WESTWINDS SUBDIVISION

STORMWATER MANAGEMENT BRIEF

Prepared For

Amiraco Properties Inc.

September 18, 2023

PLAN • SURVEY • ENGINEER

3514 White Oak Road, London, ON N6E 2Z9 t. 519.685.5300 f. 519.685.5303

September 18, 2023

AMIRACO PROPERTIES INC.
106-470 Dundas Street
London, ON
N6B 1W3

Attention: Mike Meddaoui

Subject: Westwinds Subdivision Stormwater Management Strategy

INTRODUCTION

This brief has been prepared to present the stormwater management strategy for Westwinds Subdivision. The property is located on the southwest corner of the Bostwick Road and Pack Road intersection, Mun. No. 3563 Bostwick Road. The site is bound by agricultural lands to the west and south, a residential property to the southeast, Bostwick Road to the east and Pack Road to the north. Woodland Patch 10066 (Biologic 2018) is located at the southwest corner of the property.

The proposed subdivision will include an internal road network supporting low and medium density housing. The development will also include a park block and two open space blocks. The open space blocks, along the south boundary, includes a multi-use pathway system and will preserve a portion of Woodland Patch 10066. The northeast 1.35 ha area of the property will be outside of the subdivision, for the re-alignment of Bostwick Road and Pack Road, as shown in Figure 1 (Draft Plan by MHBC).

EXISTING DRAINAGE

The subject property is primarily utilized for agricultural purposes, with Woodland Patch 10066 occupying the southwest corner of the site as mentioned. The native subsurface soils are primarily clayey silt till material up to 5m below the ground surface (as per the Hydrogeological Assessment completed by EXP Services Inc., dated May 25, 2023). These soils are known to have high runoff potential. Parameters for the pre development analysis were assigned accordingly.

The subject property has split drainage, with portions of the agricultural field draining by sheet flow to either the Bostwick Road right-of-way, southwest to Patch 10066, or to the neighbouring property to the west (Figure 2). Runoff generated from the 9.69 ha area tributary to the Bostwick Road right-of-way is conveyed to the south of the property and to the east side of Bostwick Road through a culvert, ultimately to the Thornicroft Drain.

The pre development peak flows to each natural outlet are shown in Table 1.

TABLE 1 - PRE DEVELOPMENT PEAK FLOWS

STORM EVENT	FLOWS TRIBUTARY TO BOSTWICK ROAD (m^3/s)	FLOWS TRIBUTARY TO WOODLAND PATCH (m^3/s)	FLOWS TRIBUTARY TO WEST LIMIT (m^3/s)
2 YEAR	0.14	0.07	0.01
5 YEAR	0.19	0.10	0.02
10 YEAR	0.26	0.11	0.02
25 YEAR	0.29	0.13	0.03
50 YEAR	0.33	0.16	0.05
100 YEAR	0.42	0.20	0.06
250 YEAR	0.58	0.28	0.08

See Appendix A for pre development modelling files.

PROPOSED DRAINAGE

Land use for the proposed subdivision will consist of medium density blocks (apartments and town homes), low density residential (single family lots), parkland and open space blocks. A portion of Woodland Patch 10066 will be maintained within an open space block.

Stormwater Management will be provided by both on-site permanent private systems (PPS), and a SWM facility (Kilbourne Pond #2 - dry pond) located east of Bostwick Road. Kilbourne Pond #2 (designed by others) will attenuate peak flows from both the Kilbourne Subdivision (to the east) and 13.14ha from Westwinds Subdivision.

Medium Density Blocks 8-11, as well as a portion of Block 12 (6.74 ha), will be subject to on-site PPS (quantity and quality controls) to limit peak flows. Blocks 8-11 will be controlled to an equivalent runoff coefficient of 0.30 and Block 12 to an equivalent runoff coefficient of 0.40 (Figure 3). Runoff from low density residential on Street B; Street C; and medium density residential, park and open space on Street A (6.36 ha) will not be subject to quantity control measures to limit peak flows, but will be subject to quality control measures upstream of Pond #2.

The post development peak flows to Kilbourne Pond #2 are shown in Table 2.

TABLE 2 - POST DEVELOPMENT PEAK FLOWS TO KILBOURNE POND #2

STORM EVENT	PEAK FLOW (m^3/s)
2 YEAR	0.605
5 YEAR	0.916
10 YEAR	1.166
25 YEAR	1.515
50 YEAR	1.797
100 YEAR	2.099
250 YEAR	2.659

Minor system flows will be conveyed by on-site storm sewers and major system flows will be conveyed overland, to the open space block situated at the southeast corner of the property. An oil grit separator (OGS) will be installed to ensure stormwater is treated prior to exiting the site. Downstream of the OGS, an inlet structure will be installed to capture major system flows. Minor and major flows will be conveyed through a box culvert beneath Bostwick Road to Kilbourne Pond #2 to the east. The size of the OGS, inlet structure and box culvert will be confirmed during detailed design.

Runoff generated by the remaining 1.45 ha area, made up of an Open Space Block 15 and a portion of Medium Density Block 12, will be tributary to Woodland Patch 10066, which in turn drains to Woodland Patch 10069 within W3 Farms Subdivision. Drainage from this area will be from both roof and landscaped areas to ensure only "clean" runoff is directed to Woodland Patch 10069.

The pre and post development peak flows are shown in Table 3.

TABLE 3 - POST DEVELOPMENT PEAK FLOWS TO WOODLAND PATCH 10066

STORM EVENT	PRE DEVELOPMENT PEAK FLOWS (m^3/s)	POST DEVELOPMENT PEAK FLOWS (m^3/s)	PRE TO POST DECREASE (%)
2 YEAR	0.070	0.065	7.1%
5 YEAR	0.100	0.087	13.0%
10 YEAR	0.110	0.103	6.4%
25 YEAR	0.130	0.126	3.1%
50 YEAR	0.160	0.145	9.4%
100 YEAR	0.200	0.165	17.5%
250 YEAR	0.280	0.206	26.4%

Based on preliminary results, the post development peak runoff to the Woodland Patch will be below pre development levels.

See Appendix B for post development modelling files.

SUMMARY

The proposed stormwater management strategy for Westwinds Subdivision will include on-site permanent private systems (PPS) to limit post development peak flows to Kilbourne Pond #2.

A 1.45 ha area of the site will direct "clean" runoff to Woodland Patch 10066, which in turn drains to Woodland Patch 10069 within W3 Farms Subdivision.

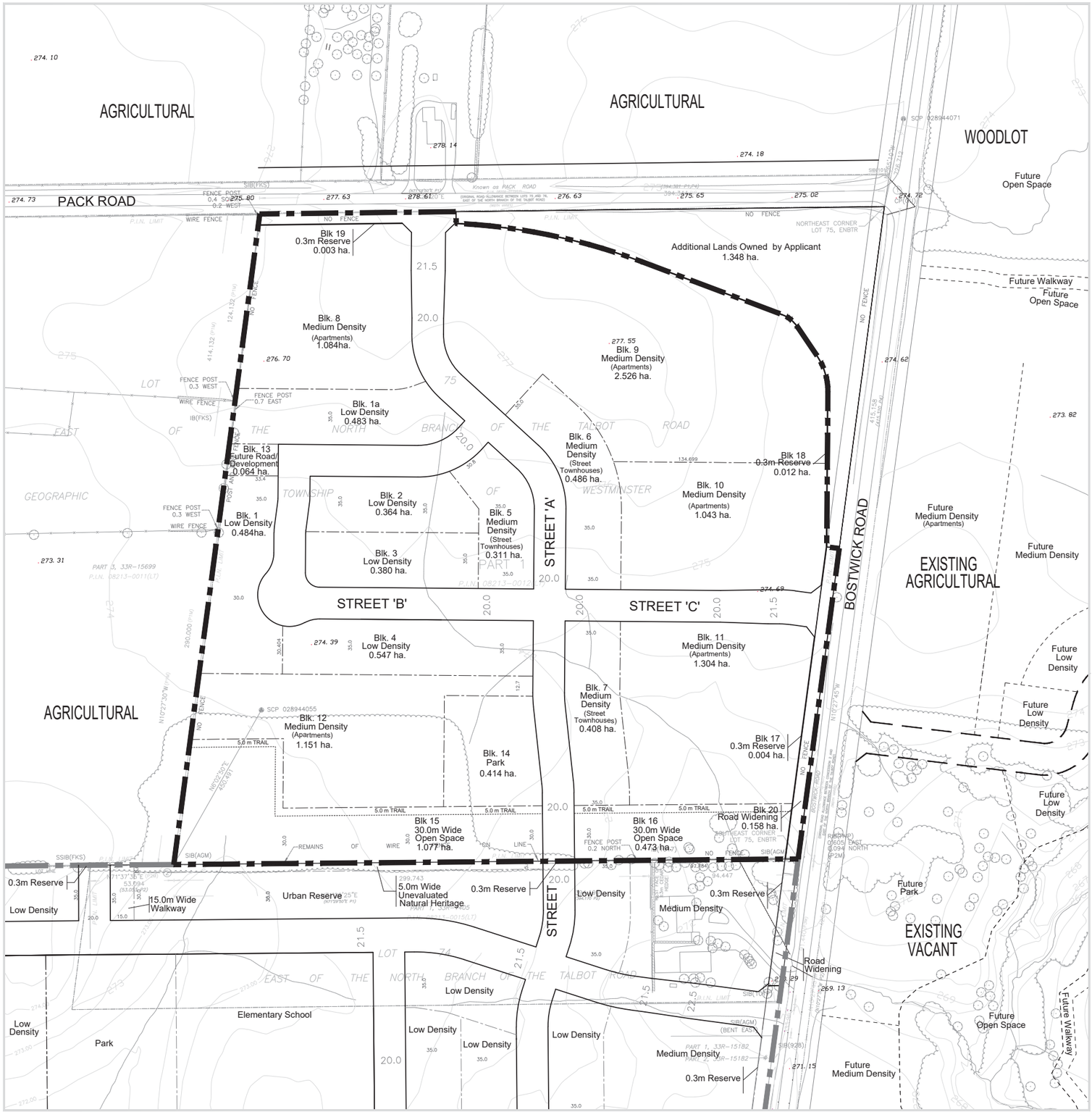
If you have any questions regarding this brief, please contact our office.

Archibald, Gray & McKay Engineering Ltd.

Craig Colpaert
Engineer-in-Training

Steve Brown, P.Eng.
Manager of Engineering Services

FIGURES



PART OF LOT 75,
CONCESSION EAST OF THE
NORTH BRANCH OF TALBOT ROAD
(GEOGRAPHIC TOWNSHIP OF WESTMINSTER)

CITY OF LONDON
COUNTY OF MIDDLESEX

Owner's Certificate

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE:_____ _____

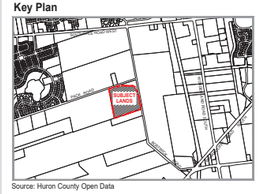
Surveyor's Certificate

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE:_____ _____

PETER G.MORETON
ONTARIO LAND SURVEYOR
CALLON DIETZ INCORPORATED
ONTARIO LAND SURVEYORS

Key Plan



Subject Lands

north

SCALE: NTS

Source: Huron County Open Data

SUBJECT TO THE CONDITIONS, IF ANY, SET FORTH IN OUR IN OUR LETTER DATED _____, 2023
THIS DRAFT PLAN IS APPROVED UNDER SECTION 51 OF THE *PLANNING ACT*, THIS ____ DAY OF _____, 2023

Additional Information Required Under Section 51(17) of the Planning Act
R.S.O. 1990, c.P.13 as Amended

A. As Shown	B. As Shown	
D. Residential/Commercial	E. As Shown	F. As Shown
G. As Shown	H. Municipal Water Supply	I. Loam, Clay, Silt
J. As Shown	J. All Services As Required	L. As Shown

Area Schedule C. As Shown **30T**_____

Description	Lots/Blocks	Units	Area (ha)
Low Density Residential	1-4	46	2.258
Med. Density Residential (STH)	5-7	37	1.205
Med. Density Residential (Cluster)	9, 11-12	56	N.A.*
Med. Density Residential (Apt)	8-12	610	7.109
Future Road / Residential	13		0.064
Park	14		0.414
Open Space	15-16		1.550
0.3m Reserves	17-19		0.019
Road Widening	20		0.158
Roads			2.059
Total	**20**	**749**	**14.835**

Notes
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. SURROUNDING PARCEL FABRIC IS APPROXIMATE.
3. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE- ONTARIO.
4. * MED. DENSITY RESIDENTIAL (CLUSTER) AREA IS INCLUDED UNDER MED. DENSITY RESIDENTIAL (APT.)

Revision No.	Date	Issued / Revision	By
1.	August 24, 2023	Issued:	CCF

MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
200-540 BINGEMANS CENTRE DR. KITCHENER, ON. N2B 3X9 | P: 519.576.3650 F: 519.576.0121 | WWW.MHBCPLAN.COM

Approval Stamp	**Date** August 24, 2023
	File No. 14212 'D'
	Drawn By L.M. and C.C.F.
Project WESTWIND	**Checked By** S.A.
Applicant **AMIRACO PROPERTIES INC.** 106-470 DUNDAS STREET LONDON, ON N6B 1W3	north
File Name PRELIMINARY DRAFT PLAN OF SUBDIVISION	**Dwg No.** 1 of 1
Plan Scale 1: 1,250 (Arch D)	0 10 20 40 60 80 100

Q:\14212'D'_3563 Bostwick Road\Graphics\DP\DP_24X30 AT 1TO1250_24Aug2023.dwg

PACK ROAD

LANDS FOR ROAD RE-ALIGNMENT

BOSTWICK ROAD

4
0.51

2
2.55

1
7.14

3
4.39

NEIGHBOURING ARGICULURAL LANDS

WOODLAND PATCH 10066

WOODLAND PATCH 10069

W3 FARMS SUBDIVISION

EXISTING CULVERT

LEGEND

DRAINAGE BOUNDARY

HATCH DENOTES PERVIOUS AREAS

1
0.00

CATCHMENT ID

AREA SERVED IN HECTARES

DIRECTION OF SURFACE FLOW

FIGURE 2
EXISTING DRAINAGE

SCALE 1:2000
DATE: SEPTEMBER 2023

ARCHIBALD, GRAY & McKAY ENGINEERING LTD.
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PHONE 519-685-5300 FAX 519-685-5303
EMAIL info@agm.on.ca WEB www.agm.on.ca
PLAN • SURVEY • ENGINEER

Plot date: Sep 18, 2023 F:\Projects\W\Westmin\WT\WT-ENBTR\WT-ENBTR-75\WT-ENBTR-75-8\Eng 1284-3\CAD 2019\1284-3 SWM Base.dwg

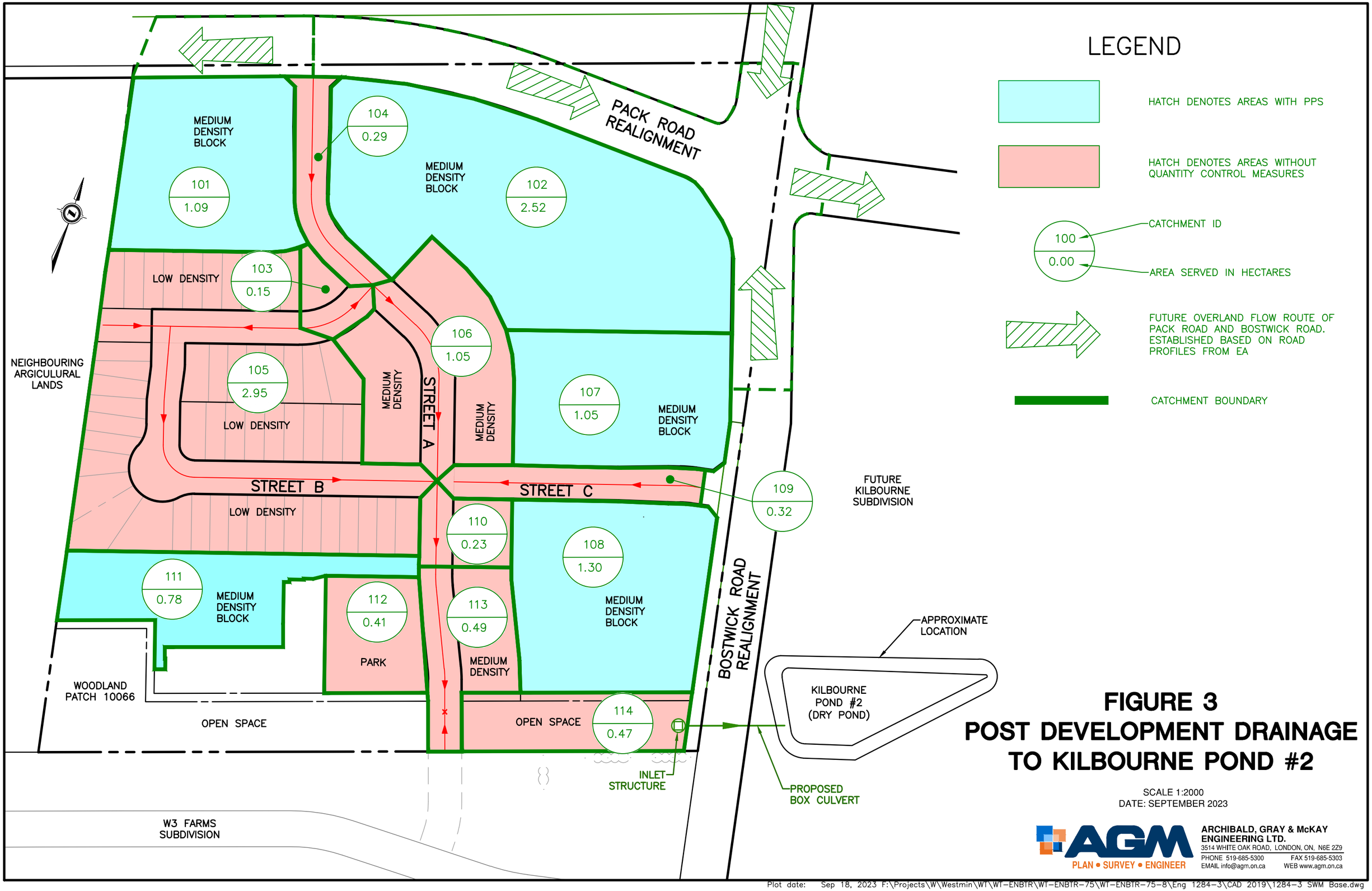

FIGURE 3
POST DEVELOPMENT DRAINAGE TO KILBOURNE POND #2

SCALE 1:2000
DATE: SEPTEMBER 2023

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Plot date: Sep 18, 2023 F:\Projects\W\Westmin\WT\WT-ENBTR\WT-ENBTR-75\WT-ENBTR-75-8\Eng 1284-3\CAD 2019\1284-3 SWM Base.dwg

