Bryant Development and Review Committee Meeting

Boswell Municipal Complex - City Hall Conference Room

210 SW 3rd Street

Date: October 08, 2026 - **Time:** 9:00 AM

Call to Order

Old Business

New Business

1. Zyair Estates - Hilltop Road- Preliminary Plat

Richardson Engineering - Requesting Recommendation for Preliminary Plat Approval

- Zyair_Estates.pdf

2. Autumn Hills Estates Ph.1 - Final Plat

Richardson Engineering - Requesting Recommendation for Final Plat Approval

- 1069-APP-01.pdf
- 1069-BOA-01.pdf
- 1069-ENGCRT-01.pdf
- 1069-LTR-01.pdf
- 1069-PLT-01.pdf

3. Midland Estates Ph. 2 - Final Plat

Hope Consulting - Requesting Recommendation for Final Plat Approval

- 1068-ASB-01.pdf
- 1068-BNDLTR-01.pdf
- 1068-LTR-01.pdf
- 1068-PLT-01.pdf

4. The Cottages of Bryant PUD - Preliminary Plat

Hope Consulting - Requesting Recommendation for Approval of Preliminary Plat

- 1071-DRN-01.pdf
- 1071-PLN-01.pdf

Staff Approved

Permit Report

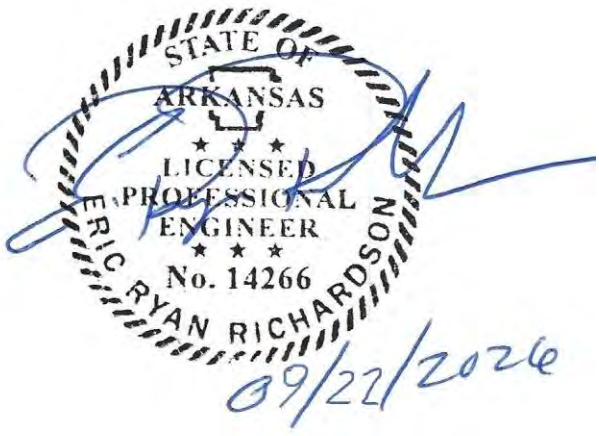
Adjournments

Drainage Report

For

Zyair Estates Subdivision

Bryant, Saline County, Arkansas



September 22, 2026

Prepared by:

RICHARDSON ENGINEERING, PLLC

325 W. South St.
Benton, AR 72015
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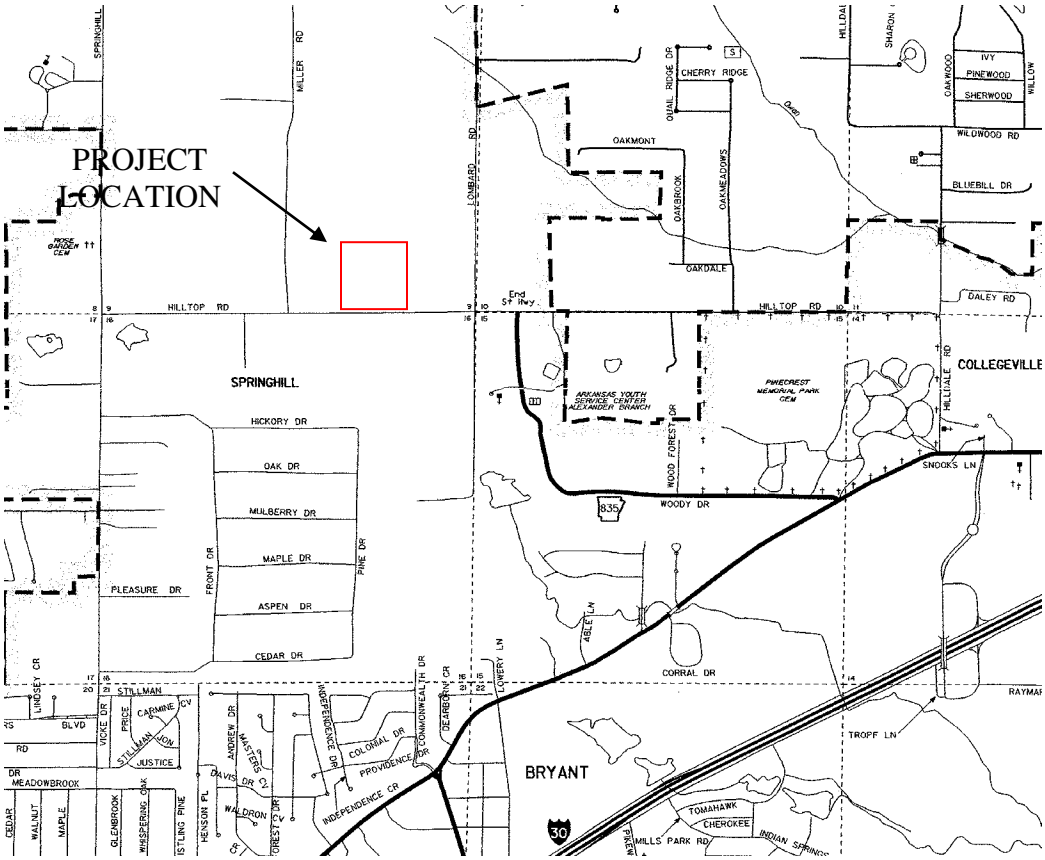
Project Owner Information

Eminent Construction
1100 Hillfarm Road
Bryant, AR 72022

Project Location and Description

The project is located on North side of the Hilltop, part of the Southwest Quater of the Southeast Quarter, Section 9, Township 1-S, Range 14-W, Saline County, Arkansas.



Vicinity Map – N.T.S

This project is a proposed Residential Subdivision, consisting of 78 lots, located in the City of Bryant, Saline County.

Site Drainage

Pre-Development

The pre-developed runoff for the site flows to the East and West. The on-site drainage basins have been broken down into six separate basins that discharge water off-site. Drainage Basins A, B, and C discharge water to the West, Basin D, E and F discharge water to the East. The pre-development drainage basin delineation can be found in the appendix of this report.

The pre-development on-site runoff condition is undeveloped/woods.

Post-Development

The site drainage starts on the Western side of the project and flows to the East and West. The drainage is sheet flows across the lots and roads and is intercepted by the proposed storm sewer system and is discharged into a proposed detention basin on the Eastern side of the proposed development.

The City of Bryant Drainage Manual utilized different C values for each storm event. The C value for the 100-year design storm was utilized for all storm events for the drainage analysis for this site.

The minimum required volume of the detention basin was found by comparing the pre-development rational method hydrograph for the area that the detention pond is being discharged, to the post-development rational method hydrograph for the area that the detention basin is receiving using the Hydrology Studio program. The minimum required volume was found to be 62,928 CF for the 100-year storm event. In order to meet the City of Bryants Stormwater Manual detention requirements, the detention pond has to be sized with at least a 25% factory of safety; therefore, the minimum size of the detention pond is 78,660 CF.

Post-Development Basin A, B, and C consist of lots on the Western border and off-site areas. Post-development Basins A, B, and C all discharge to the West of the proposed development. Post Development Basin D consists of the back half of the lots on the north line as well as off-site areas. Basin D discharges Phase 2 of the Lombard Heights subdivision. The proposed detention basin will utilize a culvert/weir discharge structure. Post-Development Basin “E-1” is the drainage basin that discharges water into the proposed detention basin. Post-development drainage basin “E-1” consists of the majority of the storm drain system for the proposed development as well as the detention pond area. Post-Development Basin E-2 consists of the remaining storm drain system that does not get discharged into the proposed detention pond as well as off-site areas. Basin E-1 and E-2 discharge to the East. Post-Development Basin F consists of the back half of lots on the South line and off-site areas. Basin F discharges to the East. Basins A, B, C, D, E-2, and F are not routed through the detention basin, so they were calculated by themselves. A delineation for the drainage basins that were used in Hydrology Studio (for

the overall site drainage basins), as well as a delineation of the basins that were used in Storm and Sanitary Analysis (on-site storm inlets) can be seen in the appendix of this report.

The post-development on-site runoff conditions changed from undeveloped/woods to single family residential development.

Runoff Summary's

Overall Project Site Area: 29.16 Acres

Pre- Development Drainage Basin Information

Overall Pre-Development Drainage Basin Study Area: 71.08 Acres

Drainage Basins	Drainage Area (Ac)	C Value	Time of Concentration (min)
Basin A	3.20	0.62	11
Basin B	14.74	0.52	15
Basin C	6.84	0.55	11
Basin D	2.95	0.50	8
Basin E-1	11.20	0.50	12
Basin E-2	18.96	0.52	13
Basin F	13.19	0.53	17

Design Storm	Basin A (cfs)	Basin B (cfs)	Basin C (cfs)	Basin D (cfs)
2-yr	8.53	28.63	16.17	7.32
10-yr	11.43	38.41	21.67	9.80
25-yr	13.13	44.15	24.90	11.26
50-yr	14.36	48.29	27.23	12.31
100-yr	15.60	52.42	29.57	13.38

Design Storm	Basin E-1 (cfs)	Basin E-2 (cfs)	Basin F (cfs)
2-yr	23.14	39.29	24.68
10-yr	31.02	52.69	33.12
25-yr	35.65	60.55	38.07
50-yr	38.98	66.22	41.64
100-yr	42.33	71.90	45.20

Overall Site Post- Development Drainage Basin Information

Overall Post-Development Drainage Study Area: 71.05 Acres

Drainage Basins	Drainage Area (Ac)	C Value	Time of Concentration (min)
Basin A	3.33	0.65	15
Basin B	12.53	0.55	21
Basin C	6.75	0.57	11
Basin D	2.97	0.57	8
Basin E-1	18.00	0.75	23
Basin E-2	15.86	0.56	13
Basin F	11.61	0.56	16

Design Storm	Basin A (cfs)	Basin B (cfs)	Basin C (cfs)	Basin D (cfs)
2-yr	8.2	22.51	16.54	8.25
10-yr	11.01	30.23	22.16	11.06
25-yr	12.66	34.75	25.47	12.70
50-yr	13.85	38.03	27.85	13.88
100-yr	15.03	41.26	30.24	15.08

Design Storm	Basin E-1 (cfs)	Basin E-2 (cfs)	Basin F (cfs)
2-yr	41.56	35.39	23.59
10-yr	55.83	47.46	31.65
25-yr	64.18	54.55	36.38
50-yr	70.24	59.65	39.79
100-yr	76.20	64.77	43.19

Basin A

Pre-Development Drainage Study Area = 3.20
Post-Development Drainage Study Area = 3.33
Existing Condition runoff Coefficient: C = 0.65
Proposed runoff Coefficient: C = 0.65
Tc Undeveloped = 11 Minutes (TR55 Method)
Tc Developed = 15 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	8.53	8.2	+0.33
10-yr	11.43	11.01	+0.42
25-yr	13.13	12.66	+0.47
50-yr	14.36	13.85	+0.51
100-yr	15.6	15.03	+0.57

Basin B

Pre-Development Drainage Study Area = 14.7
Post-Development Drainage Study Area = 12.53
Existing Condition runoff Coefficient: C = 0.52
Proposed runoff Coefficient: C = 0.55
Tc Undeveloped = 15 Minutes (TR55 Method)
Tc Developed = 21 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	28.63	22.51	+6.12
10-yr	38.41	30.23	+8.18
25-yr	44.15	34.75	+9.4
50-yr	48.29	38.03	+10.26
100-yr	52.42	41.26	+11.16

Basin C

Pre-Development Drainage Study Area = 6.84
Post-Development Drainage Study Area = 6.75
Existing Condition runoff Coefficient: C = 0.55
Proposed runoff Coefficient: C = 0.57
Tc Undeveloped = 11 Minutes (TR55 Method)
Tc Developed = 11 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	16.17	16.54	-0.37
10-yr	21.67	22.16	-0.49
25-yr	24.9	25.47	-0.57
50-yr	27.23	27.85	-0.62
100-yr	29.57	30.24	-0.67

Basin D

Pre-Development Drainage Study Area = 2.95
Post-Development Drainage Study Area = 2.97
Existing Condition runoff Coefficient: C = 0.50
Proposed runoff Coefficient: C = 0.57
Tc Undeveloped = 8 Minutes (TR55 Method)
Tc Developed = 8 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	7.32	8.25	-0.93
10-yr	9.8	11.06	-1.26
25-yr	11.26	12.7	-1.44
50-yr	12.31	13.88	-1.57
100-yr	13.38	15.08	-1.7

Basin E1

Pre-Development Drainage Study Area = 11.20 Ac
Post-Development Drainage Study Area = 18.00 Ac
Existing Condition runoff Coefficient: C = 0.50
Proposed runoff Coefficient: C = 0.75
Tc Undeveloped = 12 Minutes (TR55 Method)
Tc Developed = 23 Minutes (TR55 Method)
Detention Basin Required Volume: 62928 CF
Detention Basin Volume: 79000 CF
Maximum Storage: 83802 CF
Discharge Structure: Culvert/Weir

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Post-Development w/ Detention Flow Rate (cfs)	Maximum Water Elevation in Pond (ft)
2-yr	23.14	41.56	23.14	470.62
10-yr	31.02	55.83	31.02	471.30
25-yr	35.65	64.18	35.65	471.71
50-yr	38.98	70.24	38.98	472.00
100-yr	42.33	76.20	42.33	472.24

Basin E2

Pre-Development Drainage Study Area = 18.96 Ac
Post-Development Drainage Study Area = 15.86 Ac
Existing Condition runoff Coefficient: C = 0.52
Proposed runoff Coefficient: C = 0.56
Tc Undeveloped = 13 Minutes (TR55 Method)
Tc Developed = 13 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	39.29	35.39	+3.90
10-yr	52.69	47.46	+5.23
25-yr	60.55	54.55	+6.00
50-yr	66.22	59.65	+6.57
100-yr	71.9	64.77	+7.13

Basin F

Pre-Development Drainage Study Area = 13.19
Post-Development Drainage Study Area = 12.00
Existing Condition runoff Coefficient: C = 0.53
Proposed runoff Coefficient: C = 0.56
Tc Undeveloped = 17 Minutes (TR55 Method)
Tc Developed = 16 Minutes (TR55 Method)

Design Storm	Pre-Development Flow Rate (cfs)	Post-Development Flow Rate (cfs)	Difference (cfs)
2-yr	24.68	23.59	1.09
10-yr	33.12	31.65	1.47
25-yr	38.07	36.38	1.69
50-yr	41.64	39.79	1.85
100-yr	45.2	43.19	2.01

Recommendations/Summary

The proposed drainage improvements include a storm sewer system and a detention basin on the Eastern side of the project. The proposed detention basin releases the post development runoff at a lower rate than the pre-development condition.

Appendices

Runoff Coefficient Calculations
Time of Concentration Calculation
NRCS Soil Report
NOAA Atlas 14 Data
Site Drainage Basin Map
SSA Design Layout
Storm System Design (SSA)
Detention Pond Storage Estimate
Pond and Post Development Hydrographs (Hydrology Studio)

Runoff Coefficient Calculations

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PROJECT 024-034 Drainage Analysis DATE 09/25/2026

PRE-DEV BASIN "A" Area = 3.20 ac

→ Impervious : 0.20 Ac C = 0.95

→ Residential : 2.09 Ac C = 0.65
½ ac or larger

→ Undeveloped : 0.39 Ac C = 0.50 (clay soil Avg 2-7%)

→ Ditches : 0.52 Ac C = 0.49 (Fair condition Avg 2-7%)

$$\text{Composite } C = \frac{(0.20 \times 0.95) + (2.09 \times 0.65) + (0.39 \times 0.5) + (0.52 \times 0.49)}{3.20}$$

$$\boxed{C = 0.62}$$

PRE-DEV BASIN "B" Area = 14.74 Ac

→ Impervious : 0.19 AC C = 0.95

→ Residential : 0.29 AC C = 0.65
(½ ac or larger)

→ Undeveloped : 14.26 AC C = 0.50

$$C = \frac{(0.19 \times 0.95) + (0.29 \times 0.65) + (14.26 \times 0.5)}{14.74} \qquad \boxed{C = 0.51}$$

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PRE-DEV BASIN "C" Area = 6.84 Ac

→ Impervious : 0.10 AC C=0.95

→ Residential : 1.66 AC C=0.65
(½ or larger)

→ Commercial : 0.23 Ac C = 0.8
(water tank)

→ Undeveloped : 4.85 Ac C = 0.50

$$\text{composite } c = \frac{(0.1 \times 0.95) + (1.66 \times 0.65) + (0.23 \times 0.8) + (4.85 \times 0.5)}{6.84}$$

∴ **C = 0.55**

PRE-DEV BASIN "D" Area = 2.95 Ac

→ Undeveloped : 2.95 Ac C = 0.5

∴ **C = 0.5**

PRE-DEV BASIN "E-1" Area = 11.20 Ac

→ Undeveloped : 11.20 AC C = 0.5

∴ **C = 0.5**

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PRE-DEV BASIN "E-2" Area = 18.96 Ac

→ Single Family Residential : 1.20 Ac C = 0.7

→ Residential ($\frac{1}{2}$ or larger) : 1.0 Ac C = 0.65

→ Undeveloped : 16.76 Ac C = 0.5

$$\text{composite } c = \frac{(1.2 \times 0.7) + (1 \times 0.65) + (16.76 \times 0.5)}{18.96}$$

$$\therefore \boxed{c = 0.52}$$

PRE-DEV BASIN "F" Area = 13.19 Ac

→ Impervious : 0.35 Ac C = 0.95

→ Residential ($\frac{1}{2}$ or larger) : 1.62 Ac C = 0.65

→ Undeveloped : 11.22 Ac C = 0.5

$$\text{composite } c = \frac{(0.35 \times 0.95) + (1.62 \times 0.65) + (11.22 \times 0.5)}{13.19}$$

$$\therefore \boxed{c = 0.53}$$

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POST-DEV BASIN "A" Area: 3.33 Ac

