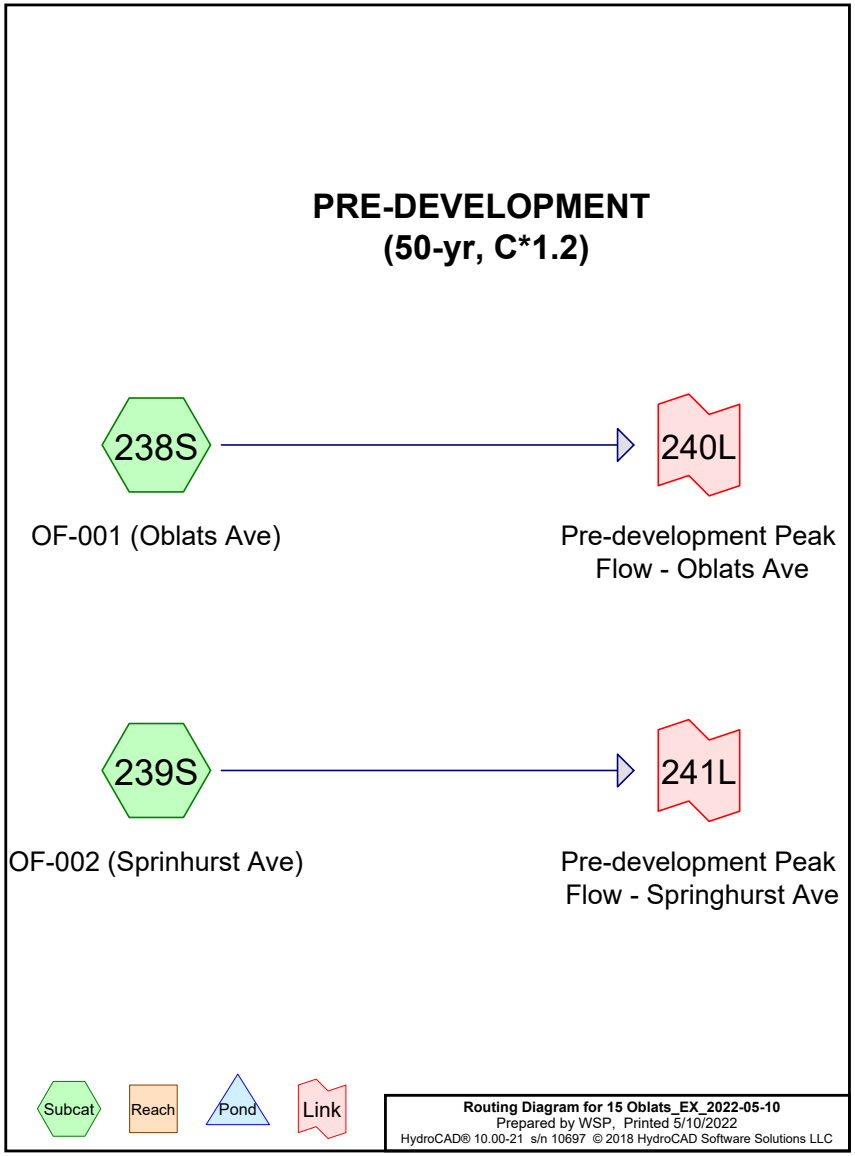
Summary for Link 236L: Pre-development Peak Flow - Springhurst Ave

Inflow Area = 5,700.0 m², 0.00% Impervious, Inflow Depth = 13 mm for 25-Year event
Inflow = 0.12380 m³/s @ 0.17 hrs, Volume= 75.6 m³
Primary = 0.12380 m³/s @ 0.17 hrs, Volume= 75.6 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 236L: Pre-development Peak Flow - Springhurst Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.56	EX-001 (238S)
5,700.0	0.60	EX-002 (239S)
6,800.0	**0.59**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 238S: OF-001 (Oblats Ave) Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=15 mm
Tc=10.0 min C=0.56 Runoff=0.02715 m³/s 16.6 m³

Subcatchment 239S: OF-002 (Sprinhurst Runoff Area=0.5700 ha 0.00% Impervious Runoff Depth=16 mm
Tc=10.0 min C=0.60 Runoff=0.15071 m³/s 92.0 m³

Link 240L: Pre-development Peak Flow - Oblats Ave Inflow=0.02715 m³/s 16.6 m³
Primary=0.02715 m³/s 16.6 m³

Link 241L: Pre-development Peak Flow - Springhurst Ave Inflow=0.15071 m³/s 92.0 m³
Primary=0.15071 m³/s 92.0 m³

Total Runoff Area = 6,800.0 m² Runoff Volume = 108.6 m³ Average Runoff Depth = 16 mm
100.00% Pervious = 6,800.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 238S: OF-001 (Oblats Ave)

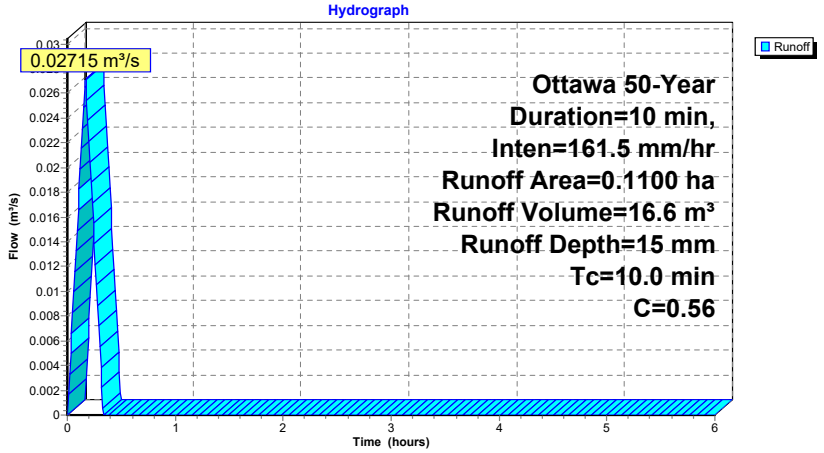
Runoff = 0.02715 m³/s @ 0.17 hrs, Volume= 16.6 m³, Depth= 15 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 50-Year Duration=10 min, Inten=161.5 mm/hr

Area (ha)	C	Description
0.1100	0.56	EX-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 238S: OF-001 (Oblats Ave)



Summary for Subcatchment 239S: OF-002 (Sprinhurst Ave)

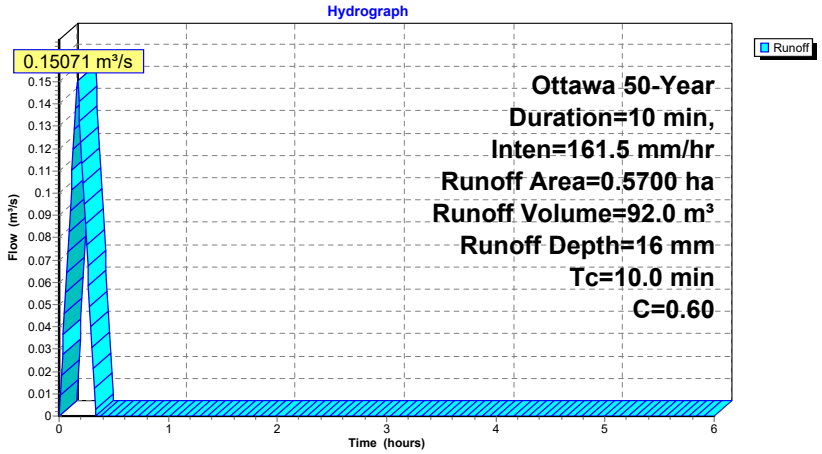
Runoff = 0.15071 m³/s @ 0.17 hrs, Volume= 92.0 m³, Depth= 16 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 50-Year Duration=10 min, Inten=161.5 mm/hr

Area (ha)	C	Description
0.5700	0.60	EX-002
0.5700		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					Direct Entry,

Subcatchment 239S: OF-002 (Sprinhurst Ave)

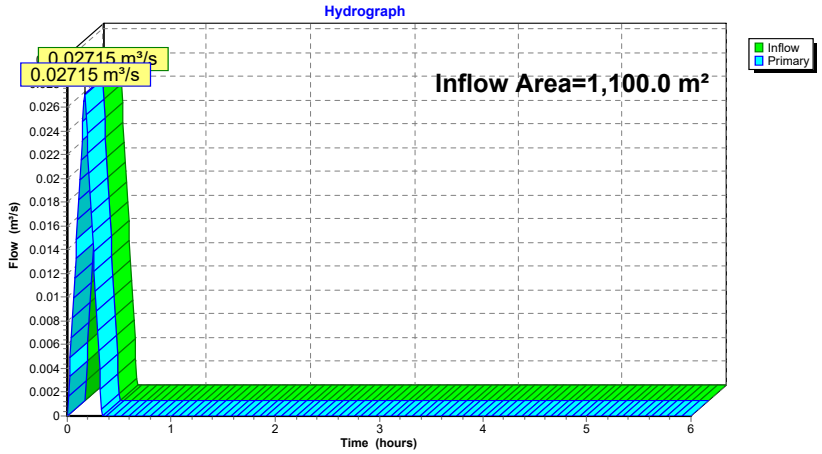


Summary for Link 240L: Pre-development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 15 mm for 50-Year event
Inflow = 0.02715 m³/s @ 0.17 hrs, Volume= 16.6 m³
Primary = 0.02715 m³/s @ 0.17 hrs, Volume= 16.6 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 240L: Pre-development Peak Flow - Oblats Ave

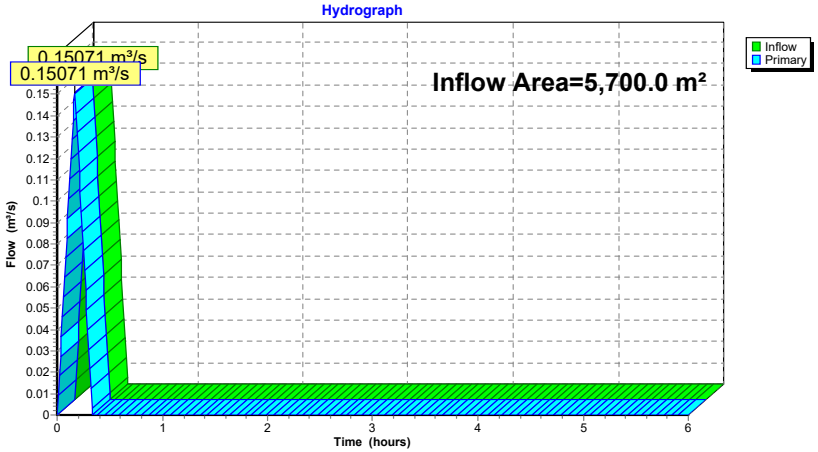


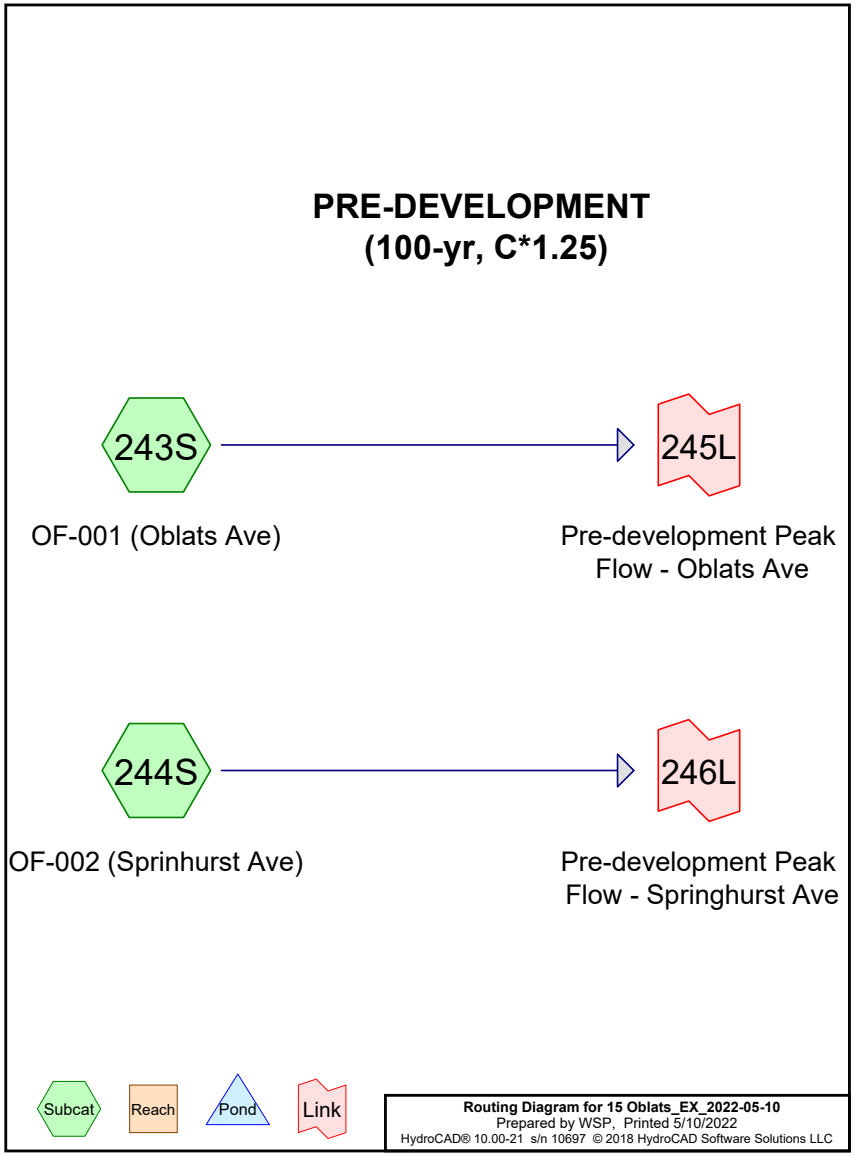
Summary for Link 241L: Pre-development Peak Flow - Springhurst Ave

Inflow Area = 5,700.0 m², 0.00% Impervious, Inflow Depth = 16 mm for 50-Year event
Inflow = 0.15071 m³/s @ 0.17 hrs, Volume= 92.0 m³
Primary = 0.15071 m³/s @ 0.17 hrs, Volume= 92.0 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 241L: Pre-development Peak Flow - Springhurst Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.59	EX-001 (243S)
5,700.0	0.63	EX-002 (244S)
6,800.0	**0.62**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 243S: OF-001 (Oblats Ave) Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=18 mm
Tc=10.0 min C=0.59 Runoff=0.03163 m³/s 19.3 m³

Subcatchment 244S: OF-002 (Sprinhurst Runoff Area=0.5700 ha 0.00% Impervious Runoff Depth=19 mm
Tc=10.0 min C=0.63 Runoff=0.17500 m³/s 106.8 m³

Link 245L: Pre-development Peak Flow - Oblats Ave Inflow=0.03163 m³/s 19.3 m³
Primary=0.03163 m³/s 19.3 m³

Link 246L: Pre-development Peak Flow - Springhurst Ave Inflow=0.17500 m³/s 106.8 m³
Primary=0.17500 m³/s 106.8 m³

Total Runoff Area = 6,800.0 m² Runoff Volume = 126.1 m³ Average Runoff Depth = 19 mm
100.00% Pervious = 6,800.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 243S: OF-001 (Oblats Ave)

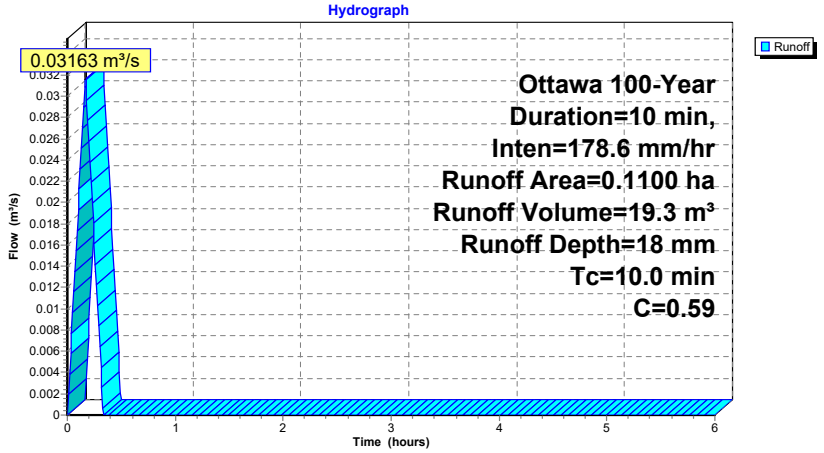
Runoff = 0.03163 m³/s @ 0.17 hrs, Volume= 19.3 m³, Depth= 18 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 100-Year Duration=10 min, Inten=178.6 mm/hr

Area (ha)	C	Description
0.1100	0.59	EX-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 243S: OF-001 (Oblats Ave)



Summary for Subcatchment 244S: OF-002 (Sprinhurst Ave)

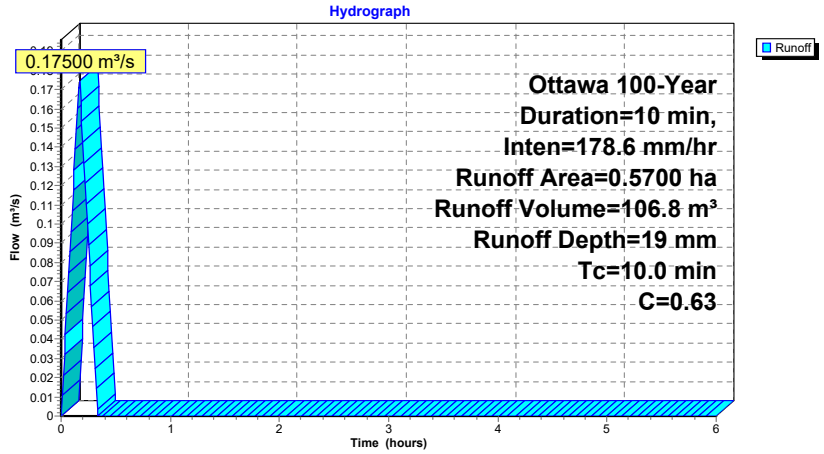
Runoff = 0.17500 m³/s @ 0.17 hrs, Volume= 106.8 m³, Depth= 19 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 100-Year Duration=10 min, Inten=178.6 mm/hr

Area (ha)	C	Description
0.5700	0.63	EX-002
0.5700		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					Direct Entry,

Subcatchment 244S: OF-002 (Sprinhurst Ave)

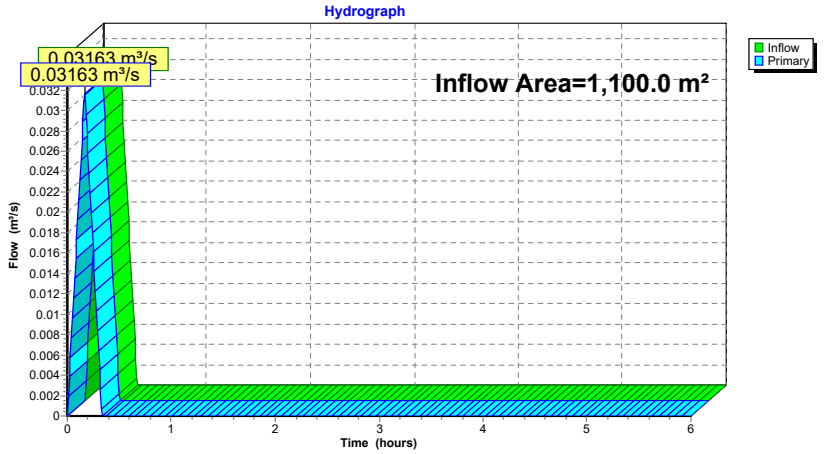


Summary for Link 245L: Pre-development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 18 mm for 100-Year event
Inflow = 0.03163 m³/s @ 0.17 hrs, Volume= 19.3 m³
Primary = 0.03163 m³/s @ 0.17 hrs, Volume= 19.3 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 245L: Pre-development Peak Flow - Oblats Ave