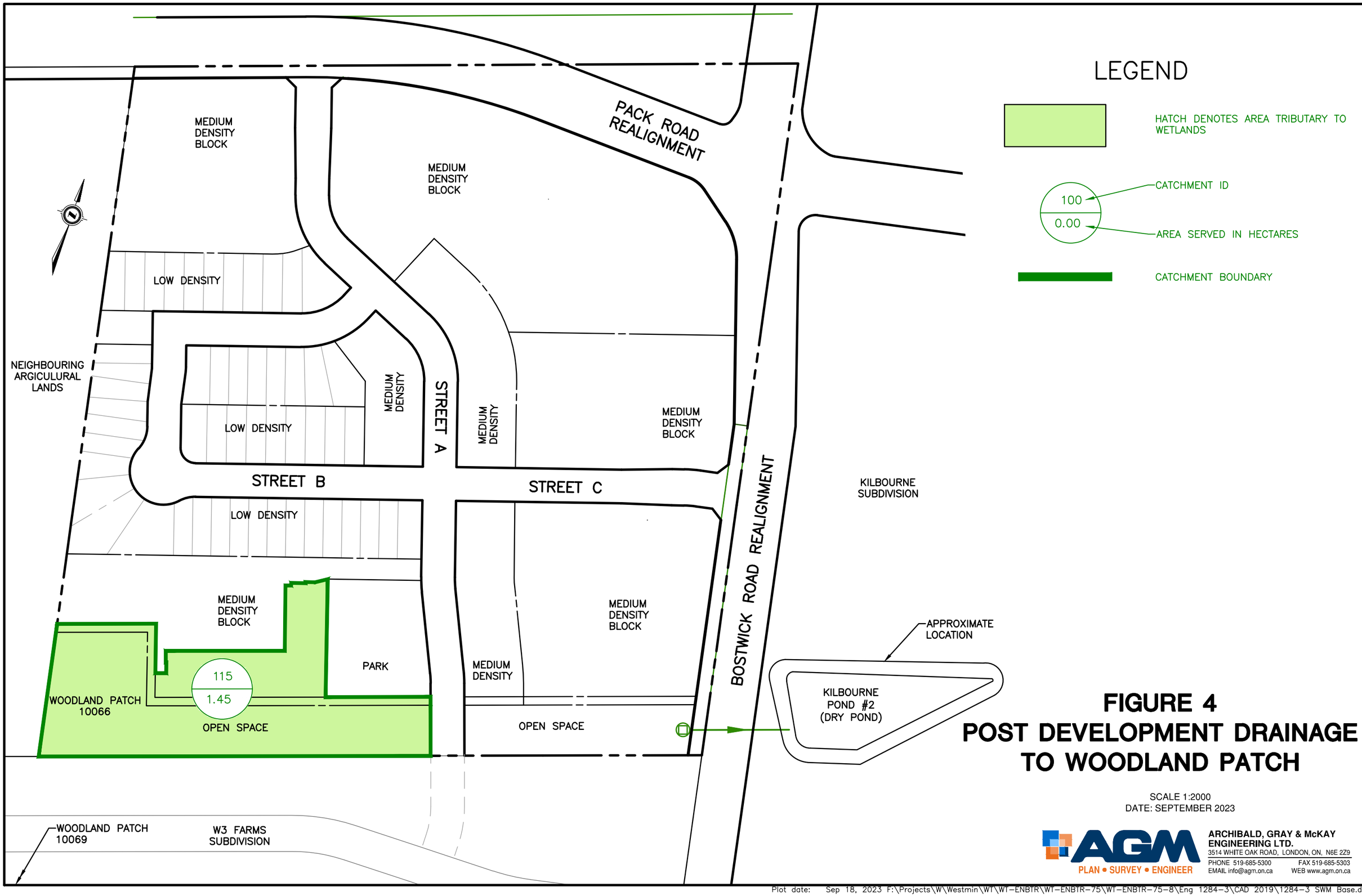

FIGURE 4
POST DEVELOPMENT DRAINAGE TO WOODLAND PATCH

SCALE 1:2000
DATE: SEPTEMBER 2023

ARCHIBALD, GRAY & McKAY ENGINEERING LTD.
3514 WHITE OAK ROAD, LONDON, ON, N6E 2Z9
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PLAN • SURVEY • ENGINEER

Plot date: Sep 18, 2023 F:\Projects\W\Westmin\WT\WT-ENBTR\WT-ENBTR-75\WT-ENBTR-75-8\Eng 1284-3\CAD 2019\1284-3 SWM Base.dwg

APPENDIX A
Pre Development Model


Pack Rd
Bostwick Rd
Bostwick
S1
7.14ha
S2
2.55ha
S3
4.39ha
S4
0.51ha
OF1
OF2
OF3
OF4
Legend
Outfalls
Subcatchments
PCSWMM Layin Pre
N
50 m

PRE DEVELOPMENT - MODELING DATA

CATCHMENT NO.	AREA (ha)	IMPERVIOUS (%)	IMPERVIOUS AREA (ha)	PERVIOUS LENGTH (m)	IMP. LENGTH (m)	Perv. Initial Abstraction (mm)	Imp. Initial Abstraction (mm)	PERVIOUS MANNINGS (n)	Pervious Slope (%)	Impervious Slope (%)	SCS CURVE #
1	7.14	0.0	0.000	240.0	240.0	5.0	2.0	0.25	1.5	1.5	82
2	2.55	0.0	0.000	170.0	170.0	0.0	2.0	0.25	1.5	1.5	82
3	4.39	0.0	0.000	200.0	200.0	0.0	2.0	0.25	1.5	1.5	82
4	0.51	0.0	0.000	45.0	45.0	0.0	2.0	0.25	2	2	82

```
  EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)
  ---------------------------------------------------------------

  August 2023


  *************
  Element Count
  *************
  Number of rain gages ...... 1
  Number of subcatchments ... 4
  Number of nodes ........... 4
  Number of links ........... 0
  Number of pollutants ...... 0
  Number of land uses ....... 0


  ****************
  Raingage Summary
  ****************
                                                  Data       Recording
  Name                 Data Source                Type       Interval
  ------------------------------------------------------------------S-----
  2YrCoL(2022)_Chicago_3h 2YrCoL(2022)_Chicago_3h        INTENSITY      min.


  ********************
  Subcatchment Summary
  ********************
  Name                        Area     Width   %Imperv    %Slope Rain Gage
Outlet
  ------------------------------------------------------------------------------
-------------------------
  S1                          7.14   2856.00      0.00    6.0000 2YrCoL(2022)
_Chicago_3h OF1
  S2                          2.55   1020.00      0.00    3.0000 2YrCoL(2022)
_Chicago_3h OF2
  S3                          4.39   2195.00      0.00    4.0000 2YrCoL(2022)
_Chicago_3h OF3
  S4                          0.51    510.00      0.00    2.0000 2YrCoL(2022)
_Chicago_3h OF4


  ************
  Node Summary
  ************
                                        Invert      Max.    Ponded    External
  Name                 Type                Elev.     Depth      Area    Inflow
  ------------------------------------------------------------------------------
  OF1                  OUTFALL           270.21      0.00       0.0
  OF2                  OUTFALL           274.50      0.00       0.0
  OF3                  OUTFALL           273.00      0.00       0.0
  OF4                  OUTFALL           276.00      0.00       0.0



  *******************************************************
```

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

  ***************
  Analysis Options
  ***************
  Flow Units ............... CMS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... NO
    Water Quality .......... NO
  Infiltration Method ...... CURVE_NUMBER
  Surcharge Method ......... SLOT
  Starting Date ............ 04/14/2022 00:00:00
  Ending Date .............. 06/13/2022 03:00:00
  Antecedent Dry Days ...... 0.0
  Report Time Step ......... 00:01:00
  Wet Time Step ............ 00:05:00
  Dry Time Step ............ 00:05:00


  *************************        Volume         Depth
  Runoff Quantity Continuity     hectare-m            mm
  *************************     ---------       -------
  Total Precipitation ......         0.479        32.838
  Evaporation Loss .........         0.000         0.000
  Infiltration Loss ........         0.368        25.242
  Surface Runoff ...........         0.094         6.429
  Final Storage ............         0.018         1.205
  Continuity Error (%) .....        -0.117


  *************************        Volume        Volume
  Flow Routing Continuity        hectare-m      10^6 ltr
  *************************     ---------      ---------
  Dry Weather Inflow .......         0.000         0.000
  Wet Weather Inflow .......         0.094         0.938
  Groundwater Inflow .......         0.000         0.000
  RDII Inflow ..............         0.000         0.000
  External Inflow ..........         0.000         0.000
  External Outflow .........         0.094         0.938
  Flooding Loss ............         0.000         0.000
  Evaporation Loss .........         0.000         0.000
  Exfiltration Loss ........         0.000         0.000
  Initial Stored Volume ....         0.000         0.000
  Final Stored Volume ......         0.000         0.000
  Continuity Error (%) .....         0.000


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

Subcatchment	Perv Runoff mm	Total Runoff mm	Total Precip 10^6 ltr	Total Runoff mm	Peak Runon CMS	Total Evap mm	Total Infil mm	Imperv Runoff mm	Runoff Coeff
S1	6.45	6.45	0.46	32.84	0.11	0.00	0.00	25.22	0.197
S2	6.25	6.25	0.16	32.84	0.03	0.00	0.00	25.38	0.190
S3	6.47	6.47	0.28	32.84	0.07	0.00	0.00	25.22	0.197
S4	6.63	6.63	0.03	32.84	0.01	0.00	0.00	25.06	0.202

Analysis begun on: Tue Sep 12 13:10:31 2023
Analysis ended on: Tue Sep 12 13:10:33 2023
Total elapsed time: 00:00:02

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 4
Number of nodes 4
Number of links 0
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
5YrCoL(2022)_Chicago_3h	5YrCoL(2022)_Chicago_3h	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S1	7.14	714.00	0.00	3.0000	5YrCoL(2022)_Chicago_3h	OF1
S2	2.55	283.33	0.00	3.0000	5YrCoL(2022)_Chicago_3h	OF2
S3	4.39	548.75	0.00	3.0000	5YrCoL(2022)_Chicago_3h	OF3
S4	0.51	255.00	0.00	2.0000	5YrCoL(2022)_Chicago_3h	OF4

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
OF1	OUTFALL	270.21	0.00	0.0	
OF2	OUTFALL	274.50	0.00	0.0	
OF3	OUTFALL	273.00	0.00	0.0	
OF4	OUTFALL	276.00	0.00	0.0	

****

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Surcharge Method ..... SLOT
Starting Date 04/14/2022 00:00:00
Ending Date 06/13/2022 03:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.645	44.190
Evaporation Loss	0.000	0.000
Infiltration Loss	0.449	30.777
Surface Runoff	0.178	12.211
Final Storage	0.018	1.240
Continuity Error (%)	-0.083	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.178	1.782
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.178	1.782
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

Subcatchment	Perv Runoff mm	Total Runoff mm	Total Precip 10^6 ltr	Total Runoff mm	Peak Runon CMS	Runoff Coeff	Total Evap mm	Total Infil mm	Imperv Runoff mm
S1	12.02	12.02	0.86	44.19	0.14	0.272	0.00	30.95	0.00
S2	12.19	12.19	0.31	44.19	0.05	0.276	0.00	30.80	0.00
S3	12.37	12.37	0.54	44.19	0.10	0.280	0.00	30.64	0.00
S4	13.63	13.63	0.07	44.19	0.02	0.308	0.00	29.41	0.00

Analysis begun on: Tue Sep 12 13:15:27 2023
Analysis ended on: Tue Sep 12 13:15:29 2023
Total elapsed time: 00:00:02

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 4
Number of nodes 4
Number of links 0
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
10YrCoL(2022)_Chicago_3h	10YrCoL(2022)_Chicago_3h	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S1	7.14	476.00	0.00	3.0000	10YrCoL(2022)_Chicago_3h	OF1
S2	2.55	318.75	0.00	2.0000	10YrCoL(2022)_Chicago_3h	OF2
S3	4.39	337.69	0.00	2.0000	10YrCoL(2022)_Chicago_3h	OF3
S4	0.51	113.33	0.00	2.0000	10YrCoL(2022)_Chicago_3h	OF4

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
OF1	OUTFALL	270.21	0.00	0.0	
OF2	OUTFALL	274.50	0.00	0.0	
OF3	OUTFALL	273.00	0.00	0.0	
OF4	OUTFALL	276.00	0.00	0.0	

****

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Surcharge Method ..... SLOT
Starting Date 04/14/2022 00:00:00
Ending Date 06/13/2022 03:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.759	52.051
Evaporation Loss	0.000	0.000
Infiltration Loss	0.494	33.886
Surface Runoff	0.248	16.973
Final Storage	0.018	1.243
Continuity Error (%)	-0.099	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.248	2.476
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.248	2.476
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff 10^6 ltr	Total Peak Runoff CMS	Runoff Coeff
S1	52.05	0.00	0.00	34.04	0.00	16.81	16.81	1.20	0.18	0.323
S2	52.05	0.00	0.00	33.25	0.00	17.63	17.63	0.45	0.08	0.339
S3	52.05	0.00	0.00	34.18	0.00	16.68	16.68	0.73	0.11	0.321
S4	52.05	0.00	0.00	32.46	0.00	18.48	18.48	0.09	0.02	0.355

Analysis begun on: Tue Sep 12 13:20:16 2023
Analysis ended on: Tue Sep 12 13:20:17 2023
Total elapsed time: 00:00:01

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 4
Number of nodes 4
Number of links 0
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
25YrCoL(2022)_Chicago_3h	25YrCoL(2022)_Chicago_3h	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S1	7.14	357.00	0.00	2.0000	25YrCoL(2022)_Chicago_3h	OF1
S2	2.55	150.00	0.00	2.0000	25YrCoL(2022)_Chicago_3h	OF2
S3	4.39	219.50	0.00	2.0000	25YrCoL(2022)_Chicago_3h	OF3
S4	0.51	113.33	0.00	1.5000	25YrCoL(2022)_Chicago_3h	OF4

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
OF1	OUTFALL	270.21	0.00	0.0	
OF2	OUTFALL	274.50	0.00	0.0	
OF3	OUTFALL	273.00	0.00	0.0	
OF4	OUTFALL	276.00	0.00	0.0	

****

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Surcharge Method ..... SLOT
Starting Date 04/14/2022 00:00:00
Ending Date 06/13/2022 03:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.897	61.487
Evaporation Loss	0.000	0.000
Infiltration Loss	0.547	37.461
Surface Runoff	0.333	22.835
Final Storage	0.018	1.247
Continuity Error (%)	-0.091	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.333	3.332
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.333	3.332
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff 10^6 ltr	Total Peak Runoff CMS	Runoff Coeff
S1	61.49	0.00	0.00	37.62	0.00	22.66	22.66	1.62	0.21	0.369
S2	61.49	0.00	0.00	37.22	0.00	23.10	23.10	0.59	0.08	0.376
S3	61.49	0.00	0.00	37.62	0.00	22.66	22.66	0.99	0.13	0.369
S4	61.49	0.00	0.00	34.99	0.00	25.46	25.46	0.13	0.03	0.414

Analysis begun on: Tue Sep 12 13:26:52 2023
Analysis ended on: Tue Sep 12 13:26:53 2023
Total elapsed time: 00:00:01

```
  EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)
  ---------------------------------------------------------------

  August 2023


  *************
  Element Count
  *************
  Number of rain gages ...... 1
  Number of subcatchments ... 4
  Number of nodes ........... 4
  Number of links ........... 0
  Number of pollutants ...... 0
  Number of land uses ....... 0


  ****************
  Raingage Summary
  ****************
                                                   Data       Recording
  Name                 Data Source                 Type       Interval
  ------------------------------------------------------------------------
  50YrCoL(2022)_Chicago_3h 50YrCoL(2022)_Chicago_3h       INTENSITY    5 min.


  ********************
  Subcatchment Summary
  ********************
  Name                        Area     Width   %Imperv    %Slope Rain Gage
Outlet
  ------------------------------------------------------------------------------
-------------------------
  S1                          7.14    297.50      0.00    1.5000 50YrCoL(2022)
_Chicago_3h OF1
  S2                          2.55    150.00      0.00    1.5000 50YrCoL(2022)
_Chicago_3h OF2
  S3                          4.39    219.50      0.00    1.5000 50YrCoL(2022)
_Chicago_3h OF3
  S4                          0.51    113.33      0.00    2.0000 50YrCoL(2022)
_Chicago_3h OF4


  ************
  Node Summary
  ************
                                        Invert      Max.    Ponded    External
  Name                 Type                Elev.     Depth      Area    Inflow
  ------------------------------------------------------------------------
  OF1                  OUTFALL           270.21      0.00       0.0
  OF2                  OUTFALL           274.50      0.00       0.0
  OF3                  OUTFALL           273.00      0.00       0.0
  OF4                  OUTFALL           276.00      0.00       0.0



  ********************************************************
```