-> Impervious : 0.27 Ac C = 0.95
-> Single Family : 0.35 Ac C = 0.7
-> Residential : 2.2 Ac C = 0.65
($\frac{1}{2}$ ac or larger)
-> Ditches : 0.48 Ac C = 0.49

$$\text{composite } C = \frac{(0.27 \times 0.95) + (0.35 \times 0.7) + (2.2 \times 0.65) + (0.48 \times 0.49)}{3.33}$$

$\therefore \boxed{C = 0.65}$

POST-DEV BASIN "B" Area: 12.53 Ac

-> Impervious : 0.19 Ac C = 0.95
-> Residential : 0.29 Ac C = 0.65
($\frac{1}{2}$ Ac or larger)
-> Single Family : 3.41 Ac C = 0.7
-> Undeveloped : 8.6 Ac C = 0.5

$$\text{composite } C = \frac{(0.19 \times 0.95) + (0.29 \times 0.65) + (3.41 \times 0.7) + (8.6 \times 0.5)}{12.53}$$

$\therefore \boxed{C = 0.55}$

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POST-DEV BASIN "C" Area: 6.75 AC

-> Impervious : 0.1 AC C = 0.95

-> Residential (½ or larger) : 1.66 AC C = 0.65

-> Single Family : 0.44 AC C = 0.7

-> Commercial (water tank) : 0.23 AC C = 0.8

-> Undeveloped : 4.32 AC C = 0.5

$$\text{composite } C = \frac{(0.1 \times 0.95) + (1.66 \times 0.65) + (0.44 \times 0.7) + (0.23 \times 0.8) + (4.32 \times 0.5)}{6.75}$$

$\therefore \boxed{C = 0.57}$

POST-DEV BASIN "D" Area: 2.97 AC

-> Single Family : 1.10 AC C = 0.7

-> Undeveloped : 1.87 AC C = 0.5

$$\text{Composite } C = \frac{(1.1 \times 0.7) + (1.87 \times 0.5)}{2.97} = 0.57$$

$\therefore \boxed{C = 0.57}$

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POST-DEV BASIN "E-1"

Area : 18 Ac

→ Impervious : 4.63 Ac C = 0.95
→ Single Family : 9.81 Ac C = 0.7
→ Woods : 3.59 Ac C = 0.6 (clay soil 7% slope)

$$\text{Composite } C = \frac{(4.63 \times 0.95) + (9.81 \times 0.7) + (3.59 \times 0.6)}{18}$$

$$\boxed{C = 0.745}$$

POST-DEV BASIN "E-2"

Area : 15.86

→ single Family : 4.14 Ac C = 0.7
→ Gravel : 0.36 Ac C = 0.65
→ Residential ($\frac{1}{2}$ or larger) : 1.44 Ac C = 0.65
→ Undeveloped : 9.93 Ac C = 0.5

$$\text{composite } C = \frac{(4.14 \times 0.7) + (0.36 \times 0.65) + (1.44 \times 0.65) + (9.9 \times 05)}{15.86}$$

$$\therefore \boxed{C = 0.56}$$

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POST-DEV BASIN "F"

Area : 11.61 AC

→ Impervious : 0.37 AC C = 0.95

→ Single Family : 1.50 AC C = 0.70

→ Residential : 1.52 AC C = 0.65
($\frac{1}{2}$ AC or larger)

→ Undeveloped : 8.21 AC C = 0.50

$$\text{Composite } C = \frac{(0.37 \times 0.95) + (1.50 \times 0.7) + (1.52 \times 0.65) + (8.21 \times 0.5)}{11.61}$$

∴ **C = 0.56**

Runoff Coefficients

Land Use Types	Frequency 10	25	100
Business			
Central Business District	0.9	0.93	0.95
Commercial Area	.85 (.70-.95)*	0.9	0.95
Neighborhood Area	.70 (.50-.75)	0.75	0.8
Residential			
Single Family	.50 (.30-.60)	0.6	0.7
Multi-Unit (Detached)	.60 (.40-.65)	0.65	0.75
Multi-Unit (Attached)	.70 (.60-.75)	0.75	0.8
½ Acre Lots or Larger	.40 (.25-.50)	0.45	0.65
Apartments	.70 (.50-.80)	0.75	0.8
Industrial			
Light Areas	.80 (.50-.85)	0.82	0.85
Heavy Areas	.85 (.60-.90)	0.87	0.9
Miscellaneous			
Parks and Cemeteries	.30 (.10-.40)	0.4	0.6
Playgrounds	.35 (.20-.40)	0.5	0.7
Schools and Churches	.60 (.50-.75)	0.65	0.75
Railroad Yards	.50 (.30-.60)	0.6	0.7
Offsite Flow Analysis (When Land Use Not Defined)	.55 (.45-.65)	0.67	0.7

*NOTE: The range of runoff coefficients is based on soil type. The low value is for sandy soils, while the high value is for clay soils. The given runoff coefficient outside the parenthesis is to be used for design, unless the Engineer of Record receives approval from the City Engineer for another value located within the given coefficient range.

Source: City of Little Rock Stormwater Management & Drainage Design Manual

TABLE 400-1 Runoff Coefficients for Surface Types

Character of Surface	Return Period					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Developed						
Asphaltic	0.73	0.77	0.81	0.86	0.90	0.95
Concrete/Roof	0.75	0.80	0.83	0.88	0.92	0.97
Grass Areas (Lawns, Parks, etc.)						
Poor Condition (grass cover less than 50 percent of the area)						
Flat, 0-2%	0.32	0.34	0.37	0.40	0.44	0.47
Average, 2-7%	0.37	0.40	0.43	0.46	0.49	0.53
Steep, Over 7%	0.40	0.43	0.45	0.49	0.52	0.55
Fair Condition (grass cover on 50 to 75 percent of the area)						
Flat, 0-2%	0.25	0.28	0.30	0.34	0.37	0.41
Average, 2-7%	0.33	0.36	0.38	0.42	0.45	0.49
Steep, Over 7%	0.37	0.40	0.42	0.46	0.49	0.53
Good Condition (grass cover larger than 75 percent of the area)						
Flat, 0-2%	0.21	0.23	0.25	0.29	0.32	0.36
Average, 2-7%	0.29	0.32	0.35	0.39	0.42	0.46
Steep, Over 7%	0.34	0.37	0.40	0.44	0.47	0.51
Undeveloped						
Cultivated Land						
Flat, 0-2%	0.31	0.34	0.36	0.40	0.43	0.47
Average, 2-7%	0.35	0.38	0.41	0.44	0.48	0.51
Steep, Over 7%	0.39	0.42	0.44	0.48	0.51	0.54
Pasture/Range						
Flat, 0-2%	0.25	0.28	0.30	0.34	0.37	0.41
Average, 2-7%	0.33	0.36	0.38	0.42	0.45	0.49
Steep, Over 7%	0.37	0.40	0.42	0.46	0.49	0.53
Forest/Woodlands						
Flat, 0-2%	0.22	0.25	0.28	0.31	0.35	0.39
Average, 2-7%	0.31	0.34	0.36	0.40	0.43	0.47
Steep, Over 7%	0.35	0.39	0.41	0.45	0.48	0.52

Source: Rossmiller, R.L. "The Raional Formula Revisited."
County of Austin Drainage Criteria Manual

TABLE 400-2

Runoff Coefficients for Rational Method Composite Analysis

Land Use Types	Frequency 10	25	100
Undeveloped Areas			
Historic Flow Analysis, Greenbelts			
Agricultural, Natural Vegetation			
Clay Soil			
Flat, 2%	0.3	0.33	0.37
Average, 2-7%	0.4	0.44	0.5
Steep, 7%	0.5	0.55	0.62
Sandy Soil			
Flat, 2%	0.12	0.13	0.15
Average, 2-7%	0.2	0.22	0.25
Steep, 7%	0.3	0.33	0.37
Streets			
Paved	0.9	0.92	0.95
Gravel	0.35	0.5	0.65
Miscellaneous			
Drives and Walks	0.9	0.91	0.92
Roofs	0.9	0.92	0.95
Lawns			
Clay Soil			
Flat, 2%	0.18	0.2	0.25
Average, 2-7%	0.22	0.28	0.35
Steep, 7%	0.35	0.45	0.6
Sandy Soil			
Flat, 2%	0.1	0.25	0.4
Average, 2-7%	0.15	0.3	0.45
Steep, 7%	0.2	0.35	0.5

Source: City of Little Rock Stormwater Management & Drainage Design Manual

The design engineer shall use the preceding values as a rule of thumb. Areas not conforming to the preceding descriptions will be evaluated by calculating a composite runoff coefficient. Areas will be evaluated based upon the ultimate development for the area under consideration.

Time of Concentration

RICHARDSON ENGINEERING
Planning ▪ Engineering ▪ Development Consulting

325 West South Street
Benton, AR 72015
(501) 315-7225

PROJECT 024-034 Tc Calculation DATE 09/25/2026

POST-DEV BASIN "E-1"

overland Flow from lots to Pipe Network (L) = 157 ft

→ mannings n = 0.25

→ 24 hr, 2Year (P) = 4.34 rainfall

→ slope (S) = 0.017

$$t_1 = \frac{0.007 \times (nL)^{0.8}}{(P)^{0.5} \times (S)^{0.4}} = \frac{0.007 \times (0.25 \times 157)^{0.8}}{4.34^{0.5} \times 0.017^{0.4}} = \boxed{20.39 \text{ min}}$$

$$\left[t = \frac{V}{L \times 60} \right]$$

Pipe-25(3)	L = 33.2 ft	V = 4.2 fps	→ t_2 = 0.12 min
pipe-25(2)	L = 150 ft	V = 4.8 fps	→ t_3 = 0.49 min
pipe-25(1)	L = 44.8 ft	V = 5.36 fps	→ t_4 = 0.13 min
pipe-24	L = 73.5 ft	V = 8.97 fps	→ t_5 = 0.13 min
pipe 23	L = 222 ft	V = 6.68 fps	→ t_6 = 0.53 min
pipe 21	L = 69.8 ft	V = 8.01 fps	→ t_7 = 0.139 min
pipe 20	L = 256 ft	V = 7.2 fps	→ t_8 = 0.56 min
pipe 17	L = 32.9 ft	V = 7.5 fps	→ t_9 = 0.07 min
pipe 16	L = 131.6	V = 10.9 fps	→ t_{10} = 0.19 min
pipe-25(15)	L = 248	V = 8.17 fps	→ t_{11} = 0.48 min
pipe-25(15)(1)	L = 24.2	V = 7.46 fps	→ t_{12} = 0.051 min

RICHARDSON ENGINEERING
Planning ▪ Engineering ▪ Development Consulting

325 West South Street
Benton, AR 72015
(501) 315-7225

PROJECT 024-034 t_c Calculation DATE 09/25/2026

FES-46 to Weir 6

$L = 149$ ft

$S = 0.025$ ft/ft

$V = 20.328(S)^{0.5} = 16.1345(0.025)^{0.5}$ (For paved surface)

$= 4.54$ fps

$$t_{13} = \frac{149}{4.54 \times 60} = 0.54 \text{ min}$$

∴ Total time of concentration $= t_1 + t_2 + t_3 \ldots\ldots t_{13}$

$=$ **23 minutes** #

NRCS Soil Report

Soil Map—Saline County, Arkansas
(Hilltop Property Drainage Analysis)

Map Scale: 1:4,150 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Saline County, Arkansas
Survey Area Data: Version 22, Sep 10, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 1, 2022—May 29, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Carnasaw-Townley association, undulating	16.2	22.7%
29	Tiak silt loam, 3 to 8 percent slopes	54.9	77.3%
Totals for Area of Interest		**71.1**	**100.0%**

Saline County, Arkansas

9—Carnasaw-Townley association, undulating

Map Unit Setting

National map unit symbol: m073
Landscape: Hills
Elevation: 500 to 1,800 feet
Mean annual precipitation: 44 to 61 inches
Mean annual air temperature: 49 to 74 degrees F
Frost-free period: 185 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Carnasaw and similar soils: 50 percent
Townley and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Carnasaw

Setting

Landscape: Hills
Landform: Hills
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from acid shale

Typical profile

A - 0 to 3 inches: gravelly silt loam
Bt1 - 3 to 6 inches: silty clay loam
Bt2 - 6 to 40 inches: clay
Cr - 40 to 72 inches: bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 40 to 60 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Ecological site: F119XY006AR - Clayey Upland
Hydric soil rating: No

Description of Townley

Setting

Landscape: Hills
Landform: Hills
Landform position (three-dimensional): Nose slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy residuum weathered from sandstone and shale over clayey residuum weathered from sandstone and shale

Typical profile

A - 0 to 6 inches: silt loam
Bt1 - 6 to 23 inches: silty clay
Bt2 - 23 to 25 inches: silty clay
Cr - 25 to 29 inches: bedrock

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F119XY006AR - Clayey Upland
Hydric soil rating: No

Minor Components

Pirum

Percent of map unit: 15 percent
Landscape: Hills
Ecological site: F119XY007AR - Loamy Upland
Hydric soil rating: No

Data Source Information

Soil Survey Area: Saline County, Arkansas
Survey Area Data: Version 22, Sep 10, 2025

Saline County, Arkansas

29—Tiak silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: m06q
Landscape: Coastal plains
Elevation: 70 to 570 feet
Mean annual precipitation: 44 to 61 inches
Mean annual air temperature: 49 to 74 degrees F
Frost-free period: 185 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Tiak and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tiak

Setting

Landscape: Coastal plains
Landform: Interfluves
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy and clayey marine deposits

Typical profile

A - 0 to 7 inches: silt loam
E - 7 to 9 inches: loam
Bt1 - 9 to 32 inches: clay
Bt2 - 32 to 72 inches: clay

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C/D
Ecological site: F133BY002TX - Seasonally Wet Upland

Hydric soil rating: No

Data Source Information

Soil Survey Area: Saline County, Arkansas
Survey Area Data: Version 22, Sep 10, 2025