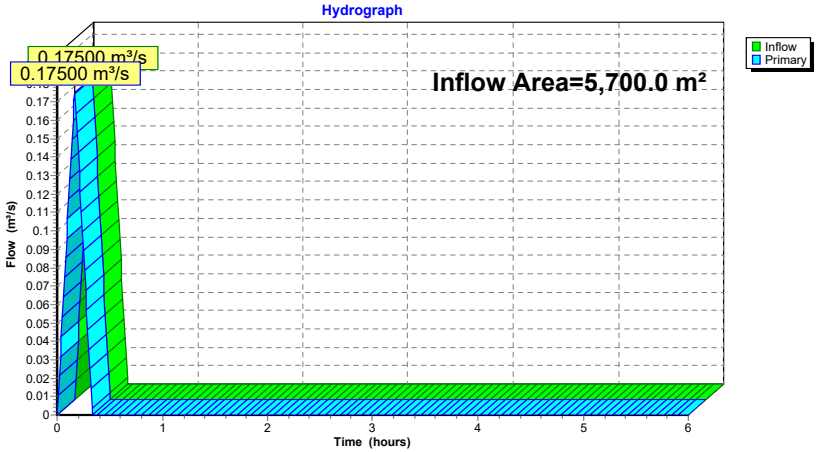


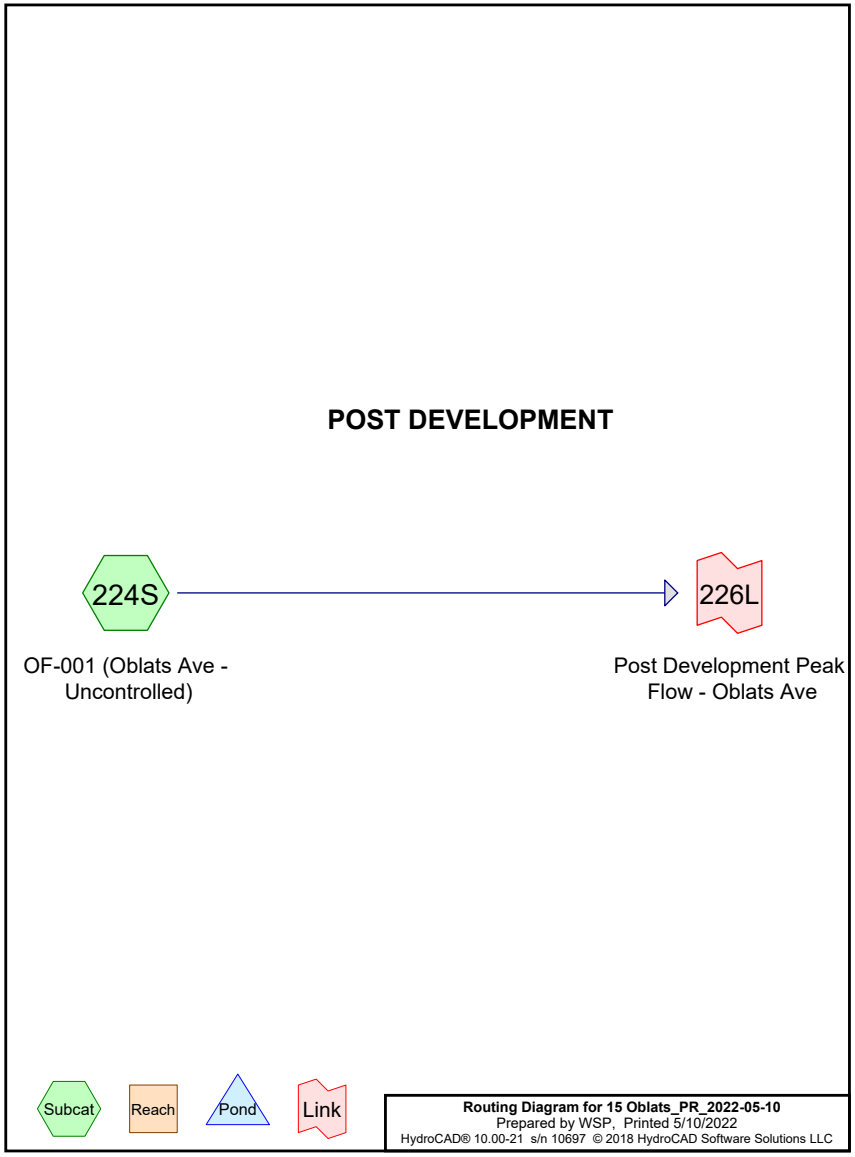
Summary for Link 246L: Pre-development Peak Flow - Springhurst Ave

Inflow Area = 5,700.0 m², 0.00% Impervious, Inflow Depth = 19 mm for 100-Year event
Inflow = 0.17500 m³/s @ 0.17 hrs, Volume= 106.8 m³
Primary = 0.17500 m³/s @ 0.17 hrs, Volume= 106.8 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 246L: Pre-development Peak Flow - Springhurst Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.52	PR-001 (224S)
1,100.0	**0.52**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 224S: OF-001 (Oblats Ave - Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=7 mm
Tc=10.0 min C=0.52 Runoff=0.01199 m³/s 7.3 m³

Link 226L: Post Development Peak Flow - Oblats Ave Inflow=0.01199 m³/s 7.3 m³
Primary=0.01199 m³/s 7.3 m³

Total Runoff Area = 1,100.0 m² Runoff Volume = 7.3 m³ Average Runoff Depth = 7 mm
100.00% Pervious = 1,100.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 224S: OF-001 (Oblats Ave - Uncontrolled)

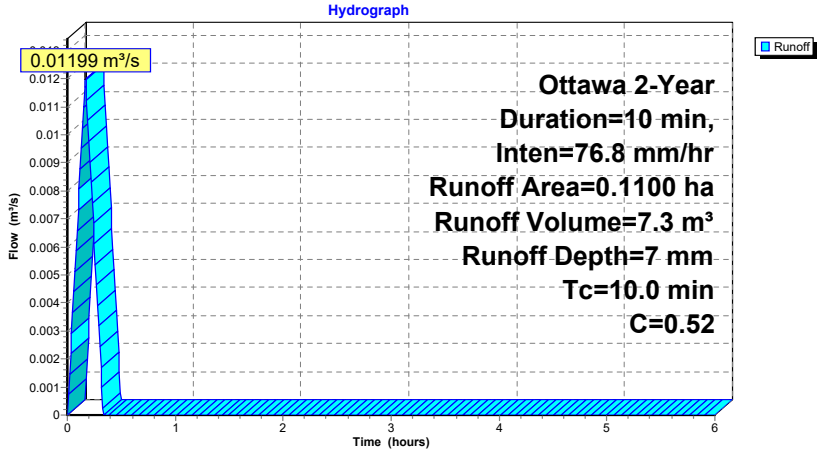
Runoff = 0.01199 m³/s @ 0.17 hrs, Volume= 7.3 m³, Depth= 7 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 2-Year Duration=10 min, Inten=76.8 mm/hr

Area (ha)	C	Description
0.1100	0.52	PR-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 224S: OF-001 (Oblats Ave - Uncontrolled)

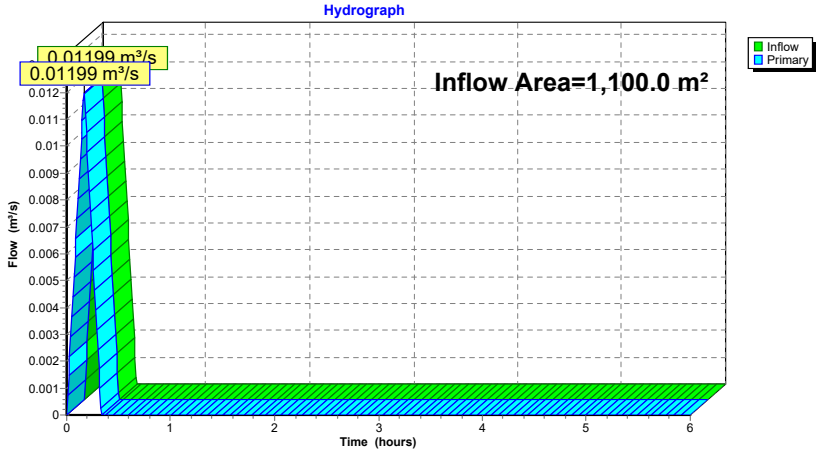


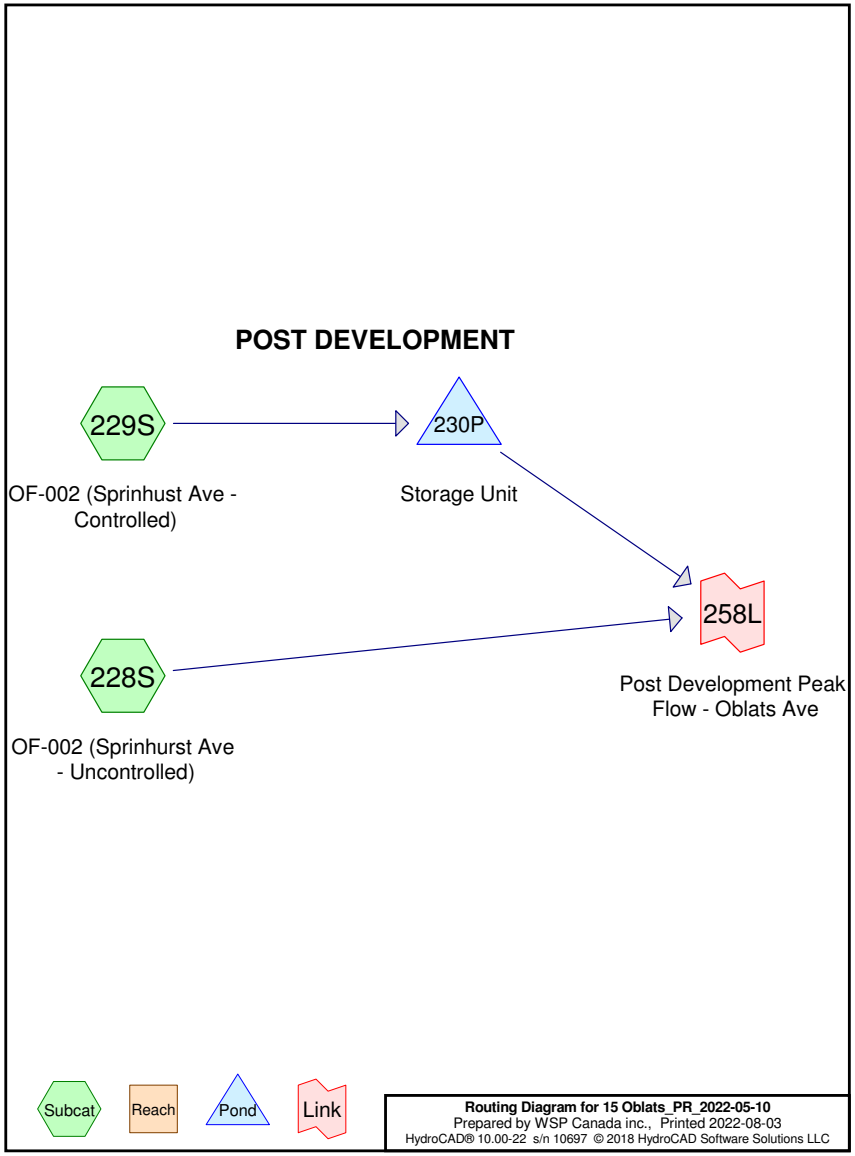
Summary for Link 226L: Post Development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 7 mm for 2-Year event
Inflow = 0.01199 m³/s @ 0.17 hrs, Volume= 7.3 m³
Primary = 0.01199 m³/s @ 0.17 hrs, Volume= 7.3 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 226L: Post Development Peak Flow - Oblats Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
2,300.0	0.90	PR-002 (229S)
500.0	0.83	PR-003 (229S)
800.0	0.90	PR-004 (229S)
500.0	0.74	PR-005 (229S)
900.0	0.57	PR-006 (229S)
200.0	0.25	PR-007 (228S)
10.0	0.25	PR-008 (228S)
500.0	0.40	PR-009 (228S)
5,710.0	**0.76**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 228S: OF-002 (Sprinhurst Runoff Area=0.0710 ha 0.00% Impervious Runoff Depth=7 mm
Tc=10.0 min C=0.36 Runoff=0.00329 m³/s 4.7 m³

Subcatchment 229S: OF-002 (Sprinhust Runoff Area=0.5000 ha 0.00% Impervious Runoff Depth=15 mm
Tc=10.0 min C=0.82 Runoff=0.05282 m³/s 76.1 m³

Pond 230P: Storage Unit Peak Elev=0.602 m Storage=43.8 m³ Inflow=0.05282 m³/s 76.1 m³
Outflow=0.02782 m³/s 76.0 m³

Link 258L: Post Development Peak Flow - Oblats Ave Inflow=0.03002 m³/s 80.8 m³
Primary=0.03002 m³/s 80.8 m³

Total Runoff Area = 5,710.0 m² Runoff Volume = 80.8 m³ Average Runoff Depth = 14 mm
100.00% Pervious = 5,710.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 228S: OF-002 (Sprinhurst Ave - Uncontrolled)

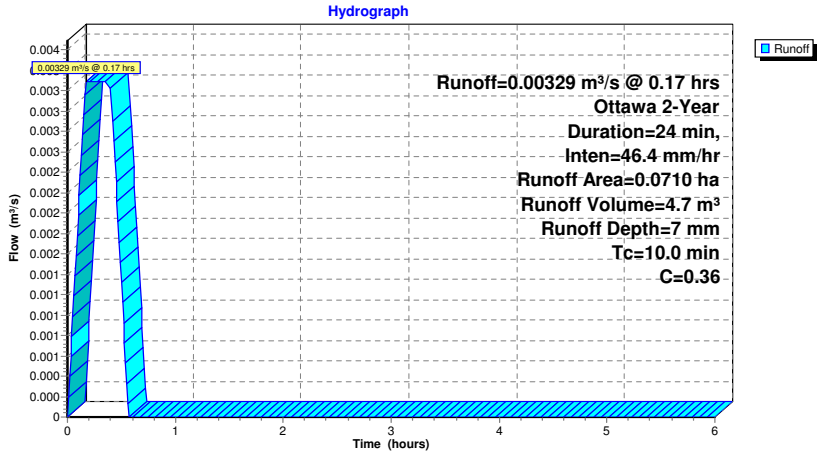
Runoff = 0.00329 m³/s @ 0.17 hrs, Volume= 4.7 m³, Depth= 7 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 2-Year Duration=24 min, Inten=46.4 mm/hr

Area (ha)	C	Description
0.0200	0.25	PR-007
0.0010	0.25	PR-008
0.0500	0.40	PR-009
0.0710	0.36	Weighted Average
0.0710		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 228S: OF-002 (Sprinhurst Ave - Uncontrolled)



Summary for Subcatchment 229S: OF-002 (Sprinhust Ave - Controlled)

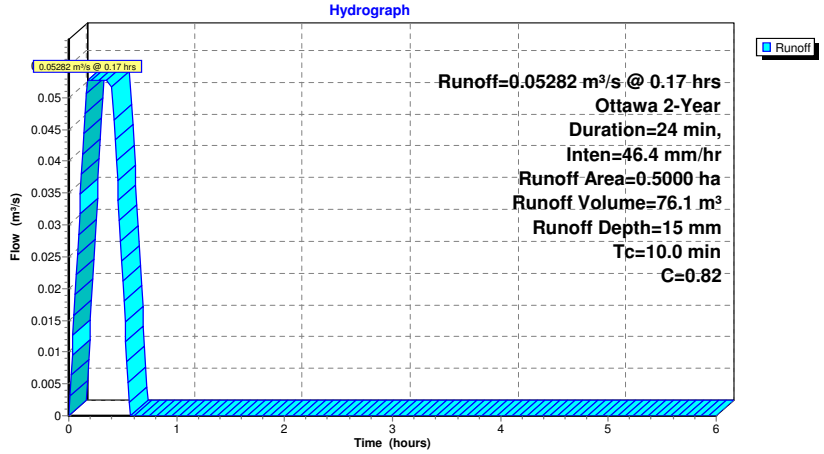
Runoff = 0.05282 m³/s @ 0.17 hrs, Volume= 76.1 m³, Depth= 15 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 2-Year Duration=24 min, Inten=46.4 mm/hr

Area (ha)	C	Description
0.2300	0.90	PR-002
0.0500	0.83	PR-003
0.0800	0.90	PR-004
0.0500	0.74	PR-005
0.0900	0.57	PR-006
0.5000	0.82	Weighted Average
0.5000		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 229S: OF-002 (Sprinhust Ave - Controlled)



Summary for Pond 230P: Storage Unit

Inflow Area = 5,000.0 m², 0.00% Impervious, Inflow Depth = 15 mm for 2-Year event
Inflow = 0.05282 m³/s @ 0.17 hrs, Volume= 76.1 m³
Outflow = 0.02782 m³/s @ 0.48 hrs, Volume= 76.0 m³, Atten= 47%, Lag= 18.5 min
Primary = 0.02782 m³/s @ 0.48 hrs, Volume= 76.0 m³

Routing by Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 0.602 m @ 0.48 hrs Surf.Area= 72.8 m² Storage= 43.8 m³

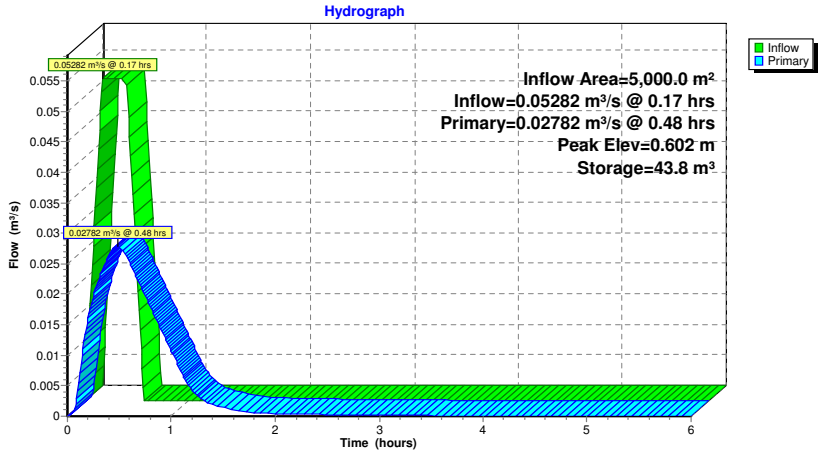
Plug-Flow detention time= 23.2 min calculated for 76.0 m³ (100% of inflow)
Center-of-Mass det. time= 23.2 min (40.2 - 17.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	181.9 m³	**6.80 mW x 10.70 mL x 2.50 mH Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**135 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.02782 m³/s @ 0.48 hrs HW=0.602 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.02782 m³/s @ 1.94 m/s)