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

  ***************
  Analysis Options
  ***************
  Flow Units ............... CMS
  Process Models:
    Rainfall/Runoff ........ YES
    RDII ................... NO
    Snowmelt ............... NO
    Groundwater ............ NO
    Flow Routing ........... NO
    Water Quality .......... NO
  Infiltration Method ...... CURVE_NUMBER
  Surcharge Method ......... SLOT
  Starting Date ............ 04/14/2022 00:00:00
  Ending Date .............. 06/13/2022 03:00:00
  Antecedent Dry Days ...... 0.0
  Report Time Step ......... 00:01:00
  Wet Time Step ............ 00:05:00
  Dry Time Step ............ 00:05:00


  *************************        Volume         Depth
  Runoff Quantity Continuity     hectare-m            mm
  *************************     ---------       -------
  Total Precipitation ......         1.003        68.725
  Evaporation Loss .........         0.000         0.000
  Infiltration Loss ........         0.581        39.834
  Surface Runoff ...........         0.405        27.734
  Final Storage ............         0.018         1.219
  Continuity Error (%) .....        -0.089


  *************************        Volume        Volume
  Flow Routing Continuity        hectare-m      10^6 ltr
  *************************     ---------      ---------
  Dry Weather Inflow .......         0.000         0.000
  Wet Weather Inflow .......         0.405         4.046
  Groundwater Inflow .......         0.000         0.000
  RDII Inflow ..............         0.000         0.000
  External Inflow ..........         0.000         0.000
  External Outflow .........         0.405         4.046
  Flooding Loss ............         0.000         0.000
  Evaporation Loss .........         0.000         0.000
  Exfiltration Loss ........         0.000         0.000
  Initial Stored Volume ....         0.000         0.000
  Final Stored Volume ......         0.000         0.000
  Continuity Error (%) .....         0.000


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

Subcatchment	Perv Runoff mm	Total Runoff mm	Total Precip 10^6 ltr	Total Runoff mm	Total Peak Runon CMS	Total Runoff mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Runoff Coeff
S1	27.22	27.22	1.94	68.73	0.23	0.00	0.00	40.35	0.00	0.396
S2	28.31	28.31	0.72	68.73	0.10	0.00	0.00	39.22	0.00	0.412
S3	27.82	27.82	1.22	68.73	0.16	0.00	0.00	39.75	0.00	0.405
S4	31.37	31.37	0.16	68.73	0.05	0.00	0.00	36.34	0.00	0.457

Analysis begun on: Tue Sep 12 11:23:46 2023
Analysis ended on: Tue Sep 12 11:23:47 2023
Total elapsed time: 00:00:01

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 4
Number of nodes 4
Number of links 0
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
100YrCoL(2022)_Chicago_3h	100YrCoL(2022)_Chicago_3h	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S1	7.14	297.50	0.00	1.5000	100YrCoL(2022)_Chicago_3h	OF1
S2	2.55	150.00	0.00	1.5000	100YrCoL(2022)_Chicago_3h	OF2
S3	4.39	219.50	0.00	1.5000	100YrCoL(2022)_Chicago_3h	OF3
S4	0.51	113.33	0.00	2.0000	100YrCoL(2022)_Chicago_3h	OF4

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
OF1	OUTFALL	270.21	0.00	0.0	
OF2	OUTFALL	274.50	0.00	0.0	
OF3	OUTFALL	273.00	0.00	0.0	
OF4	OUTFALL	276.00	0.00	0.0	

****

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Surcharge Method ..... SLOT
Starting Date 04/14/2022 00:00:00
Ending Date 06/13/2022 03:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	1.106	75.839
Evaporation Loss	0.000	0.000
Infiltration Loss	0.601	41.178
Surface Runoff	0.489	33.493
Final Storage	0.018	1.241
Continuity Error (%)	-0.097	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.489	4.887
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.489	4.887
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
S1	75.84	0.00	0.00	41.68	0.00	32.97	32.97	2.35	0.29	0.435
S2	75.84	0.00	0.00	40.59	0.00	34.08	34.08	0.87	0.13	0.449
S3	75.84	0.00	0.00	41.10	0.00	33.58	33.58	1.47	0.20	0.443
S4	75.84	0.00	0.00	37.71	0.00	37.18	37.18	0.19	0.06	0.490

Analysis begun on: Fri Sep 8 09:51:12 2023
Analysis ended on: Fri Sep 8 09:51:14 2023
Total elapsed time: 00:00:02

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 4
Number of nodes 4
Number of links 0
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
250YrCoL(2022)_Chicago_3h	250YrCoL(2022)_Chicago_3h	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S1	7.14	297.50	0.00	1.5000	250YrCoL(2022)_Chicago_3h	OF1
S2	2.55	150.00	0.00	1.5000	250YrCoL(2022)_Chicago_3h	OF2
S3	4.39	219.50	0.00	1.5000	250YrCoL(2022)_Chicago_3h	OF3
S4	0.51	113.33	0.00	2.0000	250YrCoL(2022)_Chicago_3h	OF4

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
OF1	OUTFALL	270.21	0.00	0.0	
OF2	OUTFALL	274.50	0.00	0.0	
OF3	OUTFALL	273.00	0.00	0.0	
OF4	OUTFALL	276.00	0.00	0.0	

****

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Surcharge Method ..... SLOT
Starting Date 04/14/2022 00:00:00
Ending Date 06/13/2022 03:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	1.264	86.611
Evaporation Loss	0.000	0.000
Infiltration Loss	0.626	42.940
Surface Runoff	0.620	42.519
Final Storage	0.018	1.250
Continuity Error (%)	-0.113	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.620	6.204
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.620	6.204
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

****
Subcatchment Runoff Summary
****

Subcatchment	Perv Runoff mm	Total Runoff mm	Total Precip 10^6 ltr	Total Runoff mm	Total Peak Runon CMS	Total Runoff mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Runoff Coeff
S1	41.98	41.98	3.00	86.61	0.40	0.00	0.00	43.45	0.00	0.485
S2	43.12	43.12	1.10	86.61	0.18	0.00	0.00	42.36	0.00	0.498
S3	42.61	42.61	1.87	86.61	0.28	0.00	0.00	42.85	0.00	0.492
S4	46.26	46.26	0.24	86.61	0.08	0.00	0.00	39.47	0.00	0.534

Analysis begun on: Fri Sep 8 09:51:12 2023
Analysis ended on: Fri Sep 8 09:51:14 2023
Total elapsed time: 00:00:02

APPENDIX B
Post Development Model


Pack Rd
Bostwick Rd
Bostwick Rd
S102
2.52ha
J1
S104
0.29ha
S101
1.09ha
C1
S103
0.15ha
S106
1.04ha
S107
1.05ha
J3
J4
S109
0.32ha
C4
S105
2.9514ha
J5
S110
0.23ha
C5
S108
1.6ha
C2
J6
S113
0.49ha
S112
0.41ha
C6
S111
0.78ha
S114
0.47ha
OF1
C7
S115
1.45ha
OF2
Legend
Junctions
Outfalls
Conduits
Subcatchments
PCSWMM Layin Post
N
100 m

POST DEVELOPMENT - MODELING DATA

CATCHMENT NO.	AREA (ha)	IMPERVIOUS (%)	IMPERVIOUS AREA (ha)	PERVIOUS LENGTH (m)	IMP. LENGTH (m)	Perv. Initial Abstraction (mm)	Imp. Initial Abstraction (mm)	PERVIOUS MANNINGS (n)	Pervious Slope (%)	Impervious Slope (%)	SCS CURVE #
101	1.09	14.3	0.155	50.0	50.0	5.0	2.0	0.25	1.0	1.0	82
102	2.52	14.3	0.360	120.0	120.0	5.0	2.0	0.25	1.0	1.0	82
103	0.15	42.9	0.066	25.0	25.0	5.0	2.0	0.25	1.0	1.0	82
104	0.29	64.3	0.183	70.0	70.0	5.0	2.0	0.25	1.0	1.0	82
105	2.95	42.9	1.265	160.0	160.0	5.0	2.0	0.25	1.0	1.0	82
106	1.04	64.3	0.671	65.0	65.0	5.0	2.0	0.25	1.0	1.0	82
107	1.05	14.3	0.150	40.0	40.0	5.0	2.0	0.25	1.0	1.0	82
108	1.30	14.3	0.185	60.0	60.0	5.0	2.0	0.25	1.0	1.0	82
109	0.32	64.3	0.203	80.0	80.0	5.0	2.0	0.25	1.0	1.0	82
110	0.23	64.3	0.149	40.0	40.0	5.0	2.0	0.25	1.0	1.0	82
111	0.78	28.6	0.223	150.0	150.0	5.0	2.0	0.25	1.0	1.0	82
112	0.41	7.1	0.029	30.0	30.0	5.0	2.0	0.25	1.0	1.0	82
113	0.49	64.3	0.313	50.0	50.0	5.0	2.0	0.25	1.0	1.0	82
114	0.47	7.1	0.034	65.0	65.0	5.0	2.0	0.25	2.0	2.0	82
115	1.45	15.3	0.222	120.0	120.0	5.0	2.0	0.25	1.0	1.0	82

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 8
Number of subcatchments ... 15
Number of nodes 9
Number of links 7
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
CofL_Chicago_3h_5yr	CofL_Chicago_3h_5yr	INTENSITY	5 min.
CofL_Chicago_3hr_100yr	CofL_Chicago_3hr_100yr	INTENSITY	5 min.
CofL_Chicago_3hr_10yr	CofL_Chicago_3hr_10yr	INTENSITY	5 min.
CofL_Chicago_3hr_250yr	CofL_Chicago_3hr_250yr	INTENSITY	5 min.
CofL_Chicago_3hr_25mm	CofL_Chicago_3hr_25mm	INTENSITY	5 min.
CofL_Chicago_3hr_25yr	CofL_Chicago_3hr_25yr	INTENSITY	5 min.
CofL_Chicago_3hr_2yr	Chicago_3h_2yr	INTENSITY	5 min.
CofL_Chicago_3hr_50yr	CofL_Chicago_3hr_50yr	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S101	1.09	218.00	14.30	1.0000	CofL_Chicago_3hr_2yr	J1
S102	2.52	210.00	14.30	1.0000	CofL_Chicago_3hr_2yr	J1
S103	0.15	60.00	42.90	1.0000	CofL_Chicago_3hr_2yr	J2
S104	0.29	41.43	64.30	1.0000	CofL_Chicago_3hr_2yr	J1
S105	2.95	184.46	42.90	1.0000	CofL_Chicago_3hr_2yr	J3
S106	1.04	160.00	64.30	1.0000	CofL_Chicago_3hr_2yr	J2
S107	1.05	262.50	14.30	1.0000	CofL_Chicago_3hr_2yr	J4
S108	1.60	266.67	14.30	1.0000	CofL_Chicago_3hr_2yr	J4
S109	0.32	40.00	64.30	0.5000	CofL_Chicago_3hr_2yr	J4
S110	0.23	57.50	64.30	1.0000	CofL_Chicago_3hr_2yr	J5
S111	0.78	52.00	28.60	1.0000	CofL_Chicago_3hr_2yr	J6
S112	0.41	136.67	7.10	1.0000	CofL_Chicago_3hr_2yr	J6
S113	0.49	98.00	64.30	1.0000	CofL_Chicago_3hr_2yr	J6
S114	0.47	72.31	7.10	2.0000	CofL_Chicago_3hr_2yr	OF1
S115	1.45	120.83	15.30	1.0000	CofL_Chicago_3hr_2yr	OF2

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
J1	JUNCTION	276.50	2.50	0.0	
J2	JUNCTION	275.50	2.50	0.0	
J3	JUNCTION	276.00	3.00	0.0	
J4	JUNCTION	274.50	3.50	0.0	
J5	JUNCTION	273.85	2.15	0.0	
J6	JUNCTION	273.65	2.35	0.0	
J7	JUNCTION	273.45	2.55	0.0	
OF1	OUTFALL	270.00	0.97	0.0	
OF2	OUTFALL	273.00	0.00	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	J2	CONDUIT	92.9	1.0761	0.0150
C2	J3	J5	CONDUIT	326.7	0.6581	0.0150
C3	J2	J5	CONDUIT	134.8	1.2239	0.0150
C4	J4	J5	CONDUIT	138.2	0.4702	0.0150
C5	J5	J6	CONDUIT	51.4	0.3893	0.0150
C6	J6	J7	CONDUIT	87.6	0.2282	0.0150
C7	J7	OF1	CONDUIT	29.9	11.6031	0.0150

****
Cross Section Summary
****

		Full	Full	Hyd.	Max.	No. of Full

Conduit	Shape	Depth	Area	Rad.	Width	Barrels	Flow
C1	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	107.99
C2	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	84.45
C3	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	115.17
C4	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	71.38
C5	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	64.95
C6	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	49.73
C7	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	354.60

****
Transect Summary
****

Transect 20m_ROW_8m_Road
Area:

0.0002	0.0010	0.0034	0.0072	0.0125
0.0192	0.0259	0.0328	0.0403	0.0487
0.0577	0.0676	0.0782	0.0895	0.1016
0.1145	0.1281	0.1424	0.1575	0.1734
0.1900	0.2074	0.2255	0.2444	0.2640
0.2844	0.3056	0.3275	0.3501	0.3735
0.3977	0.4226	0.4483	0.4747	0.5019
0.5298	0.5585	0.5879	0.6181	0.6491
0.6808	0.7132	0.7464	0.7804	0.8151
0.8506	0.8868	0.9238	0.9615	1.0000

Hrad:

0.0184	0.0252	0.0416	0.0599	0.0787
0.1088	0.1464	0.1736	0.1939	0.2141
0.2341	0.2541	0.2740	0.2939	0.3137
0.3335	0.3533	0.3730	0.3927	0.4124
0.4321	0.4517	0.4714	0.4910	0.5107
0.5303	0.5499	0.5695	0.5891	0.6087
0.6283	0.6479	0.6675	0.6871	0.7066
0.7262	0.7458	0.7654	0.7849	0.8045
0.8240	0.8436	0.8632	0.8827	0.9023
0.9218	0.9414	0.9609	0.9805	1.0000

Width:

0.0096	0.0401	0.0792	0.1182	0.1573
0.1736	0.1738	0.1852	0.2046	0.2240
0.2434	0.2628	0.2822	0.3016	0.3210
0.3404	0.3598	0.3792	0.3986	0.4180
0.4374	0.4568	0.4762	0.4956	0.5150
0.5344	0.5538	0.5732	0.5926	0.6120
0.6314	0.6508	0.6702	0.6896	0.7090
0.7284	0.7478	0.7672	0.7866	0.8060
0.8254	0.8448	0.8642	0.8836	0.9030
0.9224	0.9418	0.9612	0.9806	1.0000

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... SLOT
Starting Date 08/29/2023 00:00:00
Ending Date 09/01/2023 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00
Routing Time Step ..... 1.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 1
Head Tolerance ..... 0.001500 m

