

CLECO POWER LLC
BRAME ENERGY CENTER
LENA, RAPIDES PARISH, LOUISIANA



RUN-ON/RUNOFF CONTROL
SYSTEM PLAN

ASH MANAGEMENT LANDFILL
CELL 4

AGENCY INTEREST NO. 2922

D-079-0390/P-0379-R1-M2

DECEMBER 2023

Providence Engineering and Environmental Group LLC
1201 Main Street
Baton Rouge, LA 70802
(225) 766-7400
www.providenceeng.com
Providence Project No: 002-322



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Attachment

1 HydroCad Report

1.0 INTRODUCTION

The Ash Management Landfill at the Cleco Brame Energy Center (BEC) operates under solid waste permit P-0379-R1M3 issued by the Louisiana Department of Environmental Quality (LDEQ). On October 11, 2021, the LDEQ approved a minor modification for design changes to Cell 4 to comply with CCR design requirements. These changes included raising the excavation grades in Cell 4, changes to final waste grades, raising the perimeter levee elevations, and reorientation of the leachate collection trenches.

The ash management landfill is surrounded by a perimeter ditch and levee system which prevents runoff from the area from entering the operational areas of the facility. To collect the waters permeating the waste material, the leachate collection system is in place. This water collected in the leachate collection system and stormwater runoff from the ash management landfill is routed to the Leachate Collection/Runoff pond. This water is treated before release through an LPDES permitted outfall.

On April 17, 2015, the United States Environmental Protection Agency (EPA) issued the final version of the federal coal combustion residuals rule (CCR Rule) to regulate the disposal of CCR materials generated at coal-fired units. The rule is being administered as part of the Resource Conservation and Recovery Act (RCRA, 42 U.S.C. §6901 et seq.), using the Subtitle D approach.

Per 40 CFR §257.81(c)(5), Cleco must obtain certification from a qualified professional engineer that the run-on and runoff systems for Cell 4 meet the requirements of 40 CFR 257.81(c)(1-5). This certification is included in **Appendix A**.

2.0 REQUIREMENTS FOR RUN-ON AND RUNOFF CONTROL SYSTEMS

This plan will document how the run-on and runoff systems have been designed and constructed to meet the criteria in accordance with §257.81(c)(1) as supported by appropriate engineering calculations for CCR units. The run-on control system must be designed to prevent flow on the active portion of the CCR unit during the peak discharge from a 24-hour, 25-year storm; and the runoff control system from the active portion of the CCR unit must be designed to collect and control at least the water volume resulting from a 24-hour, 25-year storm, in accordance with §257.3-3, detailing discharges to surface waters. This plan will be revised every five years in accordance with §257.81 (c)(4).

3.0 RUN-ON AND RUNOFF CONTROL SYSTEMS

Run-on is controlled by the construction of the perimeter levee system around Cell 4 of the ash management landfill. The perimeter levee has been constructed to minimum elevation of 122' NAVD 88. Ground surface elevations in the immediate vicinity of Cell 4 range from 110' to 105' NAVD 88. Sufficient freeboard exists to prevent run-on from outside of Cell 4 from entering the operational footprint of the CCR Unit.

Runoff from Cell 4 is controlled by the interior ditch at the toe of the slope of the waste. This interior ditch intercepts stormwater runoff at the base of the slope and routes the runoff to the Leachate Collection/Runoff pond. A HydroCAD model of the interior ditch was developed, and the subsequent calculations were used to support that the interior ditch has the capacity to handle the stormwater

runoff generated from a 25-year, 24-hour storm event (10.10 inches). These calculations and HydroCAD report are included in **Attachment 1**. For the HydroCAD analysis, only the runoff from Cell 4 was considered and only the section of interior ditch surrounding Cell 4 was analyzed for capacity. Cell 4 is the only disposal cell receiving CCR materials for disposal. The runoff from Cell 4 was computed using a uniform area weighted average slope and the channel dimensions were averaged using four cross-sections and remain constant for the analysis. The soil was considered to be a hydrologic classification of C and the Manning's n values are correlated to bare earth. Cell 4 was split in half represented by two subcatchments and the interior ditch was also modeled in two sections draining from a high point at the Northwest and the interior ditch flowing to the Southeast.

4.0 CONCLUSIONS

The results of the model show that the south side of the interior ditch has a design storage capacity of 105,316 cubic-feet and reached a peak storage of 28,302 cubic-feet during a SCS Type III 25-year 24-hour storm event. Similarly, the north side of the interior ditch has a design storage capacity of 92,722 cubic-feet and reached a peak storage of 19,780 cubic feet during a SCS Type III 25-year 24-hour storm event.

Based on the review of design criteria for the perimeter levee and interior ditch system and the included calculations, Cleco has determined that the run-on/runoff system for Cell 4 meets the criteria outlined in 40 CFR 257.81 (c)(1-5). This report will be placed in the facility's operating record in accordance with 40 CFR 257.107(f) and will be made available on the facility's publicly accessible internet site in accordance with 40 CFR 257.107(f).

APPENDIX A
CERTIFICATION

APPENDIX A

CERTIFICATION

I certify that this Run-on/Runoff Control System Plan fulfills the minimum requirements of 40 CFR 257.81(c)(1-5), as applicable. This certification is based on my review of the Cleco Brame Run-on/Runoff Control System Plan and operational information about the CCR units.

Gary J. Leonards, P.E.

Name

30568

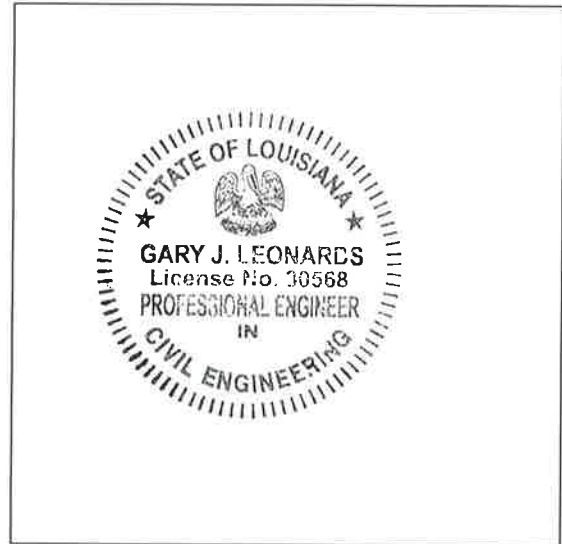
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Louisiana