Pond 230P: Storage Unit

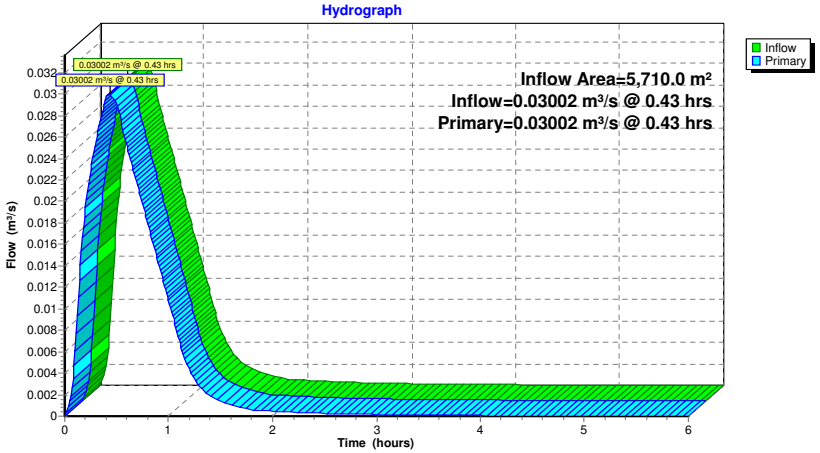


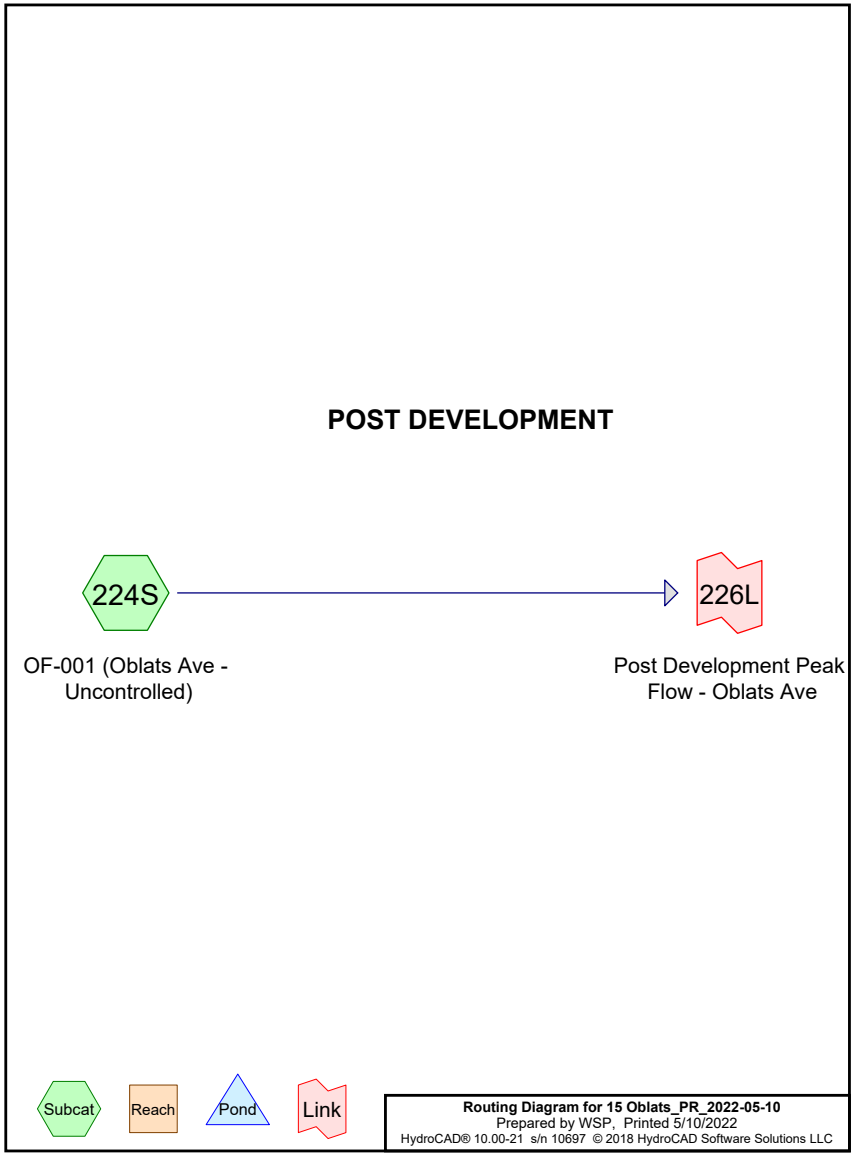
Summary for Link 258L: Post Development Peak Flow - Oblats Ave

Inflow Area = 5,710.0 m², 0.00% Impervious, Inflow Depth > 14 mm for 2-Year event
Inflow = 0.03002 m³/s @ 0.43 hrs, Volume= 80.8 m³
Primary = 0.03002 m³/s @ 0.43 hrs, Volume= 80.8 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 258L: Post Development Peak Flow - Oblats Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.52	PR-001 (224S)
1,100.0	**0.52**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 224S: OF-001 (Oblats Ave - Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=9 mm
Tc=10.0 min C=0.52 Runoff=0.01627 m³/s 9.9 m³

Link 226L: Post Development Peak Flow - Oblats Ave Inflow=0.01627 m³/s 9.9 m³
Primary=0.01627 m³/s 9.9 m³

Total Runoff Area = 1,100.0 m² Runoff Volume = 9.9 m³ Average Runoff Depth = 9 mm
100.00% Pervious = 1,100.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 224S: OF-001 (Oblats Ave - Uncontrolled)

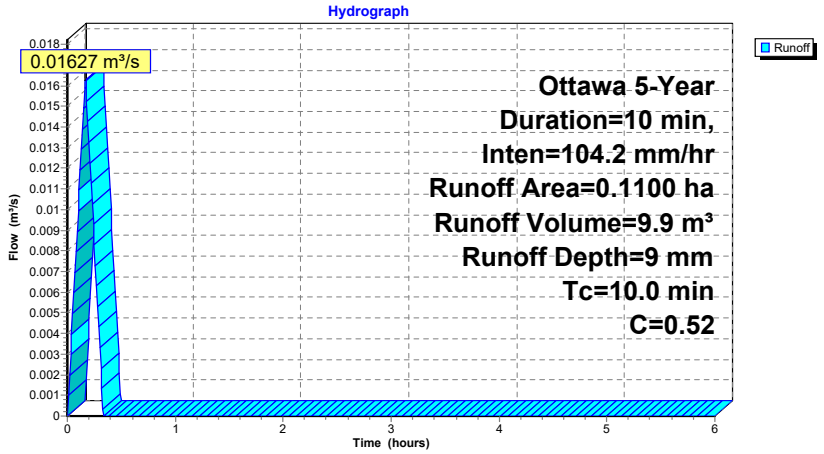
Runoff = 0.01627 m³/s @ 0.17 hrs, Volume= 9.9 m³, Depth= 9 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 5-Year Duration=10 min, Inten=104.2 mm/hr

Area (ha)	C	Description
0.1100	0.52	PR-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 224S: OF-001 (Oblats Ave - Uncontrolled)

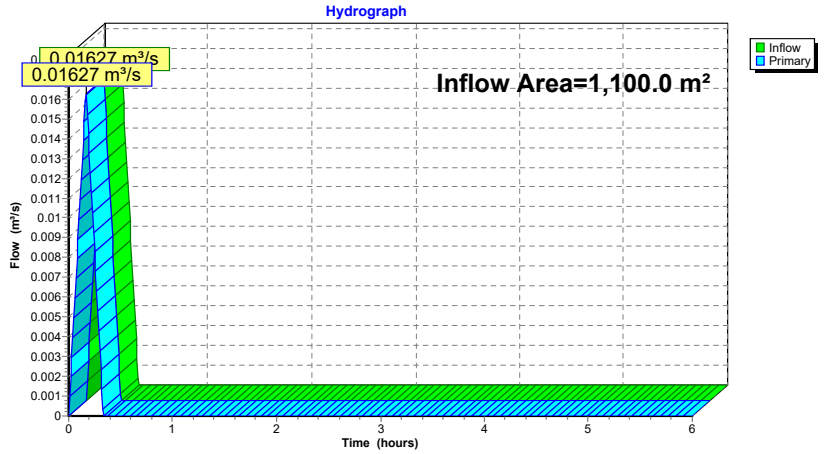


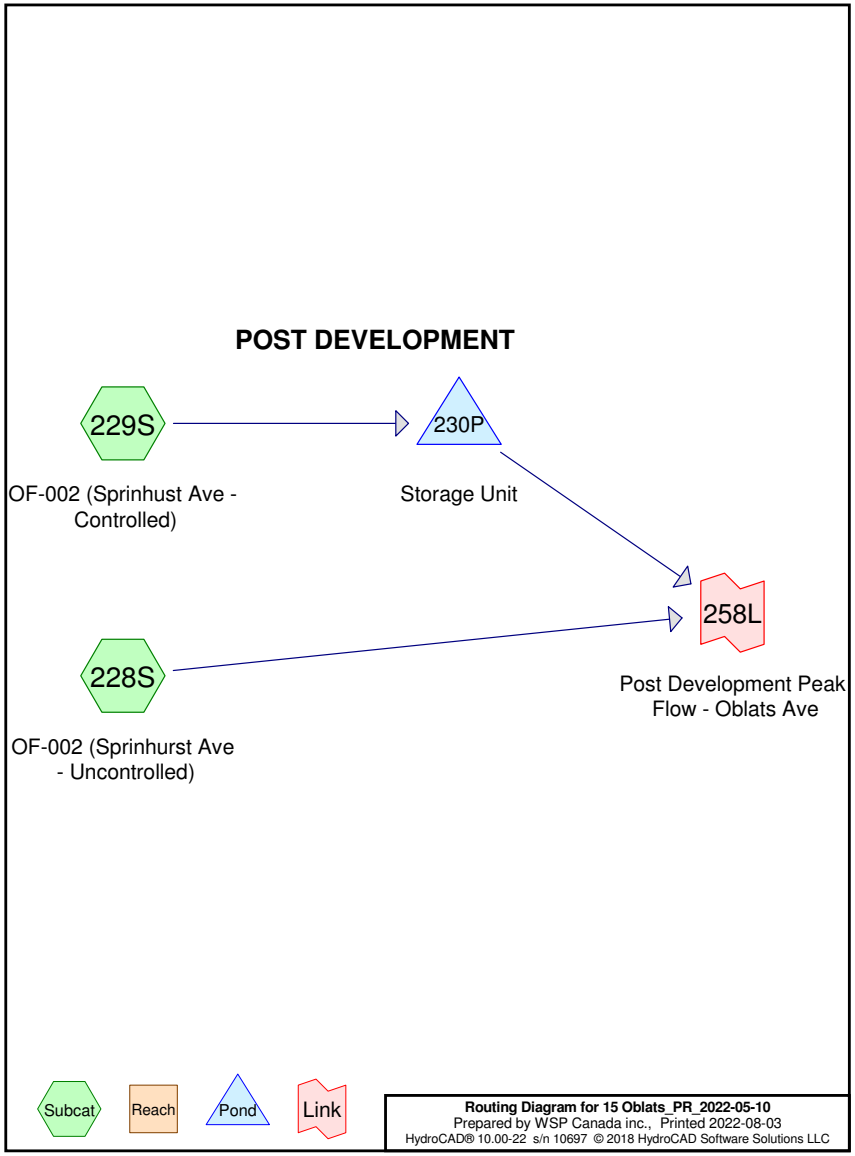
Summary for Link 226L: Post Development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 9 mm for 5-Year event
Inflow = 0.01627 m³/s @ 0.17 hrs, Volume= 9.9 m³
Primary = 0.01627 m³/s @ 0.17 hrs, Volume= 9.9 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 226L: Post Development Peak Flow - Oblats Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
2,300.0	0.90	PR-002 (229S)
500.0	0.83	PR-003 (229S)
800.0	0.90	PR-004 (229S)
500.0	0.74	PR-005 (229S)
900.0	0.57	PR-006 (229S)
200.0	0.25	PR-007 (228S)
10.0	0.25	PR-008 (228S)
500.0	0.40	PR-009 (228S)
5,710.0	**0.76**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 228S: OF-002 (Sprinhurst Runoff Area=0.0710 ha 0.00% Impervious Runoff Depth=9 mm
Tc=10.0 min C=0.36 Runoff=0.00432 m³/s 6.5 m³

Subcatchment 229S: OF-002 (Sprinhust Runoff Area=0.5000 ha 0.00% Impervious Runoff Depth=21 mm
Tc=10.0 min C=0.82 Runoff=0.06935 m³/s 104.0 m³

Pond 230P: Storage Unit Peak Elev=0.861 m Storage=62.6 m³ Inflow=0.06935 m³/s 104.0 m³
Outflow=0.03388 m³/s 104.0 m³

Link 258L: Post Development Peak Flow - Oblats Ave Inflow=0.03674 m³/s 110.5 m³
Primary=0.03674 m³/s 110.5 m³

Total Runoff Area = 5,710.0 m² Runoff Volume = 110.5 m³ Average Runoff Depth = 19 mm
100.00% Pervious = 5,710.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 228S: OF-002 (Sprinhurst Ave - Uncontrolled)

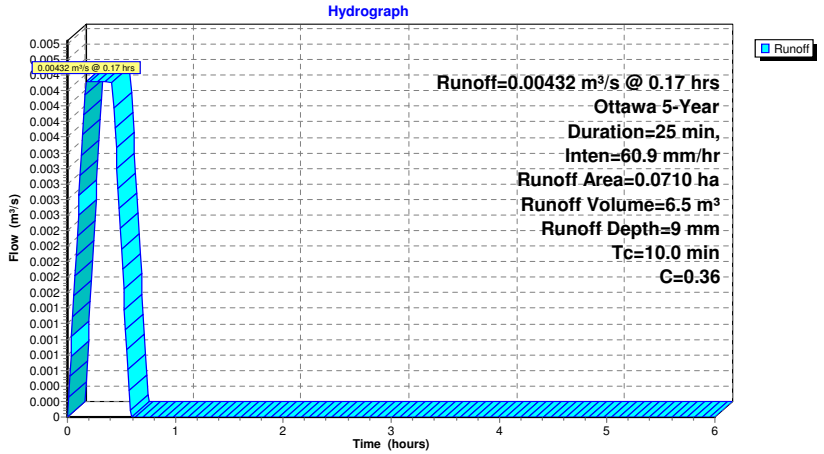
Runoff = 0.00432 m³/s @ 0.17 hrs, Volume= 6.5 m³, Depth= 9 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 5-Year Duration=25 min, Inten=60.9 mm/hr

Area (ha)	C	Description
0.0200	0.25	PR-007
0.0010	0.25	PR-008
0.0500	0.40	PR-009
0.0710	0.36	Weighted Average
0.0710		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 228S: OF-002 (Sprinhurst Ave - Uncontrolled)



Summary for Subcatchment 229S: OF-002 (Sprinhust Ave - Controlled)

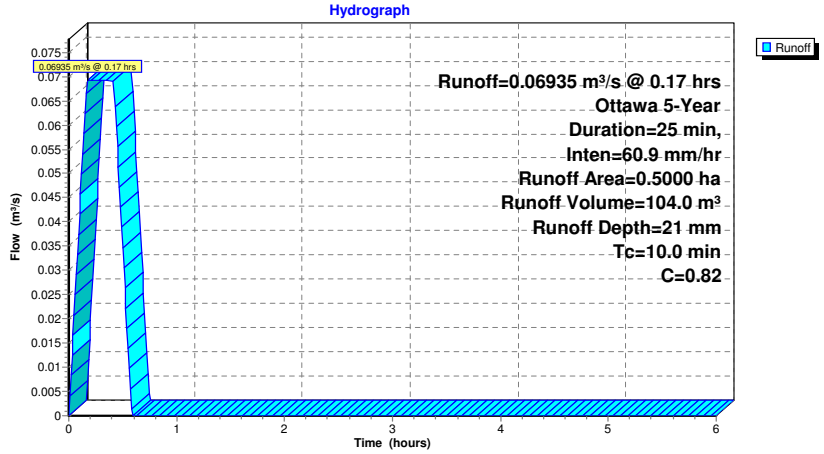
Runoff = 0.06935 m³/s @ 0.17 hrs, Volume= 104.0 m³, Depth= 21 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 5-Year Duration=25 min, Inten=60.9 mm/hr

Area (ha)	C	Description
0.2300	0.90	PR-002
0.0500	0.83	PR-003
0.0800	0.90	PR-004
0.0500	0.74	PR-005
0.0900	0.57	PR-006
0.5000	0.82	Weighted Average
0.5000		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 229S: OF-002 (Sprinhust Ave - Controlled)



Summary for Pond 230P: Storage Unit

Inflow Area = 5,000.0 m², 0.00% Impervious, Inflow Depth = 21 mm for 5-Year event
Inflow = 0.06935 m³/s @ 0.17 hrs, Volume= 104.0 m³
Outflow = 0.03388 m³/s @ 0.50 hrs, Volume= 104.0 m³, Atten= 51%, Lag= 19.9 min
Primary = 0.03388 m³/s @ 0.50 hrs, Volume= 104.0 m³

Routing by Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 0.861 m @ 0.50 hrs Surf.Area= 72.8 m² Storage= 62.6 m³

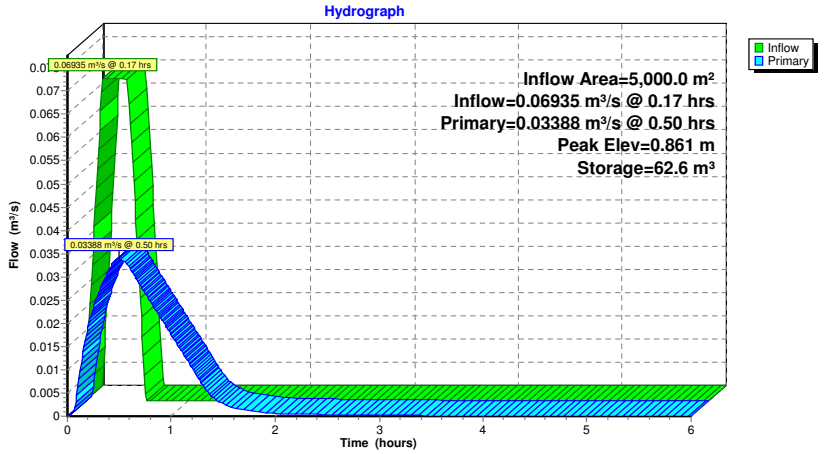
Plug-Flow detention time= 25.5 min calculated for 104.0 m³ (100% of inflow)
Center-of-Mass det. time= 25.5 min (43.0 - 17.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	181.9 m³	**6.80 mW x 10.70 mL x 2.50 mH Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**135 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.03388 m³/s @ 0.50 hrs HW=0.861 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.03388 m³/s @ 2.37 m/s)