NOAA Atlas 14 Data

NOAA Atlas 14, Volume 9, Version 2
Location name: Bryant, Arkansas, USA*
Latitude: 34.6452°, Longitude: -92.5032°
Elevation: 527 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.452** (0.366-0.553)	**0.512** (0.414-0.627)	**0.607** (0.490-0.746)	**0.684** (0.549-0.844)	**0.786** (0.608-0.994)	**0.861** (0.652-1.11)	**0.934** (0.684-1.23)	**1.01** (0.707-1.36)	**1.10** (0.741-1.53)	**1.16** (0.768-1.66)
10-min	**0.661** (0.536-0.810)	**0.749** (0.607-0.918)	**0.889** (0.717-1.09)	**1.00** (0.803-1.24)	**1.15** (0.890-1.46)	**1.26** (0.955-1.62)	**1.37** (1.00-1.80)	**1.47** (1.04-2.00)	**1.60** (1.09-2.24)	**1.70** (1.12-2.42)
15-min	**0.806** (0.654-0.988)	**0.914** (0.740-1.12)	**1.08** (0.875-1.33)	**1.22** (0.980-1.51)	**1.40** (1.08-1.77)	**1.54** (1.16-1.98)	**1.67** (1.22-2.20)	**1.80** (1.26-2.44)	**1.96** (1.32-2.73)	**2.07** (1.37-2.96)
30-min	**1.20** (0.972-1.47)	**1.36** (1.10-1.67)	**1.62** (1.31-2.00)	**1.83** (1.47-2.26)	**2.11** (1.63-2.66)	**2.31** (1.75-2.96)	**2.50** (1.83-3.30)	**2.69** (1.89-3.65)	**2.93** (1.98-4.09)	**3.10** (2.05-4.42)
60-min	**1.60** (1.30-1.96)	**1.82** (1.47-2.23)	**2.16** (1.74-2.65)	**2.44** (1.95-3.00)	**2.81** (2.17-3.56)	**3.09** (2.34-3.97)	**3.36** (2.46-4.44)	**3.63** (2.56-4.93)	**3.98** (2.70-5.57)	**4.24** (2.80-6.05)
2-hr	**2.01** (1.64-2.44)	**2.27** (1.85-2.76)	**2.69** (2.19-3.28)	**3.04** (2.46-3.72)	**3.51** (2.74-4.42)	**3.87** (2.95-4.95)	**4.22** (3.12-5.54)	**4.58** (3.24-6.18)	**5.04** (3.44-7.00)	**5.38** (3.58-7.62)
3-hr	**2.26** (1.86-2.74)	**2.55** (2.09-3.09)	**3.03** (2.48-3.68)	**3.43** (2.79-4.19)	**3.99** (3.13-5.01)	**4.42** (3.39-5.64)	**4.85** (3.60-6.35)	**5.29** (3.77-7.13)	**5.88** (4.03-8.15)	**6.33** (4.22-8.93)
6-hr	**2.71** (2.24-3.26)	**3.08** (2.55-3.70)	**3.70** (3.05-4.46)	**4.24** (3.47-5.13)	**5.00** (3.97-6.27)	**5.61** (4.35-7.14)	**6.23** (4.67-8.14)	**6.89** (4.95-9.24)	**7.78** (5.37-10.7)	**8.47** (5.69-11.9)
12-hr	**3.20** (2.67-3.81)	**3.68** (3.07-4.40)	**4.52** (3.75-5.40)	**5.25** (4.33-6.30)	**6.30** (5.05-7.87)	**7.15** (5.59-9.06)	**8.04** (6.07-10.5)	**8.98** (6.50-12.0)	**10.3** (7.16-14.1)	**11.3** (7.65-15.8)
24-hr	**3.75** (3.15-4.44)	**4.35** (3.66-5.15)	**5.39** (4.51-6.40)	**6.30** (5.25-7.52)	**7.64** (6.18-9.50)	**8.74** (6.89-11.0)	**9.89** (7.53-12.8)	**11.1** (8.11-14.8)	**12.8** (8.99-17.5)	**14.2** (9.65-19.6)
2-day	**4.40** (3.73-5.16)	**5.07** (4.30-5.96)	**6.24** (5.27-7.35)	**7.28** (6.11-8.62)	**8.81** (7.18-10.9)	**10.1** (8.00-12.6)	**11.4** (8.73-14.6)	**12.8** (9.40-16.9)	**14.7** (10.4-20.0)	**16.3** (11.2-22.4)
3-day	**4.81** (4.10-5.62)	**5.54** (4.71-6.47)	**6.78** (5.75-7.95)	**7.87** (6.64-9.27)	**9.46** (7.75-11.6)	**10.8** (8.59-13.4)	**12.1** (9.33-15.5)	**13.6** (10.0-17.8)	**15.6** (11.0-21.0)	**17.2** (11.8-23.5)
4-day	**5.14** (4.39-5.98)	**5.90** (5.04-6.87)	**7.20** (6.12-8.41)	**8.33** (7.04-9.78)	**9.97** (8.18-12.2)	**11.3** (9.03-14.0)	**12.7** (9.78-16.1)	**14.1** (10.4-18.5)	**16.1** (11.5-21.7)	**17.7** (12.2-24.2)
7-day	**5.96** (5.13-6.89)	**6.79** (5.84-7.86)	**8.20** (7.02-9.52)	**9.41** (8.01-11.0)	**11.1** (9.18-13.5)	**12.5** (10.1-15.4)	**13.9** (10.8-17.6)	**15.4** (11.5-20.0)	**17.5** (12.5-23.4)	**19.1** (13.2-25.9)
10-day	**6.74** (5.82-7.76)	**7.61** (6.57-8.77)	**9.07** (7.80-10.5)	**10.3** (8.82-12.0)	**12.1** (9.99-14.5)	**13.5** (10.9-16.5)	**14.9** (11.6-18.7)	**16.4** (12.2-21.2)	**18.4** (13.2-24.5)	**20.0** (13.9-27.0)
20-day	**9.13** (7.96-10.4)	**10.1** (8.78-11.5)	**11.6** (10.1-13.4)	**12.9** (11.2-14.9)	**14.8** (12.3-17.5)	**16.2** (13.1-19.5)	**17.6** (13.8-21.8)	**19.0** (14.3-24.3)	**20.9** (15.1-27.6)	**22.4** (15.7-30.1)
30-day	**11.1** (9.71-12.6)	**12.2** (10.7-13.9)	**14.0** (12.2-15.9)	**15.4** (13.4-17.7)	**17.4** (14.6-20.6)	**18.9** (15.5-22.7)	**20.4** (16.1-25.2)	**21.9** (16.5-27.9)	**23.9** (17.3-31.3)	**25.4** (17.8-33.9)
45-day	**13.4** (11.8-15.2)	**14.9** (13.1-16.8)	**17.1** (15.0-19.5)	**18.9** (16.5-21.6)	**21.4** (17.9-25.1)	**23.2** (19.0-27.7)	**25.0** (19.7-30.6)	**26.7** (20.2-33.7)	**28.9** (20.9-37.7)	**30.5** (21.5-40.6)
60-day	**15.3** (13.6-17.3)	**17.1** (15.1-19.3)	**20.0** (17.5-22.6)	**22.2** (19.4-25.3)	**25.2** (21.2-29.4)	**27.4** (22.5-32.5)	**29.5** (23.3-36.0)	**31.5** (23.9-39.7)	**34.1** (24.8-44.2)	**35.9** (25.4-47.7)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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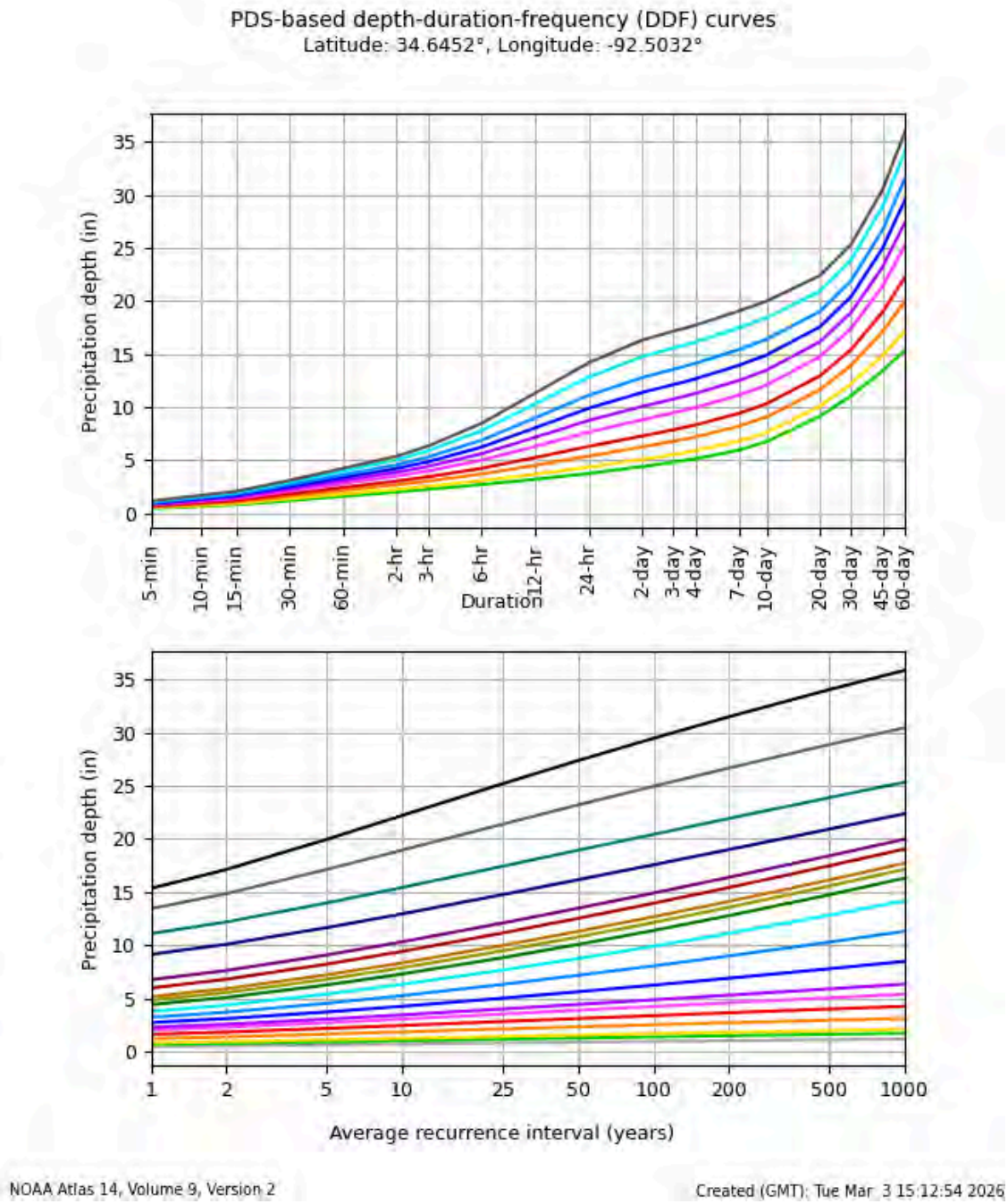
PF graphical



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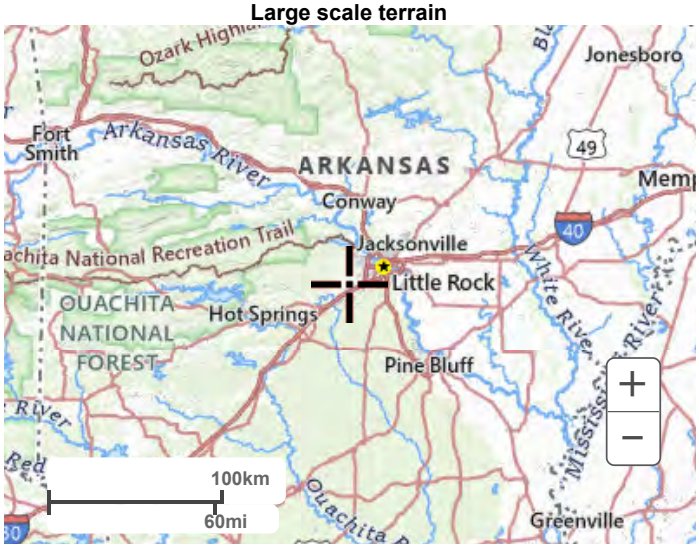
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map

Large scale aerial

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

NOAA Atlas 14, Volume 9, Version 2
Location name: Bryant, Arkansas, USA*
Latitude: 34.6452°, Longitude: -92.5032°
Elevation: 527 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**5.42** (4.39-6.64)	**6.14** (4.97-7.52)	**7.28** (5.88-8.95)	**8.21** (6.59-10.1)	**9.43** (7.30-11.9)	**10.3** (7.82-13.3)	**11.2** (8.21-14.8)	**12.1** (8.48-16.4)	**13.2** (8.89-18.4)	**13.9** (9.22-19.9)
10-min	**3.97** (3.22-4.86)	**4.49** (3.64-5.51)	**5.33** (4.30-6.55)	**6.01** (4.82-7.42)	**6.90** (5.34-8.73)	**7.57** (5.73-9.73)	**8.21** (6.01-10.8)	**8.84** (6.21-12.0)	**9.63** (6.52-13.4)	**10.2** (6.74-14.6)
15-min	**3.22** (2.62-3.95)	**3.66** (2.96-4.48)	**4.34** (3.50-5.33)	**4.88** (3.92-6.03)	**5.61** (4.34-7.10)	**6.15** (4.66-7.91)	**6.67** (4.88-8.80)	**7.18** (5.05-9.74)	**7.83** (5.30-10.9)	**8.30** (5.48-11.8)
30-min	**2.40** (1.94-2.94)	**2.73** (2.21-3.34)	**3.25** (2.62-3.99)	**3.66** (2.94-4.52)	**4.21** (3.25-5.32)	**4.62** (3.49-5.93)	**5.01** (3.66-6.59)	**5.38** (3.78-7.30)	**5.86** (3.96-8.17)	**6.20** (4.10-8.84)
60-min	**1.60** (1.30-1.96)	**1.82** (1.47-2.23)	**2.16** (1.74-2.65)	**2.44** (1.95-3.00)	**2.81** (2.17-3.56)	**3.09** (2.34-3.97)	**3.36** (2.46-4.44)	**3.63** (2.56-4.93)	**3.98** (2.70-5.57)	**4.24** (2.80-6.05)
2-hr	**1.00** (0.820-1.22)	**1.13** (0.926-1.38)	**1.35** (1.09-1.64)	**1.52** (1.23-1.86)	**1.75** (1.37-2.21)	**1.93** (1.48-2.47)	**2.11** (1.56-2.77)	**2.29** (1.62-3.09)	**2.52** (1.72-3.50)	**2.69** (1.79-3.81)
3-hr	**0.752** (0.618-0.910)	**0.849** (0.696-1.03)	**1.01** (0.824-1.22)	**1.14** (0.928-1.39)	**1.33** (1.04-1.67)	**1.47** (1.13-1.88)	**1.62** (1.20-2.12)	**1.76** (1.26-2.37)	**1.96** (1.34-2.72)	**2.11** (1.41-2.97)
6-hr	**0.452** (0.374-0.543)	**0.514** (0.425-0.618)	**0.618** (0.509-0.745)	**0.708** (0.579-0.857)	**0.835** (0.663-1.05)	**0.936** (0.726-1.19)	**1.04** (0.779-1.36)	**1.15** (0.825-1.54)	**1.30** (0.896-1.79)	**1.41** (0.950-1.98)
12-hr	**0.265** (0.221-0.316)	**0.305** (0.254-0.364)	**0.375** (0.311-0.448)	**0.435** (0.359-0.523)	**0.522** (0.419-0.653)	**0.593** (0.464-0.752)	**0.667** (0.504-0.867)	**0.745** (0.539-0.996)	**0.853** (0.594-1.17)	**0.938** (0.635-1.31)
24-hr	**0.156** (0.131-0.184)	**0.181** (0.152-0.214)	**0.224** (0.187-0.266)	**0.262** (0.218-0.313)	**0.318** (0.257-0.395)	**0.364** (0.287-0.458)	**0.412** (0.313-0.532)	**0.463** (0.337-0.615)	**0.534** (0.374-0.730)	**0.590** (0.402-0.817)
2-day	**0.091** (0.077-0.107)	**0.105** (0.089-0.124)	**0.130** (0.109-0.153)	**0.151** (0.127-0.179)	**0.183** (0.149-0.226)	**0.209** (0.166-0.262)	**0.237** (0.181-0.304)	**0.266** (0.195-0.351)	**0.307** (0.216-0.417)	**0.339** (0.232-0.466)
3-day	**0.066** (0.056-0.078)	**0.076** (0.065-0.089)	**0.094** (0.079-0.110)	**0.109** (0.092-0.128)	**0.131** (0.107-0.161)	**0.149** (0.119-0.185)	**0.168** (0.129-0.214)	**0.188** (0.138-0.247)	**0.216** (0.153-0.292)	**0.238** (0.163-0.326)
4-day	**0.053** (0.045-0.062)	**0.061** (0.052-0.071)	**0.074** (0.063-0.087)	**0.086** (0.073-0.101)	**0.103** (0.085-0.126)	**0.117** (0.094-0.145)	**0.131** (0.101-0.167)	**0.147** (0.108-0.192)	**0.168** (0.119-0.226)	**0.184** (0.127-0.251)
7-day	**0.035** (0.030-0.041)	**0.040** (0.034-0.046)	**0.048** (0.041-0.056)	**0.056** (0.047-0.065)	**0.066** (0.054-0.080)	**0.074** (0.059-0.091)	**0.082** (0.064-0.104)	**0.091** (0.068-0.119)	**0.103** (0.074-0.139)	**0.113** (0.078-0.153)
10-day	**0.028** (0.024-0.032)	**0.031** (0.027-0.036)	**0.037** (0.032-0.043)	**0.042** (0.036-0.049)	**0.050** (0.041-0.060)	**0.056** (0.045-0.068)	**0.062** (0.048-0.077)	**0.068** (0.050-0.088)	**0.076** (0.054-0.102)	**0.083** (0.057-0.112)
20-day	**0.019** (0.016-0.021)	**0.021** (0.018-0.024)	**0.024** (0.021-0.027)	**0.026** (0.023-0.031)	**0.030** (0.025-0.036)	**0.033** (0.027-0.040)	**0.036** (0.028-0.045)	**0.039** (0.029-0.050)	**0.043** (0.031-0.057)	**0.046** (0.032-0.062)
30-day	**0.015** (0.013-0.017)	**0.016** (0.014-0.019)	**0.019** (0.016-0.022)	**0.021** (0.018-0.024)	**0.024** (0.020-0.028)	**0.026** (0.021-0.031)	**0.028** (0.022-0.034)	**0.030** (0.022-0.038)	**0.033** (0.023-0.043)	**0.035** (0.024-0.047)
45-day	**0.012** (0.010-0.014)	**0.013** (0.012-0.015)	**0.015** (0.013-0.018)	**0.017** (0.015-0.020)	**0.019** (0.016-0.023)	**0.021** (0.017-0.025)	**0.023** (0.018-0.028)	**0.024** (0.018-0.031)	**0.026** (0.019-0.034)	**0.028** (0.019-0.037)
60-day	**0.010** (0.009-0.012)	**0.011** (0.010-0.013)	**0.013** (0.012-0.015)	**0.015** (0.013-0.017)	**0.017** (0.014-0.020)	**0.019** (0.015-0.022)	**0.020** (0.016-0.024)	**0.021** (0.016-0.027)	**0.023** (0.017-0.030)	**0.024** (0.017-0.033)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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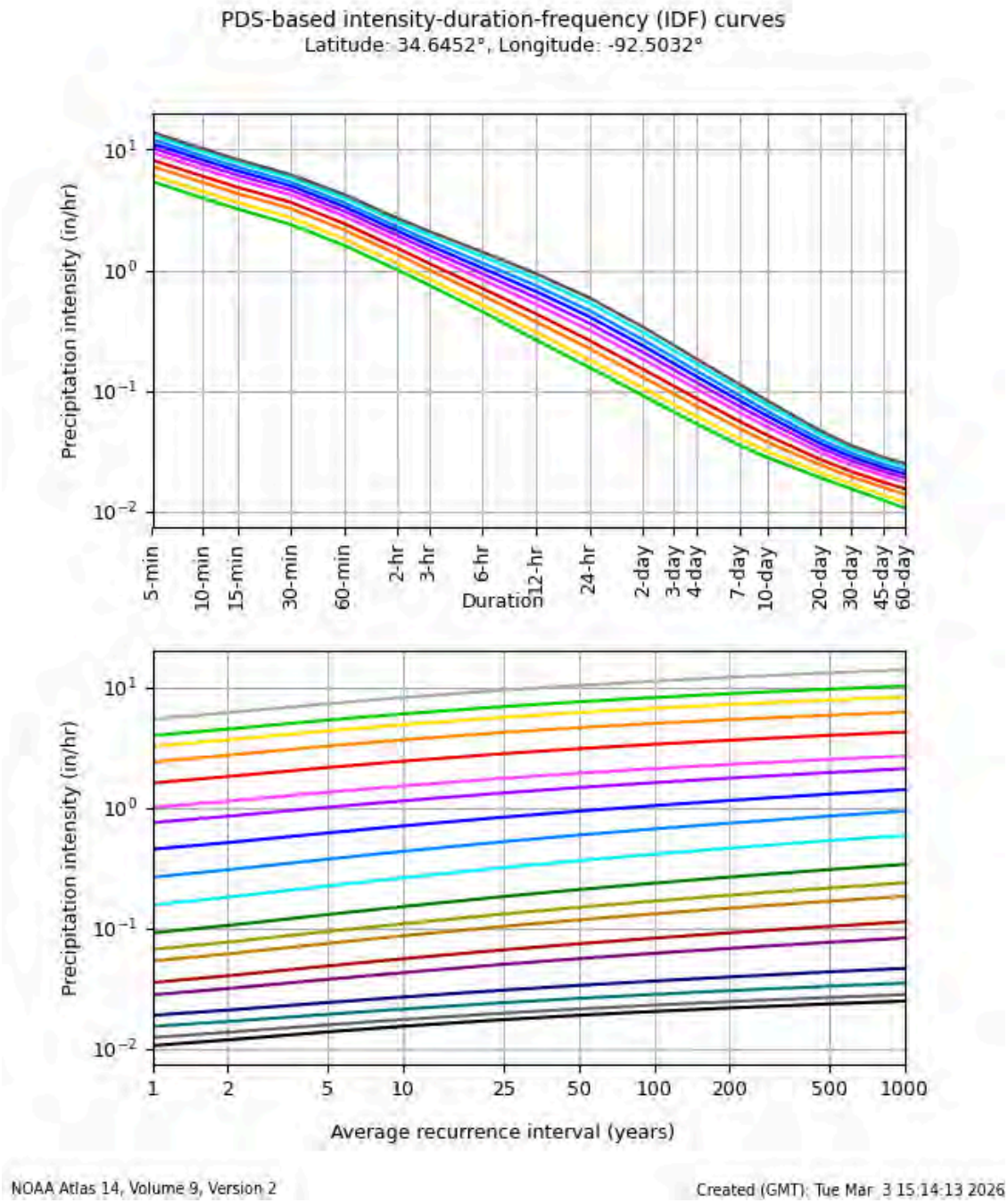
PF graphical