State

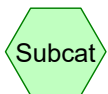
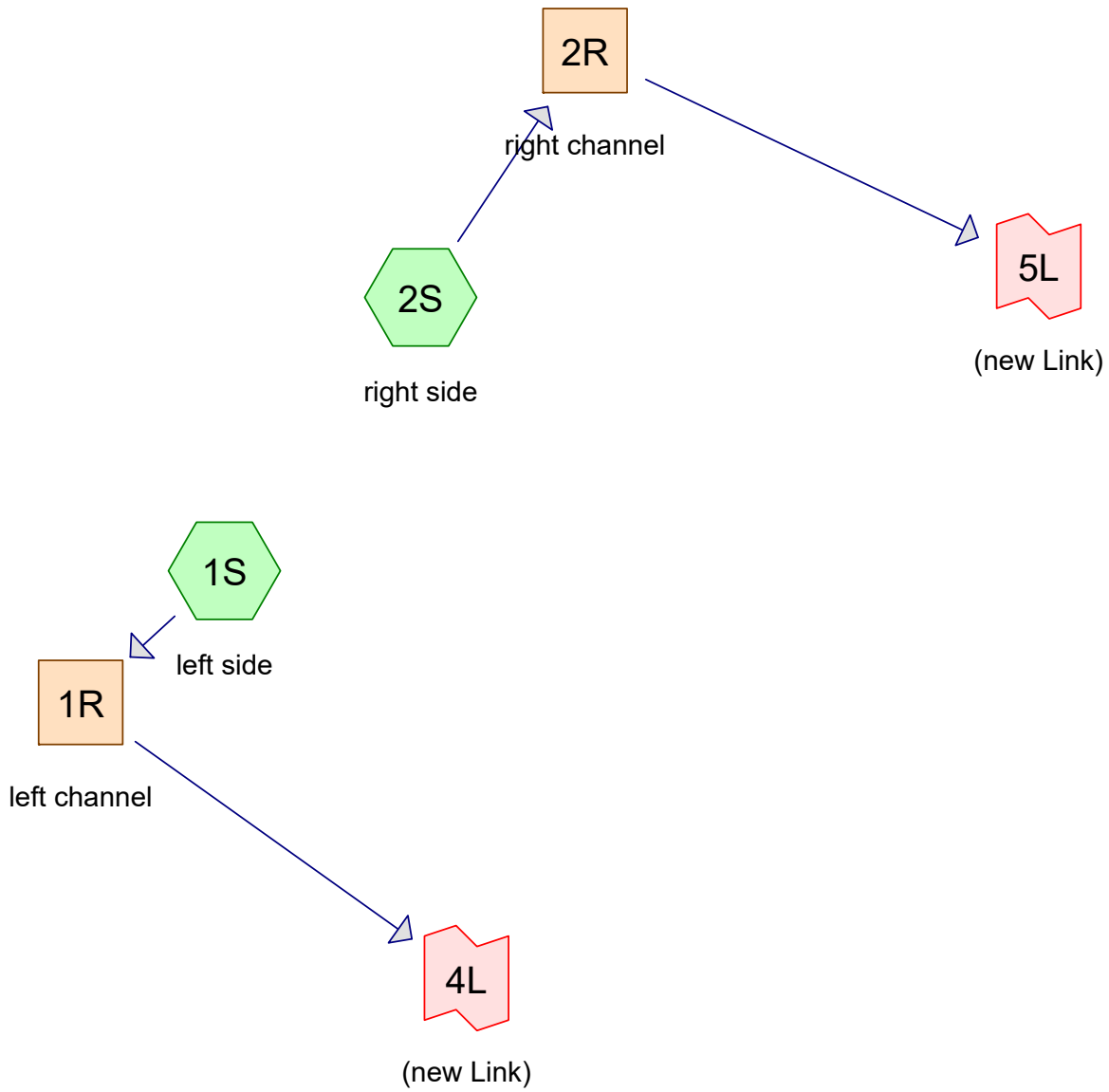
Signature

12/29/23
Date



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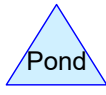
ATTACHMENT 1
HYDROCAD REPORT



Subcat



Reach



Pond



Link

Routing Diagram for Runoff Model 1

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Runoff Model 1

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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25 year	Type III 24-hr		Default	24.00	1	10.10	2

Runoff Model 1

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
12.287	91	Fallow, bare soil, HSG C (1S, 2S)
12.287	91	TOTAL AREA

Runoff Model 1

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
12.287	HSG C	1S, 2S
0.000	HSG D	
0.000	Other	
12.287		TOTAL AREA

Runoff Model 1

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	12.287	0.000	0.000	12.287	Fallow, bare soil	1S, 2S
0.000	0.000	12.287	0.000	0.000	12.287	TOTAL AREA	

Runoff Model 1

Type III 24-hr 25 year Rainfall=10.10"

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Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: left side Runoff Area=5.782 ac 0.00% Impervious Runoff Depth=9.00"
Flow Length=350' Slope=0.2537 '/' Tc=1.2 min CN=91 Runoff=66.11 cfs 4.338 af

Subcatchment 2S: right side Runoff Area=6.505 ac 0.00% Impervious Runoff Depth=9.00"
Flow Length=347' Slope=0.2591 '/' Tc=1.2 min CN=91 Runoff=74.37 cfs 4.880 af

Reach 1R: left channel Avg. Flow Depth=2.14' Max Vel=1.69 fps Inflow=66.11 cfs 4.338 af
n=0.022 L=1,179.0' S=0.0004 '/' Capacity=239.34 cfs Outflow=40.58 cfs 4.338 af

Reach 2R: right channel Avg. Flow Depth=1.93' Max Vel=2.76 fps Inflow=74.37 cfs 4.880 af
n=0.022 L=960.0' S=0.0012 '/' Capacity=461.01 cfs Outflow=56.86 cfs 4.880 af

Link 4L: (new Link) Inflow=40.58 cfs 4.338 af
Primary=40.58 cfs 4.338 af

Link 5L: (new Link) Inflow=56.86 cfs 4.880 af
Primary=56.86 cfs 4.880 af

Total Runoff Area = 12.287 ac Runoff Volume = 9.218 af Average Runoff Depth = 9.00"
100.00% Pervious = 12.287 ac 0.00% Impervious = 0.000 ac

Runoff Model 1

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Type III 24-hr 25 year Rainfall=10.10"

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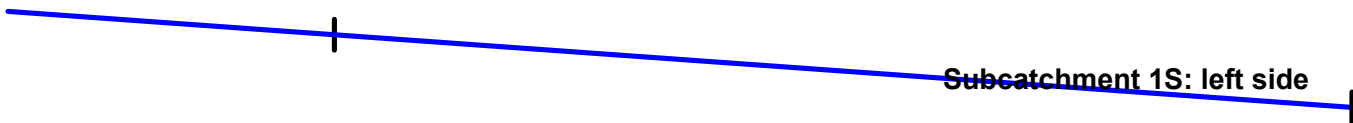
Summary for Subcatchment 1S: left side

Runoff = 66.11 cfs @ 12.02 hrs, Volume= 4.338 af, Depth= 9.00"
 Routed to Reach 1R : left channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25 year Rainfall=10.10"