Pond 230P: Storage Unit

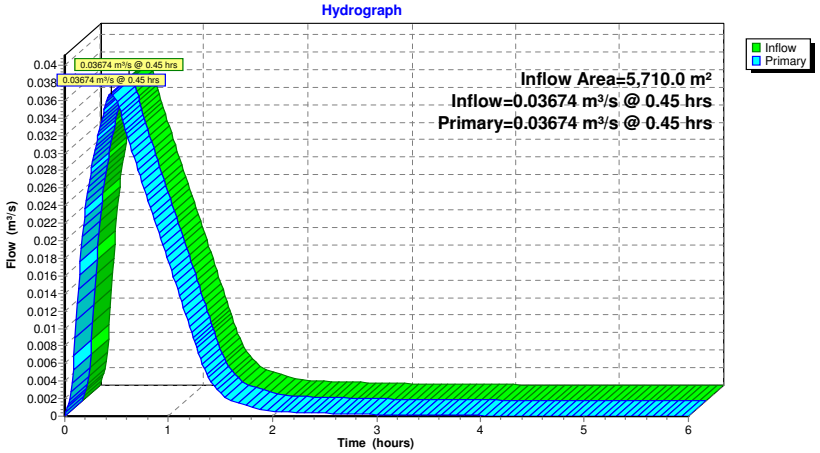


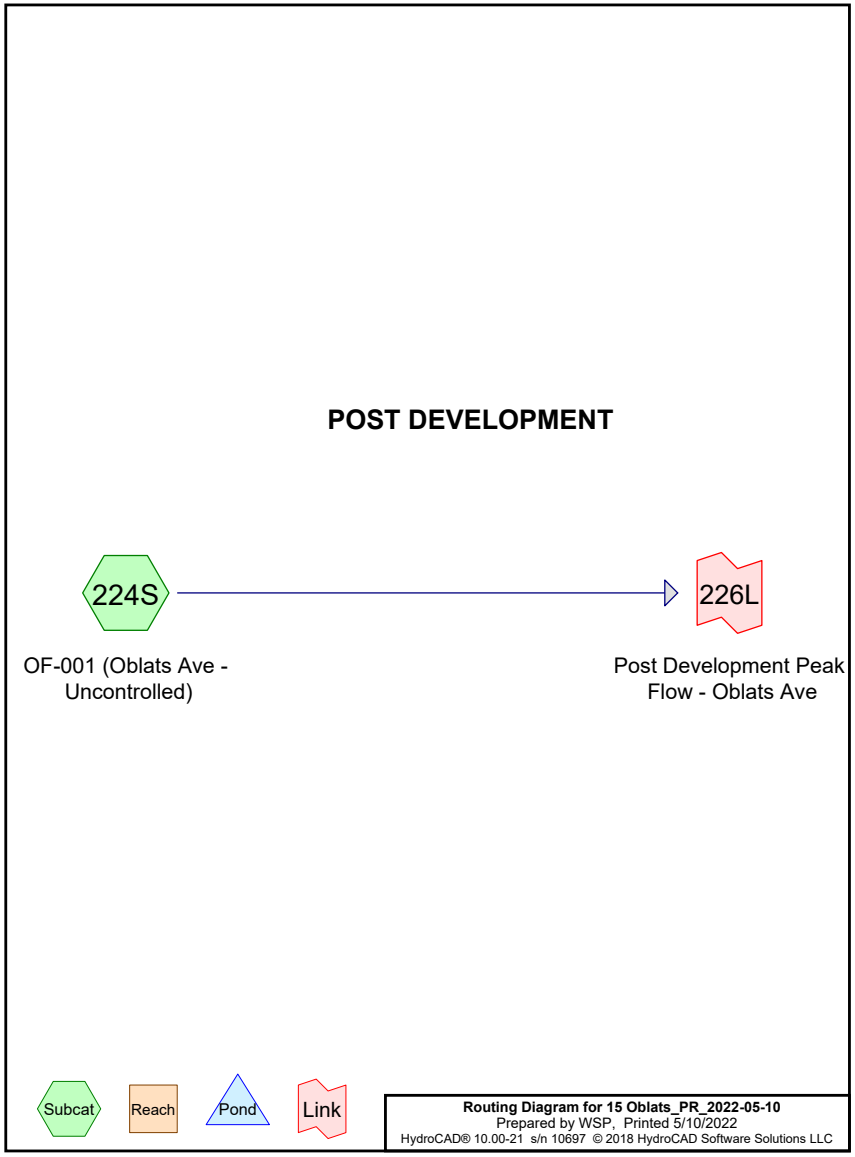
Summary for Link 258L: Post Development Peak Flow - Oblats Ave

Inflow Area = 5,710.0 m², 0.00% Impervious, Inflow Depth > 19 mm for 5-Year event
Inflow = 0.03674 m³/s @ 0.45 hrs, Volume= 110.5 m³
Primary = 0.03674 m³/s @ 0.45 hrs, Volume= 110.5 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 258L: Post Development Peak Flow - Oblats Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.52	PR-001 (224S)
1,100.0	**0.52**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 224S: OF-001 (Oblats Ave - Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=11 mm
Tc=10.0 min C=0.52 Runoff=0.01907 m³/s 11.6 m³

Link 226L: Post Development Peak Flow - Oblats Ave Inflow=0.01907 m³/s 11.6 m³
Primary=0.01907 m³/s 11.6 m³

Total Runoff Area = 1,100.0 m² Runoff Volume = 11.6 m³ Average Runoff Depth = 11 mm
100.00% Pervious = 1,100.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 224S: OF-001 (Oblats Ave - Uncontrolled)

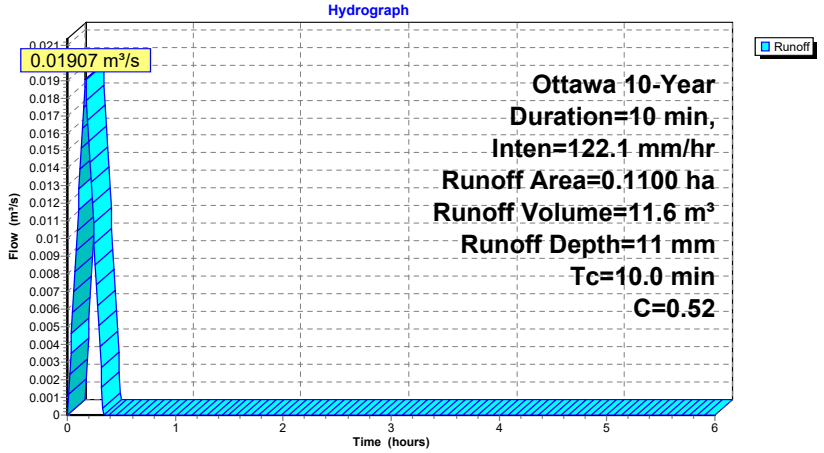
Runoff = 0.01907 m³/s @ 0.17 hrs, Volume= 11.6 m³, Depth= 11 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 10-Year Duration=10 min, Inten=122.1 mm/hr

Area (ha)	C	Description
0.1100	0.52	PR-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 224S: OF-001 (Oblats Ave - Uncontrolled)

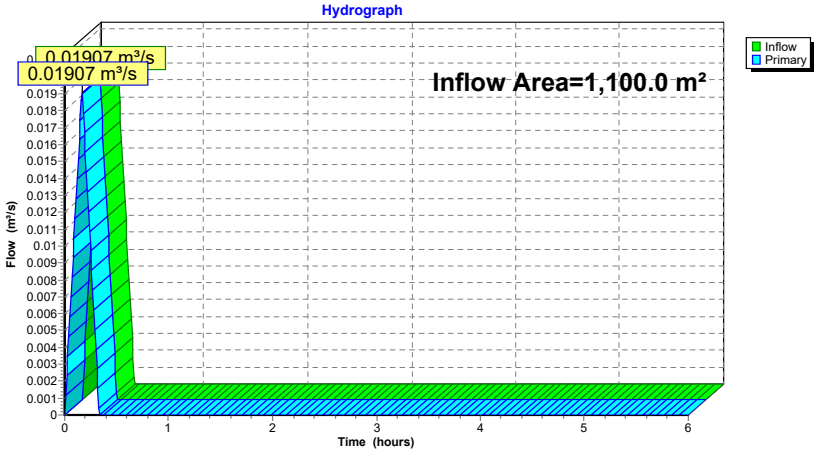


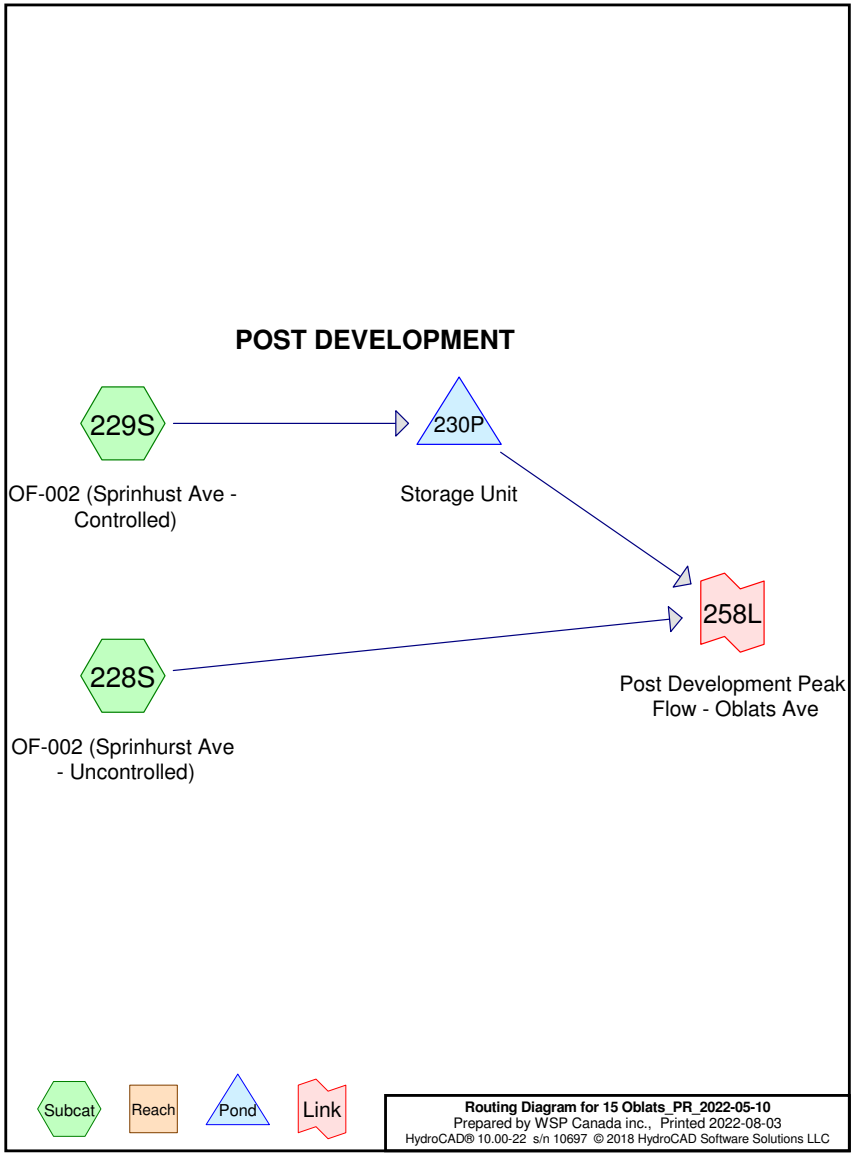
Summary for Link 226L: Post Development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 11 mm for 10-Year event
Inflow = 0.01907 m³/s @ 0.17 hrs, Volume= 11.6 m³
Primary = 0.01907 m³/s @ 0.17 hrs, Volume= 11.6 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 226L: Post Development Peak Flow - Oblats Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
2,300.0	0.90	PR-002 (229S)
500.0	0.83	PR-003 (229S)
800.0	0.90	PR-004 (229S)
500.0	0.74	PR-005 (229S)
900.0	0.57	PR-006 (229S)
200.0	0.25	PR-007 (228S)
10.0	0.25	PR-008 (228S)
500.0	0.40	PR-009 (228S)
5,710.0	**0.76**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 228S: OF-002 (Sprinhurst Runoff Area=0.0710 ha 0.00% Impervious Runoff Depth=11 mm
Tc=10.0 min C=0.36 Runoff=0.00493 m³/s 7.7 m³

Subcatchment 229S: OF-002 (Sprinhust Runoff Area=0.5000 ha 0.00% Impervious Runoff Depth=25 mm
Tc=10.0 min C=0.82 Runoff=0.07904 m³/s 123.3 m³

Pond 230P: Storage Unit Peak Elev=1.039 m Storage=75.6 m³ Inflow=0.07904 m³/s 123.3 m³
Outflow=0.03750 m³/s 123.2 m³

Link 258L: Post Development Peak Flow - Oblats Ave Inflow=0.04077 m³/s 130.9 m³
Primary=0.04077 m³/s 130.9 m³

Total Runoff Area = 5,710.0 m² Runoff Volume = 131.0 m³ Average Runoff Depth = 23 mm
100.00% Pervious = 5,710.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 228S: OF-002 (Sprinhurst Ave - Uncontrolled)

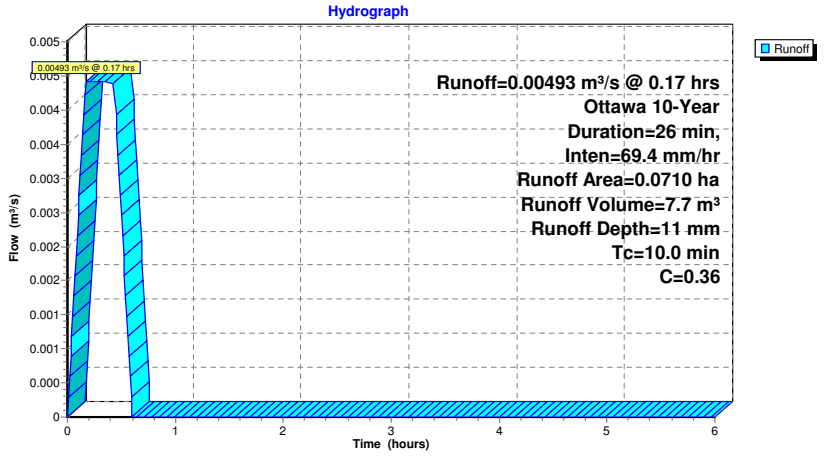
Runoff = 0.00493 m³/s @ 0.17 hrs, Volume= 7.7 m³, Depth= 11 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 10-Year Duration=26 min, Inten=69.4 mm/hr

Area (ha)	C	Description
0.0200	0.25	PR-007
0.0010	0.25	PR-008
0.0500	0.40	PR-009
0.0710	0.36	Weighted Average
0.0710		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 228S: OF-002 (Sprinhurst Ave - Uncontrolled)



Summary for Subcatchment 229S: OF-002 (Sprinhust Ave - Controlled)

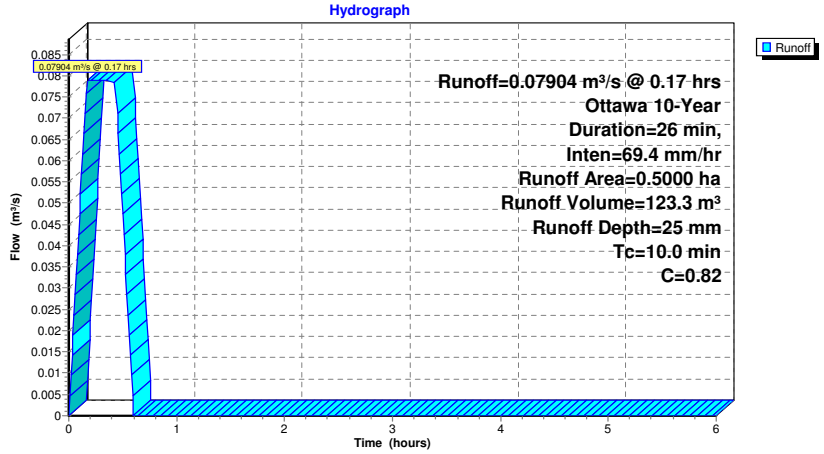
Runoff = 0.07904 m³/s @ 0.17 hrs, Volume= 123.3 m³, Depth= 25 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 10-Year Duration=26 min, Inten=69.4 mm/hr

Area (ha)	C	Description
0.2300	0.90	PR-002
0.0500	0.83	PR-003
0.0800	0.90	PR-004
0.0500	0.74	PR-005
0.0900	0.57	PR-006
0.5000	0.82	Weighted Average
0.5000		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 229S: OF-002 (Sprinhust Ave - Controlled)



Summary for Pond 230P: Storage Unit

Inflow Area = 5,000.0 m², 0.00% Impervious, Inflow Depth = 25 mm for 10-Year event
Inflow = 0.07904 m³/s @ 0.17 hrs, Volume= 123.3 m³
Outflow = 0.03750 m³/s @ 0.52 hrs, Volume= 123.2 m³, Atten= 53%, Lag= 21.1 min
Primary = 0.03750 m³/s @ 0.52 hrs, Volume= 123.2 m³

Routing by Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 1.039 m @ 0.52 hrs Surf.Area= 72.8 m² Storage= 75.6 m³

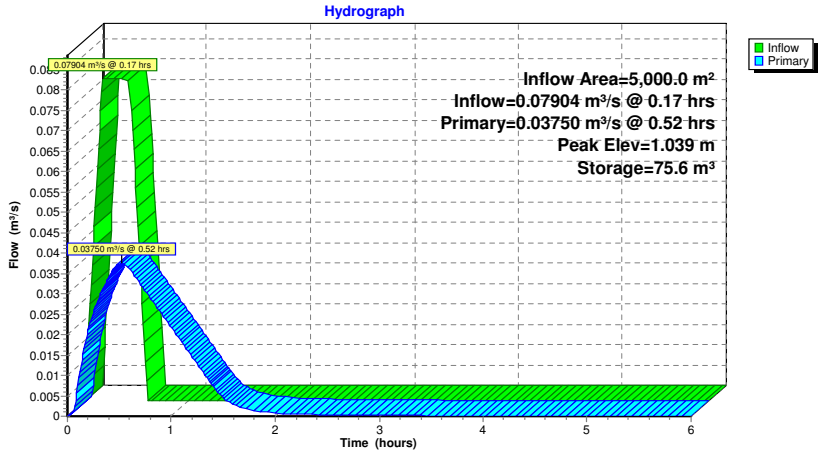
Plug-Flow detention time= 26.7 min calculated for 123.0 m³ (100% of inflow)
Center-of-Mass det. time= 27.0 min (45.0 - 18.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	181.9 m³	**6.80 mW x 10.70 mL x 2.50 mH Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**135 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.03750 m³/s @ 0.52 hrs HW=1.039 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.03750 m³/s @ 2.62 m/s)