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.487	32.838
Evaporation Loss	0.000	0.000
Infiltration Loss	0.284	19.137
Surface Runoff	0.183	12.348
Final Storage	0.021	1.442
Continuity Error (%)	-0.273	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.183	1.833
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.183	1.830

```
  Flooding Loss .............         0.000        0.000
  Evaporation Loss .........          0.000        0.000
  Exfiltration Loss ........          0.000        0.000
  Initial Stored Volume ....          0.000        0.000
  Final Stored Volume ......          0.000        0.000
  Continuity Error (%) .....          0.130


  ************************
  Highest Continuity Errors
  ************************
  Node J5 (1.20%)


  ***************************
  Time-Step Critical Elements
  ***************************
  None


  ******************************
  Highest Flow Instability Indexes
  ******************************
  Link C6 (5)


  ************************
  Routing Time Step Summary
  ************************ :
  Minimum Time Step         :       0.50 sec
  Average Time Step         :       1.00 sec
  Maximum Time Step         :       1.00 sec
  Percent in Steady State           0.00
  Average Iterations per Step :     2.00
  Percent Not Converging    :       0.00
  Time Step Frequencies
      1.000 -  0.871 sec      :    100.00 %
      0.871 -  0.758 sec      :      0.00 %
      0.758 -  0.660 sec      :      0.00 %
      0.660 -  0.574 sec      :      0.00 %
      0.574 -  0.500 sec      :      0.00 %


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

  ---------------------------------------------------------------------------------
-----------------------------------------------
                             Total      Total      Total      Total     Imperv
Perv      Total       Total     Peak  Runoff
                          Precip      Runon       Evap      Infil     Runoff
Runoff     Runoff      Runoff   Runoff   Coeff
  Subcatchment                mm         mm         mm         mm         mm
mm             mm      10^6 ltr      CMS
  ---------------------------------------------------------------------------------
-----------------------------------------------
```

```
  S101                      32.84       0.00       0.00      22.57       4.43
4.55       8.97        0.10     0.05   0.273
  S102                      32.84       0.00       0.00      23.53       4.44
3.58       8.02        0.20     0.11   0.244
  S103                      32.84       0.00       0.00      14.49      13.30
3.57      16.87        0.03     0.02   0.514
  S104                      32.84       0.00       0.00       9.20      20.05
2.08      22.13        0.06     0.05   0.674
  S105                      32.84       0.00       0.00      15.59      13.38
2.48      15.86        0.47     0.31   0.483
  S106                      32.84       0.00       0.00       9.17      20.05
2.11      22.15        0.23     0.18   0.675
  S107                      32.84       0.00       0.00      22.37       4.43
4.75       9.18        0.10     0.05   0.279
  S108                      32.84       0.00       0.00      22.71       4.43
4.37       8.79        0.14     0.07   0.268
  S109                      32.84       0.00       0.00       9.37      20.05
1.92      21.96        0.07     0.05   0.669
  S110                      32.84       0.00       0.00       9.06      20.01
2.23      22.25        0.05     0.04   0.678
  S111                      32.84       0.00       0.00      19.60       8.92
2.94      11.86        0.09     0.06   0.361
  S112                      32.84       0.00       0.00      24.02       2.20
5.33       7.53        0.03     0.01   0.229
  S113                      32.84       0.00       0.00       9.12      20.03
2.18      22.21        0.11     0.09   0.676
  S114                      32.84       0.00       0.00      24.47       2.20
4.93       7.13        0.03     0.01   0.217
  S115                      32.84       0.00       0.00      23.26       4.75
3.55       8.31        0.12     0.07   0.253


  ******************
  Node Depth Summary
  ******************

  ---------------------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max     Reported
                                  Depth    Depth      HGL   Occurrence   Max Depth
Node                 Type       Meters   Meters   Meters  days hr:min       Meters
  ---------------------------------------------------------------------------------
J1                   JUNCTION     0.01     0.09   276.59        0 01:10         0.09
J2                   JUNCTION     0.01     0.10   275.60        0 01:12         0.10
J3                   JUNCTION     0.01     0.10   276.10        0 01:13         0.10
J4                   JUNCTION     0.01     0.09   274.59        0 01:11         0.09
J5                   JUNCTION     0.01     0.14   273.99        0 01:17         0.14
J6                   JUNCTION     0.02     0.18   273.83        0 01:18         0.18
J7                   JUNCTION     0.00     0.09   273.54        0 01:18         0.09
OF1                  OUTFALL      0.00     0.09   270.09        0 01:18         0.09
OF2                  OUTFALL      0.00     0.00   273.00        0 00:00         0.00


  *******************
  Node Inflow Summary
  *******************

  ---------------------------------------------------------------------------------
---------------
```

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
J1	JUNCTION	0.204	0.204	01:10	0.364	0.364	-0.110
J2	JUNCTION	0.201	0.381	01:10	0.256	0.62	-0.582
J3	JUNCTION	0.311	0.311	01:10	0.468	0.468	-1.548
J4	JUNCTION	0.163	0.163	01:10	0.307	0.307	-1.249
J5	JUNCTION	0.043	0.739	01:12	0.0512	1.46	1.214
J6	JUNCTION	0.158	0.612	01:16	0.232	1.68	-0.020
J7	JUNCTION	0.000	0.602	01:18		1.68	0.041
OF1	OUTFALL	0.010	0.605	01:18	0.0335	1.71	0.000
OF2	OUTFALL	0.065	0.065	01:10	0.12	0.12	0.000

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
OF1	13.14	0.050	0.605	1.710
OF2	7.42	0.006	0.065	0.120
System	10.28	0.056	0.629	1.830

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CHANNEL	0.188	01:10	2.62	0.00	0.10
C2	CHANNEL	0.236	01:13	2.03	0.00	0.12
C3	CHANNEL	0.344	01:12	3.74	0.00	0.12
C4	CHANNEL	0.136	01:11	1.69	0.00	0.12
C5	CHANNEL	0.538	01:17	0.61	0.01	0.17
C6	CHANNEL	0.602	01:18	17.72	0.01	0.14
C7	CHANNEL	0.601	01:18	>50.00	0.00	0.09

****
Flow Classification Summary
****

Conduit	Length	Adjusted /Actual	Fraction of Time in Flow Class: Dry	Up	Down	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.01	0.00	0.00	0.89	0.11	0.00	0.00	0.65	0.00	
C2	1.00	0.01	0.00	0.00	0.74	0.25	0.00	0.00	0.30	0.00	
C3	1.00	0.01	0.00	0.00	0.86	0.13	0.00	0.00	0.29	0.00	
C4	1.00	0.01	0.00	0.00	0.95	0.04	0.00	0.00	0.29	0.00	
C5	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.99	0.00	
C6	1.00	0.01	0.00	0.00	0.14	0.85	0.00	0.00	0.00	0.00	
C7	1.00	0.28	0.00	0.00	0.53	0.20	0.00	0.00	0.90	0.00	

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Tue Sep 12 11:48:15 2023
Analysis ended on: Tue Sep 12 11:48:17 2023

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 8
Number of subcatchments ... 15
Number of nodes 9
Number of links 7
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
CofL_Chicago_3h_5yr	CofL_Chicago_3h_5yr	INTENSITY	5 min.
CofL_Chicago_3hr_100yr	CofL_Chicago_3hr_100yr	INTENSITY	5 min.
CofL_Chicago_3hr_10yr	CofL_Chicago_3hr_10yr	INTENSITY	5 min.
CofL_Chicago_3hr_250yr	CofL_Chicago_3hr_250yr	INTENSITY	5 min.
CofL_Chicago_3hr_25mm	CofL_Chicago_3hr_25mm	INTENSITY	5 min.
CofL_Chicago_3hr_25yr	CofL_Chicago_3hr_25yr	INTENSITY	5 min.
CofL_Chicago_3hr_2yr	Chicago_3h_2yr	INTENSITY	5 min.
CofL_Chicago_3hr_50yr	CofL_Chicago_3hr_50yr	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S101	1.09	218.00	14.30	1.0000	CofL_Chicago_3h_5yr	J1
S102	2.52	210.00	14.30	1.0000	CofL_Chicago_3h_5yr	J1
S103	0.15	60.00	42.90	1.0000	CofL_Chicago_3h_5yr	J2
S104	0.29	41.43	64.30	1.0000	CofL_Chicago_3h_5yr	J1
S105	2.95	184.46	42.90	1.0000	CofL_Chicago_3h_5yr	J3
S106	1.04	160.00	64.30	1.0000	CofL_Chicago_3h_5yr	J2
S107	1.05	262.50	14.30	1.0000	CofL_Chicago_3h_5yr	J4
S108	1.60	266.67	14.30	1.0000	CofL_Chicago_3h_5yr	J4
S109	0.32	40.00	64.30	0.5000	CofL_Chicago_3h_5yr	J4
S110	0.23	57.50	64.30	1.0000	CofL_Chicago_3h_5yr	J5
S111	0.78	52.00	28.60	1.0000	CofL_Chicago_3h_5yr	J6
S112	0.41	136.67	7.10	1.0000	CofL_Chicago_3h_5yr	J6
S113	0.49	98.00	64.30	1.0000	CofL_Chicago_3h_5yr	J6
S114	0.47	72.31	7.10	2.0000	CofL_Chicago_3h_5yr	OF1
S115	1.45	120.83	15.30	1.0000	CofL_Chicago_3h_5yr	OF2

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
J1	JUNCTION	276.50	2.50	0.0	
J2	JUNCTION	275.50	2.50	0.0	
J3	JUNCTION	276.00	3.00	0.0	
J4	JUNCTION	274.50	3.50	0.0	
J5	JUNCTION	273.85	2.15	0.0	
J6	JUNCTION	273.65	2.35	0.0	
J7	JUNCTION	273.45	2.55	0.0	
OF1	OUTFALL	270.00	0.97	0.0	
OF2	OUTFALL	273.00	0.00	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	J2	CONDUIT	92.9	1.0761	0.0150
C2	J3	J5	CONDUIT	326.7	0.6581	0.0150
C3	J2	J5	CONDUIT	134.8	1.2239	0.0150
C4	J4	J5	CONDUIT	138.2	0.4702	0.0150
C5	J5	J6	CONDUIT	51.4	0.3893	0.0150
C6	J6	J7	CONDUIT	87.6	0.2282	0.0150
C7	J7	OF1	CONDUIT	29.9	11.6031	0.0150

****
Cross Section Summary
****

		Full	Full	Hyd.	Max.	No. of Full

Conduit	Shape	Depth	Area	Rad.	Width	Barrels	Flow
C1	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	107.99
C2	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	84.45
C3	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	115.17
C4	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	71.38
C5	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	64.95
C6	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	49.73
C7	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	354.60

****
Transect Summary
****

Transect 20m_ROW_8m_Road
Area:

0.0002	0.0010	0.0034	0.0072	0.0125
0.0192	0.0259	0.0328	0.0403	0.0487
0.0577	0.0676	0.0782	0.0895	0.1016
0.1145	0.1281	0.1424	0.1575	0.1734
0.1900	0.2074	0.2255	0.2444	0.2640
0.2844	0.3056	0.3275	0.3501	0.3735
0.3977	0.4226	0.4483	0.4747	0.5019
0.5298	0.5585	0.5879	0.6181	0.6491
0.6808	0.7132	0.7464	0.7804	0.8151
0.8506	0.8868	0.9238	0.9615	1.0000

Hrad:

0.0184	0.0252	0.0416	0.0599	0.0787
0.1088	0.1464	0.1736	0.1939	0.2141
0.2341	0.2541	0.2740	0.2939	0.3137
0.3335	0.3533	0.3730	0.3927	0.4124
0.4321	0.4517	0.4714	0.4910	0.5107
0.5303	0.5499	0.5695	0.5891	0.6087
0.6283	0.6479	0.6675	0.6871	0.7066
0.7262	0.7458	0.7654	0.7849	0.8045
0.8240	0.8436	0.8632	0.8827	0.9023
0.9218	0.9414	0.9609	0.9805	1.0000

Width:

0.0096	0.0401	0.0792	0.1182	0.1573
0.1736	0.1738	0.1852	0.2046	0.2240
0.2434	0.2628	0.2822	0.3016	0.3210
0.3404	0.3598	0.3792	0.3986	0.4180
0.4374	0.4568	0.4762	0.4956	0.5150
0.5344	0.5538	0.5732	0.5926	0.6120
0.6314	0.6508	0.6702	0.6896	0.7090
0.7284	0.7478	0.7672	0.7866	0.8060
0.8254	0.8448	0.8642	0.8836	0.9030
0.9224	0.9418	0.9612	0.9806	1.0000

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... SLOT
Starting Date 08/29/2023 00:00:00
Ending Date 09/01/2023 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00
Routing Time Step ..... 1.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 1
Head Tolerance ..... 0.001500 m

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.656	44.191
Evaporation Loss	0.000	0.000
Infiltration Loss	0.330	22.265
Surface Runoff	0.306	20.597
Final Storage	0.021	1.448
Continuity Error (%)	-0.271	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.306	3.057
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.305	3.054

Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.078	

****
Time-Step Critical Elements
****
None

****
Highest Flow Instability Indexes
****
Link C6 (5)

****
Routing Time Step Summary
****

Minimum Time Step	:	0.50 sec
Average Time Step	:	1.00 sec
Maximum Time Step	:	1.00 sec
Percent in Steady State		0.00
Average Iterations per Step	:	2.00
Percent Not Converging	:	0.00
Time Step Frequencies		
1.000 - 0.871 sec	:	100.00 %
0.871 - 0.758 sec	:	0.00 %
0.758 - 0.660 sec	:	0.00 %
0.660 - 0.574 sec	:	0.00 %
0.574 - 0.500 sec	:	0.00 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
S101	44.19	0.00	0.00	26.19	6.05	10.69	16.74	0.18	0.06	0.379
S102	44.19	0.00	0.00	27.45	6.07	9.39	15.45	0.39	0.14	0.350
S103	44.19	0.00	0.00	16.80	18.17	7.78	25.94	0.04	0.03	0.587
S104	44.19	0.00	0.00	10.67	27.39	6.39	24.67	0.73	0.43	0.558
S105	44.19	0.00	0.00	18.15	18.28	6.39	24.67	0.73	0.43	0.558
S106	44.19	0.00	0.00	10.64	27.38	4.71	32.09	0.33	0.25	0.726
S107	44.19	0.00	0.00	25.93	6.05	10.94	16.99	0.18	0.06	0.384
S108	44.19	0.00	0.00	26.39	6.05	10.46	16.51	0.26	0.09	0.374
S109	44.19	0.00	0.00	10.86	27.40	4.48	31.88	0.10	0.07	0.721
S110	44.19	0.00	0.00	10.50	27.33	4.86	32.19	0.07	0.06	0.728
S111	44.19	0.00	0.00	22.92	12.18	7.76	19.94	0.16	0.08	0.451
S112	44.19	0.00	0.00	27.90	3.00	12.08	15.09	0.06	0.01	0.341
S113	44.19	0.00	0.00	10.56	27.36	4.80	32.15	0.16	0.12	0.728
S114	44.19	0.00	0.00	28.32	3.00	11.59	14.59	0.07	0.01	0.330
S115	44.19	0.00	0.00	27.12	6.49	9.30	15.79	0.23	0.09	0.357

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
J1	JUNCTION	0.01	0.10	276.60	0 01:10	0.10
J2	JUNCTION	0.01	0.11	275.61	0 01:11	0.11
J3	JUNCTION	0.01	0.11	276.11	0 01:13	0.11
J4	JUNCTION	0.01	0.10	274.60	0 01:11	0.10
J5	JUNCTION	0.01	0.17	274.02	0 01:17	0.17
J6	JUNCTION	0.02	0.22	273.87	0 01:17	0.22
J7	JUNCTION	0.00	0.10	273.55	0 01:18	0.10
OF1	OUTFALL	0.00	0.10	270.10	01:18	0.10
OF2	OUTFALL	0.00	0.00	273.00	00:00	0.00