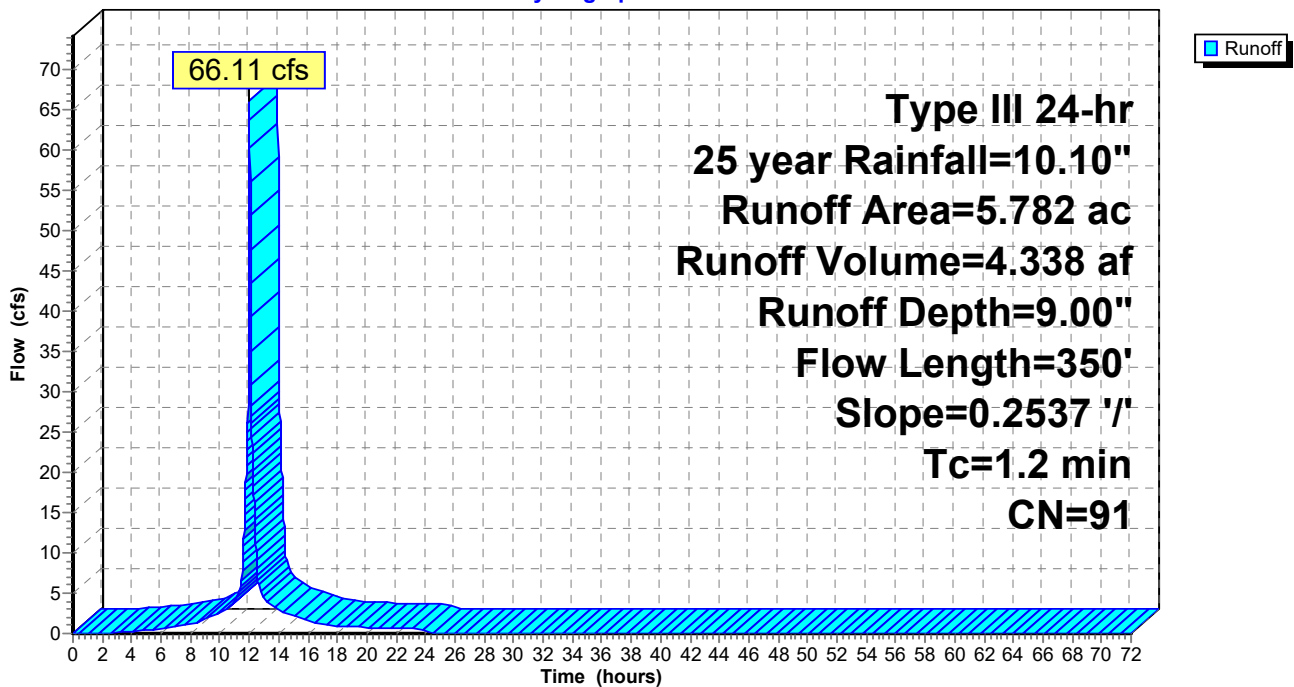
Area (ac)	CN	Description
5.782	91	Fallow, bare soil, HSG C
5.782		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	85	0.2537	4.66		Sheet Flow, n= 0.011 P2= 5.13"
0.9	265	0.2537	5.04		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
1.2	350	Total			



Subcatchment 1S: left side

Hydrograph



Runoff Model 1

Type III 24-hr 25 year Rainfall=10.10"

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Hydrograph for Subcatchment 1S: left side

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	53.00	10.10	9.00	0.00
1.00	0.10	0.00	0.00	54.00	10.10	9.00	0.00
2.00	0.20	0.00	0.00	55.00	10.10	9.00	0.00
3.00	0.31	0.01	0.13	56.00	10.10	9.00	0.00
4.00	0.43	0.05	0.26	57.00	10.10	9.00	0.00
5.00	0.57	0.10	0.40	58.00	10.10	9.00	0.00
6.00	0.73	0.18	0.54	59.00	10.10	9.00	0.00
7.00	0.91	0.30	0.82	60.00	10.10	9.00	0.00
8.00	1.15	0.47	1.13	61.00	10.10	9.00	0.00
9.00	1.47	0.72	1.77	62.00	10.10	9.00	0.00
10.00	1.91	1.08	2.48	63.00	10.10	9.00	0.00
11.00	2.53	1.63	3.89	64.00	10.10	9.00	0.00
12.00	5.05	4.03	61.19	65.00	10.10	9.00	0.00
13.00	7.57	6.51	4.34	66.00	10.10	9.00	0.00
14.00	8.19	7.11	2.88	67.00	10.10	9.00	0.00
15.00	8.63	7.54	2.20	68.00	10.10	9.00	0.00
16.00	8.95	7.86	1.53	69.00	10.10	9.00	0.00
17.00	9.19	8.10	1.23	70.00	10.10	9.00	0.00
18.00	9.37	8.28	0.94	71.00	10.10	9.00	0.00
19.00	9.53	8.43	0.85	72.00	10.10	9.00	0.00
20.00	9.67	8.57	0.76				
21.00	9.79	8.70	0.69				
22.00	9.91	8.81	0.63				
23.00	10.01	8.91	0.56				
24.00	10.10	9.00	0.50				
25.00	10.10	9.00	0.00				
26.00	10.10	9.00	0.00				
27.00	10.10	9.00	0.00				
28.00	10.10	9.00	0.00				
29.00	10.10	9.00	0.00				
30.00	10.10	9.00	0.00				
31.00	10.10	9.00	0.00				
32.00	10.10	9.00	0.00				
33.00	10.10	9.00	0.00				
34.00	10.10	9.00	0.00				
35.00	10.10	9.00	0.00				
36.00	10.10	9.00	0.00				
37.00	10.10	9.00	0.00				
38.00	10.10	9.00	0.00				
39.00	10.10	9.00	0.00				
40.00	10.10	9.00	0.00				
41.00	10.10	9.00	0.00				
42.00	10.10	9.00	0.00				
43.00	10.10	9.00	0.00				
44.00	10.10	9.00	0.00				
45.00	10.10	9.00	0.00				
46.00	10.10	9.00	0.00				
47.00	10.10	9.00	0.00				
48.00	10.10	9.00	0.00				
49.00	10.10	9.00	0.00				
50.00	10.10	9.00	0.00				
51.00	10.10	9.00	0.00				
52.00	10.10	9.00	0.00				

Runoff Model 1

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Type III 24-hr 25 year Rainfall=10.10"

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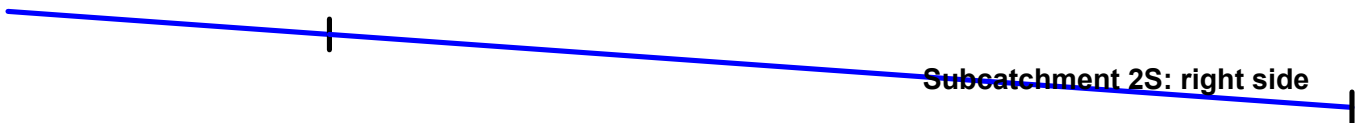
Summary for Subcatchment 2S: right side

Runoff = 74.37 cfs @ 12.02 hrs, Volume= 4.880 af, Depth= 9.00"
 Routed to Reach 2R : right channel

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25 year Rainfall=10.10"