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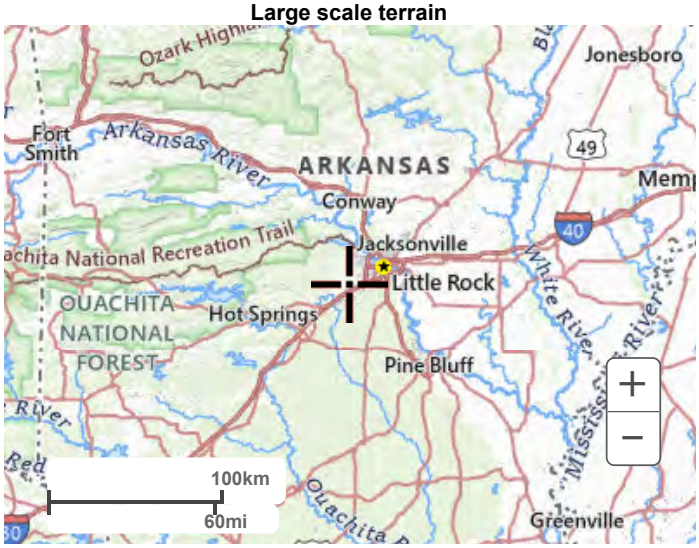
Maps & aerials

Small scale terrain

Large scale terrain



Large scale map

Large scale aerial

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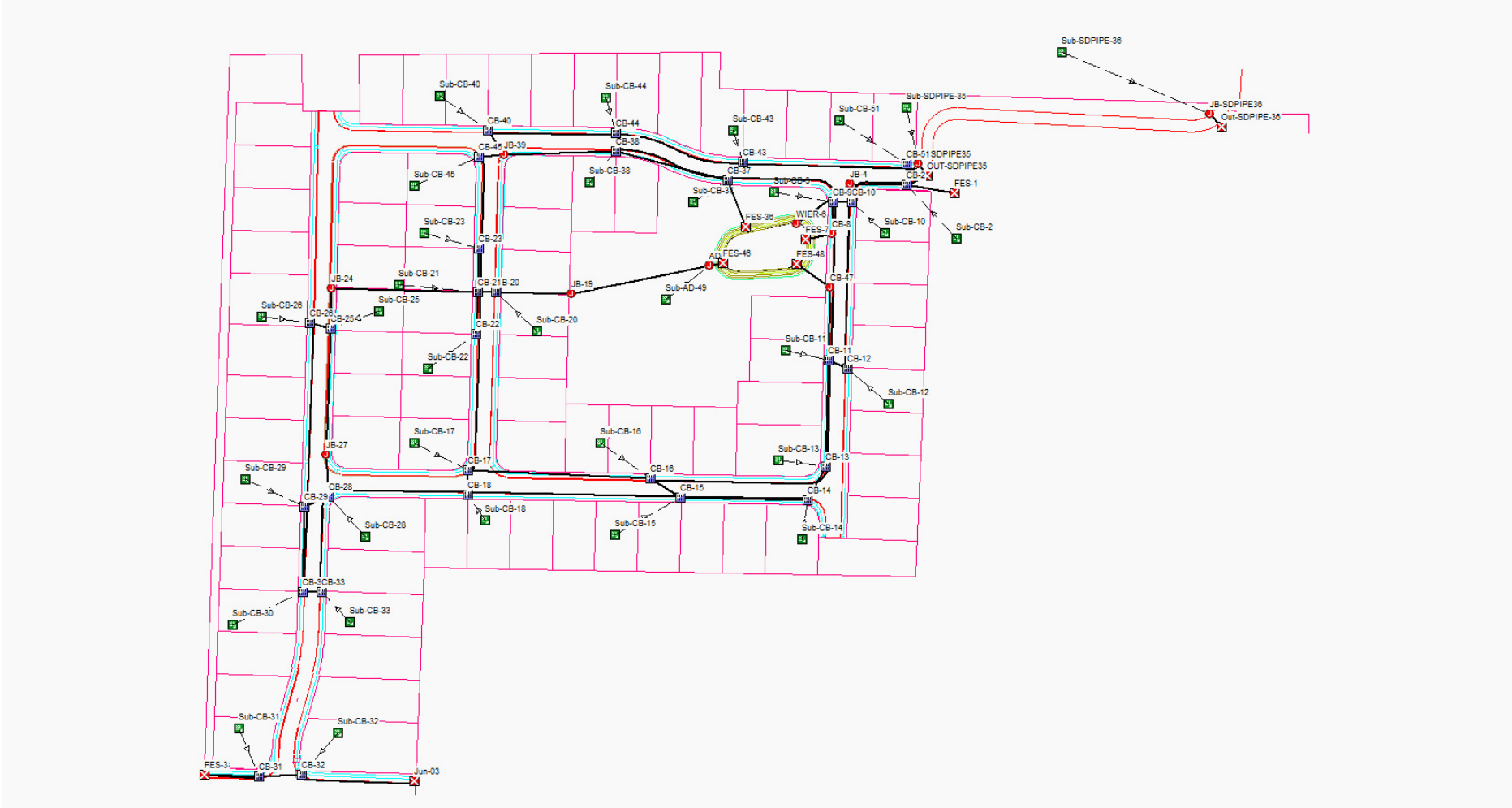
Disclaimer

Site Drainage Basin Maps

SSA Design Layout



Autodesk Storm and Sanitary Analysis

Storm System Design (SSA)

2 Year Design Storm

Project Description

File Name	HILLTOP 9-21-2026.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	33
Nodes	52
Junctions	13
Outfalls	9
Flow Diversions	0
Inlets	30
Storage Nodes	0
Links	67
Channels	22
Pipes	45
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	2 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-AD-49	4.59	0.7000	1.27	0.89	4.06	9.26	0 00:26:24
2	Sub-CB-10	0.54	0.7000	0.90	0.63	0.34	1.42	0 00:14:15
3	Sub-CB-11	0.44	0.7000	0.75	0.52	0.23	1.36	0 00:10:06
4	Sub-CB-12	0.70	0.7000	0.95	0.67	0.47	1.75	0 00:15:59
5	Sub-CB-13	0.37	0.7000	0.75	0.52	0.19	1.14	0 00:10:09
6	Sub-CB-14	0.87	0.7000	0.81	0.57	0.49	2.47	0 00:12:04
7	Sub-CB-15	1.24	0.7000	0.93	0.65	0.80	3.15	0 00:15:19
8	Sub-CB-16	0.30	0.7000	0.71	0.50	0.15	0.96	0 00:09:21
9	Sub-CB-17	0.25	0.7000	0.68	0.48	0.12	0.84	0 00:08:26
10	Sub-CB-18	0.76	0.7000	0.90	0.63	0.48	1.96	0 00:14:44
11	Sub-CB-2	0.15	0.7000	0.60	0.42	0.06	0.56	0 00:06:39
12	Sub-CB-20	0.61	0.7000	0.73	0.51	0.31	1.93	0 00:09:37
13	Sub-CB-21	0.81	0.7000	0.98	0.68	0.55	1.97	0 00:16:54
14	Sub-CB-22	1.23	0.7000	1.05	0.74	0.91	2.84	0 00:19:13
15	Sub-CB-23	0.85	0.7000	0.96	0.67	0.57	2.11	0 00:16:07
16	Sub-CB-25	0.66	0.7000	0.58	0.41	0.27	2.55	0 00:06:15
17	Sub-CB-26	0.41	0.7000	0.51	0.36	0.15	1.76	0 00:05:00
18	Sub-CB-28	0.35	0.7000	0.90	0.63	0.22	0.92	0 00:14:16
19	Sub-CB-29	0.32	0.7000	0.97	0.68	0.22	0.78	0 00:16:41
20	Sub-CB-30	0.44	0.7000	1.00	0.70	0.31	1.07	0 00:17:16
21	Sub-CB-31	0.28	0.5000	0.88	0.44	0.12	0.53	0 00:13:48
22	Sub-CB-32	0.24	0.7000	0.94	0.66	0.16	0.61	0 00:15:37
23	Sub-CB-33	0.45	0.7000	0.96	0.67	0.30	1.11	0 00:16:22
24	Sub-CB-37	0.27	0.7000	0.93	0.65	0.18	0.69	0 00:15:16
25	Sub-CB-38	0.38	0.7000	0.83	0.58	0.22	1.06	0 00:12:34
26	Sub-CB-40	0.63	0.7000	0.72	0.50	0.32	1.99	0 00:09:30
27	Sub-CB-43	0.57	0.7000	0.98	0.68	0.39	1.39	0 00:16:54
28	Sub-CB-44	0.48	0.7000	0.99	0.69	0.33	1.16	0 00:17:09
29	Sub-CB-45	0.24	0.7000	0.65	0.45	0.11	0.83	0 00:07:51
30	Sub-CB-51	0.76	0.7000	1.13	0.79	0.60	1.67	0 00:21:40
31	Sub-CB-9	0.54	0.7000	1.03	0.72	0.39	1.27	0 00:18:21
32	Sub-SDPIPE-35	0.16	0.7000	0.77	0.54	0.09	0.48	0 00:10:36
33	Sub-SDPIPE-36	1.73	0.7000	1.24	0.87	1.50	3.55	0 00:25:20

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	M Freeboa Attain (
1	AD-49	Junction	468.50	472.65	468.50	472.65	10.00	16.89	470.00	0.00	2.
2	CB-47	Junction	471.00	479.32	471.00	479.32	10.00	10.15	471.95	0.00	7.
3	CB-8	Junction	468.50	474.72	468.50	474.72	10.00	1.72	468.90	0.00	5.
4	JB	Junction	462.30	468.30	462.30	468.30	0.00	0.50	462.56	0.00	5.
5	JB-19	Junction	502.00	509.27	502.00	509.27	10.00	10.43	502.46	0.00	6.
6	JB-24	Junction	526.00	535.80	526.00	535.80	10.00	4.51	526.39	0.00	9.
7	JB-27	Junction	534.00	539.80	534.00	539.80	10.00	3.63	534.43	0.00	5.
8	JB-39	Junction	510.00	521.73	510.00	521.73	10.00	2.22	510.29	0.00	11.
9	JB-4	Junction	462.74	473.05	462.74	473.05	10.00	0.00	462.74	0.00	10.
10	JB-SDPIPE35	Junction	462.75	464.00	462.75	0.00	100.00	0.50	462.98	0.00	1.
11	JB-SDPIPE36	Junction	441.30	442.80	441.30	0.00	1000.00	3.55	442.08	0.00	0.
12	8-Jun	Junction	538.50	544.50	538.50	544.50	0.00	1.07	538.98	0.00	5.
13	WIER-6	Junction	468.00	472.50	468.00	472.50	10.00	0.00	468.00	0.00	4.
14	FES-1	Outfall	461.00					1.43	461.30		
15	FES-3	Outfall	538.50					0.98	538.87		
16	FES-36	Outfall	472.00					5.36	472.42		
17	FES-46	Outfall	468.25					16.89	469.31		
18	FES-48	Outfall	468.00					10.15	468.78		
19	FES-7	Outfall	468.00					1.72	468.34		
20	3-Jun	Outfall	0.00					0.00	0.00		
21	OUT-SDPIPE35	Outfall	462.25					0.47	462.40		
22	Out-SDPIPE-36	Outfall	441.00					3.55	441.65		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
1	Link-05	Pipe	CB-16	CB-13	406.55	517.00	503.00	3.4400	18.000	0.0150	0.00	15.32	0.00	0.00	0.
2	Link-08	Pipe	JB-SDPIPE35	JB	30.00	462.75	462.25	1.6700	15.000	0.0120	0.50	8.57	0.06	2.99	0.
3	Link-30	Pipe	CB-51	JB-SDPIPE35	30.83	462.08	462.75	-2.1800	18.000	0.0150	0.28	28.73	0.01	3.67	0.
4	Link-33	Pipe	CB-2	FES-1	33.60	461.75	461.00	2.2300	24.000	0.0150	1.43	29.29	0.05	4.43	0.
5	Link-37	Pipe	JB	OUT-SDPIPE35	0.96	462.30	462.25	5.2100	15.000	0.0120	0.47	15.97	0.03	3.56	0.
6	Link-39	Pipe	8-Jun	FES-3	0.36	538.50	538.50	0.0000	18.000	0.0130	0.98	5.54	0.18	2.38	0.
7	L-SDPIPE-8	Pipe	CB-47	FES-48	70.00	471.00	468.00	4.2900	18.000	0.0150	10.15	18.85	0.54	9.62	0.
8	SDPIPE-10	Pipe	CB-13	CB-11	187.03	493.00	486.75	3.3400	18.000	0.0120	8.07	20.80	0.39	10.34	0.
9	SDPIPE-11	Pipe	CB-14	CB-13	66.59	502.00	498.50	5.2600	18.000	0.0130	7.45	24.08	0.31	10.58	0.
10	SDPIPE-12	Pipe	CB-15	CB-14	297.35	513.00	503.00	3.3600	18.000	0.0120	4.77	20.87	0.23	9.29	0.
11	SDPIPE-13	Pipe	CB-16	CB-15	64.00	514.00	513.00	1.5600	18.000	0.0130	2.82	13.13	0.21	5.27	0.
12	SDPIPE-14	Pipe	CB-17	CB-16	322.00	528.00	514.00	4.3500	18.000	0.0130	1.92	21.90	0.09	5.20	0.
13	SDPIPE-15	Pipe	CB-18	CB-17	42.43	529.00	528.00	2.3600	18.000	0.0130	1.62	16.13	0.10	5.56	0.
14	SDPIPE-16	Pipe	CB-20	JB-19	131.65	504.25	502.00	1.7100	24.000	0.0120	10.43	32.04	0.33	10.08	0.
15	SDPIPE-17	Pipe	CB-21	CB-20	32.94	508.50	508.00	1.5200	24.000	0.0120	10.12	30.19	0.34	6.83	0.
16	SDPIPE-18	Pipe	CB-22	CB-21	77.00	510.00	508.50	1.9500	18.000	0.0120	2.53	15.88	0.16	3.19	0.
17	SDPIPE-19	Pipe	CB-23	CB-21	75.59	509.50	508.50	1.3200	18.000	0.0120	2.10	13.09	0.16	2.60	0.
18	SDPIPE-2	Pipe	JB-4	CB-2	99.00	462.74	461.75	1.0000	24.000	0.0130	0.00	22.62	0.00	0.00	0.
19	SDPIPE-20	Pipe	JB-24	CB-21	256.11	526.00	508.50	6.8300	18.000	0.0120	4.51	29.75	0.15	6.59	0.
20	SDPIPE-21	Pipe	CB-25	JB-24	69.87	527.00	526.00	1.4300	18.000	0.0120	4.51	13.61	0.33	7.36	0.
21	SDPIPE-22	Pipe	CB-26	CB-25	33.08	530.50	527.00	10.5800	18.000	0.0130	0.76	34.17	0.02	2.37	0.
22	SDPIPE-23	Pipe	JB-27	CB-25	222.35	534.00	527.00	3.1500	18.000	0.0120	3.62	20.19	0.18	6.15	0.
23	SDPIPE-24	Pipe	CB-28	JB-27	73.59	537.00	534.00	4.0800	18.000	0.0130	3.63	21.21	0.17	8.15	0.
24	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.61	14.89	0.04	4.01	0.
25	SDPIPE-25 (1)	Pipe	CB-29	CB-28	44.82	537.50	537.00	1.1200	18.000	0.0130	2.88	11.09	0.26	4.98	0.
26	SDPIPE-25 (12)	Pipe	CB-43	CB-37	42.57	484.50	484.00	1.1700	18.000	0.0130	1.30	11.38	0.11	3.90	0.
27	SDPIPE-25 (13)	Pipe	CB-44	CB-38	33.23	496.00	494.50	4.5100	18.000	0.0130	1.08	22.32	0.05	5.17	0.
28	SDPIPE-25 (14)	Pipe	CB-45	JB-39	46.24	515.00	514.00	2.1600	18.000	0.0130	0.81	15.45	0.05	4.33	0.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
46	Link-01	Channel	CB-30	CB-29	151.74	547.90	542.86	3.3200	3.960	0.0320	0.00	5.85	0.00	0.00	0.
47	Link-02	Channel	CB-28	CB-18	253.20	542.65	534.99	3.0300	3.960	0.0320	0.00	5.59	0.00	0.00	0.
48	Link-03	Channel	CB-18	CB-15	303.55	534.99	520.24	4.8600	3.960	0.0320	0.34	7.51	0.04	0.80	0.
49	Link-04	Channel	CB-15	CB-14	302.16	520.24	513.25	2.3100	3.960	0.0320	0.93	4.19	0.22	0.66	0.
50	Link-06	Channel	CB-13	CB-11	192.70	508.19	490.69	9.0800	3.960	0.0320	0.00	9.68	0.00	0.00	0.
51	Link-07	Channel	CB-12	CB-10	295.35	491.89	474.00	6.0600	3.960	0.0320	0.34	7.90	0.04	0.34	0.
52	Link-09	Channel	CB-17	CB-22	172.84	533.32	517.04	9.4200	3.960	0.0320	0.00	9.88	0.00	0.12	0.
53	Link-10	Channel	CB-22	CB-21	156.96	517.04	515.89	0.7300	3.960	0.0320	0.30	2.67	0.11	0.25	0.
54	Link-11	Channel	CB-23	CB-21	80.56	516.98	515.89	1.3500	3.960	0.0320	0.00	3.74	0.00	0.02	0.
55	Link-12	Channel	CB-45	CB-23	172.11	524.64	516.98	4.4500	3.960	0.0320	0.01	6.78	0.00	1.32	0.
56	Link-13	Channel	CB-40	CB-44	228.53	524.80	507.00	7.7900	3.960	0.0320	0.42	8.96	0.05	3.61	0.
57	Link-14	Channel	CB-44	CB-43	236.24	500.50	482.00	7.8300	3.960	0.0320	0.08	8.97	0.01	0.94	0.
58	Link-15	Channel	CB-38	CB-37	208.04	506.87	490.69	7.7800	3.960	0.0320	0.02	8.96	0.00	1.21	0.
59	Link-16	Channel	CB-37	CB-9	218.60	490.69	474.00	7.6400	3.960	0.0320	0.01	8.87	0.00	0.01	0.
60	Link-17	Channel	CB-43	CB-51	291.31	488.57	465.82	7.8100	3.960	0.0320	0.15	8.97	0.02	1.36	0.
61	Link-18	Channel	CB-10	CB-2	126.47	474.00	465.77	6.5100	3.960	0.0320	0.00	8.19	0.00	0.00	0.
62	Link-19	Channel	CB-33	CB-28	176.20	547.88	542.65	2.9700	3.960	0.0320	0.01	5.53	0.00	0.97	0.
63	Link-20	Channel	CB-11	CB-9	282.13	490.69	474.00	5.9200	3.960	0.0320	0.16	7.81	0.02	0.48	0.
64	Link-24	Channel	CB-29	CB-26	316.29	542.86	535.29	2.3900	3.960	0.0320	0.00	4.97	0.00	0.00	0.
65	Link-28	Channel	CB-32	3-Jun	204.60	549.87	0.00	268.7500	3.960	0.0320	0.00	52.65	0.00	0.00	0.
66	Link-38	Channel	CB-2	JB	44.72	465.77	462.30	7.7600	3.960	0.0320	0.00	8.95	0.00	0.02	0.
67	Link-40	Channel	CB-31	8-Jun	97.13	549.37	538.50	11.1900	3.960	0.0320	0.00	10.74	0.00	0.00	0.