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CMS	Maximum Total Inflow CMS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent

```
  ------------------------------------------------------------------------------
----------------                                                0
  J1                    JUNCTION     0.272    0.272          01:10        0.665
0.665       -0.017                                             0
  J2                    JUNCTION     0.272    0.514          01:10        0.373
1.04       -0.314                                             0
  J3                    JUNCTION     0.429    0.429          01:10        0.728
0.728       -0.978                                             0
  J4                    JUNCTION     0.221    0.221          01:10        0.545
0.545       -0.603                                             0
  J5                    JUNCTION     0.057    1.050          01:12        0.074
2.4        0.675                                              0
  J6                    JUNCTION     0.214    0.918          01:16        0.375
2.76       -0.009                                             0
  J7                    JUNCTION     0.000    0.905          01:17
2.76        0.024                                             0
  OF1                   OUTFALL      0.014    0.916          01:18       0.0686
2.83        0.000                                             0
  OF2                   OUTFALL      0.087    0.087          01:10        0.229
0.229        0.000


  **********************
  Node Surcharge Summary
  **********************

  No nodes were surcharged.


  **********************
  Node Flooding Summary
  **********************

  No nodes were flooded.


  ************************
  Outfall Loading Summary
  ************************

  -----------------------------------------------------------
                        Flow      Avg                  Max        Total
                        Freq      Flow                 Flow       Volume
  Outfall Node          Pcnt      CMS                  CMS    10^6 ltr
  -----------------------------------------------------------
  OF1                  13.48     0.081               0.916       2.825
  OF2                   8.60     0.010               0.087       0.229
  -----------------------------------------------------------
  System               11.04     0.091               0.958       3.054


  ********************
  Link Flow Summary
  ********************

  ------------------------------------------------------------------------------
                              Maximum  Time of Max   Maximum    Max/    Max/
                               |Flow|   Occurrence   |Veloc|    Full    Full
```

```
  Link                  Type          CMS  days hr:min     m/sec    Flow   Depth
  ------------------------------------------------------------------------------
  C1                    CHANNEL     0.255       01:10      2.57    0.00    0.11
  C2                    CHANNEL     0.342       01:13      2.13    0.00    0.14
  C3                    CHANNEL     0.476       01:11      3.84    0.00    0.14
  C4                    CHANNEL     0.193       01:11      1.83    0.00    0.14
  C5                    CHANNEL     0.800       01:17      0.67    0.01    0.20
  C6                    CHANNEL     0.905       01:17     17.47    0.02    0.16
  C7                    CHANNEL     0.905       01:18     47.07    0.00    0.10


  **************************
  Flow Classification Summary
  **************************

  -------------------------------------------------------------------------------
----
                      Adjusted    ---------- Fraction of Time in Flow Class -------
---
                       /Actual         Up    Down  Sub   Sup   Up    Down  Norm
Inlet
  Conduit               Length    Dry  Dry   Dry   Crit  Crit  Crit  Crit  Ltd
Ctrl
  -------------------------------------------------------------------------------
----
  C1                      1.00   0.01  0.00  0.00  0.87  0.12  0.00  0.00  0.70
0.00
  C2                      1.00   0.01  0.00  0.00  0.75  0.24  0.00  0.00  0.31
0.00
  C3                      1.00   0.01  0.00  0.00  0.86  0.13  0.00  0.00  0.30
0.00
  C4                      1.00   0.01  0.00  0.00  0.95  0.05  0.00  0.00  0.29
0.00
  C5                      1.00   0.01  0.00  0.00  0.99  0.00  0.00  0.00  0.99
0.00
  C6                      1.00   0.01  0.00  0.00  0.15  0.84  0.00  0.00  0.00
0.00
  C7                      1.00   0.27  0.00  0.00  0.53  0.20  0.00  0.00  0.89
0.00


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

  No conduits were surcharged.


  Analysis begun on:  Tue Sep 12 11:54:28 2023
  Analysis ended on:  Tue Sep 12 11:54:30 2023
  Total elapsed time: 00:00:02
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 8
Number of subcatchments ... 15
Number of nodes 9
Number of links 7
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
CofL_Chicago_3h_5yr	CofL_Chicago_3h_5yr	INTENSITY	5 min.
CofL_Chicago_3hr_100yr	CofL_Chicago_3hr_100yr	INTENSITY	5 min.
CofL_Chicago_3hr_10yr	CofL_Chicago_3hr_10yr	INTENSITY	5 min.
CofL_Chicago_3hr_250yr	CofL_Chicago_3hr_250yr	INTENSITY	5 min.
CofL_Chicago_3hr_25mm	CofL_Chicago_3hr_25mm	INTENSITY	5 min.
CofL_Chicago_3hr_25yr	CofL_Chicago_3hr_25yr	INTENSITY	5 min.
CofL_Chicago_3hr_2yr	Chicago_3h_2yr	INTENSITY	5 min.
CofL_Chicago_3hr_50yr	CofL_Chicago_3hr_50yr	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S101	1.09	218.00	14.30	1.0000	CofL_Chicago_3hr_10yr	J1
S102	2.52	210.00	14.30	1.0000	CofL_Chicago_3hr_10yr	J1
S103	0.15	60.00	42.90	1.0000	CofL_Chicago_3hr_10yr	J2
S104	0.29	41.43	64.30	1.0000	CofL_Chicago_3hr_10yr	J1
S105	2.95	184.46	42.90	1.0000	CofL_Chicago_3hr_10yr	J3
S106	1.04	160.00	64.30	1.0000	CofL_Chicago_3hr_10yr	J2
S107	1.05	262.50	14.30	1.0000	CofL_Chicago_3hr_10yr	J4
S108	1.60	266.67	14.30	1.0000	CofL_Chicago_3hr_10yr	J4
S109	0.32	40.00	64.30	0.5000	CofL_Chicago_3hr_10yr	J4
S110	0.23	57.50	64.30	1.0000	CofL_Chicago_3hr_10yr	J5
S111	0.78	52.00	28.60	1.0000	CofL_Chicago_3hr_10yr	J6
S112	0.41	136.67	7.10	1.0000	CofL_Chicago_3hr_10yr	J6
S113	0.49	98.00	64.30	1.0000	CofL_Chicago_3hr_10yr	J6
S114	0.47	72.31	7.10	2.0000	CofL_Chicago_3hr_10yr	OF1
S115	1.45	120.83	15.30	1.0000	CofL_Chicago_3hr_10yr	OF2

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
J1	JUNCTION	276.50	2.50	0.0	
J2	JUNCTION	275.50	2.50	0.0	
J3	JUNCTION	276.00	3.00	0.0	
J4	JUNCTION	274.50	3.50	0.0	
J5	JUNCTION	273.85	2.15	0.0	
J6	JUNCTION	273.65	2.35	0.0	
J7	JUNCTION	273.45	2.55	0.0	
OF1	OUTFALL	270.00	0.97	0.0	
OF2	OUTFALL	273.00	0.00	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	J2	CONDUIT	92.9	1.0761	0.0150
C2	J3	J5	CONDUIT	326.7	0.6581	0.0150
C3	J2	J5	CONDUIT	134.8	1.2239	0.0150
C4	J4	J5	CONDUIT	138.2	0.4702	0.0150
C5	J5	J6	CONDUIT	51.4	0.3893	0.0150
C6	J6	J7	CONDUIT	87.6	0.2282	0.0150
C7	J7	OF1	CONDUIT	29.9	11.6031	0.0150

****
Cross Section Summary
****

		Full	Full	Hyd.	Max.	No. of Full

Conduit	Shape	Depth	Area	Rad.	Width	Barrels	Flow
C1	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	107.99
C2	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	84.45
C3	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	115.17
C4	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	71.38
C5	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	64.95
C6	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	49.73
C7	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	354.60

****
Transect Summary
****

Transect 20m_ROW_8m_Road
Area:

0.0002	0.0010	0.0034	0.0072	0.0125
0.0192	0.0259	0.0328	0.0403	0.0487
0.0577	0.0676	0.0782	0.0895	0.1016
0.1145	0.1281	0.1424	0.1575	0.1734
0.1900	0.2074	0.2255	0.2444	0.2640
0.2844	0.3056	0.3275	0.3501	0.3735
0.3977	0.4226	0.4483	0.4747	0.5019
0.5298	0.5585	0.5879	0.6181	0.6491
0.6808	0.7132	0.7464	0.7804	0.8151
0.8506	0.8868	0.9238	0.9615	1.0000

Hrad:

0.0184	0.0252	0.0416	0.0599	0.0787
0.1088	0.1464	0.1736	0.1939	0.2141
0.2341	0.2541	0.2740	0.2939	0.3137
0.3335	0.3533	0.3730	0.3927	0.4124
0.4321	0.4517	0.4714	0.4910	0.5107
0.5303	0.5499	0.5695	0.5891	0.6087
0.6283	0.6479	0.6675	0.6871	0.7066
0.7262	0.7458	0.7654	0.7849	0.8045
0.8240	0.8436	0.8632	0.8827	0.9023
0.9218	0.9414	0.9609	0.9805	1.0000

Width:

0.0096	0.0401	0.0792	0.1182	0.1573
0.1736	0.1738	0.1852	0.2046	0.2240
0.2434	0.2628	0.2822	0.3016	0.3210
0.3404	0.3598	0.3792	0.3986	0.4180
0.4374	0.4568	0.4762	0.4956	0.5150
0.5344	0.5538	0.5732	0.5926	0.6120
0.6314	0.6508	0.6702	0.6896	0.7090
0.7284	0.7478	0.7672	0.7866	0.8060
0.8254	0.8448	0.8642	0.8836	0.9030
0.9224	0.9418	0.9612	0.9806	1.0000

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... SLOT
Starting Date 08/29/2023 00:00:00
Ending Date 09/01/2023 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00
Routing Time Step ..... 1.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 1
Head Tolerance ..... 0.001500 m

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.773	52.051
Evaporation Loss	0.000	0.000
Infiltration Loss	0.355	23.933
Surface Runoff	0.398	26.809
Final Storage	0.022	1.458
Continuity Error (%)	-0.287	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.398	3.979
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.398	3.976

```
  Flooding Loss ............          0.000        0.000
  Evaporation Loss .........          0.000        0.000
  Exfiltration Loss ........          0.000        0.000
  Initial Stored Volume ....          0.000        0.000
  Final Stored Volume ......          0.000        0.000
  Continuity Error (%) .....          0.060


  ***************************
  Time-Step Critical Elements
  ***************************
  None


  *********************************
  Highest Flow Instability Indexes
  *********************************
  Link C6 (4)


  ************************
  Routing Time Step Summary
  ************************ :
  Minimum Time Step         :       0.50 sec
  Average Time Step         :       1.00 sec
  Maximum Time Step         :       1.00 sec
  Percent in Steady State          -0.00
  Average Iterations per Step :     2.00
  Percent Not Converging    :       0.00
  Time Step Frequencies      :
      1.000 -  0.871 sec     :     100.00 %
      0.871 -  0.758 sec     :       0.00 %
      0.758 -  0.660 sec     :       0.00 %
      0.660 -  0.574 sec     :       0.00 %
      0.574 -  0.500 sec     :       0.00 %


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

  ------------------------------------------------------------------------------------
-----------------------------------------------
                           Total      Total      Total      Total     Imperv
Perv      Total       Total     Peak  Runoff
                        Precip      Runon       Evap      Infil     Runoff
Runoff     Runoff      Runoff   Runoff   Coeff
  Subcatchment                mm         mm         mm         mm         mm
mm          mm       10^6 ltr      CMS
  ------------------------------------------------------------------------------------
-----------------------------------------------
  S101                      52.05       0.00       0.00      28.12       7.17
15.49      22.66        0.25     0.08   0.435
  S102                      52.05       0.00       0.00      29.48       7.19
14.08      21.27        0.54     0.17   0.409
  S103                      52.05       0.00       0.00      18.12      21.53
11.03      32.56        0.05     0.03   0.626
  S104                      52.05       0.00       0.00      11.48      32.45
  S105                      52.05       0.00       0.00      19.52      21.67
9.53      31.20        0.92     0.51   0.599
  S106                      52.05       0.00       0.00      11.46      32.45
6.73      39.18        0.41     0.29   0.753
  S107                      52.05       0.00       0.00      27.88       7.17
15.76      22.93        0.24     0.07   0.440
  S108                      52.05       0.00       0.00      28.37       7.17
15.24      22.42        0.36     0.11   0.431
  S109                      52.05       0.00       0.00      11.69      32.48
6.48      38.96        0.12     0.08   0.749
  S110                      52.05       0.00       0.00      11.33      32.38
6.90      39.28        0.09     0.07   0.755
  S111                      52.05       0.00       0.00      24.66      14.43
11.67      26.10        0.20     0.10   0.501
  S112                      52.05       0.00       0.00      30.02       3.56
17.32      20.88        0.09     0.02   0.401
  S113                      52.05       0.00       0.00      11.38      32.41
6.82      39.24        0.19     0.14   0.754
  S114                      52.05       0.00       0.00      30.48       3.56
16.79      20.35        0.10     0.02   0.391
  S115                      52.05       0.00       0.00      29.13       7.69
13.94      21.63        0.31     0.10   0.416


  ******************
  Node Depth Summary
  ******************

  ------------------------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max    Reported
                                  Depth    Depth      HGL   Occurrence   Max Depth
Node                 Type       Meters   Meters   Meters  days hr:min      Meters
  ------------------------------------------------------------------------------------
J1                   JUNCTION     0.01     0.10   276.60        01:10        0.10
J2                   JUNCTION     0.01     0.12   275.62        01:11        0.12
J3                   JUNCTION     0.01     0.12   276.12        01:12        0.12
J4                   JUNCTION     0.01     0.11   274.61        01:12        0.11
J5                   JUNCTION     0.01     0.18   274.03        01:17        0.18
J6                   JUNCTION     0.02     0.24   273.89        01:17        0.24
J7                   JUNCTION     0.00     0.11   273.56        01:18        0.11
OF1                  OUTFALL      0.00     0.11   270.11        01:18        0.11
OF2                  OUTFALL      0.00     0.00   273.00        00:00        0.00


  *******************
  Node Inflow Summary
  *******************

  ------------------------------------------------------------------------------------
----------------
                                Maximum  Maximum                  Lateral
Total        Flow
                                Lateral    Total  Time of Max      Inflow
Inflow     Balance
                                 Inflow   Inflow   Occurrence      Volume
Volume       Error
  Node               Type           CMS      CMS  days hr:min    10^6 ltr    10^6
ltr     Percent
```

J1	JUNCTION	0.324	0.324	01:10	0.897	0.897	0.007	0
J2	JUNCTION	0.321	0.618	01:10	0.456	1.35	-0.252	0
J3	JUNCTION	0.509	0.509	01:10	0.921	0.921	-0.802	0
J4	JUNCTION	0.267	0.267	01:10	0.724	0.724	-0.446	0
J5	JUNCTION	0.067	1.288	01:12	0.0903	3.1	0.526	0
J6	JUNCTION	0.254	1.161	01:16	0.481	3.57	-0.007	0
J7	JUNCTION	0.000	1.147	01:17		3.57	0.019	0
OF1	OUTFALL	0.019	1.166	01:18	0.0957	3.66	0.000	0
OF2	OUTFALL	0.103	0.103	01:10	0.314	0.314	0.000	

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
OF1	13.76	0.103	1.166	3.663
OF2	9.26	0.013	0.103	0.314
System	11.51	0.116	1.223	3.976

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CHANNEL	0.309	01:10	2.05	0.00	0.12
C2	CHANNEL	0.419	01:12	2.45	0.00	0.16
C3	CHANNEL	0.579	01:11	3.31	0.01	0.15
C4	CHANNEL	0.241	01:12	2.94	0.00	0.15
C5	CHANNEL	1.008	01:17	0.71	0.02	0.22
C6	CHANNEL	1.147	01:17	17.48	0.02	0.18
C7	CHANNEL	1.147	01:18	>50.00	0.00	0.11

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.01	0.00	0.00	0.85	0.14	0.00	0.00	0.66	0.00
C2	1.00	0.01	0.00	0.00	0.75	0.24	0.00	0.00	0.31	0.00
C3	1.00	0.01	0.00	0.00	0.87	0.13	0.00	0.00	0.30	0.00
C4	1.00	0.01	0.00	0.00	0.95	0.04	0.00	0.00	0.29	0.00
C5	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.99	0.00
C6	1.00	0.01	0.00	0.00	0.15	0.84	0.00	0.00	0.00	0.00
C7	1.00	0.27	0.00	0.00	0.53	0.20	0.00	0.00	0.89	0.00

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Tue Sep 12 11:55:45 2023
Analysis ended on: Tue Sep 12 11:55:48 2023
Total elapsed time: 00:00:03

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 8
Number of subcatchments ... 15
Number of nodes 9
Number of links 7
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
CofL_Chicago_3h_5yr	CofL_Chicago_3h_5yr	INTENSITY	5 min.
CofL_Chicago_3hr_100yr	CofL_Chicago_3hr_100yr	INTENSITY	5 min.
CofL_Chicago_3hr_10yr	CofL_Chicago_3hr_10yr	INTENSITY	5 min.
CofL_Chicago_3hr_250yr	CofL_Chicago_3hr_250yr	INTENSITY	5 min.
CofL_Chicago_3hr_25mm	CofL_Chicago_3hr_25mm	INTENSITY	5 min.
CofL_Chicago_3hr_25yr	CofL_Chicago_3hr_25yr	INTENSITY	5 min.
CofL_Chicago_3hr_2yr	Chicago_3h_2yr	INTENSITY	5 min.
CofL_Chicago_3hr_50yr	CofL_Chicago_3hr_50yr	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S101	1.09	218.00	14.30	1.0000	CofL_Chicago_3hr_25yr	J1
S102	2.52	210.00	14.30	1.0000	CofL_Chicago_3hr_25yr	J1
S103	0.15	60.00	42.90	1.0000	CofL_Chicago_3hr_25yr	J2
S104	0.29	41.43	64.30	1.0000	CofL_Chicago_3hr_25yr	J1
S105	2.95	184.46	42.90	1.0000	CofL_Chicago_3hr_25yr	J3
S106	1.04	160.00	64.30	1.0000	CofL_Chicago_3hr_25yr	J2
S107	1.05	262.50	14.30	1.0000	CofL_Chicago_3hr_25yr	J4
S108	1.60	266.67	14.30	1.0000	CofL_Chicago_3hr_25yr	J4
S109	0.32	40.00	64.30	0.5000	CofL_Chicago_3hr_25yr	J4
S110	0.23	57.50	64.30	1.0000	CofL_Chicago_3hr_25yr	J5
S111	0.78	52.00	28.60	1.0000	CofL_Chicago_3hr_25yr	J6
S112	0.41	136.67	7.10	1.0000	CofL_Chicago_3hr_25yr	J6
S113	0.49	98.00	64.30	1.0000	CofL_Chicago_3hr_25yr	J6
S114	0.47	72.31	7.10	2.0000	CofL_Chicago_3hr_25yr	OF1
S115	1.45	120.83	15.30	1.0000	CofL_Chicago_3hr_25yr	OF2

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
J1	JUNCTION	276.50	2.50	0.0	
J2	JUNCTION	275.50	2.50	0.0	
J3	JUNCTION	276.00	3.00	0.0	
J4	JUNCTION	274.50	3.50	0.0	
J5	JUNCTION	273.85	2.15	0.0	
J6	JUNCTION	273.65	2.35	0.0	
J7	JUNCTION	273.45	2.55	0.0	
OF1	OUTFALL	270.00	0.97	0.0	
OF2	OUTFALL	273.00	0.00	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	J2	CONDUIT	92.9	1.0761	0.0150
C2	J3	J5	CONDUIT	326.7	0.6581	0.0150
C3	J2	J5	CONDUIT	134.8	1.2239	0.0150
C4	J4	J5	CONDUIT	138.2	0.4702	0.0150
C5	J5	J6	CONDUIT	51.4	0.3893	0.0150
C6	J6	J7	CONDUIT	87.6	0.2282	0.0150
C7	J7	OF1	CONDUIT	29.9	11.6031	0.0150

****
Cross Section Summary
****

		Full	Full	Hyd.	Max.	No. of Full

Conduit	Shape	Depth	Area	Rad.	Width	Barrels	Flow
C1	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	107.99
C2	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	84.45
C3	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	115.17
C4	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	71.38
C5	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	64.95
C6	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	49.73
C7	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	354.60

****
Transect Summary
****

Transect 20m_ROW_8m_Road
Area:

0.0002	0.0010	0.0034	0.0072	0.0125
0.0192	0.0259	0.0328	0.0403	0.0487
0.0577	0.0676	0.0782	0.0895	0.1016
0.1145	0.1281	0.1424	0.1575	0.1734
0.1900	0.2074	0.2255	0.2444	0.2640
0.2844	0.3056	0.3275	0.3501	0.3735
0.3977	0.4226	0.4483	0.4747	0.5019
0.5298	0.5585	0.5879	0.6181	0.6491
0.6808	0.7132	0.7464	0.7804	0.8151
0.8506	0.8868	0.9238	0.9615	1.0000

Hrad:

0.0184	0.0252	0.0416	0.0599	0.0787
0.1088	0.1464	0.1736	0.1939	0.2141
0.2341	0.2541	0.2740	0.2939	0.3137
0.3335	0.3533	0.3730	0.3927	0.4124
0.4321	0.4517	0.4714	0.4910	0.5107
0.5303	0.5499	0.5695	0.5891	0.6087
0.6283	0.6479	0.6675	0.6871	0.7066
0.7262	0.7458	0.7654	0.7849	0.8045
0.8240	0.8436	0.8632	0.8827	0.9023
0.9218	0.9414	0.9609	0.9805	1.0000

Width:

0.0096	0.0401	0.0792	0.1182	0.1573
0.1736	0.1738	0.1852	0.2046	0.2240
0.2434	0.2628	0.2822	0.3016	0.3210
0.3404	0.3598	0.3792	0.3986	0.4180
0.4374	0.4568	0.4762	0.4956	0.5150
0.5344	0.5538	0.5732	0.5926	0.6120
0.6314	0.6508	0.6702	0.6896	0.7090
0.7284	0.7478	0.7672	0.7866	0.8060
0.8254	0.8448	0.8642	0.8836	0.9030
0.9224	0.9418	0.9612	0.9806	1.0000

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... SLOT
Starting Date 08/29/2023 00:00:00
Ending Date 09/01/2023 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00
Routing Time Step ..... 1.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 1
Head Tolerance ..... 0.001500 m

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.913	61.487
Evaporation Loss	0.000	0.000
Infiltration Loss	0.380	25.629
Surface Runoff	0.514	34.603
Final Storage	0.022	1.453
Continuity Error (%)	-0.323	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.514	5.136
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.513	5.133