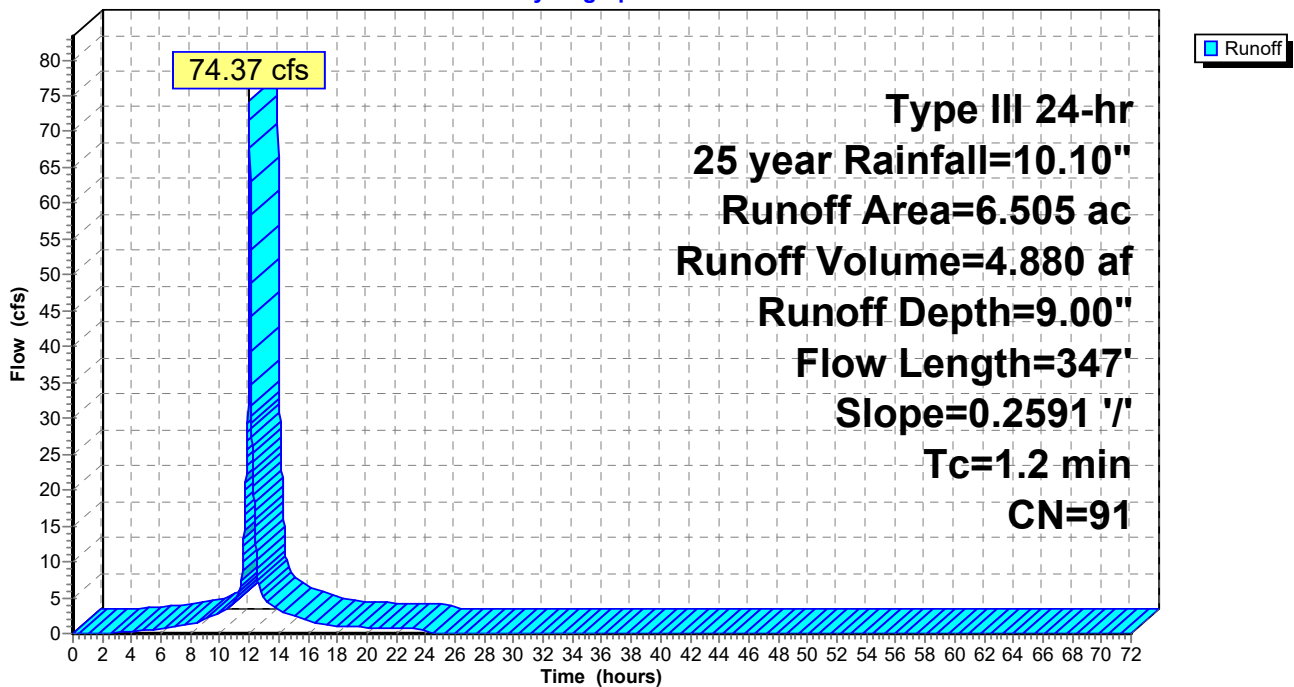
Area (ac)	CN	Description
6.505	91	Fallow, bare soil, HSG C
6.505		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	83	0.2591	4.67		Sheet Flow, n= 0.011 P2= 5.13"
0.9	264	0.2591	5.09		Shallow Concentrated Flow, Nearly Bare & Untilled Kv= 10.0 fps
1.2	347	Total			



Subcatchment 2S: right side

Hydrograph



Runoff Model 1

Type III 24-hr 25 year Rainfall=10.10"

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Hydrograph for Subcatchment 2S: right side

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	53.00	10.10	9.00	0.00
1.00	0.10	0.00	0.00	54.00	10.10	9.00	0.00
2.00	0.20	0.00	0.00	55.00	10.10	9.00	0.00
3.00	0.31	0.01	0.15	56.00	10.10	9.00	0.00
4.00	0.43	0.05	0.30	57.00	10.10	9.00	0.00
5.00	0.57	0.10	0.45	58.00	10.10	9.00	0.00
6.00	0.73	0.18	0.61	59.00	10.10	9.00	0.00
7.00	0.91	0.30	0.92	60.00	10.10	9.00	0.00
8.00	1.15	0.47	1.27	61.00	10.10	9.00	0.00
9.00	1.47	0.72	2.00	62.00	10.10	9.00	0.00
10.00	1.91	1.08	2.80	63.00	10.10	9.00	0.00
11.00	2.53	1.63	4.38	64.00	10.10	9.00	0.00
12.00	5.05	4.03	68.84	65.00	10.10	9.00	0.00
13.00	7.57	6.51	4.88	66.00	10.10	9.00	0.00
14.00	8.19	7.11	3.24	67.00	10.10	9.00	0.00
15.00	8.63	7.54	2.47	68.00	10.10	9.00	0.00
16.00	8.95	7.86	1.72	69.00	10.10	9.00	0.00
17.00	9.19	8.10	1.38	70.00	10.10	9.00	0.00
18.00	9.37	8.28	1.06	71.00	10.10	9.00	0.00
19.00	9.53	8.43	0.95	72.00	10.10	9.00	0.00
20.00	9.67	8.57	0.86				
21.00	9.79	8.70	0.78				
22.00	9.91	8.81	0.71				
23.00	10.01	8.91	0.63				
24.00	10.10	9.00	0.56				
25.00	10.10	9.00	0.00				
26.00	10.10	9.00	0.00				
27.00	10.10	9.00	0.00				
28.00	10.10	9.00	0.00				
29.00	10.10	9.00	0.00				
30.00	10.10	9.00	0.00				
31.00	10.10	9.00	0.00				
32.00	10.10	9.00	0.00				
33.00	10.10	9.00	0.00				
34.00	10.10	9.00	0.00				
35.00	10.10	9.00	0.00				
36.00	10.10	9.00	0.00				
37.00	10.10	9.00	0.00				
38.00	10.10	9.00	0.00				
39.00	10.10	9.00	0.00				
40.00	10.10	9.00	0.00				
41.00	10.10	9.00	0.00				
42.00	10.10	9.00	0.00				
43.00	10.10	9.00	0.00				
44.00	10.10	9.00	0.00				
45.00	10.10	9.00	0.00				
46.00	10.10	9.00	0.00				
47.00	10.10	9.00	0.00				
48.00	10.10	9.00	0.00				
49.00	10.10	9.00	0.00				
50.00	10.10	9.00	0.00				
51.00	10.10	9.00	0.00				
52.00	10.10	9.00	0.00				

Runoff Model 1

Type III 24-hr 25 year Rainfall=10.10"

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Summary for Reach 1R: left channel

Inflow Area = 5.782 ac, 0.00% Impervious, Inflow Depth = 9.00" for 25 year event
 Inflow = 66.11 cfs @ 12.02 hrs, Volume= 4.338 af
 Outflow = 40.58 cfs @ 12.28 hrs, Volume= 4.338 af, Atten= 39%, Lag= 15.8 min
 Routed to Link 4L : (new Link)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.69 fps, Min. Travel Time= 11.6 min
 Avg. Velocity = 0.42 fps, Avg. Travel Time= 46.5 min

Peak Storage= 28,302 cf @ 12.09 hrs
 Average Depth at Peak Storage= 2.14' , Surface Width= 16.84'
 Bank-Full Depth= 4.86' Flow Area= 89.3 sf, Capacity= 239.34 cfs

Custom cross-section, Length= 1,179.0' Slope= 0.0004 '/'
 Constant n= 0.022 Earth, clean & straight
 Inlet Invert= 118.39', Outlet Invert= 117.90'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-15.56	123.00	0.00
-2.82	118.14	4.86
0.00	118.14	4.86
2.82	118.14	4.86
15.56	123.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	5.6	0.0	0	0.00
4.86	89.3	32.9	31.1	105,316	239.34