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutt Sprea during Pea Flo (f
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	469.43	10.00	1.66	N/A	N/A	N/A	8.50	6.6
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	481.00	N/A	1.36	1.20	0.16	88.32	8.50	4.5
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	485.50	N/A	1.75	1.42	0.33	80.95	8.50	4.9
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	493.00	N/A	1.14	1.14	0.00	100.00	8.50	5.4
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	502.00	10.00	2.92	N/A	N/A	N/A	8.50	7.3
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	513.00	N/A	3.45	2.28	1.17	66.00	8.50	6.9
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	514.00	N/A	0.96	0.95	0.01	99.37	8.50	4.3
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	528.00	N/A	0.84	0.84	0.00	100.00	8.50	4.1
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	529.00	N/A	1.96	1.63	0.34	82.82	8.50	5.6
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	461.75	N/A	0.56	0.56	0.00	100.00	8.50	3.3
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	504.25	10.00	1.93	N/A	N/A	N/A	8.50	5.5
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	508.50	10.00	2.14	N/A	N/A	N/A	8.50	5.9
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	510.00	N/A	2.84	2.54	0.30	89.42	8.50	6.1
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	509.50	N/A	2.11	2.11	0.00	99.96	8.50	6.3
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	527.00	10.00	2.55	N/A	N/A	N/A	8.50	6.7
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	530.50	10.00	1.76	N/A	N/A	N/A	8.50	5.2
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	537.00	N/A	0.92	0.92	0.00	100.00	8.50	4.7
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	537.50	N/A	0.78	0.78	0.00	100.00	8.50	4.4
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	543.50	N/A	1.07	1.07	0.00	100.00	8.50	5.0
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.53	0.53	0.00	100.00	8.50	3.8
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	546.00	N/A	0.61	0.61	0.00	100.00	8.50	4.0
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	544.00	N/A	1.11	1.11	0.00	99.93	8.50	5.0
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	478.50	N/A	0.71	0.71	0.00	100.00	8.50	3.6
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	494.50	N/A	1.06	1.02	0.04	96.00	8.50	4.2
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	515.00	N/A	1.99	1.57	0.42	79.01	8.50	5.3
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	484.50	N/A	1.46	1.29	0.17	88.10	8.50	4.7
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	496.00	N/A	1.17	1.10	0.07	93.77	8.50	4.4
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	515.00	N/A	0.83	0.83	0.00	99.59	8.50	3.8

Subbasin Hydrology

Subbasin : Sub-AD-49

Input Data

Area (ac) 4.59
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	4.59	-	0.7
Composite Area & Weighted Runoff Coeff.	4.59		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	299.3	0	0
Slope (%) :	8.53	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	24.81	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	184.58	0	0
Slope (%) :	14.79	0	0
Surface Type :	Woodland	Paved	Paved
Velocity (ft/sec) :	1.92	0	0
Computed Flow Time (min) :	1.6	0	0

Total TOC (min) 26.41

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.54
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	62.75	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.31	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	287	0	0
Slope (%) :	6.16	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.05	0	0
Computed Flow Time (min) :	0.95	0	0

Total TOC (min) 14.26

Subbasin : Sub-CB-11

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	87.01933392	0	0
Slope (%) :	4.23334562	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	9.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	144.6117952	0	0
Slope (%) :	9.33800334	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.21	0	0
Computed Flow Time (min) :	0.39	0	0

Total TOC (min) 10.10

Subbasin : Sub-CB-12

Input Data

Area (ac) 0.7
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.7	-	0.7
Composite Area & Weighted Runoff Coeff.	0.7		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.34441067	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.92	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	290.7440621	0	0
Slope (%) :	7.85301046	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	4.52	0	0
Computed Flow Time (min) :	1.07	0	0

Total TOC (min) 15.99

Subbasin : Sub-CB-13

Input Data

Area (ac) 0.37
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.7
Composite Area & Weighted Runoff Coeff.	0.37		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.99	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	326.6	0	0
Slope (%) :	3.5	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.8	0	0
Computed Flow Time (min) :	1.43	0	0

Total TOC (min) 10.16

Subbasin : Sub-CB-14

Input Data

Area (ac) 0.87
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.87	-	0.7
Composite Area & Weighted Runoff Coeff.	0.87		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	133.09	0	0
Slope (%) :	7.48	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	10.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	224.63	0	0
Slope (%) :	2.32	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.1	0	0
Computed Flow Time (min) :	1.21	0	0

Total TOC (min) 12.07

Subbasin : Sub-CB-15

Input Data

Area (ac) 1.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.24	-	0.7
Composite Area & Weighted Runoff Coeff.	1.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	129.63	0	0
Slope (%) :	3.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	13.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	369.75	0	0
Slope (%) :	4.45	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	1.44	0	0

Total TOC (min) 15.32

Subbasin : Sub-CB-16

Input Data

Area (ac) 0.3
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.3	-	0.7
Composite Area & Weighted Runoff Coeff.	0.3		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	35.63	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.47	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.56	0	0
Slope (%) :	4.29	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.21	0	0
Computed Flow Time (min) :	0.89	0	0

Total TOC (min) 9.36

Subbasin : Sub-CB-17

Input Data

Area (ac) 0.25
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.25	-	0.7
Composite Area & Weighted Runoff Coeff.	0.25		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	30.83	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	7.54	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221.33	0	0
Slope (%) :	4.052	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.09	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 8.44

Subbasin : Sub-CB-18

Input Data

Area (ac) 0.76
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	169.6828048	0	0
Slope (%) :	5.92476783	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	14.48	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.81153859	0	0
Slope (%) :	5.8473515	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.92	0	0
Computed Flow Time (min) :	0.26	0	0

Total TOC (min) 14.74

Subbasin : Sub-CB-2

Input Data

Area (ac) 0.15
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.15	-	0.7
Composite Area & Weighted Runoff Coeff.	0.15		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	49.14	0	0
Slope (%) :	3.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	6.63	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	7.8	0	0
Slope (%) :	7.9	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 6.65

Subbasin : Sub-CB-20

Input Data

Area (ac) 0.61
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.61	-	0.7
Composite Area & Weighted Runoff Coeff.	0.61		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.97	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	228.24	0	0
Slope (%) :	4.33669128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.23	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 9.62

Subbasin : Sub-CB-21

Input Data

Area (ac) 0.81
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.81	-	0.7
Composite Area & Weighted Runoff Coeff.	0.81		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	225.91	0	0
Slope (%) :	7.69	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	74	0	0
Slope (%) :	1.44	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.44	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-22

Input Data

Area (ac) 1.23
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.23	-	0.7
Composite Area & Weighted Runoff Coeff.	1.23		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	227.07	0	0
Slope (%) :	5.59	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	18.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	150.89	0	0
Slope (%) :	5.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.52	0	0

Total TOC (min) 19.23

Subbasin : Sub-CB-23

Input Data

Area (ac) 0.85
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.85	-	0.7
Composite Area & Weighted Runoff Coeff.	0.85		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	226.71	0	0
Slope (%) :	8.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.24	0	0
Computed Flow Time (min) :	15.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.07	0	0
Slope (%) :	3.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.93	0	0
Computed Flow Time (min) :	0.32	0	0

Total TOC (min) 16.12

Subbasin : Sub-CB-25

Input Data

Area (ac) 0.66
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.7
Composite Area & Weighted Runoff Coeff.	0.66		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.69	0	0
Slope (%) :	3.98	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	4.99	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	218	0	0
Slope (%) :	1.9995265	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.26	0	0

Total TOC (min) 6.25

Subbasin : Sub-CB-26

Input Data

Area (ac) 0.41
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.41	-	0.7
Composite Area & Weighted Runoff Coeff.	0.41		0.7

Time of Concentration

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	391.04	0	0
Slope (%) :	2.05	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.91	0	0
Computed Flow Time (min) :	2.24	0	0

Total TOC (min) 2.24

Subbasin : Sub-CB-28

Input Data

Area (ac) 0.35
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.7
Composite Area & Weighted Runoff Coeff.	0.35		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.21	0	0
Slope (%) :	1.57	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	13.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	96.33	0	0
Slope (%) :	2.66	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.32	0	0
Computed Flow Time (min) :	0.48	0	0

Total TOC (min) 14.28

Subbasin : Sub-CB-29

Input Data

Area (ac) 0.32
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.32	-	0.7
Composite Area & Weighted Runoff Coeff.	0.32		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	79.19359172	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.04	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	145.6546025	0	0
Slope (%) :	3.30814128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.7	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 16.69

Subbasin : Sub-CB-30

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.06466793	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.18	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.4355599	0	0
Slope (%) :	2.37620836	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	1.09	0	0

Total TOC (min) 17.27

Subbasin : Sub-CB-31

Input Data

Area (ac) 0.28
Weighted Runoff Coefficient 0.5

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.5
Composite Area & Weighted Runoff Coeff.	0.28		0.5

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	61.18415656	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.05	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	147.427748	0	0
Slope (%) :	2.48368186	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.2	0	0
Computed Flow Time (min) :	0.77	0	0

Total TOC (min) 13.81

Subbasin : Sub-CB-32

Input Data

Area (ac) 0.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.82652581	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	123.3068858	0	0
Slope (%) :	2.56696146	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.26	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 15.63

Subbasin : Sub-CB-33

Input Data

Area (ac) 0.45
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.7
Composite Area & Weighted Runoff Coeff.	0.45		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	74.8476514	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15.33	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	205.0538871	0	0
Slope (%) :	2.54735015	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.24	0	0
Computed Flow Time (min) :	1.05	0	0

Total TOC (min) 16.38

Subbasin : Sub-CB-37

Input Data

Area (ac) 0.27
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.27	-	0.7
Composite Area & Weighted Runoff Coeff.	0.27		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	70.96	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.69	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.13	0	0
Slope (%) :	7.95	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.59	0	0

Total TOC (min) 15.28

Subbasin : Sub-CB-38

Input Data

Area (ac) 0.38
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.7
Composite Area & Weighted Runoff Coeff.	0.38		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	56.31288611	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	12.21	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	122.2285539	0	0
Slope (%) :	7.88883657	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.36	0	0

Total TOC (min) 12.57

Subbasin : Sub-CB-40

Input Data

Area (ac) 0.63
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	-	0.7
Composite Area & Weighted Runoff Coeff.	0.63		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.47168729	0	0
Slope (%) :	4.83233018	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	8.82	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.6819013	0	0
Slope (%) :	7.22299665	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.69	0	0

Total TOC (min) 9.51

Subbasin : Sub-CB-43

Input Data

Area (ac) 0.57
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.7
Composite Area & Weighted Runoff Coeff.	0.57		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.44365706	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.24	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	230.963887	0	0
Slope (%) :	7.93293268	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.67	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-44

Input Data

Area (ac)	0.48
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.48	-	0.7
Composite Area & Weighted Runoff Coeff.	0.48		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.23540495	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.53	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	215.6393568	0	0
Slope (%) :	7.93956492	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 17.16

Subbasin : Sub-CB-45

Input Data

Area (ac)	0.24
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	26.67	0	0
Slope (%) :	0.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	7.2	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221	0	0
Slope (%) :	7.58	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.6	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 7.86

Subbasin : Sub-CB-51

Input Data

Area (ac)	0.76
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	109.87	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	20.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	284.96	0	0
Slope (%) :	7.93363114	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.83	0	0

Total TOC (min) 21.67

Subbasin : Sub-CB-9

Input Data

Area (ac)	0.54
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	94.51887751	0	0
Slope (%) :	1.1562359	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	17.43	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	272.2215693	0	0
Slope (%) :	5.96622322	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.97	0	0
Computed Flow Time (min) :	0.91	0	0

Total TOC (min) 18.35

Subbasin : Sub-SDPIPE-35

Input Data

Area (ac)	0.16
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.16	-	0.7
Composite Area & Weighted Runoff Coeff.	0.16		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	117.01	0	0
Slope (%) :	6.14	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	10.61	0	0

Total TOC (min) 10.61

Subbasin : Sub-SDPIPE-36

Input Data

Area (ac)	1.73
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.73	-	0.7
Composite Area & Weighted Runoff Coeff.	1.73		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	299.51	0	0
Slope (%) :	6	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.22	0	0
Computed Flow Time (min) :	22.7	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	546	0	0
Slope (%) :	5.3	0	0
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	3.45	0	0
Computed Flow Time (min) :	2.64	0	0