Pond 230P: Storage Unit

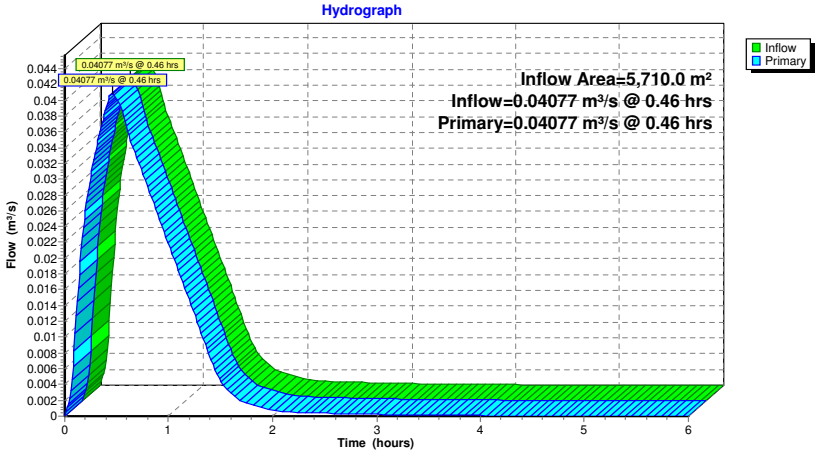


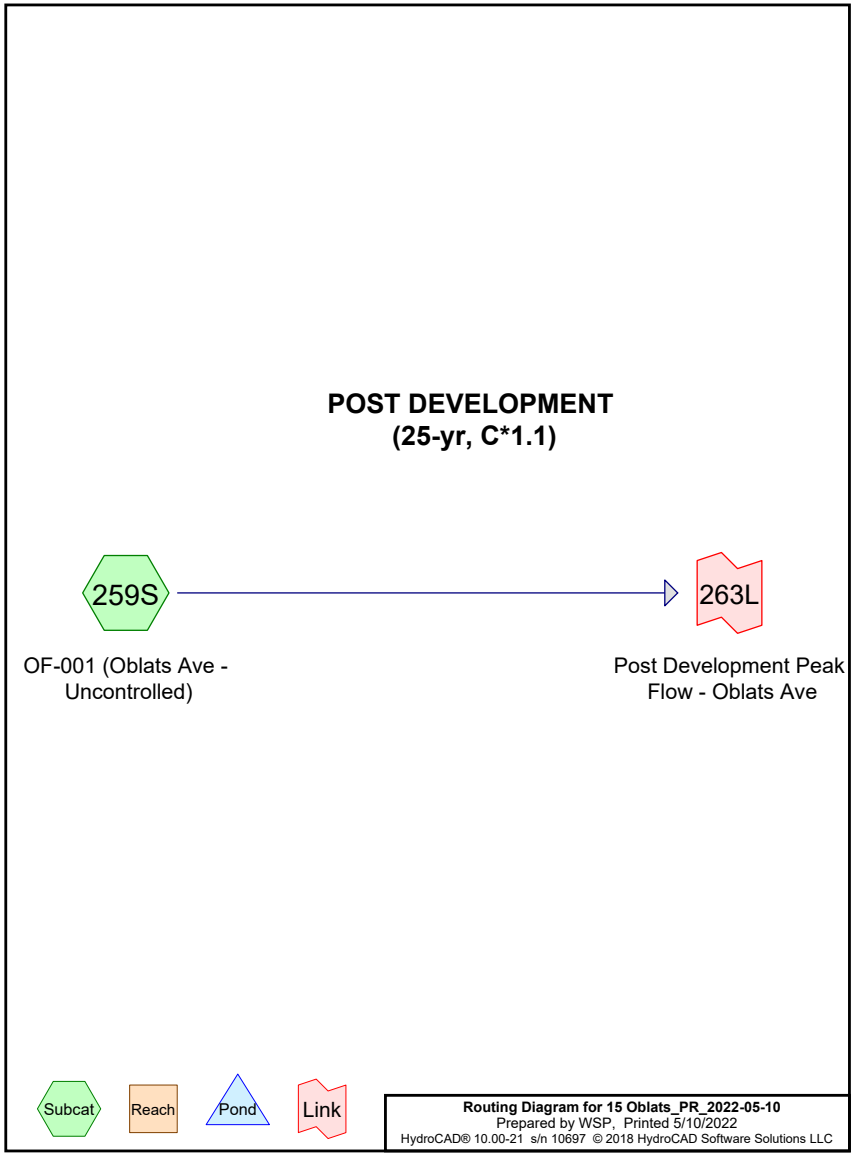
Summary for Link 258L: Post Development Peak Flow - Oblats Ave

Inflow Area = 5,710.0 m², 0.00% Impervious, Inflow Depth > 23 mm for 10-Year event
Inflow = 0.04077 m³/s @ 0.46 hrs, Volume= 130.9 m³
Primary = 0.04077 m³/s @ 0.46 hrs, Volume= 130.9 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 258L: Post Development Peak Flow - Oblats Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.57	PR-001 (259S)
1,100.0	**0.57**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 259S: OF-001 (Oblats Ave - Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=14 mm
Tc=10.0 min C=0.57 Runoff=0.02476 m³/s 15.1 m³

Link 263L: Post Development Peak Flow - Oblats Ave Inflow=0.02476 m³/s 15.1 m³
Primary=0.02476 m³/s 15.1 m³

Total Runoff Area = 1,100.0 m² Runoff Volume = 15.1 m³ Average Runoff Depth = 14 mm
100.00% Pervious = 1,100.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 259S: OF-001 (Oblats Ave - Uncontrolled)

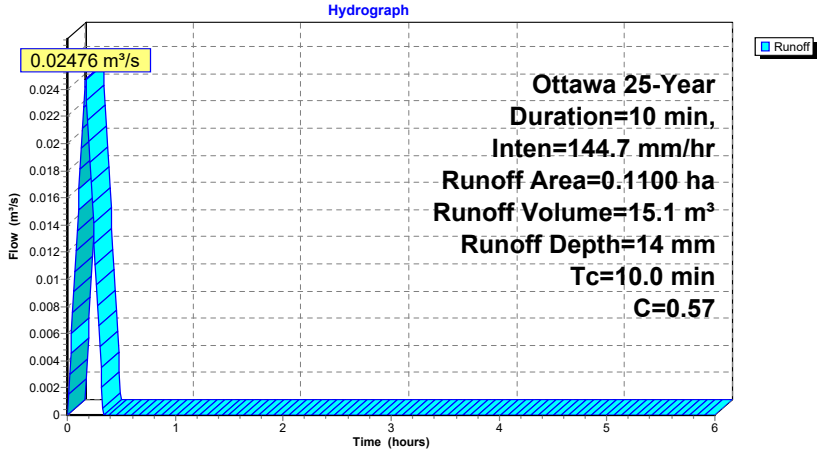
Runoff = 0.02476 m³/s @ 0.17 hrs, Volume= 15.1 m³, Depth= 14 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 25-Year Duration=10 min, Inten=144.7 mm/hr

Area (ha)	C	Description
0.1100	0.57	PR-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 259S: OF-001 (Oblats Ave - Uncontrolled)

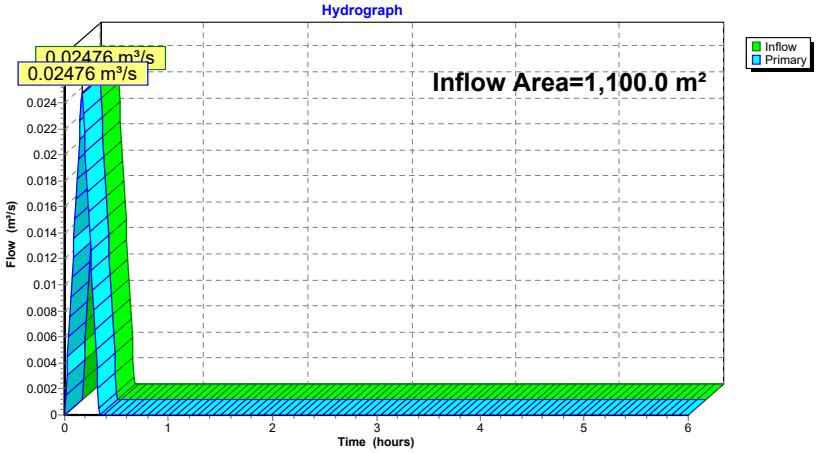


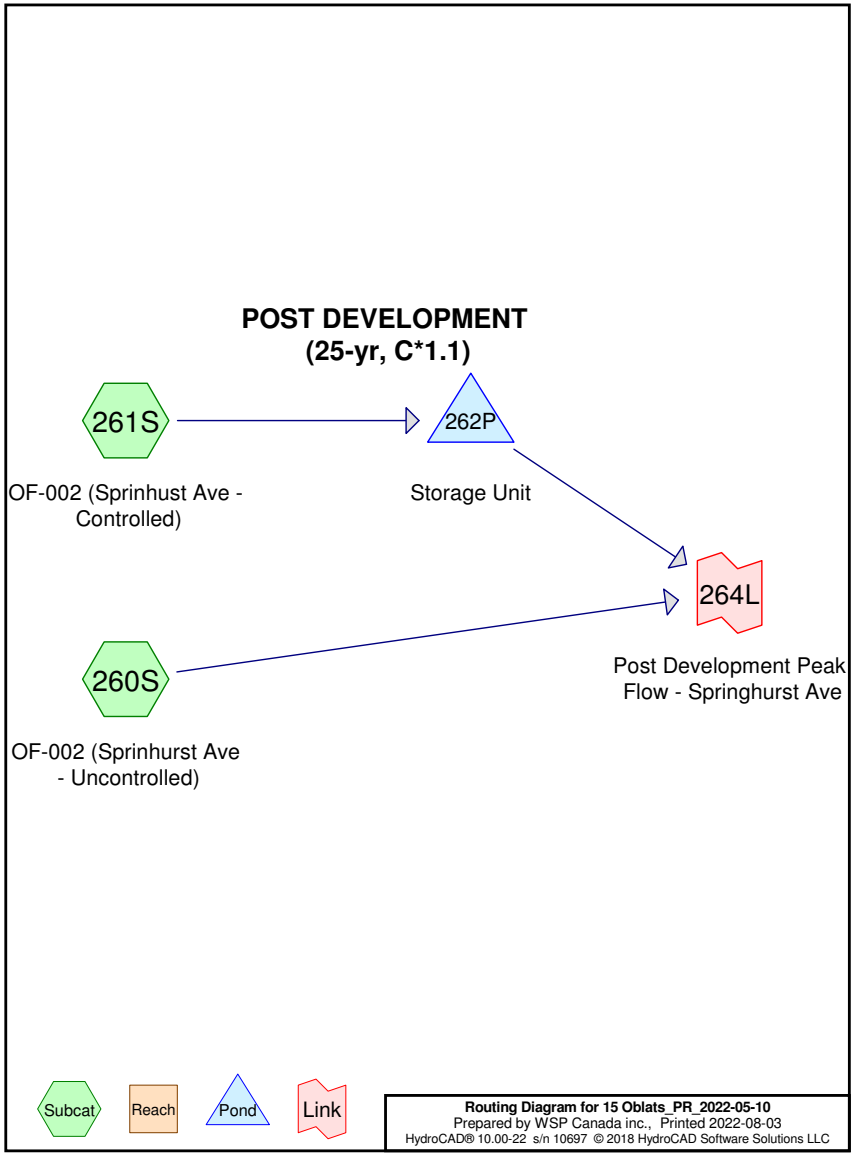
Summary for Link 263L: Post Development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 14 mm for 25-Year event
Inflow = 0.02476 m³/s @ 0.17 hrs, Volume= 15.1 m³
Primary = 0.02476 m³/s @ 0.17 hrs, Volume= 15.1 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 263L: Post Development Peak Flow - Oblats Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
2,300.0	0.99	PR-002 (261S)
500.0	0.91	PR-003 (261S)
800.0	0.99	PR-004 (261S)
500.0	0.81	PR-005 (261S)
900.0	0.63	PR-006 (261S)
200.0	0.28	PR-007 (260S)
10.0	0.28	PR-008 (260S)
500.0	0.44	PR-009 (260S)
5,710.0	**0.84**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 260S: OF-002 (Sprinhurst Runoff Area=0.0710 ha 0.00% Impervious Runoff Depth=14 mm
Tc=10.0 min C=0.39 Runoff=0.00615 m³/s 10.0 m³

Subcatchment 261S: OF-002 (Sprinhust Runoff Area=0.5000 ha 62.00% Impervious Runoff Depth=32 mm
Tc=10.0 min C=0.90 Runoff=0.10002 m³/s 162.0 m³

Pond 262P: Storage Unit Peak Elev=1.421 m Storage=103.4 m³ Inflow=0.10002 m³/s 162.0 m³
Outflow=0.04425 m³/s 162.0 m³

Link 264L: Post Development Peak Flow - Springhurst Ave Inflow=0.04833 m³/s 172.0 m³
Primary=0.04833 m³/s 172.0 m³

Total Runoff Area = 5,710.0 m² Runoff Volume = 172.0 m³ Average Runoff Depth = 30 mm
45.71% Pervious = 2,610.0 m² 54.29% Impervious = 3,100.0 m²

Summary for Subcatchment 260S: OF-002 (Sprinhurst Ave - Uncontrolled)

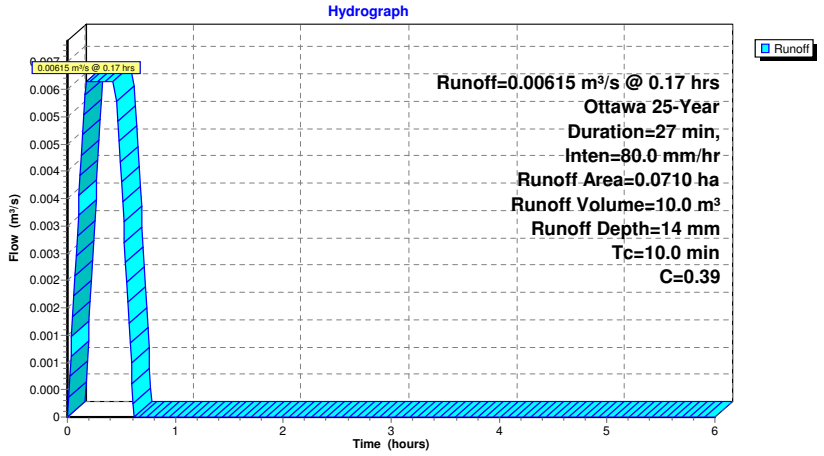
Runoff = 0.00615 m³/s @ 0.17 hrs, Volume= 10.0 m³, Depth= 14 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 25-Year Duration=27 min, Inten=80.0 mm/hr

Area (ha)	C	Description
0.0200	0.28	PR-007
0.0010	0.28	PR-008
0.0500	0.44	PR-009
0.0710	0.39	Weighted Average
0.0710		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 260S: OF-002 (Sprinhurst Ave - Uncontrolled)



Summary for Subcatchment 261S: OF-002 (Sprinhust Ave - Controlled)

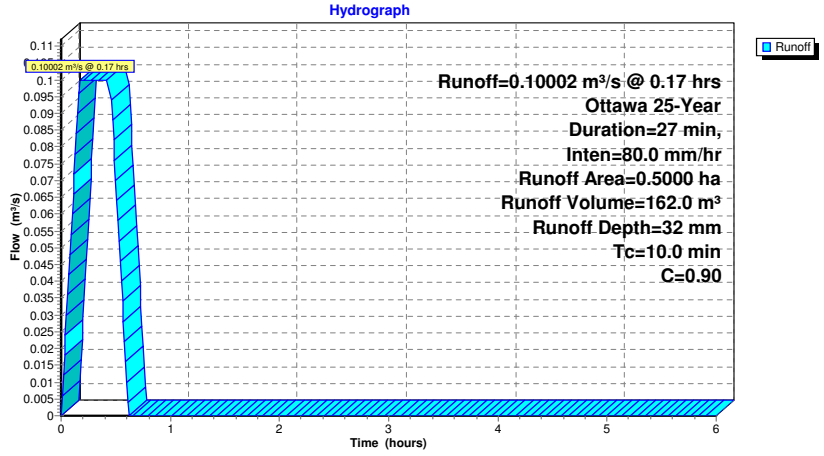
Runoff = 0.10002 m³/s @ 0.17 hrs, Volume= 162.0 m³, Depth= 32 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 25-Year Duration=27 min, Inten=80.0 mm/hr

Area (ha)	C	Description
0.2300	0.99	PR-002
0.0500	0.91	PR-003
0.0800	0.99	PR-004
0.0500	0.81	PR-005
0.0900	0.63	PR-006
0.5000	0.90	Weighted Average
0.1900		38.00% Pervious Area
0.3100		62.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 261S: OF-002 (Sprinhust Ave - Controlled)



Summary for Pond 262P: Storage Unit

Inflow Area = 5,000.0 m², 62.00% Impervious, Inflow Depth = 32 mm for 25-Year event
Inflow = 0.10002 m³/s @ 0.17 hrs, Volume= 162.0 m³
Outflow = 0.04425 m³/s @ 0.54 hrs, Volume= 162.0 m³, Atten= 56%, Lag= 22.4 min
Primary = 0.04425 m³/s @ 0.54 hrs, Volume= 162.0 m³

Routing by Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 1.421 m @ 0.54 hrs Surf.Area= 72.8 m² Storage= 103.4 m³

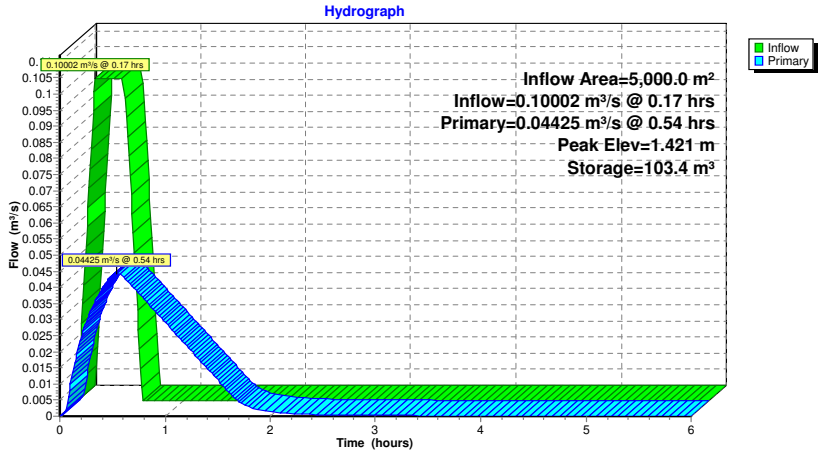
Plug-Flow detention time= 30.2 min calculated for 162.0 m³ (100% of inflow)
Center-of-Mass det. time= 30.2 min (48.7 - 18.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	181.9 m³	**6.80 mW x 10.70 mL x 2.50 mH Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**135 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.04424 m³/s @ 0.54 hrs HW=1.420 m (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.04424 m³/s @ 3.09 m/s)