Runoff Model 1

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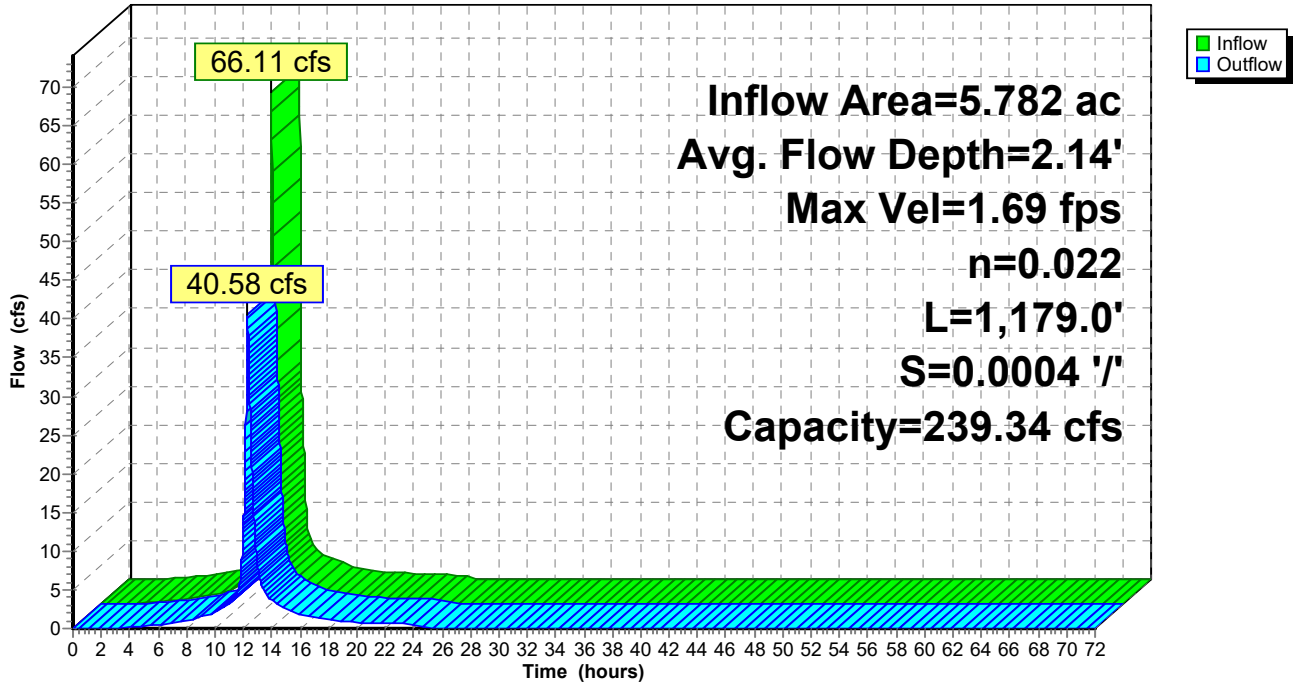
Type III 24-hr 25 year Rainfall=10.10"

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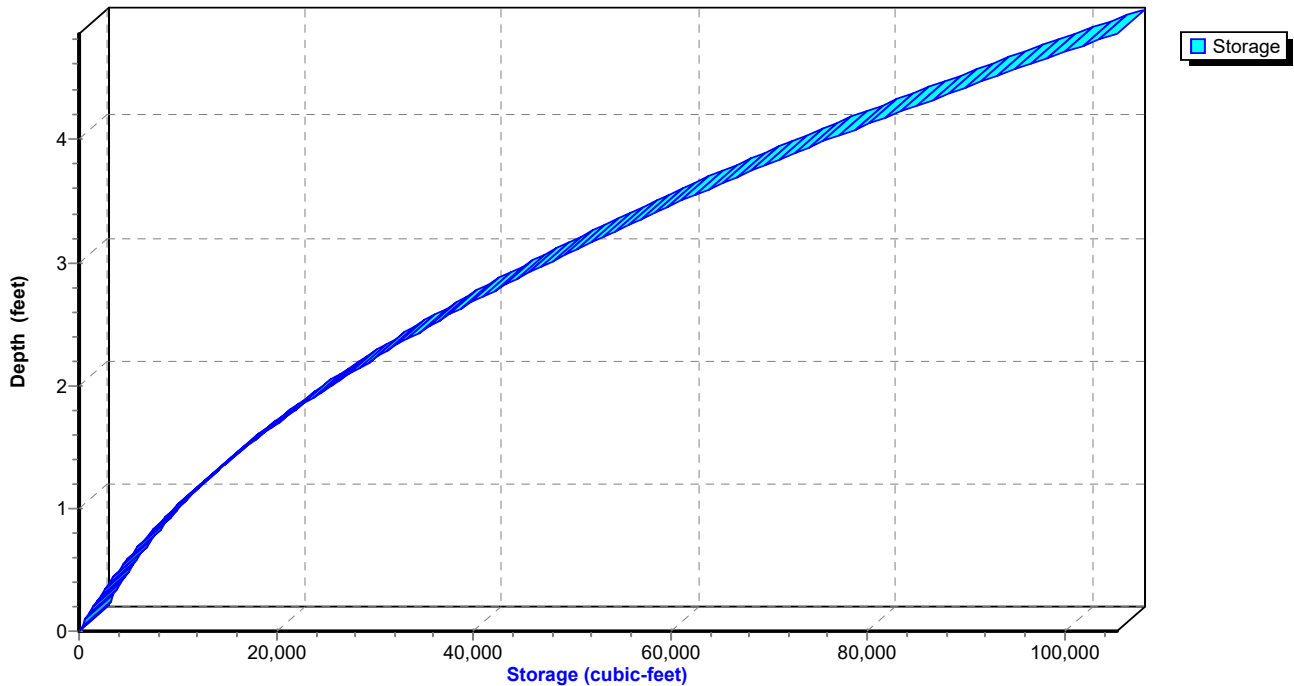
Reach 1R: left channel

Hydrograph



Reach 1R: left channel

Stage-Storage



Runoff Model 1

Type III 24-hr 25 year Rainfall=10.10"

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Hydrograph for Reach 1R: left channel

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	118.39	0.00
2.00	0.00	0	118.39	0.00
4.00	0.26	621	118.48	0.12
6.00	0.54	1,306	118.57	0.44
8.00	1.13	2,145	118.67	0.94
10.00	2.48	3,681	118.85	2.12
12.00	61.19	22,028	120.19	12.83
14.00	2.88	4,732	118.95	3.57
16.00	1.53	3,091	118.78	1.87
18.00	0.94	2,211	118.68	1.10
20.00	0.76	1,850	118.64	0.81
22.00	0.63	1,633	118.61	0.67
24.00	0.50	1,421	118.59	0.54
26.00	0.00	282	118.43	0.05
28.00	0.00	94	118.40	0.02
30.00	0.00	31	118.39	0.01
32.00	0.00	10	118.39	0.00
34.00	0.00	3	118.39	0.00
36.00	0.00	1	118.39	0.00
38.00	0.00	0	118.39	0.00
40.00	0.00	0	118.39	0.00
42.00	0.00	0	118.39	0.00
44.00	0.00	0	118.39	0.00
46.00	0.00	0	118.39	0.00
48.00	0.00	0	118.39	0.00
50.00	0.00	0	118.39	0.00
52.00	0.00	0	118.39	0.00
54.00	0.00	0	118.39	0.00
56.00	0.00	0	118.39	0.00
58.00	0.00	0	118.39	0.00
60.00	0.00	0	118.39	0.00
62.00	0.00	0	118.39	0.00
64.00	0.00	0	118.39	0.00
66.00	0.00	0	118.39	0.00
68.00	0.00	0	118.39	0.00
70.00	0.00	0	118.39	0.00
72.00	0.00	0	118.39	0.00