Total TOC (min) 25.34

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	AD-49	468.50	472.65	4.15	468.50	0.00	472.65	0.00	10.00	19.85
2	CB-47	471.00	479.32	8.32	471.00	0.00	479.32	0.00	10.00	81.81
3	CB-8	468.50	474.72	6.22	468.50	0.00	474.72	0.00	10.00	50.59
4	JB	462.30	468.30	6.00	462.30	0.00	468.30	0.00	0.00	57.00
5	JB-19	502.00	509.27	7.27	502.00	0.00	509.27	0.00	10.00	63.30
6	JB-24	526.00	535.80	9.80	526.00	0.00	535.80	0.00	10.00	99.54
7	JB-27	534.00	539.80	5.80	534.00	0.00	539.80	0.00	10.00	51.59
8	JB-39	510.00	521.73	11.73	510.00	0.00	521.73	0.00	10.00	74.75
9	JB-4	462.74	473.05	10.31	462.74	0.00	473.05	0.00	10.00	99.76
10	JB-SDPIPE35	462.75	464.00	1.25	462.75	0.00	0.00	-464.00	100.00	0.00
11	JB-SDPIPE36	441.30	442.80	1.50	441.30	0.00	0.00	-442.80	1000.00	0.00
12	8-Jun	538.50	544.50	6.00	538.50	0.00	544.50	0.00	0.00	54.00
13	WIER-6	468.00	472.50	4.50	468.00	0.00	472.50	0.00	10.00	30.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Oc (days
1	AD-49	16.89	9.26	470.00	1.50	0.00	2.65	468.56	0.06	0 00:19	
2	CB-47	10.15	0.00	471.95	0.95	0.00	7.37	471.03	0.03	0 00:14	
3	CB-8	1.72	0.00	468.90	0.40	0.00	5.82	468.52	0.02	0 00:22	
4	JB	0.50	0.00	462.56	0.26	0.00	5.74	462.31	0.01	0 00:11	
5	JB-19	10.43	0.00	502.46	0.46	0.00	6.81	502.02	0.02	0 00:17	
6	JB-24	4.51	0.00	526.39	0.39	0.00	9.40	526.01	0.01	0 00:07	
7	JB-27	3.63	0.00	534.43	0.43	0.00	5.37	534.01	0.01	0 00:17	
8	JB-39	2.22	0.00	510.29	0.29	0.00	11.43	510.01	0.01	0 00:09	
9	JB-4	0.00	0.00	462.74	0.00	0.00	10.31	462.74	0.00	0 00:00	
10	JB-SDPIPE35	0.50	0.48	462.98	0.23	0.00	1.27	462.76	0.01	0 00:10	
11	JB-SDPIPE36	3.55	3.55	442.08	0.78	0.00	0.72	441.33	0.03	0 00:25	
12	8-Jun	1.07	0.00	538.98	0.48	0.00	5.52	538.52	0.02	0 00:17	
13	WIER-6	0.00	0.00	468.00	0.00	0.00	4.50	468.00	0.00	0 00:00	

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Er
1	Link-01	151.74	547.90	4.40	542.86	5.36	5.04	3.3200	User-Defined	0.330	14.000	0.0320	
2	Link-02	253.20	542.65	5.65	534.99	5.99	7.66	3.0300	User-Defined	0.330	14.000	0.0320	
3	Link-03	303.55	534.99	5.99	520.24	7.24	14.75	4.8600	User-Defined	0.330	14.000	0.0320	
4	Link-04	302.16	520.24	7.24	513.25	11.25	6.99	2.3100	User-Defined	0.330	14.000	0.0320	
5	Link-06	192.70	508.19	15.19	490.69	9.69	17.50	9.0800	User-Defined	0.330	14.000	0.0320	
6	Link-07	295.35	491.89	6.39	474.00	4.56	17.89	6.0600	User-Defined	0.330	14.000	0.0320	
7	Link-09	172.84	533.32	5.32	517.04	7.04	16.28	9.4200	User-Defined	0.330	14.000	0.0320	
8	Link-10	156.96	517.04	7.04	515.89	7.39	1.15	0.7300	User-Defined	0.330	14.000	0.0320	
9	Link-11	80.56	516.98	7.48	515.89	7.39	1.09	1.3500	User-Defined	0.330	14.000	0.0320	
10	Link-12	172.11	524.64	9.64	516.98	7.48	7.67	4.4500	User-Defined	0.330	14.000	0.0320	
11	Link-13	228.53	524.80	9.80	507.00	11.00	17.80	7.7900	User-Defined	0.330	14.000	0.0320	
12	Link-14	236.24	500.50	4.50	482.00	-2.50	18.50	7.8300	User-Defined	0.330	14.000	0.0320	
13	Link-15	208.04	506.87	12.37	490.69	12.19	16.18	7.7800	User-Defined	0.330	14.000	0.0320	
14	Link-16	218.60	490.69	12.19	474.00	4.90	16.69	7.6400	User-Defined	0.330	14.000	0.0320	
15	Link-17	291.31	488.57	4.07	465.82	3.74	22.75	7.8100	User-Defined	0.330	14.000	0.0320	
16	Link-18	126.47	474.00	4.56	465.77	4.02	8.23	6.5100	User-Defined	0.330	14.000	0.0320	
17	Link-19	176.20	547.88	3.88	542.65	5.65	5.23	2.9700	User-Defined	0.330	14.000	0.0320	
18	Link-20	282.13	490.69	9.69	474.00	4.90	16.70	5.9200	User-Defined	0.330	14.000	0.0320	
19	Link-24	316.29	542.86	5.36	535.29	4.79	7.57	2.3900	User-Defined	0.330	14.000	0.0320	
20	Link-28	204.60	549.87	3.87	0.00	0.00	549.87	268.7500	User-Defined	0.330	14.000	0.0320	
21	Link-38	44.72	465.77	4.02	462.30	0.00	3.47	7.7600	User-Defined	0.330	14.000	0.0320	
22	Link-40	97.13	549.37	4.87	538.50	0.00	10.87	11.1900	User-Defined	0.330	14.000	0.0320	

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froud Numb
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)	
1	Link-01	0.00	0 00:18	5.85	0.00	0.00		0.00	0.01	0.00	
2	Link-02	0.00	0 00:00	5.59	0.00	0.00		0.05	0.15	0.00	
3	Link-03	0.34	0 00:14	7.51	0.04	0.80	6.32	0.14	0.42	0.00	
4	Link-04	0.93	0 00:15	4.19	0.22	0.66	7.63	0.26	0.78	0.00	
5	Link-06	0.00	0 00:11	9.68	0.00	0.00		0.04	0.11	0.00	
6	Link-07	0.34	0 00:16	7.90	0.04	0.34	14.48	0.21	0.65	0.00	
7	Link-09	0.00	0 00:11	9.88	0.00	0.12	24.01	0.07	0.22	0.00	
8	Link-10	0.30	0 00:19	2.67	0.11	0.25	10.46	0.24	0.72	0.00	
9	Link-11	0.00	0 00:17	3.74	0.00	0.02	67.13	0.17	0.51	0.00	
10	Link-12	0.01	0 00:09	6.78	0.00	1.32	2.17	0.02	0.05	0.00	
11	Link-13	0.42	0 00:09	8.96	0.05	3.61	1.06	0.07	0.22	0.00	
12	Link-14	0.08	0 00:17	8.97	0.01	0.94	4.19	0.06	0.18	0.00	
13	Link-15	0.02	0 00:16	8.96	0.00	1.21	2.87	0.03	0.08	0.00	
14	Link-16	0.01	0 00:17	8.87	0.00	0.01	364.33	0.17	0.52	0.00	
15	Link-17	0.15	0 00:17	8.97	0.02	1.36	3.57	0.07	0.22	0.00	
16	Link-18	0.00	0 00:00	8.19	0.00	0.00		0.00	0.00	0.00	
17	Link-19	0.01	0 00:17	5.53	0.00	0.97	3.03	0.01	0.05	0.00	
18	Link-20	0.16	0 00:10	7.81	0.02	0.48	9.80	0.17	0.52	0.00	
19	Link-24	0.00	0 00:00	4.97	0.00	0.00		0.16	0.49	0.00	
20	Link-28	0.00	0 00:00	52.65	0.00	0.00		0.00	0.00	0.00	
21	Link-38	0.00	0 00:06	8.95	0.00	0.02	37.27	0.13	0.40	0.00	
22	Link-40	0.00	0 00:00	10.74	0.00	0.00		0.17	0.50	0.00	

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Mai Roug
1	Link-05	406.55	517.00	3.00	503.00	10.00	14.00	3.4400	CIRCULAR	18.000	18.000	
2	Link-08	30.00	462.75	0.00	462.25	-0.05	0.50	1.6700	CIRCULAR	15.000	15.000	
3	Link-30	30.83	462.08	0.00	462.75	0.00	-0.67	-2.1800	CIRCULAR	18.000	18.000	
4	Link-33	33.60	461.75	0.00	461.00	0.00	0.75	2.2300	CIRCULAR	24.000	24.000	
5	Link-37	0.96	462.30	0.00	462.25	0.00	0.05	5.2100	CIRCULAR	15.000	15.000	
6	Link-39	0.36	538.50	0.00	538.50	0.00	0.00	0.0000	CIRCULAR	18.000	18.000	
7	L-SDPIPE-8	70.00	471.00	0.00	468.00	0.00	3.00	4.2900	CIRCULAR	18.000	18.000	
8	SDPIPE-10	187.03	493.00	0.00	486.75	5.75	6.25	3.3400	CIRCULAR	18.000	18.000	
9	SDPIPE-11	66.59	502.00	0.00	498.50	5.50	3.50	5.2600	CIRCULAR	18.000	18.000	
10	SDPIPE-12	297.35	513.00	0.00	503.00	1.00	10.00	3.3600	CIRCULAR	18.000	18.000	
11	SDPIPE-13	64.00	514.00	0.00	513.00	0.00	1.00	1.5600	CIRCULAR	18.000	18.000	
12	SDPIPE-14	322.00	528.00	0.00	514.00	0.00	14.00	4.3500	CIRCULAR	18.000	18.000	
13	SDPIPE-15	42.43	529.00	0.00	528.00	0.00	1.00	2.3600	CIRCULAR	18.000	18.000	
14	SDPIPE-16	131.65	504.25	0.00	502.00	0.00	2.25	1.7100	CIRCULAR	24.000	24.000	
15	SDPIPE-17	32.94	508.50	0.00	508.00	3.75	0.50	1.5200	CIRCULAR	24.000	24.000	
16	SDPIPE-18	77.00	510.00	0.00	508.50	0.00	1.50	1.9500	CIRCULAR	18.000	18.000	
17	SDPIPE-19	75.59	509.50	0.00	508.50	0.00	1.00	1.3200	CIRCULAR	18.000	18.000	
18	SDPIPE-2	99.00	462.74	0.00	461.75	0.00	0.99	1.0000	CIRCULAR	24.000	24.000	
19	SDPIPE-20	256.11	526.00	0.00	508.50	0.00	17.50	6.8300	CIRCULAR	18.000	18.000	
20	SDPIPE-21	69.87	527.00	0.00	526.00	0.00	1.00	1.4300	CIRCULAR	18.000	18.000	
21	SDPIPE-22	33.08	530.50	0.00	527.00	0.00	3.50	10.5800	CIRCULAR	18.000	18.000	
22	SDPIPE-23	222.35	534.00	0.00	527.00	0.00	7.00	3.1500	CIRCULAR	18.000	18.000	
23	SDPIPE-24	73.59	537.00	0.00	534.00	0.00	3.00	4.0800	CIRCULAR	18.000	18.000	
24	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	
25	SDPIPE-25 (1)	44.82	537.50	0.00	537.00	0.00	0.50	1.1200	CIRCULAR	18.000	18.000	
26	SDPIPE-25 (12)	42.57	484.50	0.00	484.00	5.50	0.50	1.1700	CIRCULAR	18.000	18.000	
27	SDPIPE-25 (13)	33.23	496.00	0.00	494.50	0.00	1.50	4.5100	CIRCULAR	18.000	18.000	
28	SDPIPE-25 (14)	46.24	515.00	0.00	514.00	4.00	1.00	2.1600	CIRCULAR	18.000	18.000	
29	SDPIPE-25 (15)	248.75	502.00	0.00	468.50	0.00	33.50	13.4700	CIRCULAR	24.000	24.000	
30	SDPIPE-25 (15) (1)	24.21	468.50	0.00	468.25	0.00	0.25	1.0300	CIRCULAR	30.000	30.000	
31	SDPIPE-25 (17)	32.91	462.08	0.00	461.75	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	
32	SDPIPE-25 (2)	150.25	543.50	0.00	537.50	0.00	6.00	3.9900	CIRCULAR	18.000	18.000	
33	SDPIPE-25 (3)	33.25	544.00	0.00	543.50	0.00	0.50	1.5000	CIRCULAR	18.000	18.000	
34	SDPIPE-25 (6)	87.00	478.50	0.00	472.00	0.00	6.50	7.4700	CIRCULAR	18.000	18.000	
35	SDPIPE-25 (7)	201.54	494.50	0.00	485.00	6.50	9.50	4.7100	CIRCULAR	18.000	18.000	
36	SDPIPE-25 (8)	196.25	510.00	0.00	498.00	3.50	12.00	6.1100	CIRCULAR	18.000	18.000	
37	SDPIPE-25 (9)	51.51	515.00	0.00	514.00	4.00	1.00	1.9400	CIRCULAR	18.000	18.000	
38	SDPIPE-32	95.98	544.50	0.00	538.50	0.00	6.00	6.2500	CIRCULAR	18.000	18.000	
39	SDPIPE-36	30.02	441.30	0.00	441.00	0.00	0.30	1.0000	CIRCULAR	18.000	18.000	
40	SDPIPE-4	112.76	468.00	0.00	462.74	0.00	5.26	4.6600	CIRCULAR	24.000	24.000	
41	SDPIPE-5	41.13	468.50	0.00	468.00	0.00	0.50	1.2200	CIRCULAR	24.000	24.000	
42	SDPIPE-6	55.12	469.10	0.00	468.50	0.00	0.60	1.0900	CIRCULAR	24.000	24.000	
43	SDPIPE-7	33.11	469.43	0.00	469.10	0.00	0.33	1.0100	CIRCULAR	24.000	24.000	
44	SDPIPE-8 (1)	127.57	481.00	0.00	471.00	0.00	10.00	7.8400	CIRCULAR	18.000	18.000	
45	SDPIPE-9	35.93	485.50	0.00	483.00	2.00	2.50	6.9600	CIRCULAR	18.000	18.000	

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Ti Surcharg
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(m
1	Link-05	0.00	0 00:13	15.32	0.00	0.00		0.01	0.00	0
2	Link-08	0.50	0 00:11	8.57	0.06	2.99	0.17	0.24	0.19	0
3	Link-30	0.28	0 00:21	28.73	0.01	3.67	0.14	0.13	0.09	0
4	Link-33	1.43	0 00:22	29.29	0.05	4.43	0.13	0.32	0.16	0
5	Link-37	0.47	0 00:11	15.97	0.03	3.56	0.00	0.20	0.16	0
6	Link-39	0.98	0 00:17	5.54	0.18	2.38	0.00	0.42	0.28	0
7	L-SDPIPE-8	10.15	0 00:14	18.85	0.54	9.62	0.12	0.86	0.58	0
8	SDPIPE-10	8.07	0 00:14	20.80	0.39	10.34	0.30	0.68	0.45	0
9	SDPIPE-11	7.45	0 00:15	24.08	0.31	10.58	0.10	0.63	0.42	0
10	SDPIPE-12	4.77	0 00:15	20.87	0.23	9.29	0.53	0.50	0.33	0
11	SDPIPE-13	2.82	0 00:10	13.13	0.21	5.27	0.20	0.52	0.34	0
12	SDPIPE-14	1.92	0 00:11	21.90	0.09	5.20	1.03	0.42	0.28	0
13	SDPIPE-15	1.62	0 00:14	16.13	0.10	5.56	0.13	0.33	0.22	0
14	SDPIPE-16	10.43	0 00:17	32.04	0.33	10.08	0.22	0.73	0.36	0
15	SDPIPE-17	10.12	0 00:18	30.19	0.34	6.83	0.08	0.96	0.48	0
16	SDPIPE-18	2.53	0 00:19	15.88	0.16	3.19	0.40	0.76	0.50	0
17	SDPIPE-19	2.10	0 00:16	13.09	0.16	2.60	0.48	0.75	0.50	0
18	SDPIPE-2	0.00	0 00:00	22.62	0.00	0.00		0.17	0.08	0
19	SDPIPE-20	4.51	0 00:07	29.75	0.15	6.59	0.65	0.74	0.49	0
20	SDPIPE-21	4.51	0 00:07	13.61	0.33	7.36	0.16	0.57	0.38	0
21	SDPIPE-22	0.76	0 00:08	34.17	0.02	2.37	0.23	0.45	0.30	0
22	SDPIPE-23	3.62	0 00:17	20.19	0.18	6.15	0.60	0.55	0.37	0
23	SDPIPE-24	3.63	0 00:17	21.21	0.17	8.15	0.15	0.45	0.30	0
24	SDPIPE-25	0.61	0 00:15	14.89	0.04	4.01	0.31	0.21	0.14	0
25	SDPIPE-25 (1)	2.88	0 00:17	11.09	0.26	4.98	0.15	0.54	0.36	0
26	SDPIPE-25 (12)	1.30	0 00:17	11.38	0.11	3.90	0.18	0.37	0.24	0
27	SDPIPE-25 (13)	1.08	0 00:17	22.32	0.05	5.17	0.11	0.33	0.22	0
28	SDPIPE-25 (14)	0.81	0 00:08	15.45	0.05	4.33	0.18	0.24	0.16	0
29	SDPIPE-25 (15)	10.43	0 00:17	89.94	0.12	7.36	0.56	0.98	0.49	0
30	SDPIPE-25 (15) (1)	16.89	0 00:19	45.15	0.37	6.68	0.06	1.28	0.51	0
31	SDPIPE-25 (17)	1.44	0 00:21	10.50	0.14	3.97	0.14	0.39	0.26	0
32	SDPIPE-25 (2)	2.11	0 00:17	22.74	0.09	4.56	0.55	0.46	0.31	0
33	SDPIPE-25 (3)	1.09	0 00:16	12.88	0.08	3.91	0.14	0.32	0.22	0
34	SDPIPE-25 (6)	5.36	0 00:10	31.10	0.17	12.09	0.12	0.45	0.30	0
35	SDPIPE-25 (7)	4.07	0 00:10	24.71	0.16	9.96	0.34	0.42	0.28	0
36	SDPIPE-25 (8)	2.22	0 00:09	28.14	0.08	9.27	0.35	0.29	0.19	0
37	SDPIPE-25 (9)	1.56	0 00:09	14.64	0.11	4.97	0.17	0.35	0.23	0
38	SDPIPE-32	1.07	0 00:15	26.26	0.04	4.43	0.36	0.34	0.23	0
39	SDPIPE-36	3.55	0 00:25	9.10	0.39	4.26	0.12	0.72	0.48	0
40	SDPIPE-4	0.00	0 00:00	48.86	0.00	0.00		0.00	0.00	0
41	SDPIPE-5	1.72	0 00:22	27.02	0.06	4.28	0.16	0.37	0.19	0
42	SDPIPE-6	1.72	0 00:22	25.54	0.07	3.87	0.24	0.40	0.20	0
43	SDPIPE-7	1.00	0 00:20	22.70	0.04	2.60	0.21	0.36	0.18	0
44	SDPIPE-8 (1)	10.15	0 00:14	31.86	0.32	11.14	0.19	0.77	0.51	0