Pond 262P: Storage Unit

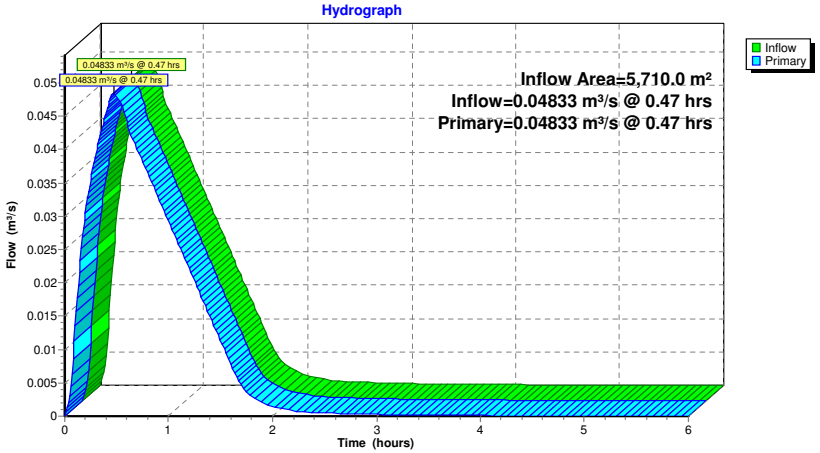


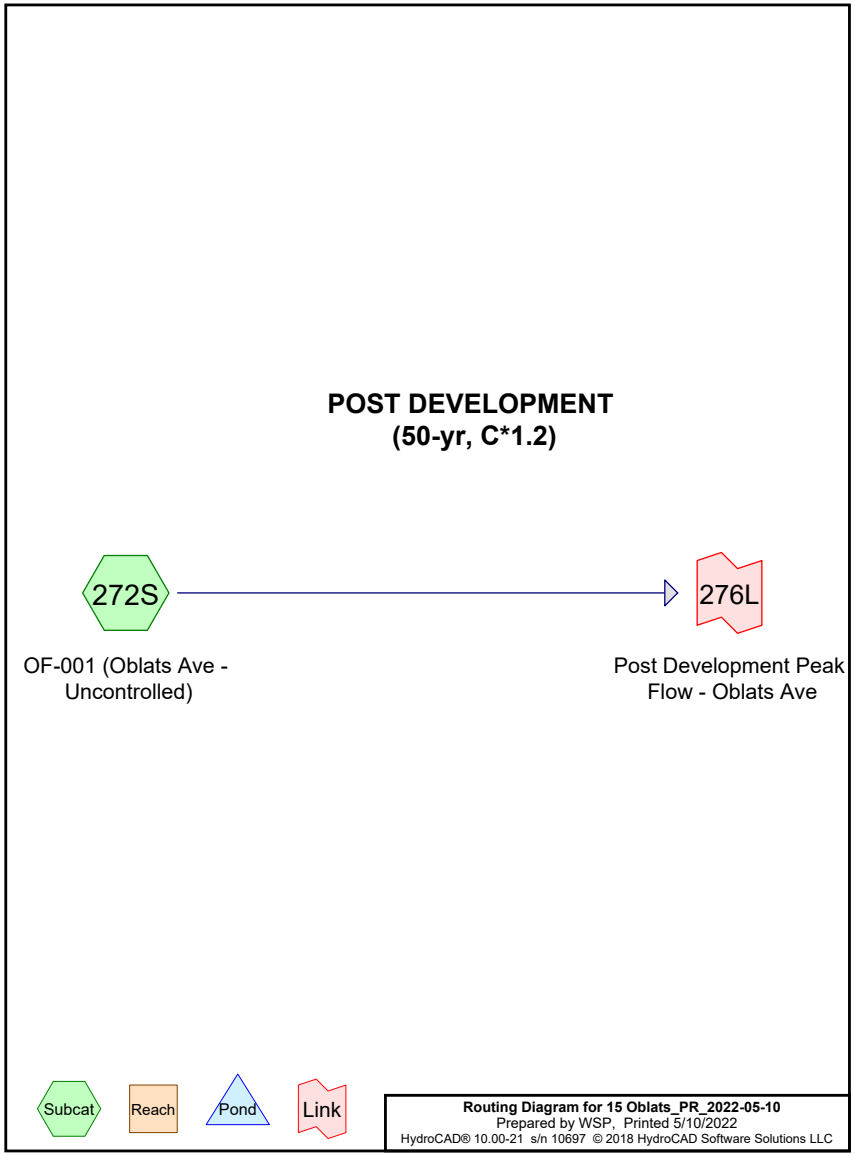
Summary for Link 264L: Post Development Peak Flow - Springhurst Ave

Inflow Area = 5,710.0 m², 54.29% Impervious, Inflow Depth > 30 mm for 25-Year event
Inflow = 0.04833 m³/s @ 0.47 hrs, Volume= 172.0 m³
Primary = 0.04833 m³/s @ 0.47 hrs, Volume= 172.0 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 264L: Post Development Peak Flow - Springhurst Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.62	PR-001 (272S)
1,100.0	**0.62**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 272S: OF-001 (Oblats Ave - Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=17 mm
Tc=10.0 min C=0.62 Runoff=0.03005 m³/s 18.3 m³

Link 276L: Post Development Peak Flow - Oblats Ave Inflow=0.03005 m³/s 18.3 m³
Primary=0.03005 m³/s 18.3 m³

Total Runoff Area = 1,100.0 m² Runoff Volume = 18.3 m³ Average Runoff Depth = 17 mm
100.00% Pervious = 1,100.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 272S: OF-001 (Oblats Ave - Uncontrolled)

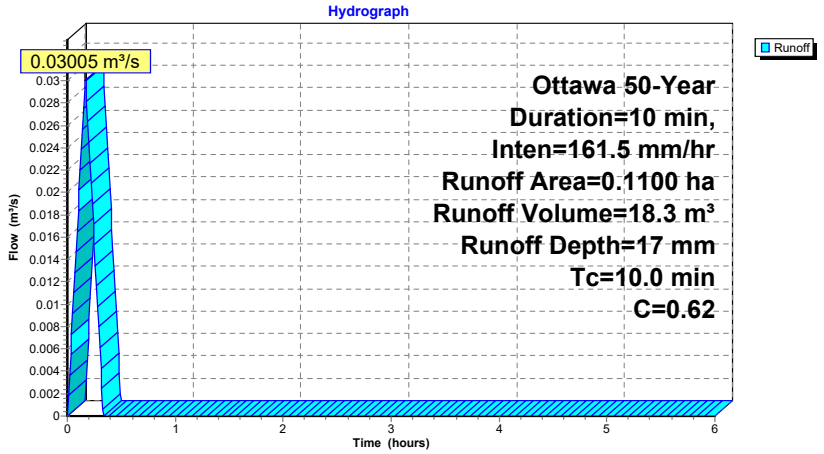
Runoff = 0.03005 m³/s @ 0.17 hrs, Volume= 18.3 m³, Depth= 17 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 50-Year Duration=10 min, Inten=161.5 mm/hr

Area (ha)	C	Description
0.1100	0.62	PR-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 272S: OF-001 (Oblats Ave - Uncontrolled)

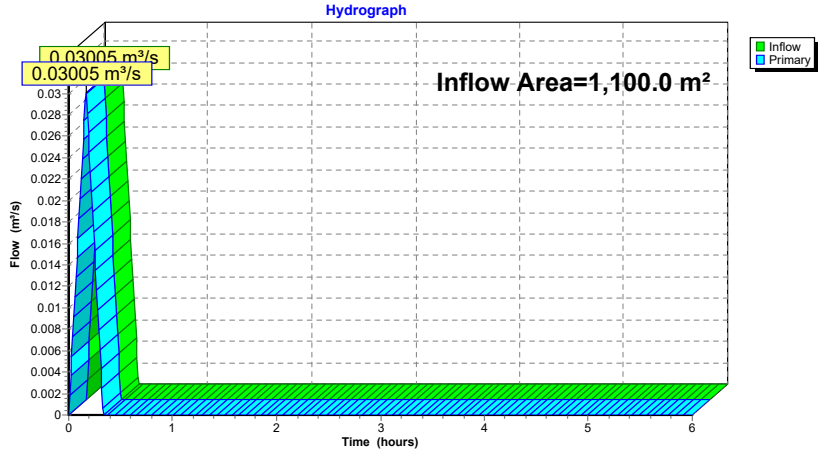


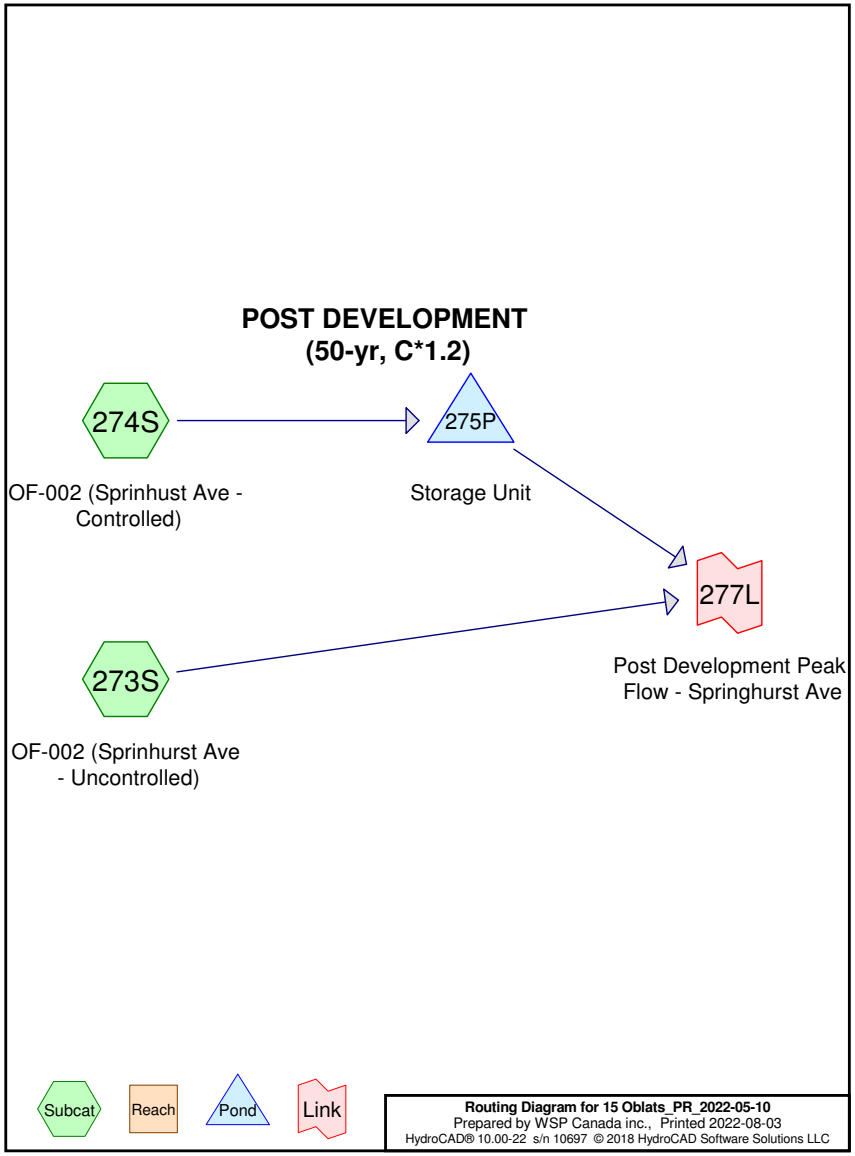
Summary for Link 276L: Post Development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 17 mm for 50-Year event
Inflow = 0.03005 m³/s @ 0.17 hrs, Volume= 18.3 m³
Primary = 0.03005 m³/s @ 0.17 hrs, Volume= 18.3 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 276L: Post Development Peak Flow - Oblats Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
2,300.0	1.00	PR-002 (274S)
500.0	1.00	PR-003 (274S)
800.0	1.00	PR-004 (274S)
500.0	0.89	PR-005 (274S)
900.0	0.69	PR-006 (274S)
200.0	0.30	PR-007 (273S)
10.0	0.30	PR-008 (273S)
500.0	0.48	PR-009 (273S)
5,710.0	**0.87**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 273S: OF-002 (Sprinhurst Runoff Area=0.0710 ha 0.00% Impervious Runoff Depth=18 mm
Tc=10.0 min C=0.43 Runoff=0.00721 m³/s 12.5 m³

Subcatchment 274S: OF-002 (Sprinhust Runoff Area=0.5000 ha 72.00% Impervious Runoff Depth=38 mm
Tc=10.0 min C=0.93 Runoff=0.10981 m³/s 191.0 m³

Pond 275P: Storage Unit Peak Elev=1.686 m Storage=122.7 m³ Inflow=0.10981 m³/s 191.0 m³
Outflow=0.04839 m³/s 191.0 m³

Link 277L: Post Development Peak Flow - Springhurst Ave Inflow=0.05343 m³/s 203.5 m³
Primary=0.05343 m³/s 203.5 m³

Total Runoff Area = 5,710.0 m² Runoff Volume = 203.6 m³ Average Runoff Depth = 36 mm
36.95% Pervious = 2,110.0 m² 63.05% Impervious = 3,600.0 m²

Summary for Subcatchment 273S: OF-002 (Sprinhurst Ave - Uncontrolled)

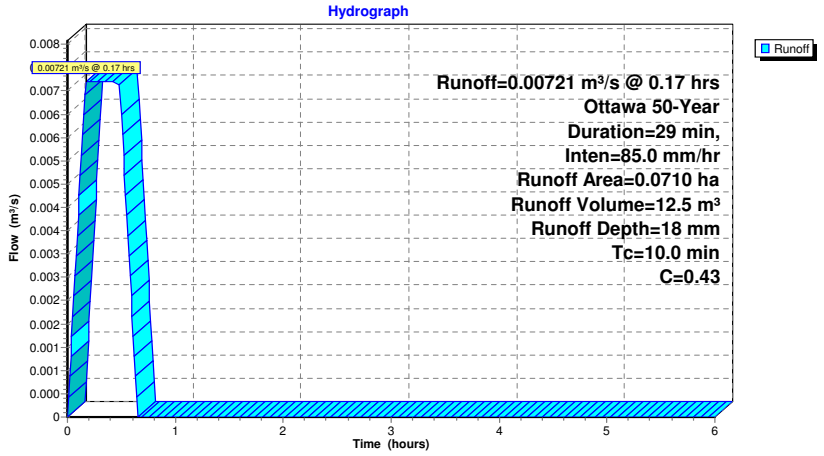
Runoff = 0.00721 m³/s @ 0.17 hrs, Volume= 12.5 m³, Depth= 18 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 50-Year Duration=29 min, Inten=85.0 mm/hr

Area (ha)	C	Description
0.0200	0.30	PR-007
0.0010	0.30	PR-008
0.0500	0.48	PR-009
0.0710	0.43	Weighted Average
0.0710		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 273S: OF-002 (Sprinhurst Ave - Uncontrolled)



Summary for Subcatchment 274S: OF-002 (Sprinhust Ave - Controlled)

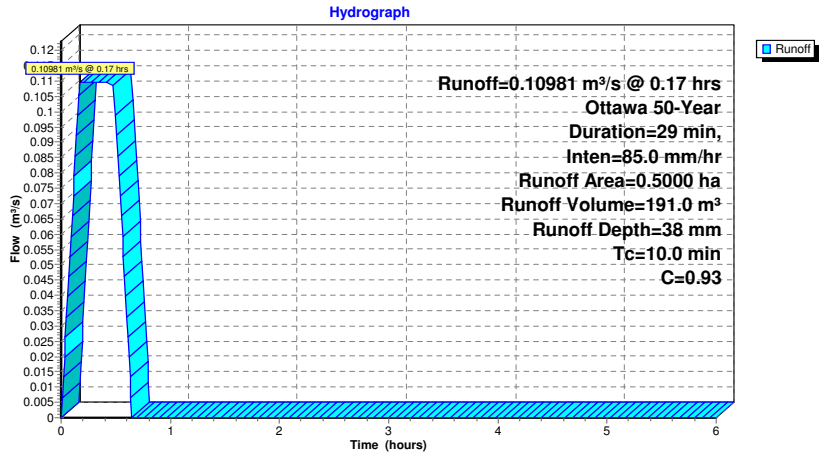
Runoff = 0.10981 m³/s @ 0.17 hrs, Volume= 191.0 m³, Depth= 38 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 50-Year Duration=29 min, Inten=85.0 mm/hr

Area (ha)	C	Description
0.2300	1.00	PR-002
0.0500	1.00	PR-003
0.0800	1.00	PR-004
0.0500	0.89	PR-005
0.0900	0.69	PR-006
0.5000	0.93	Weighted Average
0.1400		28.00% Pervious Area
0.3600		72.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 274S: OF-002 (Sprinhust Ave - Controlled)



Summary for Pond 275P: Storage Unit

Inflow Area = 5,000.0 m², 72.00% Impervious, Inflow Depth = 38 mm for 50-Year event
Inflow = 0.10981 m³/s @ 0.17 hrs, Volume= 191.0 m³
Outflow = 0.04839 m³/s @ 0.58 hrs, Volume= 191.0 m³, Atten= 56%, Lag= 24.4 min
Primary = 0.04839 m³/s @ 0.58 hrs, Volume= 191.0 m³

Routing by Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 1.686 m @ 0.58 hrs Surf.Area= 72.8 m² Storage= 122.7 m³

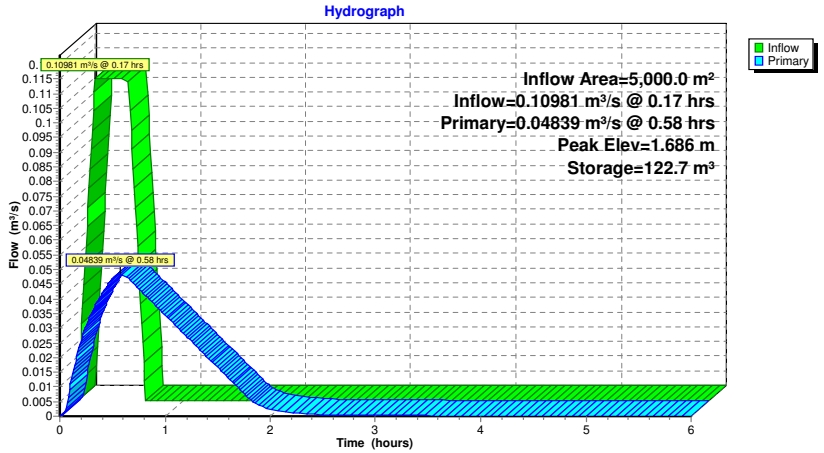
Plug-Flow detention time= 31.9 min calculated for 190.7 m³ (100% of inflow)
Center-of-Mass det. time= 32.2 min (51.7 - 19.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	181.9 m³	**6.80 mW x 10.70 mL x 2.50 mH Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**135 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.04839 m³/s @ 0.58 hrs HW=1.685 m (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.04839 m³/s @ 3.38 m/s)