Runoff Model 1

Type III 24-hr 25 year Rainfall=10.10"

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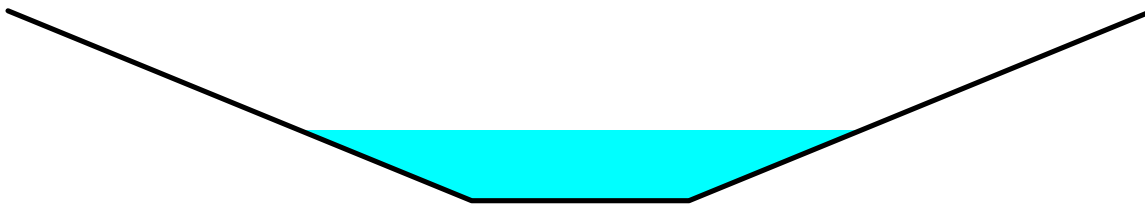
Summary for Reach 2R: right channel

Inflow Area = 6.505 ac, 0.00% Impervious, Inflow Depth = 9.00" for 25 year event
 Inflow = 74.37 cfs @ 12.02 hrs, Volume= 4.880 af
 Outflow = 56.86 cfs @ 12.16 hrs, Volume= 4.880 af, Atten= 24%, Lag= 8.5 min
 Routed to Link 5L : (new Link)

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.76 fps, Min. Travel Time= 5.8 min
 Avg. Velocity = 0.74 fps, Avg. Travel Time= 21.6 min

Peak Storage= 19,780 cf @ 12.06 hrs
 Average Depth at Peak Storage= 1.93' , Surface Width= 15.38'
 Bank-Full Depth= 5.19' Flow Area= 96.6 sf, Capacity= 461.01 cfs

Custom cross-section, Length= 960.0' Slope= 0.0012 '/'
 Constant n= 0.022 Earth, clean & straight
 Inlet Invert= 118.39', Outlet Invert= 117.23'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)
-15.64	123.00	0.00
-2.97	117.81	5.19
0.00	117.81	5.19
2.97	117.81	5.19
15.64	123.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	5.9	0.0	0	0.00
5.19	96.6	33.3	31.3	92,722	461.01



Runoff Model 1

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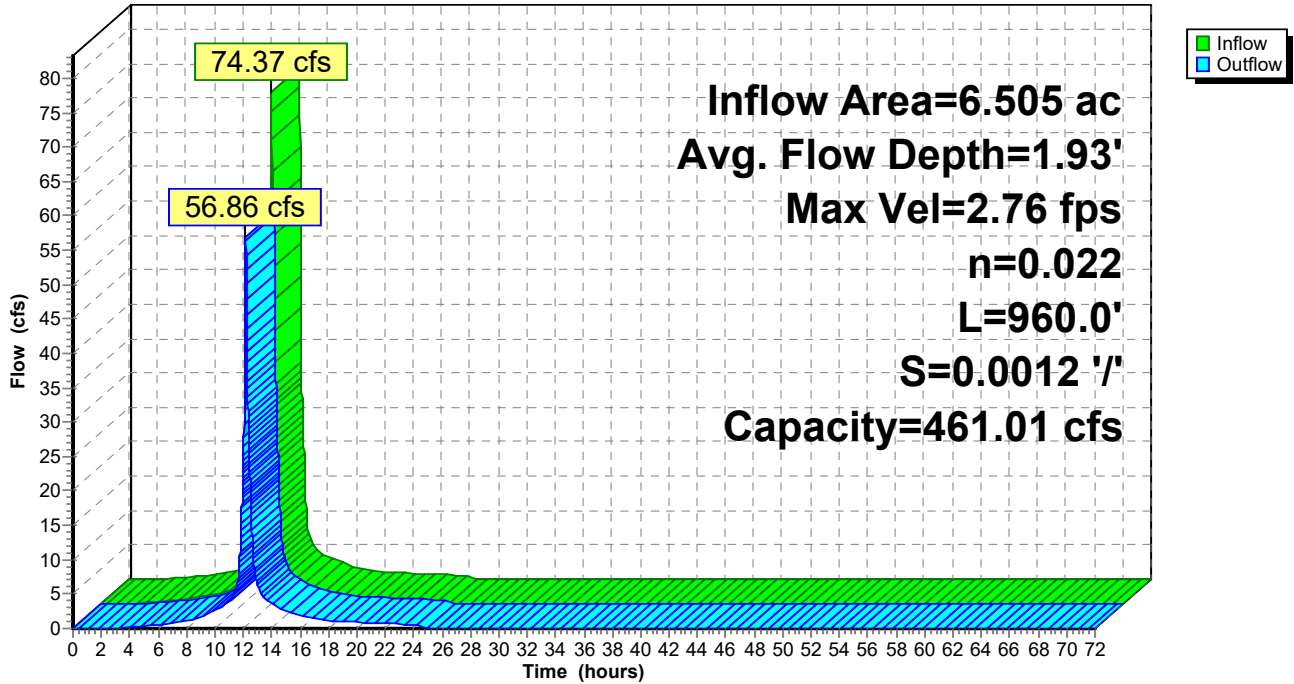
Type III 24-hr 25 year Rainfall=10.10"

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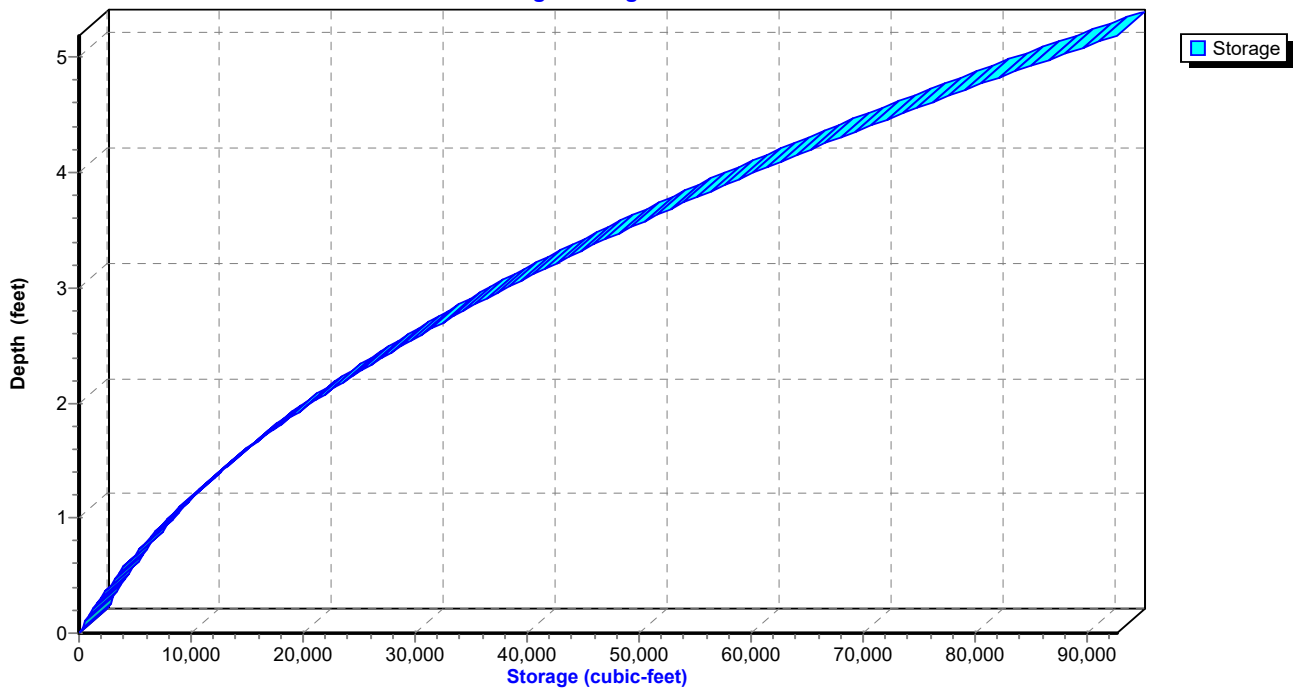
Reach 2R: right channel