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	4.56	469.43	0.00
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	9.69	481.00	0.00
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	6.39	485.50	0.00
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	15.19	493.00	0.00
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	11.25	502.00	0.00
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	5.39	513.00	0.00
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	5.70	514.00	0.00
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	5.32	528.00	0.00
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	5.99	529.00	0.00
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	4.02	461.75	0.00
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	11.64	504.25	0.00
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	7.39	508.50	0.00
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	6.97	510.00	0.00
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	7.48	509.50	0.00
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	8.29	527.00	0.00
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	4.79	530.50	0.00
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	5.65	537.00	0.00
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	5.36	537.50	0.00
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	4.40	543.50	0.00
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0.00
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	3.87	546.00	0.00
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	3.88	544.00	0.00
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	12.19	478.50	0.00
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	12.37	494.50	0.00
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	9.80	515.00	0.00
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	4.07	484.50	0.00
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	11.00	496.00	0.00
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	9.64	515.00	0.00
29	CB-51	FHWA HEC-22 GENERIC	N/A	On Grade	1	462.08	465.82	3.74	462.08	0.00
30	CB-9	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.10	474.00	4.90	469.10	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB-10	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
2	CB-11	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
3	CB-12	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
4	CB-13	0.0232	0.0254	0.0150	0.0200	1.00	0.1312	8.50
5	CB-14	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
6	CB-15	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
7	CB-16	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
8	CB-17	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
9	CB-18	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
10	CB-2	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
11	CB-20	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
12	CB-21	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
13	CB-22	0.0780	0.0254	0.0150	0.0200	1.00	0.1312	8.50
14	CB-23	0.0381	0.0254	0.0150	0.0200	1.00	0.1312	8.50
15	CB-25	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
16	CB-26	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
17	CB-28	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
18	CB-29	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
19	CB-30	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
20	CB-31	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
21	CB-32	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
22	CB-33	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
23	CB-37	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
24	CB-38	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
25	CB-40	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
26	CB-43	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
27	CB-44	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
28	CB-45	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
29	CB-51	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
30	CB-9	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	T Floo Volu (ac
1	CB-10	1.66	1.42	N/A	N/A	N/A	6.66	474.33	0.34	0 00:20	0
2	CB-11	1.36	1.36	1.20	0.16	88.32	4.50	490.80	0.11	0 00:14	0
3	CB-12	1.75	1.75	1.42	0.33	80.95	4.96	492.01	0.12	0 00:16	0
4	CB-13	1.14	1.14	1.14	0.00	100.00	5.48	508.33	0.13	0 00:14	0
5	CB-14	2.92	2.47	N/A	N/A	N/A	7.38	513.61	0.35	0 00:15	0
6	CB-15	3.45	3.15	2.28	1.17	66.00	6.95	518.56	0.17	0 00:14	0
7	CB-16	0.96	0.96	0.95	0.01	99.37	4.32	519.80	0.10	0 00:09	0
8	CB-17	0.84	0.84	0.84	0.00	100.00	4.13	533.42	0.10	0 00:11	0
9	CB-18	1.96	1.96	1.63	0.34	82.82	5.64	535.13	0.14	0 00:14	0
10	CB-2	0.56	0.56	0.56	0.00	100.00	3.38	465.85	0.08	0 00:22	0
11	CB-20	1.93	1.93	N/A	N/A	N/A	5.59	516.20	0.31	0 00:17	0
12	CB-21	2.14	1.97	N/A	N/A	N/A	5.99	516.21	0.32	0 00:18	0
13	CB-22	2.84	2.84	2.54	0.30	89.42	6.12	517.12	0.15	0 00:19	0
14	CB-23	2.11	2.11	2.11	0.00	99.96	6.31	517.13	0.15	0 00:16	0
15	CB-25	2.55	2.55	N/A	N/A	N/A	6.73	535.63	0.34	0 00:07	0
16	CB-26	1.76	1.76	N/A	N/A	N/A	5.26	535.59	0.30	0 00:08	0
17	CB-28	0.92	0.92	0.92	0.00	100.00	4.72	542.77	0.11	0 00:17	0
18	CB-29	0.78	0.78	0.78	0.00	100.00	4.45	542.97	0.11	0 00:17	0
19	CB-30	1.07	1.07	1.07	0.00	100.00	5.00	548.03	0.12	0 00:17	0
20	CB-31	0.53	0.53	0.53	0.00	100.00	3.82	549.46	0.09	0 00:15	0
21	CB-32	0.61	0.61	0.61	0.00	100.00	4.03	549.97	0.10	0 00:15	0
22	CB-33	1.11	1.11	1.11	0.00	99.93	5.05	548.00	0.12	0 00:16	0
23	CB-37	0.71	0.69	0.71	0.00	100.00	3.67	490.78	0.09	0 00:10	0
24	CB-38	1.06	1.06	1.02	0.04	96.00	4.24	506.97	0.10	0 00:10	0
25	CB-40	1.99	1.99	1.57	0.42	79.01	5.35	524.93	0.13	0 00:09	0
26	CB-43	1.46	1.39	1.29	0.17	88.10	4.77	488.69	0.12	0 00:17	0
27	CB-44	1.17	1.16	1.10	0.07	93.77	4.41	507.11	0.11	0 00:17	0
28	CB-45	0.83	0.83	0.83	0.00	99.59	3.89	524.74	0.09	0 00:08	0
29	CB-51	1.70	1.67	1.43	0.28	83.77	5.06	465.94	0.12	0 00:21	0
30	CB-9	1.28	1.27	N/A	N/A	N/A	5.82	474.31	0.31	0 00:21	0

10 Year Design Storm

Project Description

File Name	HILLTOP 9-21-2026.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	33
Nodes	52
Junctions	13
Outfalls	9
Flow Diversions	0
Inlets	30
Storage Nodes	0
Links	67
Channels	22
Pipes	45
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	10 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-AD-49	4.59	0.7000	1.69	1.19	5.44	12.40	0 00:26:24
2	Sub-CB-10	0.54	0.7000	1.19	0.84	0.45	1.89	0 00:14:15
3	Sub-CB-11	0.44	0.7000	1.00	0.70	0.31	1.81	0 00:10:06
4	Sub-CB-12	0.70	0.7000	1.27	0.89	0.62	2.33	0 00:15:59
5	Sub-CB-13	0.37	0.7000	0.99	0.70	0.26	1.52	0 00:10:09
6	Sub-CB-14	0.87	0.7000	1.08	0.76	0.66	3.29	0 00:12:04
7	Sub-CB-15	1.24	0.7000	1.24	0.87	1.07	4.20	0 00:15:19
8	Sub-CB-16	0.30	0.7000	0.95	0.66	0.20	1.28	0 00:09:21
9	Sub-CB-17	0.25	0.7000	0.91	0.64	0.16	1.12	0 00:08:26
10	Sub-CB-18	0.76	0.7000	1.20	0.84	0.64	2.62	0 00:14:44
11	Sub-CB-2	0.15	0.7000	0.80	0.56	0.08	0.75	0 00:06:39
12	Sub-CB-20	0.61	0.7000	0.97	0.68	0.41	2.57	0 00:09:37
13	Sub-CB-21	0.81	0.7000	1.30	0.91	0.74	2.63	0 00:16:54
14	Sub-CB-22	1.23	0.7000	1.41	0.98	1.21	3.79	0 00:19:13
15	Sub-CB-23	0.85	0.7000	1.28	0.89	0.76	2.82	0 00:16:07
16	Sub-CB-25	0.66	0.7000	0.78	0.55	0.36	3.41	0 00:06:15
17	Sub-CB-26	0.41	0.7000	0.68	0.48	0.20	2.36	0 00:05:00
18	Sub-CB-28	0.35	0.7000	1.19	0.84	0.29	1.22	0 00:14:16
19	Sub-CB-29	0.32	0.7000	1.30	0.91	0.29	1.04	0 00:16:41
20	Sub-CB-30	0.44	0.7000	1.33	0.93	0.41	1.43	0 00:17:16
21	Sub-CB-31	0.28	0.5000	1.17	0.59	0.16	0.71	0 00:13:48
22	Sub-CB-32	0.24	0.7000	1.25	0.88	0.21	0.82	0 00:15:37
23	Sub-CB-33	0.45	0.7000	1.28	0.90	0.40	1.48	0 00:16:22
24	Sub-CB-37	0.27	0.7000	1.24	0.87	0.24	0.92	0 00:15:16
25	Sub-CB-38	0.38	0.7000	1.11	0.77	0.29	1.41	0 00:12:34
26	Sub-CB-40	0.63	0.7000	0.96	0.67	0.42	2.66	0 00:09:30
27	Sub-CB-43	0.57	0.7000	1.30	0.91	0.52	1.85	0 00:16:54
28	Sub-CB-44	0.48	0.7000	1.32	0.92	0.44	1.55	0 00:17:09
29	Sub-CB-45	0.24	0.7000	0.87	0.61	0.15	1.11	0 00:07:51
30	Sub-CB-51	0.76	0.7000	1.51	1.06	0.80	2.23	0 00:21:40
31	Sub-CB-9	0.54	0.7000	1.37	0.96	0.52	1.70	0 00:18:21
32	Sub-SDPIPE-35	0.16	0.7000	1.02	0.72	0.11	0.64	0 00:10:36
33	Sub-SDPIPE-36	1.73	0.7000	1.66	1.16	2.01	4.75	0 00:25:20

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	M Freeboa Attain (
1	AD-49	Junction	468.50	472.65	468.50	472.65	10.00	22.70	470.31	0.00	2.
2	CB-47	Junction	471.00	479.32	471.00	479.32	10.00	13.61	472.20	0.00	7.
3	CB-8	Junction	468.50	474.72	468.50	474.72	10.00	2.83	469.03	0.00	5.
4	JB	Junction	462.30	468.30	462.30	468.30	0.00	0.74	462.64	0.00	5.
5	JB-19	Junction	502.00	509.27	502.00	509.27	10.00	14.11	502.54	0.00	6.
6	JB-24	Junction	526.00	535.80	526.00	535.80	10.00	5.96	526.45	0.00	9.
7	JB-27	Junction	534.00	539.80	534.00	539.80	10.00	4.82	534.50	0.00	5.
8	JB-39	Junction	510.00	521.73	510.00	521.73	10.00	2.74	510.33	0.00	11.
9	JB-4	Junction	462.74	473.05	462.74	473.05	10.00	0.00	462.74	0.00	10.
10	JB-SDPIPE35	Junction	462.75	464.00	462.75	0.00	100.00	0.74	463.03	0.00	1.
11	JB-SDPIPE36	Junction	441.30	442.80	441.30	0.00	1000.00	4.75	442.25	0.00	0.
12	8-Jun	Junction	538.50	544.50	538.50	544.50	0.00	1.43	539.06	0.00	5.
13	WIER-6	Junction	468.00	472.50	468.00	472.50	10.00	0.00	468.00	0.00	4.
14	FES-1	Outfall	461.00					1.82	461.34		
15	FES-3	Outfall	538.50					1.33	538.93		
16	FES-36	Outfall	472.00					7.04	472.49		
17	FES-46	Outfall	468.25					22.69	469.50		
18	FES-48	Outfall	468.00					13.61	468.94		
19	FES-7	Outfall	468.00					2.83	468.44		
20	3-Jun	Outfall	0.00					0.00	0.00		
21	OUT-SDPIPE35	Outfall	462.25					0.72	462.43		
22	Out-SDPIPE-36	Outfall	441.00					4.75	441.77		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
1	Link-05	Pipe	CB-16	CB-13	406.55	517.00	503.00	3.4400	18.000	0.0150	0.01	15.32	0.00	2.00	0.
2	Link-08	Pipe	JB-SDPIPE35	JB	30.00	462.75	462.25	1.6700	15.000	0.0120	0.74	8.57	0.09	3.26	0.
3	Link-30	Pipe	CB-51	JB-SDPIPE35	30.83	462.08	462.75	-2.1800	18.000	0.0150	0.62	28.73	0.02	4.44	0.
4	Link-33	Pipe	CB-2	FES-1	33.60	461.75	461.00	2.2300	24.000	0.0150	1.82	29.29	0.06	4.69	0.
5	Link-37	Pipe	JB	OUT-SDPIPE35	0.96	462.30	462.25	5.2100	15.000	0.0120	0.72	15.97	0.05	3.96	0.
6	Link-39	Pipe	8-Jun	FES-3	0.36	538.50	538.50	0.0000	18.000	0.0130	1.33	5.54	0.24	2.60	0.
7	L-SDPIPE-8	Pipe	CB-47	FES-48	70.00	471.00	468.00	4.2900	18.000	0.0150	13.61	18.85	0.72	10.05	1.
8	SDPIPE-10	Pipe	CB-13	CB-11	187.03	493.00	486.75	3.3400	18.000	0.0120	11.00	20.80	0.53	11.06	0.
9	SDPIPE-11	Pipe	CB-14	CB-13	66.59	502.00	498.50	5.2600	18.000	0.0130	10.06	24.08	0.42	11.23	0.
10	SDPIPE-12	Pipe	CB-15	CB-14	297.35	513.00	503.00	3.3600	18.000	0.0120	6.05	20.87	0.29	9.88	0.
11	SDPIPE-13	Pipe	CB-16	CB-15	64.00	514.00	513.00	1.5600	18.000	0.0130	3.59	13.13	0.27	5.55	0.
12	SDPIPE-14	Pipe	CB-17	CB-16	322.00	528.00	514.00	4.3500	18.000	0.0130	2.44	21.90	0.11	5.46	0.
13	SDPIPE-15	Pipe	CB-18	CB-17	42.43	529.00	528.00	2.3600	18.000	0.0130	1.95	16.13	0.12	5.81	0.
14	SDPIPE-16	Pipe	CB-20	JB-19	131.65	504.25	502.00	1.7100	24.000	0.0120	14.11	32.04	0.44	10.66	0.
15	SDPIPE-17	Pipe	CB-21	CB-20	32.94	508.50	508.00	1.5200	24.000	0.0120	13.66	30.19	0.45	7.31	1.
16	SDPIPE-18	Pipe	CB-22	CB-21	77.00	510.00	508.50	1.9500	18.000	0.0120	3.06	15.88	0.19	3.42	0.
17	SDPIPE-19	Pipe	CB-23	CB-21	75.59	509.50	508.50	1.3200	18.000	0.0120	2.70	13.09	0.21	2.81	0.
18	SDPIPE-2	Pipe	JB-4	CB-2	99.00	462.74	461.75	1.0000	24.000	0.0130	0.00	22.62	0.00	0.00	0.
19	SDPIPE-20	Pipe	JB-24	CB-21	256.11	526.00	508.50	6.8300	18.000	0.0120	5.95	29.75	0.20	7.01	0.
20	SDPIPE-21	Pipe	CB-25	JB-24	69.87	527.00	526.00	1.4300	18.000	0.0120	5.96	13.61	0.44	7.80	0.
21	SDPIPE-22	Pipe	CB-26	CB-25	33.08	530.50	527.00	10.5800	18.000	0.0130	0.93	34.17	0.03	2.34	0.
22	SDPIPE-23	Pipe	JB-27	CB-25	222.35	534.00	527.00	3.1500	18.000	0.0120	4.82	20.19	0.24	6.51	0.
23	SDPIPE-24	Pipe	CB-28	JB-27	73.59	537.00	534.00	4.0800	18.000	0.0130	4.82	21.21	0.23	8.71	0.
24	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.81	14.89	0.05	4.34	0.
25	SDPIPE-25 (1)	Pipe	CB-29	CB-28	44.82	537.50	537.00	1.1200	18.000	0.0130	3.77	11.09	0.34	5.24	0.
26	SDPIPE-25 (12)	Pipe	CB-43	CB-37	42.57	484.50	484.00	1.1700	18.000	0.0130	1.69	11.38	0.15	4.17	0.
27	SDPIPE-25 (13)	Pipe	CB-44	CB-38	33.23	496.00	494.50	4.5100	18.000	0.0130	1.62	22.32	0.07	5.56	0.
28	SDPIPE-25 (14)	Pipe	CB-45	JB-39	46.24	515.00	514.00	2.1600	18.000	0.0130	1.04	15.45	0.07	4.60	0.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
46	Link-01	Channel	CB-30	CB-29	151.74	547.90	542.86	3.3200	3.960	0.0320	0.04	5.85	0.01	1.60	0.
47	Link-02	Channel	CB-28	CB-18	253.20	542.65	534.99	3.0300	3.960	0.0320	0.01	5.59	0.00	0.24	0.
48	Link-03	Channel	CB-18	CB-15	303.55	534.99	520.24	4.8600	3.960	0.0320	0.67	7.51	0.09	1.01	0.
49	Link-04	Channel	CB-15	CB-14	302.16	520.24	513.25	2.3100	3.960	0.0320	1.61	4.19	0.38	0.97	0.
50	Link-06	Channel	CB-13	CB-11	192.70	508.19	490.69	9.0800	3.960	0.0320	0.00	9.68	0.00	0.42	0.
51	Link-07	Channel	CB-12	CB-10	295.35	491.89	474.00	6.0600	3.960	0.0320	0.65	7.90	0.08	0.58	0.
52	Link-09	Channel	CB-17	CB-22	172.84	533.32	517.04	9.4200	3.960	0.0320	0.01	9.88	0.00	0.53	0.
53	Link-10	Channel	CB-22	CB-21	156.96	517.04	515.89	0.7300	3.960	0.0320	0.71	2.67	0.27	0.48	0.
54	Link-11	Channel	CB-23	CB-21	80.56	516.98	515.89	1.3500	3.960	0.0320	0.10	3.74	0.03	0.11	0.
55	Link-12	Channel	CB-45	CB-23	172.11	524.64	516.98	4.4500	3.960	0.0320	0.05	6.78	0.01	1.91	0.
56	Link-13	Channel	CB-40	CB-44	228.53	524.80	507.00	7.7900	3.960	0.0320	0.78	8.96	0.09	3.74	0.
57	Link-14	Channel	CB-44	CB-43	236.24	500.50	482.00	7.8300	3.960	0.0320	0.21	8.97	0.02	1.28	0.
58	Link-15	Channel	CB-38	CB-37	208.04	506.87	490.69	7.7800	3.960	0.0320	0.12	8.96	0.01	2.05	0.
59	Link-16	Channel	CB-37	CB-9	218.60	490.69	474.00	7.6400	3.960	0.0320	0.02	8.87	0.00	0.03	0.
60	Link-17	Channel	CB-43	CB-51	291.31	488.57	465.82	7.8100	3.960	0.0320	0.35	8.97	0.04	1.54	0.
61	Link-18	Channel	CB-10	CB-2	126.47	474.00	465.77	6.5100	3.960	0.0320	0.00	8.19	0.00	0.00	0.
62	Link-19	Channel	CB-33	CB-28	176.20	547.88	542.65	2.9700	3.960	0.0320	0.06	5.53	0.01	1.13	0.
63	Link-20	Channel	CB-11	CB-9	282.13	490.69	474.00	5.9200	3.960	0.0320	0.36	7.81	0.05	0.66	0.
64	Link-24	Channel	CB-29	CB-26	316.29	542.86	535.29	2.3900	3.960	0.0320	0.00	4.97	0.00	0.00	0.
65	Link-28	Channel	CB-32	3-Jun	204.60	549.87	0.00	268.7500	3.960	0.0320	0.00	52.65	0.00	0.00	0.
66	Link-38	Channel	CB-2	JB	44.72	465.77	462.30	7.7600	3.960	0.0320	0.01	8.95	0.00	0.05	0.
67	Link-40	Channel	CB-31	8-Jun	97.13	549.37	538.50	11.1900	3.960	0.0320	0.00	10.74	0.00	0.00	0.