Pond 275P: Storage Unit

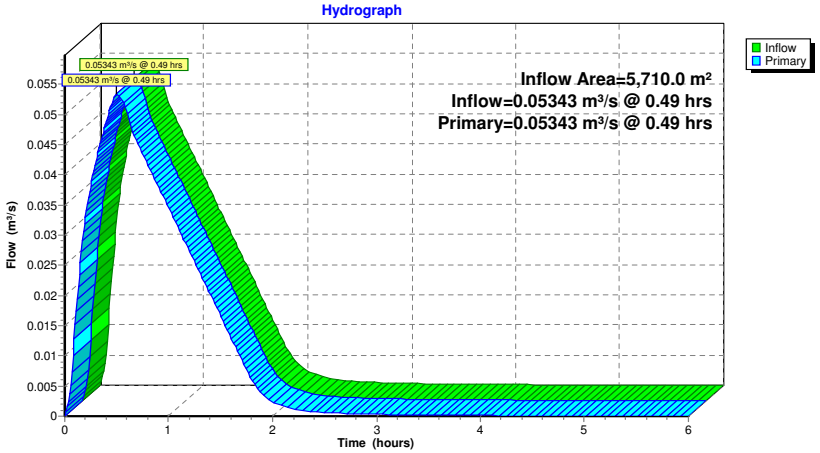


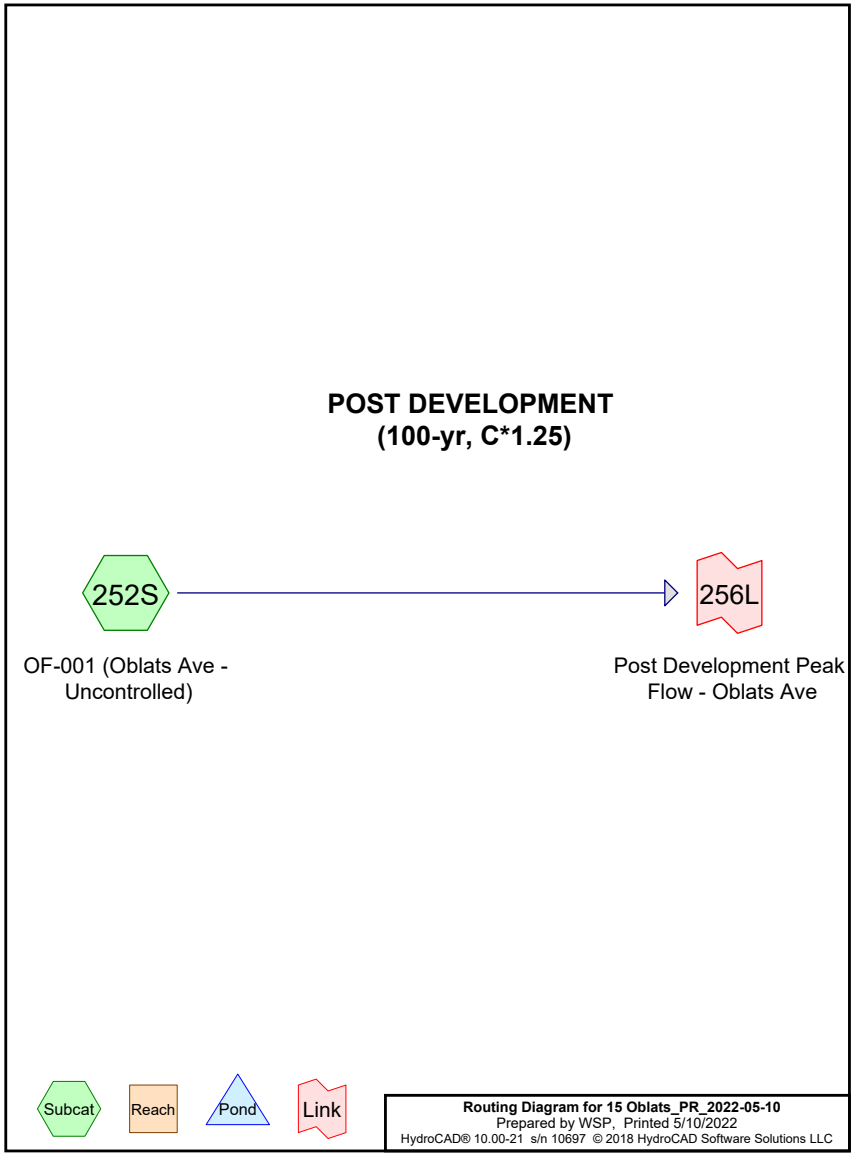
Summary for Link 277L: Post Development Peak Flow - Springhurst Ave

Inflow Area = 5,710.0 m², 63.05% Impervious, Inflow Depth > 36 mm for 50-Year event
Inflow = 0.05343 m³/s @ 0.49 hrs, Volume= 203.5 m³
Primary = 0.05343 m³/s @ 0.49 hrs, Volume= 203.5 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 277L: Post Development Peak Flow - Springhurst Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,100.0	0.65	PR-001 (252S)
1,100.0	**0.65**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 252S: OF-001 (Oblats Ave - Runoff Area=0.1100 ha 0.00% Impervious Runoff Depth=19 mm
Tc=10.0 min C=0.65 Runoff=0.03484 m³/s 21.3 m³

Link 256L: Post Development Peak Flow - Oblats Ave Inflow=0.03484 m³/s 21.3 m³
Primary=0.03484 m³/s 21.3 m³

Total Runoff Area = 1,100.0 m² Runoff Volume = 21.3 m³ Average Runoff Depth = 19 mm
100.00% Pervious = 1,100.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 252S: OF-001 (Oblats Ave - Uncontrolled)

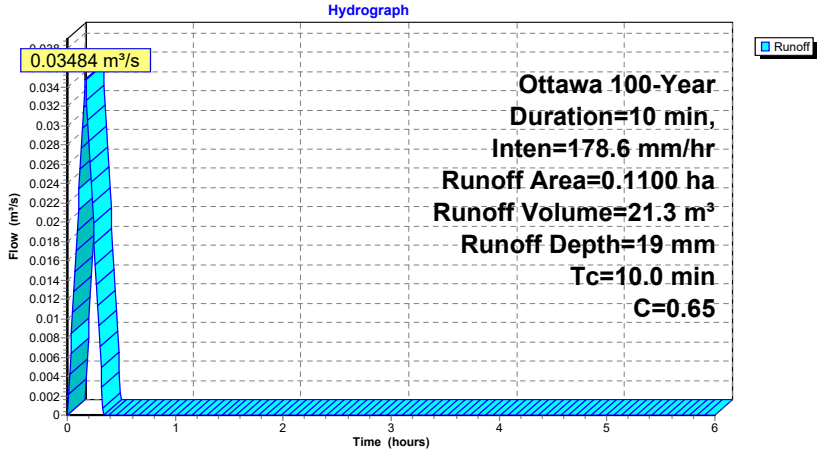
Runoff = 0.03484 m³/s @ 0.17 hrs, Volume= 21.3 m³, Depth= 19 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 100-Year Duration=10 min, Inten=178.6 mm/hr

Area (ha)	C	Description
0.1100	0.65	PR-001
0.1100		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 252S: OF-001 (Oblats Ave - Uncontrolled)

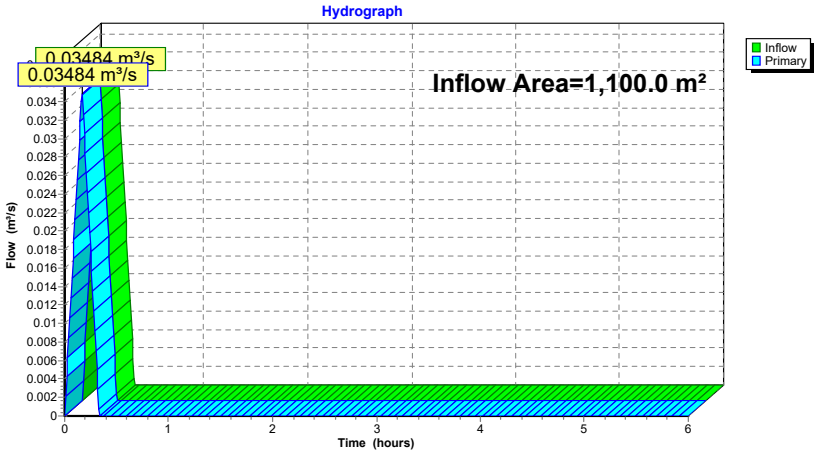


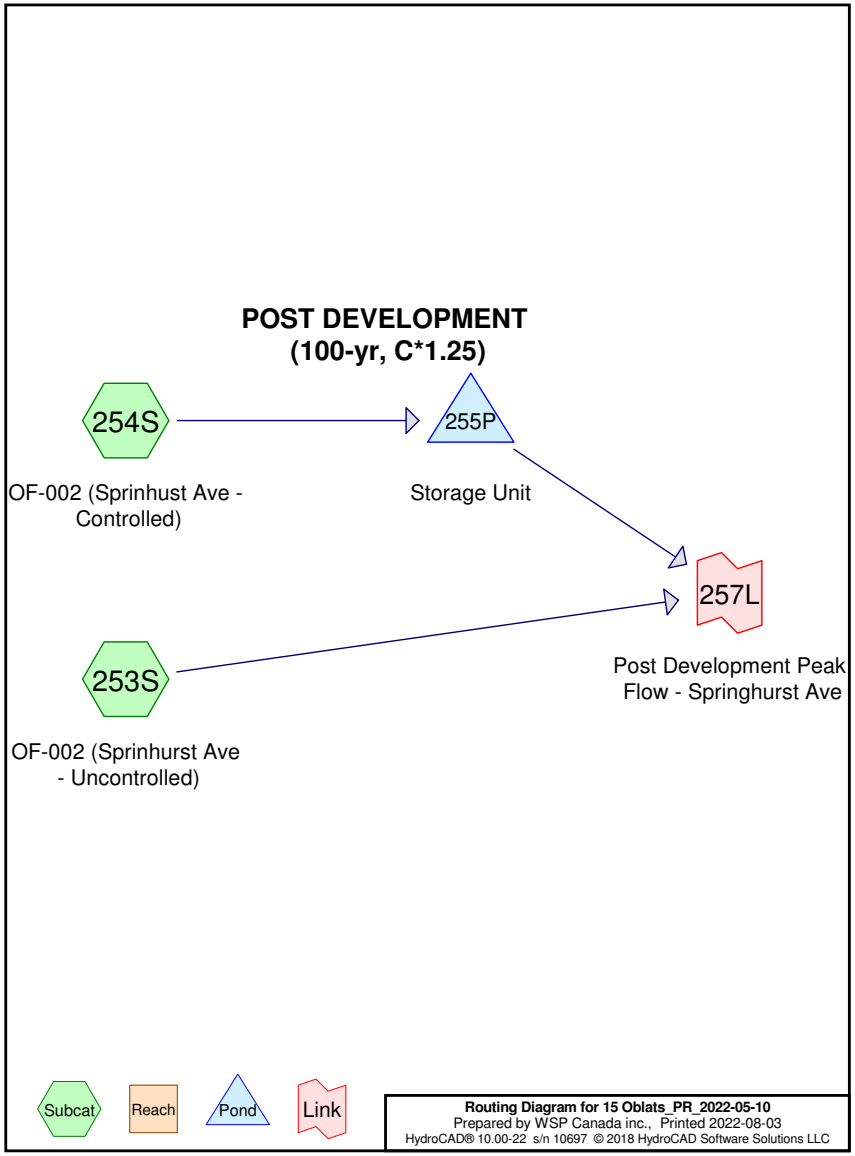
Summary for Link 256L: Post Development Peak Flow - Oblats Ave

Inflow Area = 1,100.0 m², 0.00% Impervious, Inflow Depth = 19 mm for 100-Year event
Inflow = 0.03484 m³/s @ 0.17 hrs, Volume= 21.3 m³
Primary = 0.03484 m³/s @ 0.17 hrs, Volume= 21.3 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 256L: Post Development Peak Flow - Oblats Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
2,300.0	1.00	PR-002 (254S)
500.0	1.00	PR-003 (254S)
800.0	1.00	PR-004 (254S)
500.0	0.93	PR-005 (254S)
900.0	0.71	PR-006 (254S)
200.0	0.31	PR-007 (253S)
10.0	0.31	PR-008 (253S)
500.0	0.50	PR-009 (253S)
5,710.0	**0.88**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 253S: OF-002 (Sprinhurst Runoff Area=0.0710 ha 0.00% Impervious Runoff Depth=20 mm
Tc=10.0 min C=0.44 Runoff=0.00816 m³/s 14.2 m³

Subcatchment 254S: OF-002 (Sprinhust Runoff Area=0.5000 ha 72.00% Impervious Runoff Depth=43 mm
Tc=10.0 min C=0.94 Runoff=0.12274 m³/s 213.5 m³

Pond 255P: Storage Unit Peak Elev=1.924 m Storage=140.0 m³ Inflow=0.12274 m³/s 213.5 m³
Outflow=0.05184 m³/s 213.5 m³

Link 257L: Post Development Peak Flow - Springhurst Ave Inflow=0.05755 m³/s 227.7 m³
Primary=0.05755 m³/s 227.7 m³

Total Runoff Area = 5,710.0 m² Runoff Volume = 227.7 m³ Average Runoff Depth = 40 mm
36.95% Pervious = 2,110.0 m² 63.05% Impervious = 3,600.0 m²

Summary for Subcatchment 253S: OF-002 (Sprinhurst Ave - Uncontrolled)

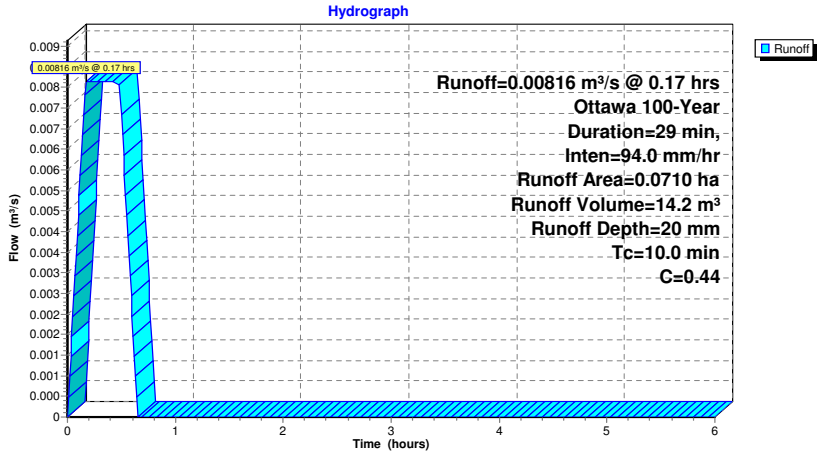
Runoff = 0.00816 m³/s @ 0.17 hrs, Volume= 14.2 m³, Depth= 20 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 100-Year Duration=29 min, Inten=94.0 mm/hr

Area (ha)	C	Description
0.0200	0.31	PR-007
0.0010	0.31	PR-008
0.0500	0.50	PR-009
0.0710	0.44	Weighted Average
0.0710		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 253S: OF-002 (Sprinhurst Ave - Uncontrolled)



Summary for Subcatchment 254S: OF-002 (Sprinhust Ave - Controlled)

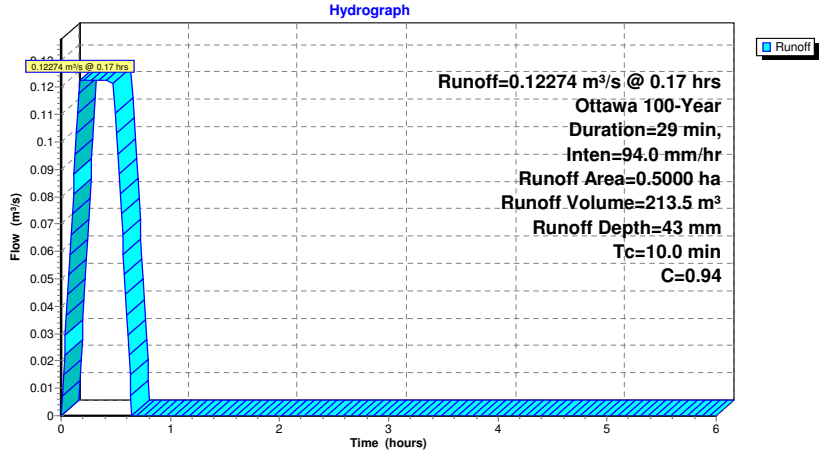
Runoff = 0.12274 m³/s @ 0.17 hrs, Volume= 213.5 m³, Depth= 43 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 100-Year Duration=29 min, Inten=94.0 mm/hr

Area (ha)	C	Description
0.2300	1.00	PR-002
0.0500	1.00	PR-003
0.0800	1.00	PR-004
0.0500	0.93	PR-005
0.0900	0.71	PR-006
0.5000	0.94	Weighted Average
0.1400		28.00% Pervious Area
0.3600		72.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 254S: OF-002 (Sprinhust Ave - Controlled)



Summary for Pond 255P: Storage Unit

Inflow Area = 5,000.0 m², 72.00% Impervious, Inflow Depth = 43 mm for 100-Year event
Inflow = 0.12274 m³/s @ 0.17 hrs, Volume= 213.5 m³
Outflow = 0.05184 m³/s @ 0.58 hrs, Volume= 213.5 m³, Atten= 58%, Lag= 24.6 min
Primary = 0.05184 m³/s @ 0.58 hrs, Volume= 213.5 m³

Routing by Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 1.924 m @ 0.58 hrs Surf.Area= 72.8 m² Storage= 140.0 m³

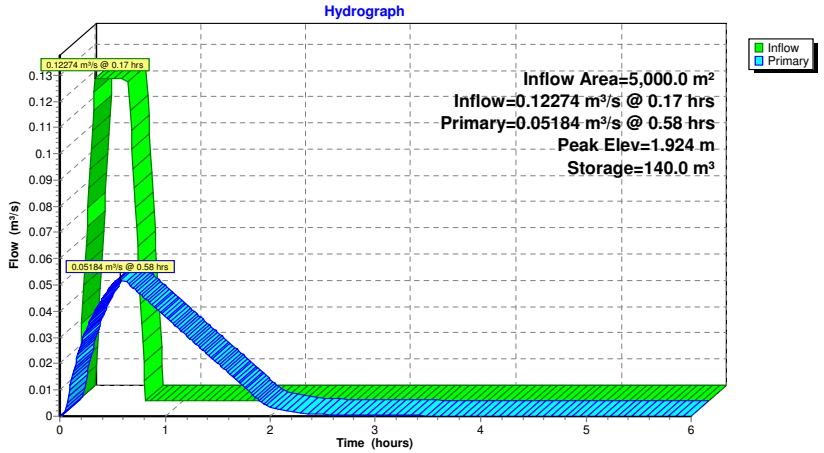
Plug-Flow detention time= 34.0 min calculated for 213.5 m³ (100% of inflow)
Center-of-Mass det. time= 34.0 min (53.5 - 19.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	181.9 m³	**6.80 mW x 10.70 mL x 2.50 mH Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**135 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.05184 m³/s @ 0.58 hrs HW=1.924 m (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.05184 m³/s @ 3.62 m/s)