Hydrograph



Reach 2R: right channel

Stage-Storage



Runoff Model 1

Type III 24-hr 25 year Rainfall=10.10"

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Hydrograph for Reach 2R: right channel

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)
0.00	0.00	0	118.39	0.00
2.00	0.00	0	118.39	0.00
4.00	0.30	484	118.47	0.21
6.00	0.61	866	118.53	0.55
8.00	1.27	1,399	118.61	1.16
10.00	2.80	2,356	118.75	2.58
12.00	68.84	16,042	120.06	23.81
14.00	3.24	2,805	118.81	3.61
16.00	1.72	1,859	118.68	1.93
18.00	1.06	1,346	118.61	1.15
20.00	0.86	1,148	118.58	0.89
22.00	0.71	1,017	118.56	0.73
24.00	0.56	884	118.54	0.59
26.00	0.00	59	118.40	0.02
28.00	0.00	5	118.39	0.00
30.00	0.00	0	118.39	0.00
32.00	0.00	0	118.39	0.00
34.00	0.00	0	118.39	0.00
36.00	0.00	0	118.39	0.00
38.00	0.00	0	118.39	0.00
40.00	0.00	0	118.39	0.00
42.00	0.00	0	118.39	0.00
44.00	0.00	0	118.39	0.00
46.00	0.00	0	118.39	0.00
48.00	0.00	0	118.39	0.00
50.00	0.00	0	118.39	0.00
52.00	0.00	0	118.39	0.00
54.00	0.00	0	118.39	0.00
56.00	0.00	0	118.39	0.00
58.00	0.00	0	118.39	0.00
60.00	0.00	0	118.39	0.00
62.00	0.00	0	118.39	0.00
64.00	0.00	0	118.39	0.00
66.00	0.00	0	118.39	0.00
68.00	0.00	0	118.39	0.00
70.00	0.00	0	118.39	0.00
72.00	0.00	0	118.39	0.00

Runoff Model 1

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Type III 24-hr 25 year Rainfall=10.10"

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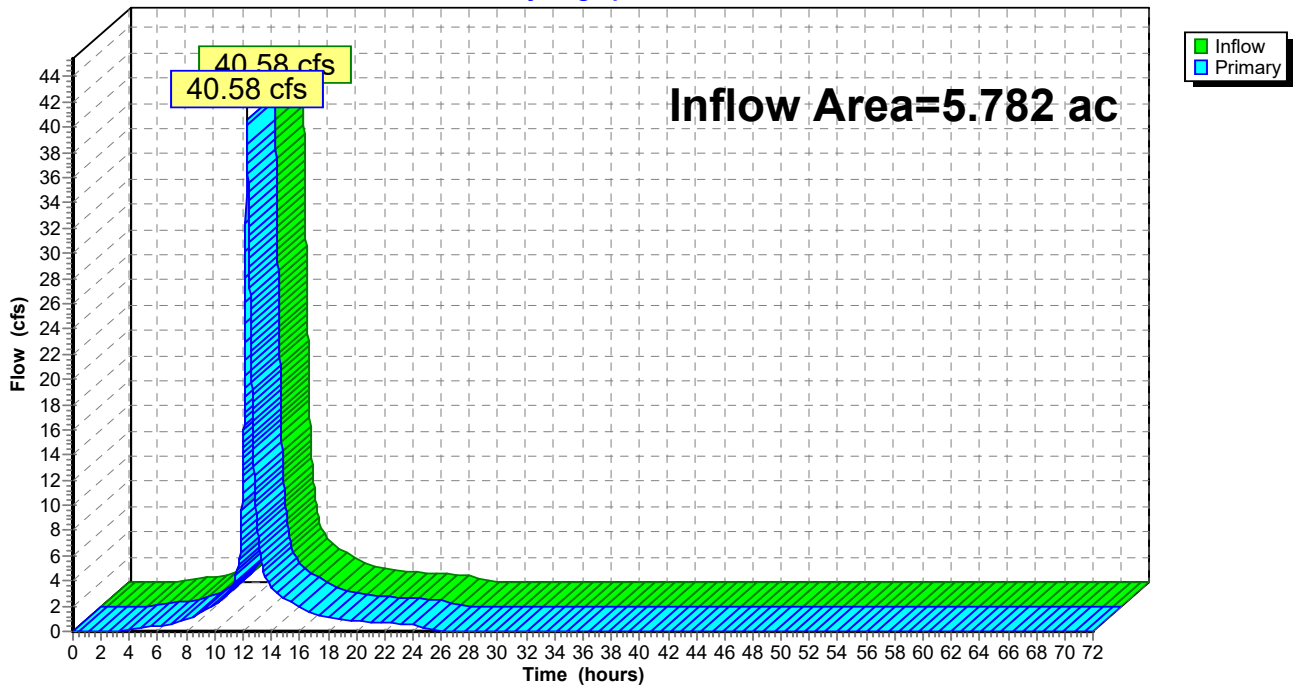
Summary for Link 4L: (new Link)

Inflow Area = 5.782 ac, 0.00% Impervious, Inflow Depth = 9.00" for 25 year event
Inflow = 40.58 cfs @ 12.28 hrs, Volume= 4.338 af
Primary = 40.58 cfs @ 12.28 hrs, Volume= 4.338 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 4L: (new Link)

Hydrograph



Runoff Model 1

Type III 24-hr 25 year Rainfall=10.10"

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Hydrograph for Link 4L: (new Link)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
3.00	0.02	0.00	0.02	56.00	0.00	0.00	0.00
4.00	0.12	0.00	0.12	57.00	0.00	0.00	0.00
5.00	0.28	0.00	0.28	58.00	0.00	0.00	0.00
6.00	0.44	0.00	0.44	59.00	0.00	0.00	0.00
7.00	0.64	0.00	0.64	60.00	0.00	0.00	0.00
8.00	0.94	0.00	0.94	61.00	0.00	0.00	0.00
9.00	1.42	0.00	1.42	62.00	0.00	0.00	0.00
10.00	2.12	0.00	2.12	63.00	0.00	0.00	0.00
11.00	3.22	0.00	3.22	64.00	0.00	0.00	0.00
12.00	12.83	0.00	12.83	65.00	0.00	0.00	0.00
13.00	8.23	0.00	8.23	66.00	0.00	0.00	0.00
14.00	3.57	0.00	3.57	67.00	0.00	0.00	0.00
15.00	2.53	0.00	2.53	68.00	0.00	0.00	0.00
16.00	1.87	0.00	1.87	69.00	0.00	0.00	0.00
17.00	1.40	0.00	1.40	70.00	0.00	0.00	0.00
18.00	1.10	0.00	1.10	71.00	0.00	0.00	0.00
19.00	0.91	0.00	0.91	72.00	0.00	0.00	0.00
20.00	0.81	0.00	0.81				
21.00	0.74	0.00	0.74				
22.00	0.67	0.00	0.67				
23.00	0.61	0.00	0.61				
24.00	0.54	0.00	0.54				
25.00	0.14	0.00	0.14				
26.00	0.05	0.00	0.05				
27.00	0.03	0.00	0.03				
28.00	0.02	0.00	0.02				
29.00	0.01	0.00	0.01				
30.00	0.01	0.00	0.01				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				
52.00	0.00	0.00	0.00				