```
  Flooding Loss ............          0.000        0.000
  Evaporation Loss .........          0.000        0.000
  Exfiltration Loss ........          0.000        0.000
  Initial Stored Volume ....          0.000        0.000
  Final Stored Volume ......          0.000        0.000
  Continuity Error (%) .....          0.046


  **************************
  Time-Step Critical Elements
  **************************
  None


  *******************************
  Highest Flow Instability Indexes
  *******************************
  Link C6 (5)


  ************************
  Routing Time Step Summary
  ************************ :
  Minimum Time Step         :       0.50 sec
  Average Time Step         :       1.00 sec
  Maximum Time Step         :       1.00 sec
  Percent in Steady State           0.00
  Average Iterations per Step :     2.00
  Percent Not Converging    :       0.00
  Time Step Frequencies       :
      1.000 -  0.871 sec      :     100.00 %
      0.871 -  0.758 sec      :       0.00 %
      0.758 -  0.660 sec      :       0.00 %
      0.660 -  0.574 sec      :       0.00 %
      0.574 -  0.500 sec      :       0.00 %


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

  ---------------------------------------------------------------------------------
-----------------------------------------------
                             Total      Total      Total      Total     Imperv
Perv      Total       Total     Peak  Runoff
                          Precip      Runon       Evap      Infil     Runoff
Runoff     Runoff      Runoff   Runoff   Coeff
  Subcatchment                mm         mm         mm         mm         mm
mm          mm      10^6 ltr      CMS
  ---------------------------------------------------------------------------------
-----------------------------------------------
  S101                      61.49       0.00       0.00      30.16       8.53
21.62      30.14        0.33     0.10   0.490
  S102                      61.49       0.00       0.00      31.55       8.54
20.14      28.68        0.72     0.21   0.466
  S103                      61.49       0.00       0.00      19.44      25.59
15.17      40.76        0.06     0.04   0.663
  S104                      61.49       0.00       0.00      12.32      38.55
  S105                      61.49       0.00       0.00      20.87      25.75
13.58      39.32        1.16     0.62   0.640
  S106                      61.49       0.00       0.00      12.30      38.54
9.30       47.84        0.50     0.35   0.778
  S107                      61.49       0.00       0.00      29.87       8.53
21.90      30.43        0.32     0.10   0.495
  S108                      61.49       0.00       0.00      30.39       8.53
21.36      29.89        0.48     0.14   0.486
  S109                      61.49       0.00       0.00      12.54      38.59
9.04       47.63        0.15     0.10   0.775
  S110                      61.49       0.00       0.00      12.15      38.46
9.49       47.95        0.11     0.08   0.780
  S111                      61.49       0.00       0.00      26.38      17.14
16.71      33.85        0.26     0.12   0.551
  S112                      61.49       0.00       0.00      32.19       4.23
24.00      28.23        0.12     0.03   0.459
  S113                      61.49       0.00       0.00      12.22      38.50
9.41       47.91        0.23     0.17   0.779
  S114                      61.49       0.00       0.00      32.69       4.23
23.44      27.67        0.13     0.03   0.450
  S115                      61.49       0.00       0.00      31.18       9.14
19.93      29.07        0.42     0.13   0.473


  *****************
  Node Depth Summary
  *****************

  ---------------------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max    Reported
                                  Depth    Depth      HGL   Occurrence   Max Depth
  Node                Type       Meters   Meters   Meters  days hr:min      Meters
  ---------------------------------------------------------------------------------
  J1                  JUNCTION     0.01     0.11   276.61        01:10        0.11
  J2                  JUNCTION     0.01     0.13   275.63        01:11        0.13
  J3                  JUNCTION     0.01     0.13   276.13        01:12        0.13
  J4                  JUNCTION     0.01     0.12   274.62        01:12        0.12
  J5                  JUNCTION     0.02     0.21   274.06        01:16        0.21
  J6                  JUNCTION     0.02     0.27   273.92        01:17        0.27
  J7                  JUNCTION     0.00     0.12   273.57        01:18        0.12
  OF1                 OUTFALL      0.00     0.11   270.11        01:18        0.11
  OF2                 OUTFALL      0.00     0.00   273.00        00:00        0.00


  ******************
  Node Inflow Summary
  ******************

  ---------------------------------------------------------------------------------
----------------
                                Maximum  Maximum                  Lateral
Total        Flow
                                Lateral    Total  Time of Max      Inflow
Inflow     Balance
                                 Inflow   Inflow   Occurrence      Volume
Volume       Error
  Node                Type          CMS      CMS  days hr:min    10^6 ltr    10^6
ltr     Percent
```

```
  ---------------------------------------------------------------------------
----------------                                                        0
  J1                JUNCTION     0.401    0.401        01:10        1.19
1.19       0.019                                                     0
  J2                JUNCTION     0.389    0.760        01:10       0.559
1.75      -0.215                                                     0
  J3                JUNCTION     0.618    0.618        01:10        1.16
1.16      -0.686                                                     0
  J4                JUNCTION     0.338    0.338        01:10        0.95
0.95      -0.354                                                     0
  J5                JUNCTION     0.081    1.618        01:12        0.11
3.98       0.431                                                     0
  J6                JUNCTION     0.311    1.501        01:16       0.615
4.58      -0.006                                                     0
  J7                JUNCTION     0.000    1.485        01:17
4.58       0.015                                                     0
  OF1               OUTFALL      0.031    1.515        01:18        0.13
4.71       0.000                                                     0
  OF2               OUTFALL      0.126    0.126        01:10       0.421
0.421      0.000
```

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
OF1	13.98	0.130	1.515	4.712
OF2	9.77	0.017	0.126	0.421
System	11.88	0.147	1.596	5.133

****
Link Flow Summary
****

```
  ---------------------------------------------------------------------------
                            Maximum  Time of Max   Maximum    Max/    Max/
                             |Flow|   Occurrence   |Veloc|    Full    Full
```

```
Link                Type          CMS  days hr:min     m/sec    Flow   Depth
  ---------------------------------------------------------------------------
C1                  CHANNEL     0.385       01:10      2.24    0.00    0.12
C2                  CHANNEL     0.521       01:12      1.98    0.01    0.17
C3                  CHANNEL     0.721       01:11      3.70    0.01    0.17
C4                  CHANNEL     0.313       01:12      1.70    0.00    0.16
C5                  CHANNEL     1.300       01:17      0.75    0.02    0.24
C6                  CHANNEL     1.485       01:17     17.22    0.03    0.20
C7                  CHANNEL     1.485       01:18    >50.00    0.00    0.12
```

****
Flow Classification Summary
****

```
  ---------------------------------------------------------------------------
----
                    Adjusted    ---------- Fraction of Time in Flow Class -------
---
                     /Actual         Up    Down  Sub   Sup   Up    Down  Norm
Inlet
  Conduit             Length    Dry  Dry   Dry   Crit  Crit  Crit  Crit  Ltd
Ctrl
  ---------------------------------------------------------------------------
----
  C1                    1.00   0.01  0.00  0.00  0.85  0.14  0.00  0.00  0.66
0.00
  C2                    1.00   0.01  0.00  0.00  0.76  0.24  0.00  0.00  0.31
0.00
  C3                    1.00   0.01  0.00  0.00  0.87  0.13  0.00  0.00  0.30
0.00
  C4                    1.00   0.01  0.00  0.00  0.95  0.04  0.00  0.00  0.29
0.00
  C5                    1.00   0.01  0.00  0.00  0.99  0.00  0.00  0.00  0.99
0.00
  C6                    1.00   0.01  0.00  0.00  0.15  0.84  0.00  0.00  0.00
0.00
  C7                    1.00   0.28  0.00  0.00  0.52  0.20  0.00  0.00  0.88
0.00
```

****
Conduit Surcharge Summary
****

No conduits were surcharged.

```
  Analysis begun on:  Tue Sep 12 11:56:54 2023
  Analysis ended on:  Tue Sep 12 11:56:56 2023
  Total elapsed time: 00:00:02
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 8
Number of subcatchments ... 15
Number of nodes 9
Number of links 7
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
CofL_Chicago_3h_5yr	CofL_Chicago_3h_5yr	INTENSITY	5 min.
CofL_Chicago_3hr_100yr	CofL_Chicago_3hr_100yr	INTENSITY	5 min.
CofL_Chicago_3hr_10yr	CofL_Chicago_3hr_10yr	INTENSITY	5 min.
CofL_Chicago_3hr_250yr	CofL_Chicago_3hr_250yr	INTENSITY	5 min.
CofL_Chicago_3hr_25mm	CofL_Chicago_3hr_25mm	INTENSITY	5 min.
CofL_Chicago_3hr_25yr	CofL_Chicago_3hr_25yr	INTENSITY	5 min.
CofL_Chicago_3hr_2yr	Chicago_3h_2yr	INTENSITY	5 min.
CofL_Chicago_3hr_50yr	CofL_Chicago_3hr_50yr	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S101	1.09	218.00	14.30	1.0000	CofL_Chicago_3hr_50yr	J1
S102	2.52	210.00	14.30	1.0000	CofL_Chicago_3hr_50yr	J1
S103	0.15	60.00	42.90	1.0000	CofL_Chicago_3hr_50yr	J2
S104	0.29	41.43	64.30	1.0000	CofL_Chicago_3hr_50yr	J1
S105	2.95	184.46	42.90	1.0000	CofL_Chicago_3hr_50yr	J3
S106	1.04	160.00	64.30	1.0000	CofL_Chicago_3hr_50yr	J2
S107	1.05	262.50	14.30	1.0000	CofL_Chicago_3hr_50yr	J4
S108	1.60	266.67	14.30	1.0000	CofL_Chicago_3hr_50yr	J4
S109	0.32	40.00	64.30	0.5000	CofL_Chicago_3hr_50yr	J4
S110	0.23	57.50	64.30	1.0000	CofL_Chicago_3hr_50yr	J5
S111	0.78	52.00	28.60	1.0000	CofL_Chicago_3hr_50yr	J6
S112	0.41	136.67	7.10	1.0000	CofL_Chicago_3hr_50yr	J6
S113	0.49	98.00	64.30	1.0000	CofL_Chicago_3hr_50yr	J6
S114	0.47	72.31	7.10	2.0000	CofL_Chicago_3hr_50yr	OF1
S115	1.45	120.83	15.30	1.0000	CofL_Chicago_3hr_50yr	OF2

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
J1	JUNCTION	276.50	2.50	0.0	
J2	JUNCTION	275.50	2.50	0.0	
J3	JUNCTION	276.00	3.00	0.0	
J4	JUNCTION	274.50	3.50	0.0	
J5	JUNCTION	273.85	2.15	0.0	
J6	JUNCTION	273.65	2.35	0.0	
J7	JUNCTION	273.45	2.55	0.0	
OF1	OUTFALL	270.00	0.97	0.0	
OF2	OUTFALL	273.00	0.00	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	J2	CONDUIT	92.9	1.0761	0.0150
C2	J3	J5	CONDUIT	326.7	0.6581	0.0150
C3	J2	J5	CONDUIT	134.8	1.2239	0.0150
C4	J4	J5	CONDUIT	138.2	0.4702	0.0150
C5	J5	J6	CONDUIT	51.4	0.3893	0.0150
C6	J6	J7	CONDUIT	87.6	0.2282	0.0150
C7	J7	OF1	CONDUIT	29.9	11.6031	0.0150

****
Cross Section Summary
****

		Full	Full	Hyd.	Max.	No. of Full

Conduit	Shape	Depth	Area	Rad.	Width	Barrels	Flow
C1	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	107.99
C2	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	84.45
C3	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	115.17
C4	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	71.38
C5	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	64.95
C6	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	49.73
C7	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	354.60

****
Transect Summary
****

Transect 20m_ROW_8m_Road
Area:

0.0002	0.0010	0.0034	0.0072	0.0125
0.0192	0.0259	0.0328	0.0403	0.0487
0.0577	0.0676	0.0782	0.0895	0.1016
0.1145	0.1281	0.1424	0.1575	0.1734
0.1900	0.2074	0.2255	0.2444	0.2640
0.2844	0.3056	0.3275	0.3501	0.3735
0.3977	0.4226	0.4483	0.4747	0.5019
0.5298	0.5585	0.5879	0.6181	0.6491
0.6808	0.7132	0.7464	0.7804	0.8151
0.8506	0.8868	0.9238	0.9615	1.0000

Hrad:

0.0184	0.0252	0.0416	0.0599	0.0787
0.1088	0.1464	0.1736	0.1939	0.2141
0.2341	0.2541	0.2740	0.2939	0.3137
0.3335	0.3533	0.3730	0.3927	0.4124
0.4321	0.4517	0.4714	0.4910	0.5107
0.5303	0.5499	0.5695	0.5891	0.6087
0.6283	0.6479	0.6675	0.6871	0.7066
0.7262	0.7458	0.7654	0.7849	0.8045
0.8240	0.8436	0.8632	0.8827	0.9023
0.9218	0.9414	0.9609	0.9805	1.0000

Width:

0.0096	0.0401	0.0792	0.1182	0.1573
0.1736	0.1738	0.1852	0.2046	0.2240
0.2434	0.2628	0.2822	0.3016	0.3210
0.3404	0.3598	0.3792	0.3986	0.4180
0.4374	0.4568	0.4762	0.4956	0.5150
0.5344	0.5538	0.5732	0.5926	0.6120
0.6314	0.6508	0.6702	0.6896	0.7090
0.7284	0.7478	0.7672	0.7866	0.8060
0.8254	0.8448	0.8642	0.8836	0.9030
0.9224	0.9418	0.9612	0.9806	1.0000

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... SLOT
Starting Date 08/29/2023 00:00:00
Ending Date 09/01/2023 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00
Routing Time Step ..... 1.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 1
Head Tolerance ..... 0.001500 m