Pond 255P: Storage Unit

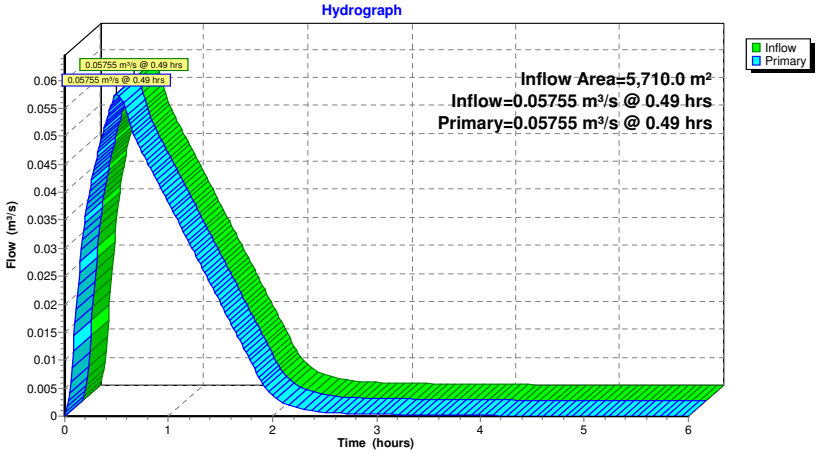


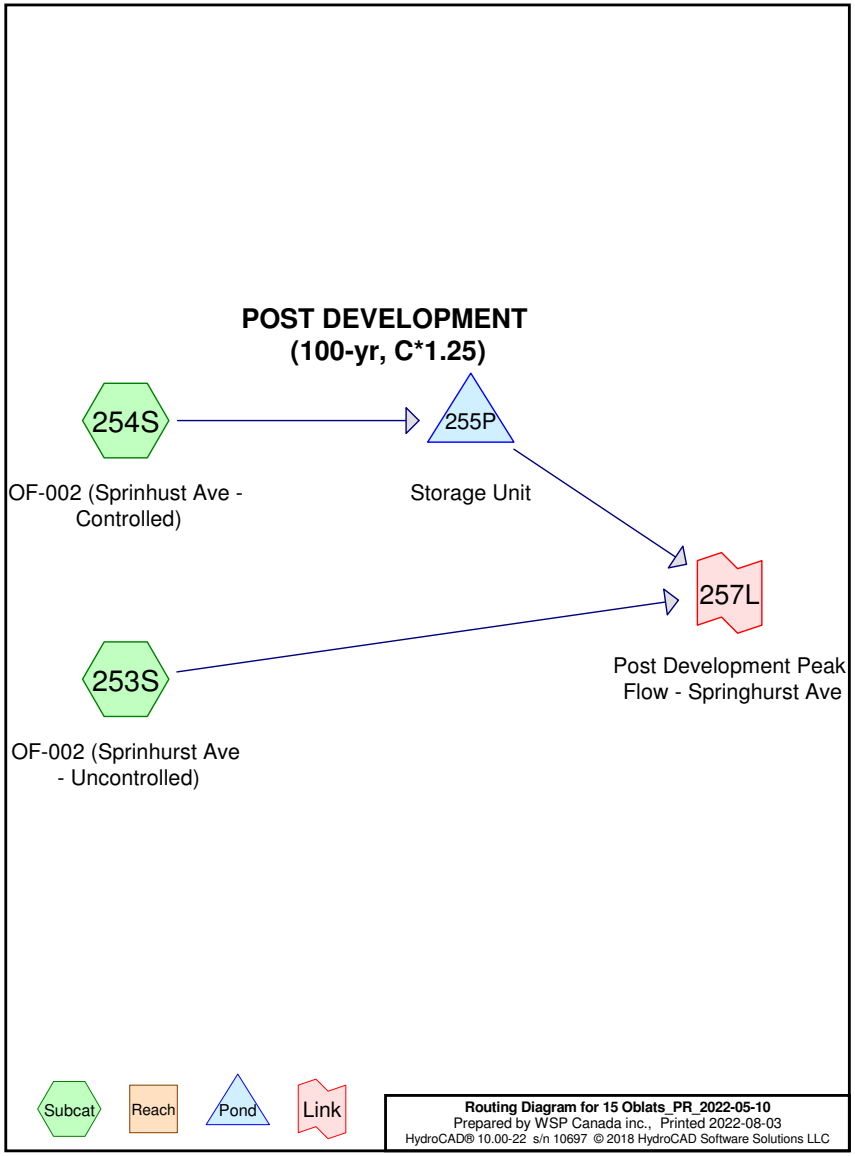
Summary for Link 257L: Post Development Peak Flow - Springhurst Ave

Inflow Area = 5,710.0 m², 63.05% Impervious, Inflow Depth > 40 mm for 100-Year event
Inflow = 0.05755 m³/s @ 0.49 hrs, Volume= 227.7 m³
Primary = 0.05755 m³/s @ 0.49 hrs, Volume= 227.7 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 257L: Post Development Peak Flow - Springhurst Ave





Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
2,300.0	1.00	PR-002 (254S)
500.0	1.00	PR-003 (254S)
800.0	1.00	PR-004 (254S)
500.0	0.93	PR-005 (254S)
900.0	0.71	PR-006 (254S)
200.0	0.31	PR-007 (253S)
10.0	0.31	PR-008 (253S)
500.0	0.50	PR-009 (253S)
5,710.0	**0.88**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 253S: OF-002 (Sprinhurst Runoff Area=0.0710 ha 0.00% Impervious Runoff Depth=21 mm
Tc=10.0 min C=0.44 Runoff=0.00747 m³/s 14.8 m³

Subcatchment 254S: OF-002 (Sprinhust Runoff Area=0.5000 ha 72.00% Impervious Runoff Depth=44 mm
Tc=10.0 min C=0.94 Runoff=0.11232 m³/s 222.4 m³

Pond 255P: Storage Unit Peak Elev=1.929 m Storage=140.4 m³ Inflow=0.11232 m³/s 222.4 m³
Outflow=0.05191 m³/s 222.3 m³

Link 257L: Post Development Peak Flow - Springhurst Ave Inflow=0.05748 m³/s 237.1 m³
Primary=0.05748 m³/s 237.1 m³

Total Runoff Area = 5,710.0 m² Runoff Volume = 237.2 m³ Average Runoff Depth = 42 mm
36.95% Pervious = 2,110.0 m² 63.05% Impervious = 3,600.0 m²

Summary for Subcatchment 253S: OF-002 (Sprinhurst Ave - Uncontrolled)

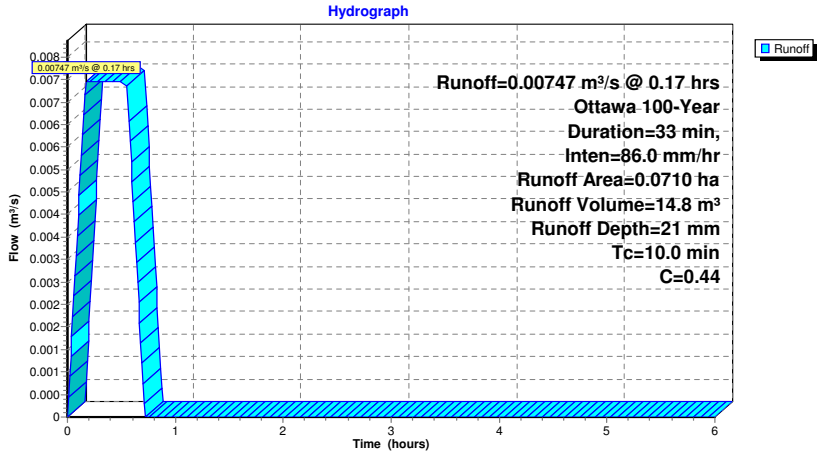
Runoff = 0.00747 m³/s @ 0.17 hrs, Volume= 14.8 m³, Depth= 21 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 100-Year Duration=33 min, Inten=86.0 mm/hr

Area (ha)	C	Description
0.0200	0.31	PR-007
0.0010	0.31	PR-008
0.0500	0.50	PR-009
0.0710	0.44	Weighted Average
0.0710		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 253S: OF-002 (Sprinhurst Ave - Uncontrolled)



Summary for Subcatchment 254S: OF-002 (Sprinhust Ave - Controlled)

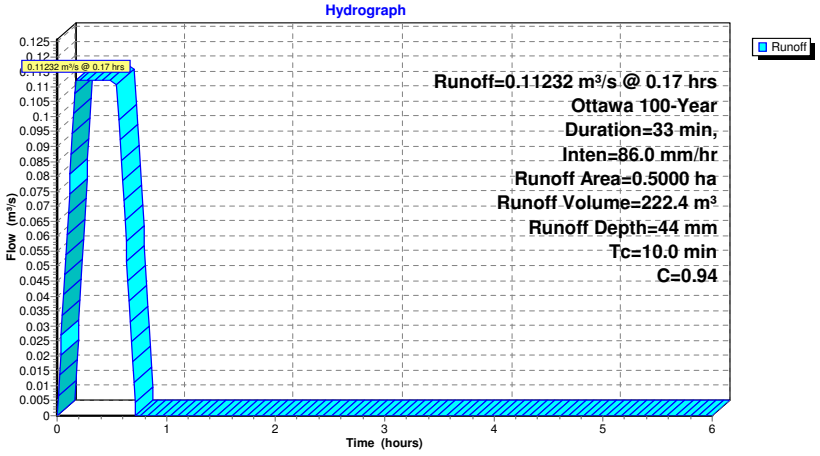
Runoff = 0.11232 m³/s @ 0.17 hrs, Volume= 222.4 m³, Depth= 44 mm

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Ottawa 100-Year Duration=33 min, Inten=86.0 mm/hr

Area (ha)	C	Description
0.2300	1.00	PR-002
0.0500	1.00	PR-003
0.0800	1.00	PR-004
0.0500	0.93	PR-005
0.0900	0.71	PR-006
0.5000	0.94	Weighted Average
0.1400		28.00% Pervious Area
0.3600		72.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 254S: OF-002 (Sprinhust Ave - Controlled)



Summary for Pond 255P: Storage Unit

Inflow Area = 5,000.0 m², 72.00% Impervious, Inflow Depth = 44 mm for 100-Year event
Inflow = 0.11232 m³/s @ 0.17 hrs, Volume= 222.4 m³
Outflow = 0.05191 m³/s @ 0.64 hrs, Volume= 222.3 m³, Atten= 54%, Lag= 28.2 min
Primary = 0.05191 m³/s @ 0.64 hrs, Volume= 222.3 m³

Routing by Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 1.929 m @ 0.64 hrs Surf.Area= 72.8 m² Storage= 140.4 m³

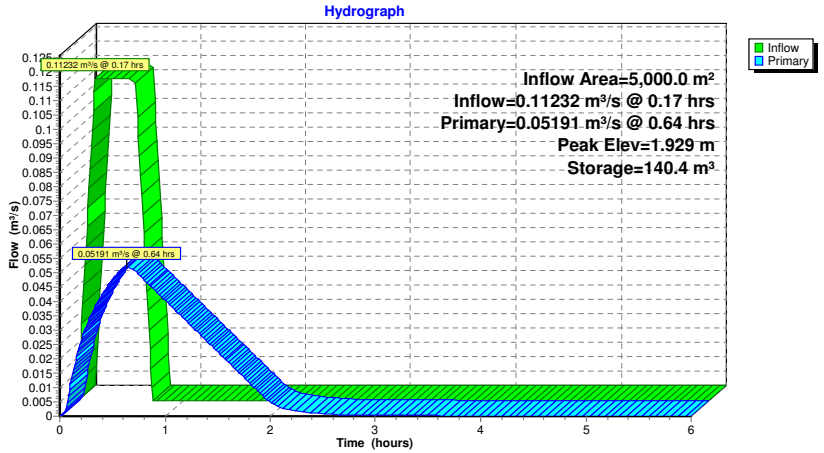
Plug-Flow detention time= 34.1 min calculated for 222.3 m³ (100% of inflow)
Center-of-Mass det. time= 34.1 min (55.6 - 21.5)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	181.9 m³	**6.80 mW x 10.70 mL x 2.50 mH Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**135 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=0.05191 m³/s @ 0.64 hrs HW=1.929 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.05191 m³/s @ 3.63 m/s)

Pond 255P: Storage Unit

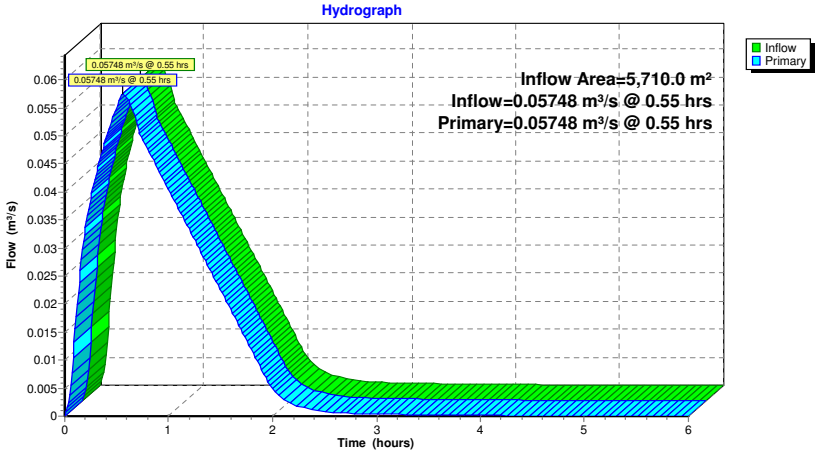


Summary for Link 257L: Post Development Peak Flow - Springhurst Ave

Inflow Area = 5,710.0 m², 63.05% Impervious, Inflow Depth > 42 mm for 100-Year event
Inflow = 0.05748 m³/s @ 0.55 hrs, Volume= 237.1 m³
Primary = 0.05748 m³/s @ 0.55 hrs, Volume= 237.1 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 257L: Post Development Peak Flow - Springhurst Ave



APPENDIX

D SUPPORTING DOCUMENTS

Hydro First Defense® - HC

Net Annual Water Quality Worksheet

Rev. 9.9

Hydro International

Project Name:	**15 Oblats Ave**	*Report Date:*	**4/13/2022**
Street:	**Oblats Ave**	*City:*	**Ottawa**
Province:	**ON**	*Country:*	**Canada**
Designer:	**Meaghan O'Neill**	*email:*	**Meaghan.Oneill@wsp.com**

Paste

Treatment Parameters:

Structure ID:	OGS	
TSS Goal:	80	% Removal
TSS Particle Size:	Fine	
Area:	0.5	ha
Percent Impervious:		
Rational C value:	0.82	Calc. Cn
Rainfall Station:	Ottawa, ONT	MAP
Peak Storm Flow:	-	L/s

RESULTS SUMMARY

Model	TSS	Volume
FD-3HC	**86.7%**	**99.3%**
FD-4HC	91.0%	99.9%
FD-5HC	94.0%	99.9%
FD-6HC	95.5%	99.9%
FD-8HC	97.5%	99.9%

Model Specification:

Model:	**FD-3HC**	
Diameter:	900	mm
Peak Flow Capacity:	425.00	L/s
Sediment Storage:	0.31	m^3
Oil Storage:	473.00	L

Installation Configuration:

Placement:	Online		
Outlet Pipe Size:	375	mm	*OK*
Inlet Pipe 1 Size:	375	mm	*OK*
Inlet Pipe 2 Size:		mm	*OK*
Inlet Pipe 3 Size:		mm	*OK*
Rim Level:	62.110	m	Calc Invs.
Outlet Pipe Invert:	58.440	m	*OK*
Invert Pipe 1:	58.470	m	*OK*
Invert Pipe 2:		m	
Invert Pipe 3:		m	

Net Annual Removal Model: FD-3HC

Intensity[1]	Fraction of Rainfall[1]	FD-3HC Removal Efficiency[2]	Weighted Net Annual Efficiency
(mm/hr)	(%)	(%)	(%)
0.50	0.1%	100.0%	0.1%
1.00	14.1%	97.4%	13.7%
1.50	14.2%	93.8%	13.3%
2.00	14.1%	91.3%	12.9%
2.50	4.2%	89.4%	3.7%
3.00	1.5%	87.9%	1.3%
3.50	8.5%	86.7%	7.4%
4.00	5.4%	85.6%	4.6%
4.50	1.2%	84.7%	1.0%
5.00	5.5%	83.8%	4.6%
6.00	4.3%	82.4%	3.6%
7.00	4.5%	81.3%	3.7%
8.00	3.1%	80.3%	2.5%
9.00	2.3%	79.4%	1.8%
10.00	2.6%	78.6%	2.0%
20.00	9.2%	73.7%	6.8%
30.00	2.6%	71.0%	1.9%
40.00	1.2%	69.1%	0.8%
50.00	0.5%	67.7%	0.4%
100.00	0.7%	63.5%	0.5%
150.00	0.1%	61.1%	0.0%
200.00	0.0%	59.5%	0.0%
Total Net Annual Removal Efficiency:			**86.7%**
Total Annual Runoff Volume Treated:			**99.3%**

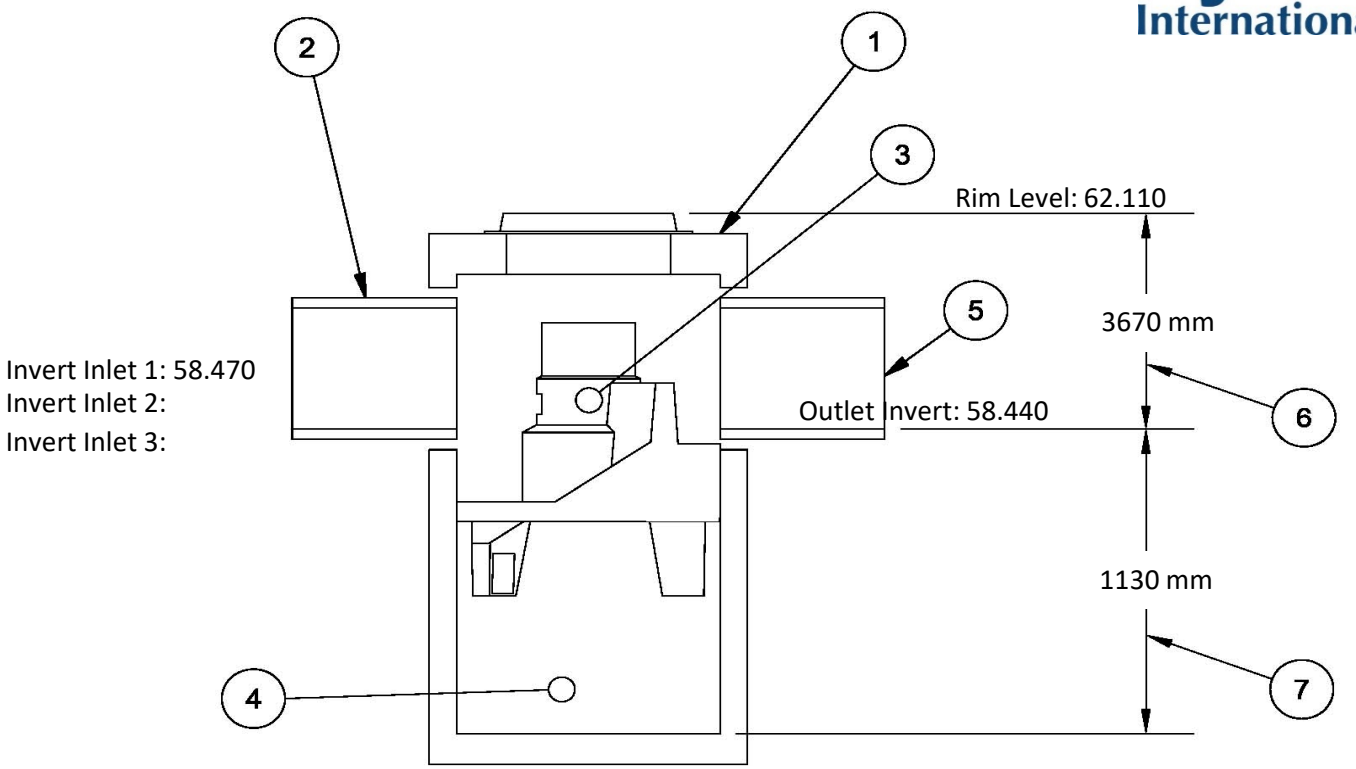
1. Rainfall Data: 1960:2007, HLY03, Ottawa, ONT, 6105976 & 6105978.

2. Based on third party verified data and appoximating the removal of a PSD similar to the STC Fine distribution

3. Rainfall adjusted to 5 min peak intensity based on hourly average.

Designer Notes:

Hydro First Defense® - HC



All drawing elevations are metres.

FD-3HC Specification

1	Vortex Chamber Diameter	900	mm
2	Inlet Pipe Diameter	375	mm
3	Oil Storage Capacity	473.00	L
4	Min. Provided Sediment Storage Capacity	0.31	m^3
5	Outlet Pipe Diameter	375	mm
6	Height(Final Grade to Outlet Invert)	3670	mm

Notes:

7	Sump Depth(Outlet Invert to Sump)	1130	mm
	Total Depth	**4800**	**mm**