Runoff Model 1

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Type III 24-hr 25 year Rainfall=10.10"

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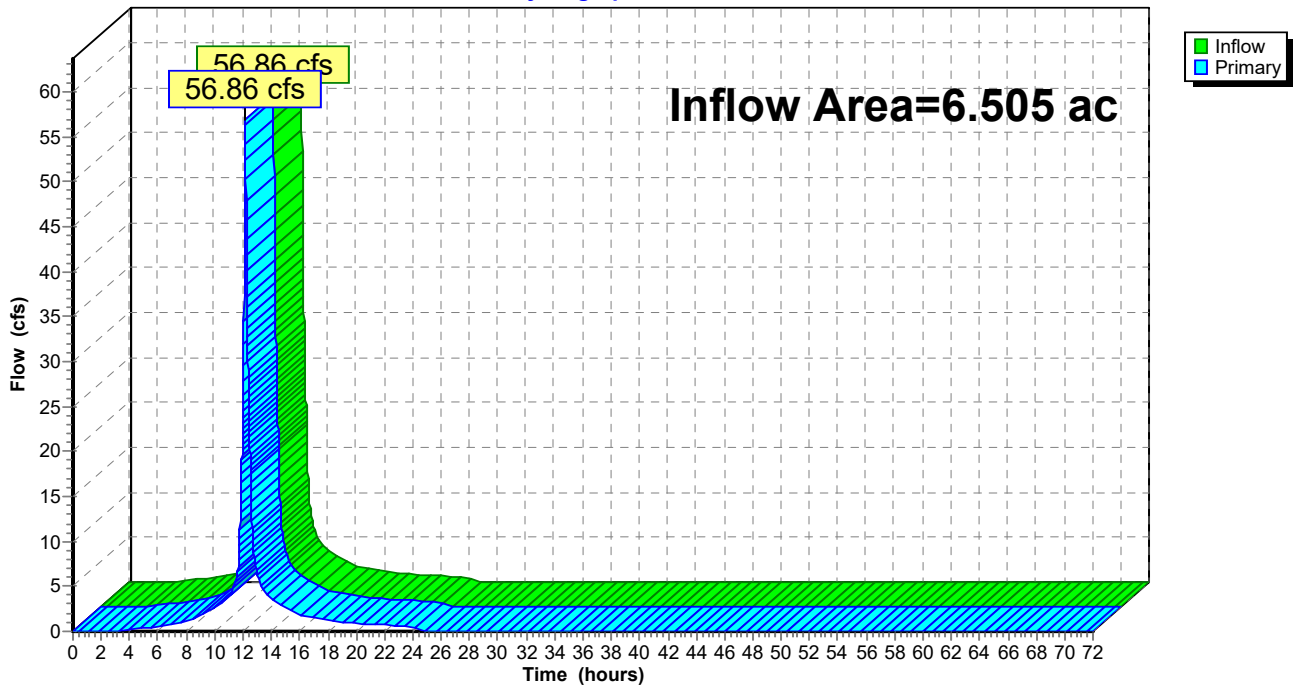
Summary for Link 5L: (new Link)

Inflow Area = 6.505 ac, 0.00% Impervious, Inflow Depth = 9.00" for 25 year event
Inflow = 56.86 cfs @ 12.16 hrs, Volume= 4.880 af
Primary = 56.86 cfs @ 12.16 hrs, Volume= 4.880 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link 5L: (new Link)

Hydrograph



Runoff Model 1

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Hydrograph for Link 5L: (new Link)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.00	0.00	53.00	0.00	0.00	0.00
1.00	0.00	0.00	0.00	54.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	55.00	0.00	0.00	0.00
3.00	0.05	0.00	0.05	56.00	0.00	0.00	0.00
4.00	0.21	0.00	0.21	57.00	0.00	0.00	0.00
5.00	0.39	0.00	0.39	58.00	0.00	0.00	0.00
6.00	0.55	0.00	0.55	59.00	0.00	0.00	0.00
7.00	0.81	0.00	0.81	60.00	0.00	0.00	0.00
8.00	1.16	0.00	1.16	61.00	0.00	0.00	0.00
9.00	1.78	0.00	1.78	62.00	0.00	0.00	0.00
10.00	2.58	0.00	2.58	63.00	0.00	0.00	0.00
11.00	3.98	0.00	3.98	64.00	0.00	0.00	0.00
12.00	23.81	0.00	23.81	65.00	0.00	0.00	0.00
13.00	6.35	0.00	6.35	66.00	0.00	0.00	0.00
14.00	3.61	0.00	3.61	67.00	0.00	0.00	0.00
15.00	2.66	0.00	2.66	68.00	0.00	0.00	0.00
16.00	1.93	0.00	1.93	69.00	0.00	0.00	0.00
17.00	1.48	0.00	1.48	70.00	0.00	0.00	0.00
18.00	1.15	0.00	1.15	71.00	0.00	0.00	0.00
19.00	0.99	0.00	0.99	72.00	0.00	0.00	0.00
20.00	0.89	0.00	0.89				
21.00	0.81	0.00	0.81				
22.00	0.73	0.00	0.73				
23.00	0.66	0.00	0.66				
24.00	0.59	0.00	0.59				
25.00	0.07	0.00	0.07				
26.00	0.02	0.00	0.02				
27.00	0.01	0.00	0.01				
28.00	0.00	0.00	0.00				
29.00	0.00	0.00	0.00				
30.00	0.00	0.00	0.00				
31.00	0.00	0.00	0.00				
32.00	0.00	0.00	0.00				
33.00	0.00	0.00	0.00				
34.00	0.00	0.00	0.00				
35.00	0.00	0.00	0.00				
36.00	0.00	0.00	0.00				
37.00	0.00	0.00	0.00				
38.00	0.00	0.00	0.00				
39.00	0.00	0.00	0.00				
40.00	0.00	0.00	0.00				
41.00	0.00	0.00	0.00				
42.00	0.00	0.00	0.00				
43.00	0.00	0.00	0.00				
44.00	0.00	0.00	0.00				
45.00	0.00	0.00	0.00				
46.00	0.00	0.00	0.00				
47.00	0.00	0.00	0.00				
48.00	0.00	0.00	0.00				
49.00	0.00	0.00	0.00				
50.00	0.00	0.00	0.00				
51.00	0.00	0.00	0.00				
52.00	0.00	0.00	0.00				

Runoff Model 1

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