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	1.020	68.725
Evaporation Loss	0.000	0.000
Infiltration Loss	0.397	26.758
Surface Runoff	0.604	40.726
Final Storage	0.022	1.467
Continuity Error (%)	-0.328	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.604	6.044
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.604	6.042

```
  Flooding Loss ............          0.000        0.000
  Evaporation Loss .........          0.000        0.000
  Exfiltration Loss ........          0.000        0.000
  Initial Stored Volume ....          0.000        0.000
  Final Stored Volume ......          0.000        0.000
  Continuity Error (%) .....          0.039


  **************************
  Time-Step Critical Elements
  **************************
  None


  *********************************
  Highest Flow Instability Indexes
  *********************************
  Link C6 (4)


  ************************
  Routing Time Step Summary
  ************************ :
  Minimum Time Step         :       0.50 sec
  Average Time Step         :       1.00 sec
  Maximum Time Step         :       1.00 sec
  Percent in Steady State           0.00
  Average Iterations per Step :     2.00
  Percent Not Converging    :       0.00
  Time Step Frequencies       :
      1.000 -  0.871 sec      :     100.00 %
      0.871 -  0.758 sec      :       0.00 %
      0.758 -  0.660 sec      :       0.00 %
      0.660 -  0.574 sec      :       0.00 %
      0.574 -  0.500 sec      :       0.00 %


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

  ---------------------------------------------------------------------------------
-----------------------------------------------
                             Total      Total      Total      Total     Imperv
Perv      Total       Total     Peak  Runoff
                          Precip      Runon       Evap      Infil     Runoff
Runoff     Runoff      Runoff   Runoff   Coeff
  Subcatchment                mm         mm         mm         mm         mm
mm          mm       10^6 ltr      CMS
  ---------------------------------------------------------------------------------
-----------------------------------------------
  S101                      68.73       0.00       0.00      31.49       9.55
26.50      36.06        0.39     0.12   0.525
  S102                      68.73       0.00       0.00      32.92       9.57
24.96      34.54        0.87     0.24   0.503
  S103                      68.73       0.00       0.00      20.33      28.68
18.47      47.15        0.07     0.04   0.686
  S104                      68.73       0.00       0.00      12.88      43.22
  S105                      68.73       0.00       0.00      21.78      28.87
16.80      45.67        1.35     0.70   0.665
  S106                      68.73       0.00       0.00      12.85      43.21
11.35      54.56        0.57     0.40   0.794
  S107                      68.73       0.00       0.00      31.26       9.55
26.80      36.35        0.38     0.12   0.529
  S108                      68.73       0.00       0.00      31.72       9.56
26.24      35.79        0.57     0.17   0.521
  S109                      68.73       0.00       0.00      13.09      43.27
11.07      54.35        0.17     0.11   0.791
  S110                      68.73       0.00       0.00      12.71      43.11
11.55      54.66        0.13     0.09   0.795
  S111                      68.73       0.00       0.00      27.52      19.22
20.73      39.94        0.31     0.13   0.581
  S112                      68.73       0.00       0.00      33.63       4.74
29.32      34.06        0.14     0.04   0.496
  S113                      68.73       0.00       0.00      12.78      43.16
11.46      54.62        0.27     0.19   0.795
  S114                      68.73       0.00       0.00      34.13       4.74
28.73      33.48        0.16     0.04   0.487
  S115                      68.73       0.00       0.00      32.54      10.24
24.70      34.94        0.51     0.14   0.508


  ******************
  Node Depth Summary
  ******************

  ------------------------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max    Reported
                                  Depth    Depth      HGL   Occurrence   Max Depth
  Node                Type       Meters   Meters   Meters  days hr:min      Meters
  ------------------------------------------------------------------------------------
  J1                  JUNCTION     0.01     0.11   276.61       01:10        0.11
  J2                  JUNCTION     0.01     0.14   275.64       01:11        0.14
  J3                  JUNCTION     0.01     0.14   276.14       01:12        0.13
  J4                  JUNCTION     0.01     0.12   274.62       01:12        0.12
  J5                  JUNCTION     0.02     0.22   274.07       01:16        0.22
  J6                  JUNCTION     0.03     0.29   273.94       01:17        0.29
  J7                  JUNCTION     0.01     0.12   273.57       01:17        0.12
  OF1                 OUTFALL      0.00     0.12   270.12       01:17        0.12
  OF2                 OUTFALL      0.00     0.00   273.00       00:00        0.00


  ******************
  Node Inflow Summary
  ******************

  ------------------------------------------------------------------------------------
----------------
                                Maximum  Maximum                  Lateral
Total        Flow
                                Lateral    Total  Time of Max      Inflow
Inflow     Balance
                                 Inflow   Inflow   Occurrence      Volume
Volume       Error
  Node                Type          CMS      CMS  days hr:min    10^6 ltr    10^6
ltr     Percent
```

```
  ---------------------------------------------------------------------------
----------------                                          0
  J1                  JUNCTION     0.465    0.465        01:10        1.42
1.42       0.021                                         0
  J2                  JUNCTION     0.442    0.875        01:10       0.638
2.06      -0.202                                         0
  J3                  JUNCTION     0.702    0.702        01:10        1.35
1.35      -0.657                                         0
  J4                  JUNCTION     0.398    0.398        01:10        1.13
1.13      -0.315                                         0
  J5                  JUNCTION     0.092    1.883        01:11       0.126
4.68       0.397                                         0
  J6                  JUNCTION     0.358    1.775        01:16       0.719
5.38      -0.005                                         0
  J7                  JUNCTION     0.000    1.758        01:17
5.38       0.014                                         0
  OF1                 OUTFALL      0.041    1.797        01:17       0.157
5.54       0.000                                         0
  OF2                 OUTFALL      0.145    0.145        01:10       0.507
0.507      0.000


  **********************
  Node Surcharge Summary
  **********************

  No nodes were surcharged.


  **********************
  Node Flooding Summary
  **********************

  No nodes were flooded.


  ************************
  Outfall Loading Summary
  ************************

  -----------------------------------------------------------
                        Flow      Avg                  Max       Total
                        Freq      Flow                 Flow      Volume
  Outfall Node           Pcnt      CMS                  CMS   10^6 ltr
  -----------------------------------------------------------
  OF1                   14.17     0.151                1.797       5.535
  OF2                   10.06     0.019                0.145       0.507
  -----------------------------------------------------------
  System                12.11     0.170                1.898       6.042


  ********************
  Link Flow Summary
  ********************

  ---------------------------------------------------------------------------
                              Maximum  Time of Max   Maximum    Max/    Max/
                               |Flow|   Occurrence   |Veloc|    Full    Full
```

```
  Link                Type          CMS  days hr:min     m/sec    Flow   Depth
  ---------------------------------------------------------------------------
  C1                  CHANNEL     0.449       01:10      1.28    0.00    0.13
  C2                  CHANNEL     0.599       01:12      1.93    0.01    0.18
  C3                  CHANNEL     0.834       01:11      2.77    0.01    0.18
  C4                  CHANNEL     0.376       01:12      2.77    0.01    0.18
  C5                  CHANNEL     1.536       01:16      2.72    0.02    0.26
  C6                  CHANNEL     1.758       01:17     17.11    0.04    0.21
  C7                  CHANNEL     1.757       01:17    >50.00    0.00    0.12


  **************************
  Flow Classification Summary
  **************************

  -------------------------------------------------------------------------------
                     Adjusted    ---------- Fraction of Time in Flow Class -------
                      /Actual         Up    Down  Sub   Sup   Up    Down  Norm
Inlet
  Conduit              Length    Dry  Dry   Dry   Crit  Crit  Crit  Crit  Ltd
Ctrl
  -------------------------------------------------------------------------------
  C1                     1.00   0.00  0.00  0.00  0.85  0.15  0.00  0.00  0.70
0.00
  C2                     1.00   0.00  0.00  0.00  0.76  0.24  0.00  0.00  0.31
0.00
  C3                     1.00   0.00  0.00  0.00  0.87  0.13  0.00  0.00  0.30
0.00
  C4                     1.00   0.00  0.00  0.00  0.95  0.04  0.00  0.00  0.29
0.00
  C5                     1.00   0.00  0.00  0.00  0.99  0.00  0.00  0.00  0.99
0.00
  C6                     1.00   0.00  0.00  0.00  0.15  0.84  0.00  0.00  0.00
0.00
  C7                     1.00   0.27  0.00  0.00  0.53  0.20  0.00  0.00  0.88
0.00


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

  No conduits were surcharged.


  Analysis begun on:  Tue Sep 12 12:48:43 2023
  Analysis ended on:  Tue Sep 12 12:48:45 2023
  Total elapsed time: 00:00:02
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 8
Number of subcatchments ... 15
Number of nodes 9
Number of links 7
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
CofL_Chicago_3h_5yr	CofL_Chicago_3h_5yr	INTENSITY	5 min.
CofL_Chicago_3hr_100yr	CofL_Chicago_3hr_100yr	INTENSITY	5 min.
CofL_Chicago_3hr_10yr	CofL_Chicago_3hr_10yr	INTENSITY	5 min.
CofL_Chicago_3hr_250yr	CofL_Chicago_3hr_250yr	INTENSITY	5 min.
CofL_Chicago_3hr_25mm	CofL_Chicago_3hr_25mm	INTENSITY	5 min.
CofL_Chicago_3hr_25yr	CofL_Chicago_3hr_25yr	INTENSITY	5 min.
CofL_Chicago_3hr_2yr	Chicago_3h_2yr	INTENSITY	5 min.
CofL_Chicago_3hr_50yr	CofL_Chicago_3hr_50yr	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S101	1.09	218.00	14.30	1.0000	CofL_Chicago_3hr_100yr	J1
S102	2.52	210.00	14.30	1.0000	CofL_Chicago_3hr_100yr	J1
S103	0.15	60.00	42.90	1.0000	CofL_Chicago_3hr_100yr	J2
S104	0.29	41.43	64.30	1.0000	CofL_Chicago_3hr_100yr	J1
S105	2.95	184.46	42.90	1.0000	CofL_Chicago_3hr_100yr	J3
S106	1.04	160.00	64.30	1.0000	CofL_Chicago_3hr_100yr	J2
S107	1.05	262.50	14.30	1.0000	CofL_Chicago_3hr_100yr	J4
S108	1.60	266.67	14.30	1.0000	CofL_Chicago_3hr_100yr	J4
S109	0.32	40.00	64.30	0.5000	CofL_Chicago_3hr_100yr	J4
S110	0.23	57.50	64.30	1.0000	CofL_Chicago_3hr_100yr	J5
S111	0.78	52.00	28.60	1.0000	CofL_Chicago_3hr_100yr	J6
S112	0.41	136.67	7.10	1.0000	CofL_Chicago_3hr_100yr	J6
S113	0.49	98.00	64.30	1.0000	CofL_Chicago_3hr_100yr	J6
S114	0.47	72.31	7.10	2.0000	CofL_Chicago_3hr_100yr	OF1
S115	1.45	120.83	15.30	1.0000	CofL_Chicago_3hr_100yr	OF2

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
J1	JUNCTION	276.50	2.50	0.0	
J2	JUNCTION	275.50	2.50	0.0	
J3	JUNCTION	276.00	3.00	0.0	
J4	JUNCTION	274.50	3.50	0.0	
J5	JUNCTION	273.85	2.15	0.0	
J6	JUNCTION	273.65	2.35	0.0	
J7	JUNCTION	273.45	2.55	0.0	
OF1	OUTFALL	270.00	0.97	0.0	
OF2	OUTFALL	273.00	0.00	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	J2	CONDUIT	92.9	1.0761	0.0150
C2	J3	J5	CONDUIT	326.7	0.6581	0.0150
C3	J2	J5	CONDUIT	134.8	1.2239	0.0150
C4	J4	J5	CONDUIT	138.2	0.4702	0.0150
C5	J5	J6	CONDUIT	51.4	0.3893	0.0150
C6	J6	J7	CONDUIT	87.6	0.2282	0.0150
C7	J7	OF1	CONDUIT	29.9	11.6031	0.0150

****
Cross Section Summary
****

		Full	Full	Hyd.	Max.	No. of Full

Conduit	Shape	Depth	Area	Rad.	Width	Barrels	Flow
C1	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	107.99
C2	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	84.45
C3	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	115.17
C4	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	71.38
C5	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	64.95
C6	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	49.73
C7	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	354.60

****
Transect Summary
****

Transect 20m_ROW_8m_Road
Area:

0.0002	0.0010	0.0034	0.0072	0.0125
0.0192	0.0259	0.0328	0.0403	0.0487
0.0577	0.0676	0.0782	0.0895	0.1016
0.1145	0.1281	0.1424	0.1575	0.1734
0.1900	0.2074	0.2255	0.2444	0.2640
0.2844	0.3056	0.3275	0.3501	0.3735
0.3977	0.4226	0.4483	0.4747	0.5019
0.5298	0.5585	0.5879	0.6181	0.6491
0.6808	0.7132	0.7464	0.7804	0.8151
0.8506	0.8868	0.9238	0.9615	1.0000

Hrad:

0.0184	0.0252	0.0416	0.0599	0.0787
0.1088	0.1464	0.1736	0.1939	0.2141
0.2341	0.2541	0.2740	0.2939	0.3137
0.3335	0.3533	0.3730	0.3927	0.4124
0.4321	0.4517	0.4714	0.4910	0.5107
0.5303	0.5499	0.5695	0.5891	0.6087
0.6283	0.6479	0.6675	0.6871	0.7066
0.7262	0.7458	0.7654	0.7849	0.8045
0.8240	0.8436	0.8632	0.8827	0.9023
0.9218	0.9414	0.9609	0.9805	1.0000

Width:

0.0096	0.0401	0.0792	0.1182	0.1573
0.1736	0.1738	0.1852	0.2046	0.2240
0.2434	0.2628	0.2822	0.3016	0.3210
0.3404	0.3598	0.3792	0.3986	0.4180
0.4374	0.4568	0.4762	0.4956	0.5150
0.5344	0.5538	0.5732	0.5926	0.6120
0.6314	0.6508	0.6702	0.6896	0.7090
0.7284	0.7478	0.7672	0.7866	0.8060
0.8254	0.8448	0.8642	0.8836	0.9030
0.9224	0.9418	0.9612	0.9806	1.0000

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... SLOT
Starting Date 08/29/2023 00:00:00
Ending Date 09/01/2023 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00
Routing Time Step ..... 1.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 1
Head Tolerance ..... 0.001500 m

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	1.126	75.839
Evaporation Loss	0.000	0.000
Infiltration Loss	0.412	27.728
Surface Runoff	0.696	46.908
Final Storage	0.022	1.457
Continuity Error (%)	-0.335	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.696	6.962
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.696	6.959

```
  Flooding Loss ............          0.000        0.000
  Evaporation Loss .........          0.000        0.000
  Exfiltration Loss ........          0.000        0.000
  Initial Stored Volume ....          0.000        0.000
  Final Stored Volume ......          0.000        0.000
  Continuity Error (%) .....          0.034


  **************************
  Time-Step Critical Elements
  **************************
  None


  *******************************
  Highest Flow Instability Indexes
  *******************************
  Link C6 (4)


  ************************
  Routing Time Step Summary
  ************************ :
  Minimum Time Step         :       0.50 sec
  Average Time Step         :       1.00 sec
  Maximum Time Step         :       1.00 sec
  Percent in Steady State           0.00
  Average Iterations per Step :     2.00
  Percent Not Converging    :       0.00
  Time Step Frequencies       :
      1.000 -  0.871 sec      :     100.00 %
      0.871 -  0.758 sec      :       0.00 %
      0.758 -  0.660 sec      :       0.00 %
      0.660 -  0.574 sec      :       0.00 %
      0.574 -  0.500 sec      :       0.00 %


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

  ---------------------------------------------------------------------------------
-----------------------------------------------
                             Total      Total      Total      Total     Imperv
Perv      Total       Total     Peak  Runoff
                          Precip      Runon       Evap      Infil     Runoff
Runoff     Runoff      Runoff   Runoff   Coeff
  Subcatchment                mm         mm         mm         mm         mm
mm          mm        10^6 ltr      CMS
  ---------------------------------------------------------------------------------
-----------------------------------------------
  S101                      75.84       0.00       0.00      32.64      10.58
31.48      42.05        0.46     0.14   0.555
  S102                      75.84       0.00       0.00      34.13      10.59
29.92      40.51        1.02     0.27   0.534
  S103                      75.84       0.00       0.00      21.13      31.74
21.79      53.54        0.08     0.05   0.706
  S104                      75.84       0.00       0.00      13.37      47.81
  S105                      75.84       0.00       0.00      22.56      31.94
20.11      52.04        1.54     0.78   0.686
  S106                      75.84       0.00       0.00      13.35      47.79
13.43      61.22        0.64     0.44   0.807
  S107                      75.84       0.00       0.00      32.37      10.58
31.77      42.35        0.44     0.15   0.558
  S108                      75.84       0.00       0.00      32.86      10.58
31.21      41.79        0.67     0.19   0.551
  S109                      75.84       0.00       0.00      13.58      47.87
13.15      61.02        0.20     0.13   0.805
  S110                      75.84       0.00       0.00      13.21      47.70
13.63      61.32        0.14     0.10   0.809
  S111                      75.84       0.00       0.00      28.48      21.26
24.85      46.12        0.36     0.15   0.608
  S112                      75.84       0.00       0.00      34.91       5.26
34.72      39.97        0.16     0.06   0.527
  S113                      75.84       0.00       0.00      13.26      47.74
13.54      61.28        0.30     0.22   0.808
  S114                      75.84       0.00       0.00      35.39       5.25
34.13      39.38        0.19     0.05   0.519
  S115                      75.84       0.00       0.00      33.68      11.33
29.60      40.93        0.59     0.16   0.540


  ******************
  Node Depth Summary
  ******************

  ---------------------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max    Reported
                                  Depth    Depth      HGL   Occurrence   Max Depth
  Node                Type       Meters   Meters   Meters  days hr:min      Meters
  ---------------------------------------------------------------------------------
  J1                  JUNCTION     0.01     0.12   276.62        01:10        0.12
  J2                  JUNCTION     0.01     0.14   275.64        01:11        0.14
  J3                  JUNCTION     0.01     0.14   276.14        01:12        0.14
  J4                  JUNCTION     0.01     0.13   274.63        01:12        0.13
  J5                  JUNCTION     0.02     0.23   274.08        01:16        0.23
  J6                  JUNCTION     0.03     0.31   273.96        01:17        0.31
  J7                  JUNCTION     0.01     0.13   273.58        01:17        0.13
  OF1                 OUTFALL      0.01     0.13   270.13        01:17        0.13
  OF2                 OUTFALL      0.00     0.00   273.00        00:00        0.00


  ******************
  Node Inflow Summary
  ******************

  ---------------------------------------------------------------------------------
----------------
                                Maximum  Maximum                  Lateral
Total        Flow
                                Lateral    Total  Time of Max      Inflow
Inflow     Balance
                                 Inflow   Inflow   Occurrence      Volume
Volume       Error
  Node                Type          CMS      CMS  days hr:min    10^6 ltr    10^6
ltr     Percent
```

```
  ---------------------------------------------------------------------------
---------------                                                  0
  J1                 JUNCTION     0.531    0.531        01:10        1.66
1.66       0.023                                                  0
  J2                 JUNCTION     0.494    0.994        01:10       0.717
2.37      -0.193                                                  0
  J3                 JUNCTION     0.785    0.785        01:10        1.54
1.54      -0.635                                                  0
  J4                 JUNCTION     0.462    0.462        01:10        1.31
1.31      -0.289                                                  0
  J5                 JUNCTION     0.103    2.147        01:12       0.141
5.38       0.372                                                  0
  J6                 JUNCTION     0.405    2.067        01:16       0.824
6.18      -0.004                                                  0
  J7                 JUNCTION     0.000    2.049        01:17
6.18       0.012                                                  0
  OF1                OUTFALL      0.052    2.099        01:17       0.185
6.37       0.000                                                  0
  OF2                OUTFALL      0.165    0.165        01:10       0.594
0.594      0.000


  **********************
  Node Surcharge Summary
  **********************

  No nodes were surcharged.


  **********************
  Node Flooding Summary
  **********************

  No nodes were flooded.


  ************************
  Outfall Loading Summary
  ************************

  ---------------------------------------------------------
                        Flow      Avg                 Max       Total
                        Freq      Flow                Flow      Volume
  Outfall Node           Pcnt      CMS                 CMS   10^6 ltr
  ---------------------------------------------------------
  OF1                   14.34     0.171               2.099       6.366
  OF2                   10.36     0.022               0.165       0.594
  ---------------------------------------------------------
  System                12.35     0.193               2.221       6.959


  ********************
  Link Flow Summary
  ********************

  ---------------------------------------------------------------------------
                              Maximum  Time of Max   Maximum    Max/    Max/
                               |Flow|   Occurrence   |Veloc|    Full    Full
```

```
  Link                 Type          CMS  days hr:min     m/sec    Flow   Depth
  ---------------------------------------------------------------------------
  C1                   CHANNEL     0.516     0 01:10      2.68    0.00    0.13
  C2                   CHANNEL     0.673     0 01:12      1.68    0.01    0.19
  C3                   CHANNEL     0.947     0 01:11      3.29    0.01    0.19
  C4                   CHANNEL     0.442     0 01:12      2.64    0.01    0.19
  C5                   CHANNEL     1.788     0 01:16      0.81    0.03    0.28
  C6                   CHANNEL     2.049     0 01:17     18.40    0.04    0.22
  C7                   CHANNEL     2.048     0 01:17    >50.00    0.01    0.13


  **************************
  Flow Classification Summary
  **************************

  -------------------------------------------------------------------------------
----
                     Adjusted    ---------- Fraction of Time in Flow Class -------
---
                      /Actual         Up    Down  Sub   Sup   Up    Down  Norm
Inlet
  Conduit               Length    Dry  Dry   Dry   Crit  Crit  Crit  Crit  Ltd
Ctrl
  -------------------------------------------------------------------------------
----
  C1                      1.00   0.00  0.00  0.00  0.85  0.15  0.00  0.00  0.71
0.00
  C2                      1.00   0.00  0.00  0.00  0.76  0.23  0.00  0.00  0.31
0.00
  C3                      1.00   0.00  0.00  0.00  0.87  0.13  0.00  0.00  0.30
0.00
  C4                      1.00   0.00  0.00  0.00  0.95  0.04  0.00  0.00  0.30
0.00
  C5                      1.00   0.00  0.00  0.00  1.00  0.00  0.00  0.00  0.99
0.00
  C6                      1.00   0.00  0.00  0.00  0.15  0.85  0.00  0.00  0.00
0.00
  C7                      1.00   0.27  0.00  0.00  0.53  0.21  0.00  0.00  0.88
0.00


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

  No conduits were surcharged.


  Analysis begun on:  Tue Sep 12 12:49:44 2023
  Analysis ended on:  Tue Sep 12 12:49:46 2023
  Total elapsed time: 00:00:02
```

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)

August 2023

****
Element Count
****
Number of rain gages 8
Number of subcatchments ... 15
Number of nodes 9
Number of links 7
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
CofL_Chicago_3h_5yr	CofL_Chicago_3h_5yr	INTENSITY	5 min.
CofL_Chicago_3hr_100yr	CofL_Chicago_3hr_100yr	INTENSITY	5 min.
CofL_Chicago_3hr_10yr	CofL_Chicago_3hr_10yr	INTENSITY	5 min.
CofL_Chicago_3hr_250yr	CofL_Chicago_3hr_250yr	INTENSITY	5 min.
CofL_Chicago_3hr_25mm	CofL_Chicago_3hr_25mm	INTENSITY	5 min.
CofL_Chicago_3hr_25yr	CofL_Chicago_3hr_25yr	INTENSITY	5 min.
CofL_Chicago_3hr_2yr	Chicago_3h_2yr	INTENSITY	5 min.
CofL_Chicago_3hr_50yr	CofL_Chicago_3hr_50yr	INTENSITY	5 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
S101	1.09	218.00	14.30	1.0000	CofL_Chicago_3hr_250yr	J1
S102	2.52	210.00	14.30	1.0000	CofL_Chicago_3hr_250yr	J1
S103	0.15	60.00	42.90	1.0000	CofL_Chicago_3hr_250yr	J2
S104	0.29	41.43	64.30	1.0000	CofL_Chicago_3hr_250yr	J1
S105	2.95	184.46	42.90	1.0000	CofL_Chicago_3hr_250yr	J3
S106	1.04	160.00	64.30	1.0000	CofL_Chicago_3hr_250yr	J2
S107	1.05	262.50	14.30	1.0000	CofL_Chicago_3hr_250yr	J4
S108	1.60	266.67	14.30	1.0000	CofL_Chicago_3hr_250yr	J4
S109	0.32	40.00	64.30	0.5000	CofL_Chicago_3hr_250yr	J4
S110	0.23	57.50	64.30	1.0000	CofL_Chicago_3hr_250yr	J5
S111	0.78	52.00	28.60	1.0000	CofL_Chicago_3hr_250yr	J6
S112	0.41	136.67	7.10	1.0000	CofL_Chicago_3hr_250yr	J6
S113	0.49	98.00	64.30	1.0000	CofL_Chicago_3hr_250yr	J6
S114	0.47	72.31	7.10	2.0000	CofL_Chicago_3hr_250yr	OF1
S115	1.45	120.83	15.30	1.0000	CofL_Chicago_3hr_250yr	OF2

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
J1	JUNCTION	276.50	2.50	0.0	
J2	JUNCTION	275.50	2.50	0.0	
J3	JUNCTION	276.00	3.00	0.0	
J4	JUNCTION	274.50	3.50	0.0	
J5	JUNCTION	273.85	2.15	0.0	
J6	JUNCTION	273.65	2.35	0.0	
J7	JUNCTION	273.45	2.55	0.0	
OF1	OUTFALL	270.00	0.97	0.0	
OF2	OUTFALL	273.00	0.00	0.0	

****
Link Summary
****

Name	From Node	To Node	Type	Length	% Slope	Roughness
C1	J1	J2	CONDUIT	92.9	1.0761	0.0150
C2	J3	J5	CONDUIT	326.7	0.6581	0.0150
C3	J2	J5	CONDUIT	134.8	1.2239	0.0150
C4	J4	J5	CONDUIT	138.2	0.4702	0.0150
C5	J5	J6	CONDUIT	51.4	0.3893	0.0150
C6	J6	J7	CONDUIT	87.6	0.2282	0.0150
C7	J7	OF1	CONDUIT	29.9	11.6031	0.0150

****
Cross Section Summary
****

	Full	Full	Hyd.	Max.	No. of Full

Conduit	Shape	Depth	Area	Rad.	Width	Barrels	Flow
C1	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	107.99
C2	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	84.45
C3	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	115.17
C4	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	71.38
C5	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	64.95
C6	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	49.73
C7	20m_ROW_8m_Road	0.97	24.96	0.49	50.00	1	354.60

****
Transect Summary
****

Transect 20m_ROW_8m_Road
Area:

0.0002	0.0010	0.0034	0.0072	0.0125
0.0192	0.0259	0.0328	0.0403	0.0487
0.0577	0.0676	0.0782	0.0895	0.1016
0.1145	0.1281	0.1424	0.1575	0.1734
0.1900	0.2074	0.2255	0.2444	0.2640
0.2844	0.3056	0.3275	0.3501	0.3735
0.3977	0.4226	0.4483	0.4747	0.5019
0.5298	0.5585	0.5879	0.6181	0.6491
0.6808	0.7132	0.7464	0.7804	0.8151
0.8506	0.8868	0.9238	0.9615	1.0000

Hrad:

0.0184	0.0252	0.0416	0.0599	0.0787
0.1088	0.1464	0.1736	0.1939	0.2141
0.2341	0.2541	0.2740	0.2939	0.3137
0.3335	0.3533	0.3730	0.3927	0.4124
0.4321	0.4517	0.4714	0.4910	0.5107
0.5303	0.5499	0.5695	0.5891	0.6087
0.6283	0.6479	0.6675	0.6871	0.7066
0.7262	0.7458	0.7654	0.7849	0.8045
0.8240	0.8436	0.8632	0.8827	0.9023
0.9218	0.9414	0.9609	0.9805	1.0000

Width:

0.0096	0.0401	0.0792	0.1182	0.1573
0.1736	0.1738	0.1852	0.2046	0.2240
0.2434	0.2628	0.2822	0.3016	0.3210
0.3404	0.3598	0.3792	0.3986	0.4180
0.4374	0.4568	0.4762	0.4956	0.5150
0.5344	0.5538	0.5732	0.5926	0.6120
0.6314	0.6508	0.6702	0.6896	0.7090
0.7284	0.7478	0.7672	0.7866	0.8060
0.8254	0.8448	0.8642	0.8836	0.9030
0.9224	0.9418	0.9612	0.9806	1.0000

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

****
Analysis Options
****
Flow Units ..... CMS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... CURVE_NUMBER
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... SLOT
Starting Date 08/29/2023 00:00:00
Ending Date 09/01/2023 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00
Routing Time Step ..... 1.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 1
Head Tolerance ..... 0.001500 m

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	1.285	86.611
Evaporation Loss	0.000	0.000
Infiltration Loss	0.430	28.986
Surface Runoff	0.838	56.478
Final Storage	0.022	1.458
Continuity Error (%)	-0.359	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.838	8.382
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.838	8.380

```
  Flooding Loss ............          0.000        0.000
  Evaporation Loss .........          0.000        0.000
  Exfiltration Loss ........          0.000        0.000
  Initial Stored Volume ....          0.000        0.000
  Final Stored Volume ......          0.000        0.000
  Continuity Error (%) .....          0.028


  **************************
  Time-Step Critical Elements
  **************************
  None


  *********************************
  Highest Flow Instability Indexes
  *********************************
  Link C6 (4)


  ************************
  Routing Time Step Summary
  ************************ :
  Minimum Time Step         :       0.50 sec
  Average Time Step         :       1.00 sec
  Maximum Time Step         :       1.00 sec
  Percent in Steady State           0.00
  Average Iterations per Step :     2.00
  Percent Not Converging    :       0.00
  Time Step Frequencies       :
      1.000 -  0.871 sec      :     100.00 %
      0.871 -  0.758 sec      :       0.00 %
      0.758 -  0.660 sec      :       0.00 %
      0.660 -  0.574 sec      :       0.00 %
      0.574 -  0.500 sec      :       0.00 %


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

  ---------------------------------------------------------------------------------
-----------------------------------------------
                             Total      Total      Total      Total     Imperv
Perv      Total       Total     Peak  Runoff
                          Precip      Runon       Evap      Infil     Runoff
Runoff     Runoff      Runoff   Runoff   Coeff
  Subcatchment                mm         mm         mm         mm         mm
mm          mm       10^6 ltr      CMS
  ---------------------------------------------------------------------------------
-----------------------------------------------
  S101                      86.61       0.00       0.00      34.19      12.12
39.25      51.37        0.56     0.18   0.593
  S102                      86.61       0.00       0.00      35.58      12.13
37.68      49.81        1.26     0.34   0.575
  S103                      86.61       0.00       0.00      22.12      36.37
26.99      63.36        0.10     0.06   0.732
  S104                      86.61       0.00       0.00      14.00      54.78
  S105                      86.61       0.00       0.00      23.57      36.61
25.27      61.88        1.83     0.96   0.714
  S106                      86.61       0.00       0.00      13.98      54.77
16.67      71.44        0.74     0.54   0.825
  S107                      86.61       0.00       0.00      33.93      12.12
39.55      51.67        0.54     0.20   0.597
  S108                      86.61       0.00       0.00      34.39      12.12
38.98      51.10        0.82     0.25   0.590
  S109                      86.61       0.00       0.00      14.20      54.87
16.38      71.26        0.23     0.15   0.823
  S110                      86.61       0.00       0.00      13.83      54.64
16.88      71.52        0.16     0.13   0.826
  S111                      86.61       0.00       0.00      29.73      24.36
31.31      55.67        0.43     0.18   0.643
  S112                      86.61       0.00       0.00      36.55       6.02
43.15      49.17        0.20     0.08   0.568
  S113                      86.61       0.00       0.00      13.90      54.70
16.79      71.48        0.35     0.26   0.825
  S114                      86.61       0.00       0.00      37.06       6.02
42.55      48.57        0.23     0.07   0.561
  S115                      86.61       0.00       0.00      35.17      12.99
37.26      50.25        0.73     0.21   0.580


  ******************
  Node Depth Summary
  ******************

  ---------------------------------------------------------------------------------
                                Average  Maximum  Maximum  Time of Max    Reported
                                  Depth    Depth      HGL   Occurrence   Max Depth
  Node                Type       Meters   Meters   Meters  days hr:min      Meters
  ---------------------------------------------------------------------------------
  J1                  JUNCTION     0.01     0.13   276.63        01:10        0.13
  J2                  JUNCTION     0.01     0.16   275.66        01:11        0.16
  J3                  JUNCTION     0.01     0.15   276.15        01:12        0.15
  J4                  JUNCTION     0.01     0.14   274.64        01:12        0.14
  J5                  JUNCTION     0.02     0.26   274.11        01:16        0.26
  J6                  JUNCTION     0.03     0.34   273.99        01:17        0.34
  J7                  JUNCTION     0.01     0.14   273.59        01:17        0.14
  OF1                 OUTFALL      0.01     0.14   270.14        01:17        0.14
  OF2                 OUTFALL      0.00     0.00   273.00        00:00        0.00


  ******************
  Node Inflow Summary
  ******************

  ---------------------------------------------------------------------------------
----------------
                                Maximum  Maximum                  Lateral
Total        Flow
                                Lateral    Total  Time of Max      Inflow
Inflow     Balance
                                 Inflow   Inflow   Occurrence      Volume
Volume       Error
  Node                Type          CMS      CMS  days hr:min    10^6 ltr    10^6
ltr     Percent
```

J1	JUNCTION	0.670	0.670	0	01:10	2.02	2.02	0.021
J2	JUNCTION	0.604	1.239	0	01:10	0.838	2.86	-0.191
J3	JUNCTION	0.957	0.957	0	01:10	1.83	1.83	-0.644
J4	JUNCTION	0.595	0.595	0	01:10	1.59	1.59	-0.276
J5	JUNCTION	0.126	2.676	0	01:11	0.164	6.46	0.363
J6	JUNCTION	0.503	2.611	0	01:16	0.986	7.42	-0.004
J7	JUNCTION	0.000	2.590	0	01:17		7.42	0.011
OF1	OUTFALL	0.070	2.659	0	01:17	0.228	7.65	0.000
OF2	OUTFALL	0.206	0.206	0	01:10	0.729	0.729	0.000

****
Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CMS	Max Flow CMS	Total Volume 10^6 ltr
OF1	14.54	0.203	2.659	7.651
OF2	10.73	0.026	0.206	0.729
System	12.63	0.229	2.821	8.380

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CMS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
C1	CHANNEL	0.655	0	01:10	1.51	0.01	0.15
C2	CHANNEL	0.820	0	01:12	2.07	0.01	0.21
C3	CHANNEL	1.181	0	01:11	3.65	0.01	0.21
C4	CHANNEL	0.573	0	01:12	1.83	0.01	0.20
C5	CHANNEL	2.260	0	01:16	0.86	0.03	0.31
C6	CHANNEL	2.590	0	01:17	17.72	0.05	0.24
C7	CHANNEL	2.589	0	01:17	>50.00	0.01	0.14

****
Flow Classification Summary
****

	Adjusted	---------- Fraction of Time in Flow Class ----------								
Conduit	/Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C1	1.00	0.00	0.00	0.00	0.85	0.15	0.00	0.00	0.67	0.00
C2	1.00	0.00	0.00	0.00	0.76	0.23	0.00	0.00	0.33	0.00
C3	1.00	0.00	0.00	0.00	0.87	0.13	0.00	0.00	0.30	0.00
C4	1.00	0.00	0.00	0.00	0.95	0.04	0.00	0.00	0.29	0.00
C5	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00
C6	1.00	0.00	0.00	0.00	0.15	0.84	0.00	0.00	0.00	0.00
C7	1.00	0.27	0.00	0.00	0.52	0.20	0.00	0.00	0.88	0.00

****
Conduit Surcharge Summary
****

No conduits were surcharged.

Analysis begun on: Tue Sep 12 12:50:27 2023
Analysis ended on: Tue Sep 12 12:50:29 2023
Total elapsed time: 00:00:02