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutt Sprea during Pea Flo (f
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	469.43	10.00	2.39	N/A	N/A	N/A	8.50	2.(
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	481.00	N/A	1.81	1.45	0.36	79.91	8.50	5.(
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	485.50	N/A	2.33	1.69	0.65	72.27	8.50	5.5
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	493.00	N/A	1.53	1.50	0.03	98.04	8.50	6.1
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	502.00	10.00	4.25	N/A	N/A	N/A	8.50	9.4
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	513.00	N/A	4.81	2.73	2.09	56.69	8.50	7.9
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	514.00	N/A	1.28	1.21	0.07	94.33	8.50	4.8
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	528.00	N/A	1.12	1.09	0.03	97.12	8.50	4.5
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	529.00	N/A	2.63	1.94	0.68	74.03	8.50	6.3
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	461.75	N/A	0.75	0.75	0.00	100.00	8.50	3.7
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	504.25	10.00	2.57	N/A	N/A	N/A	8.50	6.7
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	508.50	10.00	3.22	N/A	N/A	N/A	8.50	7.8
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	510.00	N/A	3.79	3.07	0.72	80.96	8.50	6.8
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	509.50	N/A	2.82	2.71	0.11	96.23	8.50	6.9
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	527.00	10.00	3.41	N/A	N/A	N/A	8.50	8.1
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	530.50	10.00	2.35	N/A	N/A	N/A	8.50	6.3
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	537.00	N/A	1.26	1.24	0.02	98.78	8.50	5.3
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	537.50	N/A	1.06	1.06	0.00	100.00	8.50	4.9
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	543.50	N/A	1.43	1.38	0.05	96.64	8.50	5.5
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.71	0.71	0.00	100.00	8.50	4.2
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	546.00	N/A	0.82	0.82	0.00	100.00	8.50	4.4
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	544.00	N/A	1.48	1.42	0.06	95.96	8.50	5.6
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	478.50	N/A	1.02	0.98	0.03	96.73	8.50	4.1
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	494.50	N/A	1.41	1.26	0.16	88.98	8.50	4.7
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	515.00	N/A	2.66	1.87	0.79	70.30	8.50	5.9
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	484.50	N/A	2.05	1.60	0.45	78.09	8.50	5.4
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	496.00	N/A	1.65	1.40	0.26	84.54	8.50	5.(
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	515.00	N/A	1.11	1.06	0.06	94.90	8.50	4.3

Subbasin Hydrology

Subbasin : Sub-AD-49

Input Data

Area (ac) 4.59
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	4.59	-	0.7
Composite Area & Weighted Runoff Coeff.	4.59		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	299.3	0	0
Slope (%) :	8.53	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	24.81	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	184.58	0	0
Slope (%) :	14.79	0	0
Surface Type :	Woodland	Paved	Paved
Velocity (ft/sec) :	1.92	0	0
Computed Flow Time (min) :	1.6	0	0

Total TOC (min) 26.41

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.54
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	62.75	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.31	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	287	0	0
Slope (%) :	6.16	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.05	0	0
Computed Flow Time (min) :	0.95	0	0

Total TOC (min) 14.26

Subbasin : Sub-CB-11

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	87.01933392	0	0
Slope (%) :	4.23334562	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	9.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	144.6117952	0	0
Slope (%) :	9.33800334	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.21	0	0
Computed Flow Time (min) :	0.39	0	0

Total TOC (min) 10.10

Subbasin : Sub-CB-12

Input Data

Area (ac) 0.7
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.7	-	0.7
Composite Area & Weighted Runoff Coeff.	0.7		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.34441067	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.92	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	290.7440621	0	0
Slope (%) :	7.85301046	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	4.52	0	0
Computed Flow Time (min) :	1.07	0	0

Total TOC (min) 15.99

Subbasin : Sub-CB-13

Input Data

Area (ac) 0.37
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.7
Composite Area & Weighted Runoff Coeff.	0.37		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.99	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	326.6	0	0
Slope (%) :	3.5	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.8	0	0
Computed Flow Time (min) :	1.43	0	0

Total TOC (min) 10.16

Subbasin : Sub-CB-14

Input Data

Area (ac) 0.87
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.87	-	0.7
Composite Area & Weighted Runoff Coeff.	0.87		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	133.09	0	0
Slope (%) :	7.48	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	10.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	224.63	0	0
Slope (%) :	2.32	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.1	0	0
Computed Flow Time (min) :	1.21	0	0

Total TOC (min) 12.07

Subbasin : Sub-CB-15

Input Data

Area (ac) 1.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.24	-	0.7
Composite Area & Weighted Runoff Coeff.	1.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	129.63	0	0
Slope (%) :	3.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	13.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	369.75	0	0
Slope (%) :	4.45	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	1.44	0	0

Total TOC (min) 15.32

Subbasin : Sub-CB-16

Input Data

Area (ac) 0.3
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.3	-	0.7
Composite Area & Weighted Runoff Coeff.	0.3		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	35.63	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.47	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.56	0	0
Slope (%) :	4.29	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.21	0	0
Computed Flow Time (min) :	0.89	0	0

Total TOC (min) 9.36

Subbasin : Sub-CB-17

Input Data

Area (ac) 0.25
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.25	-	0.7
Composite Area & Weighted Runoff Coeff.	0.25		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	30.83	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	7.54	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221.33	0	0
Slope (%) :	4.052	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.09	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 8.44

Subbasin : Sub-CB-18

Input Data

Area (ac) 0.76
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	169.6828048	0	0
Slope (%) :	5.92476783	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	14.48	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.81153859	0	0
Slope (%) :	5.8473515	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.92	0	0
Computed Flow Time (min) :	0.26	0	0

Total TOC (min) 14.74

Subbasin : Sub-CB-2

Input Data

Area (ac) 0.15
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.15	-	0.7
Composite Area & Weighted Runoff Coeff.	0.15		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	49.14	0	0
Slope (%) :	3.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	6.63	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	7.8	0	0
Slope (%) :	7.9	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 6.65

Subbasin : Sub-CB-20

Input Data

Area (ac) 0.61
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.61	-	0.7
Composite Area & Weighted Runoff Coeff.	0.61		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.97	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	228.24	0	0
Slope (%) :	4.33669128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.23	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 9.62

Subbasin : Sub-CB-21

Input Data

Area (ac) 0.81
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.81	-	0.7
Composite Area & Weighted Runoff Coeff.	0.81		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	225.91	0	0
Slope (%) :	7.69	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	74	0	0
Slope (%) :	1.44	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.44	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-22

Input Data

Area (ac) 1.23
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.23	-	0.7
Composite Area & Weighted Runoff Coeff.	1.23		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	227.07	0	0
Slope (%) :	5.59	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	18.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	150.89	0	0
Slope (%) :	5.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.52	0	0

Total TOC (min) 19.23

Subbasin : Sub-CB-23

Input Data

Area (ac) 0.85
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.85	-	0.7
Composite Area & Weighted Runoff Coeff.	0.85		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	226.71	0	0
Slope (%) :	8.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.24	0	0
Computed Flow Time (min) :	15.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.07	0	0
Slope (%) :	3.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.93	0	0
Computed Flow Time (min) :	0.32	0	0

Total TOC (min) 16.12

Subbasin : Sub-CB-25

Input Data

Area (ac) 0.66
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.7
Composite Area & Weighted Runoff Coeff.	0.66		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.69	0	0
Slope (%) :	3.98	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	4.99	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	218	0	0
Slope (%) :	1.9995265	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.26	0	0

Total TOC (min) 6.25

Subbasin : Sub-CB-26

Input Data

Area (ac) 0.41
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.41	-	0.7
Composite Area & Weighted Runoff Coeff.	0.41		0.7

Time of Concentration

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	391.04	0	0
Slope (%) :	2.05	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.91	0	0
Computed Flow Time (min) :	2.24	0	0

Total TOC (min) 2.24

Subbasin : Sub-CB-28

Input Data

Area (ac) 0.35
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.7
Composite Area & Weighted Runoff Coeff.	0.35		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.21	0	0
Slope (%) :	1.57	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	13.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	96.33	0	0
Slope (%) :	2.66	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.32	0	0
Computed Flow Time (min) :	0.48	0	0

Total TOC (min) 14.28

Subbasin : Sub-CB-29

Input Data

Area (ac) 0.32
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.32	-	0.7
Composite Area & Weighted Runoff Coeff.	0.32		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	79.19359172	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.04	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	145.6546025	0	0
Slope (%) :	3.30814128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.7	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 16.69

Subbasin : Sub-CB-30

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.06466793	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.18	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.4355599	0	0
Slope (%) :	2.37620836	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	1.09	0	0

Total TOC (min) 17.27

Subbasin : Sub-CB-31

Input Data

Area (ac) 0.28
Weighted Runoff Coefficient 0.5

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.5
Composite Area & Weighted Runoff Coeff.	0.28		0.5

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	61.18415656	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.05	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	147.427748	0	0
Slope (%) :	2.48368186	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.2	0	0
Computed Flow Time (min) :	0.77	0	0

Total TOC (min) 13.81

Subbasin : Sub-CB-32

Input Data

Area (ac) 0.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.82652581	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	123.3068858	0	0
Slope (%) :	2.56696146	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.26	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 15.63

Subbasin : Sub-CB-33

Input Data

Area (ac) 0.45
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.7
Composite Area & Weighted Runoff Coeff.	0.45		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	74.8476514	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15.33	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	205.0538871	0	0
Slope (%) :	2.54735015	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.24	0	0
Computed Flow Time (min) :	1.05	0	0

Total TOC (min) 16.38

Subbasin : Sub-CB-37

Input Data

Area (ac) 0.27
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.27	-	0.7
Composite Area & Weighted Runoff Coeff.	0.27		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	70.96	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.69	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.13	0	0
Slope (%) :	7.95	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.59	0	0

Total TOC (min) 15.28

Subbasin : Sub-CB-38

Input Data

Area (ac) 0.38
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.7
Composite Area & Weighted Runoff Coeff.	0.38		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	56.31288611	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	12.21	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	122.2285539	0	0
Slope (%) :	7.88883657	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.36	0	0

Total TOC (min) 12.57

Subbasin : Sub-CB-40

Input Data

Area (ac) 0.63
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	-	0.7
Composite Area & Weighted Runoff Coeff.	0.63		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.47168729	0	0
Slope (%) :	4.83233018	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	8.82	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.6819013	0	0
Slope (%) :	7.22299665	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.69	0	0

Total TOC (min) 9.51

Subbasin : Sub-CB-43

Input Data

Area (ac) 0.57
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.7
Composite Area & Weighted Runoff Coeff.	0.57		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.44365706	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.24	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	230.963887	0	0
Slope (%) :	7.93293268	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.67	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-44

Input Data

Area (ac)	0.48
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.48	-	0.7
Composite Area & Weighted Runoff Coeff.	0.48		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.23540495	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.53	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	215.6393568	0	0
Slope (%) :	7.93956492	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 17.16

Subbasin : Sub-CB-45

Input Data

Area (ac)	0.24
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	26.67	0	0
Slope (%) :	0.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	7.2	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221	0	0
Slope (%) :	7.58	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.6	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 7.86

Subbasin : Sub-CB-51

Input Data

Area (ac)	0.76
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	109.87	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	20.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	284.96	0	0
Slope (%) :	7.93363114	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.83	0	0

Total TOC (min) 21.67

Subbasin : Sub-CB-9

Input Data

Area (ac)	0.54
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	94.51887751	0	0
Slope (%) :	1.1562359	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	17.43	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	272.2215693	0	0
Slope (%) :	5.96622322	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.97	0	0
Computed Flow Time (min) :	0.91	0	0

Total TOC (min) 18.35

Subbasin : Sub-SDPIPE-35

Input Data

Area (ac)	0.16
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.16	-	0.7
Composite Area & Weighted Runoff Coeff.	0.16		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	117.01	0	0
Slope (%) :	6.14	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	10.61	0	0

Total TOC (min) 10.61

Subbasin : Sub-SDPIPE-36

Input Data

Area (ac)	1.73
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.73	-	0.7
Composite Area & Weighted Runoff Coeff.	1.73		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	299.51	0	0
Slope (%) :	6	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.22	0	0
Computed Flow Time (min) :	22.7	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	546	0	0
Slope (%) :	5.3	0	0
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	3.45	0	0
Computed Flow Time (min) :	2.64	0	0

Total TOC (min) 25.34

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	AD-49	468.50	472.65	4.15	468.50	0.00	472.65	0.00	10.00	19.85
2	CB-47	471.00	479.32	8.32	471.00	0.00	479.32	0.00	10.00	81.81
3	CB-8	468.50	474.72	6.22	468.50	0.00	474.72	0.00	10.00	50.59
4	JB	462.30	468.30	6.00	462.30	0.00	468.30	0.00	0.00	57.00
5	JB-19	502.00	509.27	7.27	502.00	0.00	509.27	0.00	10.00	63.30
6	JB-24	526.00	535.80	9.80	526.00	0.00	535.80	0.00	10.00	99.54
7	JB-27	534.00	539.80	5.80	534.00	0.00	539.80	0.00	10.00	51.59
8	JB-39	510.00	521.73	11.73	510.00	0.00	521.73	0.00	10.00	74.75
9	JB-4	462.74	473.05	10.31	462.74	0.00	473.05	0.00	10.00	99.76
10	JB-SDPIPE35	462.75	464.00	1.25	462.75	0.00	0.00	-464.00	100.00	0.00
11	JB-SDPIPE36	441.30	442.80	1.50	441.30	0.00	0.00	-442.80	1000.00	0.00
12	8-Jun	538.50	544.50	6.00	538.50	0.00	544.50	0.00	0.00	54.00
13	WIER-6	468.00	472.50	4.50	468.00	0.00	472.50	0.00	10.00	30.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Oc (days
1	AD-49	22.70	12.40	470.31	1.81	0.00	2.35	468.57	0.07	0 00:19	
2	CB-47	13.61	0.00	472.20	1.20	0.00	7.12	471.03	0.03	0 00:14	
3	CB-8	2.83	0.00	469.03	0.53	0.00	5.69	468.52	0.02	0 00:18	
4	JB	0.74	0.00	462.64	0.34	0.00	5.66	462.31	0.01	0 00:17	
5	JB-19	14.11	0.00	502.54	0.54	0.00	6.74	502.02	0.02	0 00:17	
6	JB-24	5.96	0.00	526.45	0.45	0.00	9.34	526.01	0.01	0 00:07	
7	JB-27	4.82	0.00	534.50	0.50	0.00	5.30	534.01	0.01	0 00:17	
8	JB-39	2.74	0.00	510.33	0.33	0.00	11.40	510.01	0.01	0 00:09	
9	JB-4	0.00	0.00	462.74	0.00	0.00	10.31	462.74	0.00	0 00:00	
10	JB-SDPIPE35	0.74	0.64	463.03	0.28	0.00	1.22	462.76	0.01	0 00:17	
11	JB-SDPIPE36	4.75	4.75	442.25	0.95	0.00	0.55	441.33	0.03	0 00:25	
12	8-Jun	1.43	0.00	539.06	0.56	0.00	5.44	538.52	0.02	0 00:17	
13	WIER-6	0.00	0.00	468.00	0.00	0.00	4.50	468.00	0.00	0 00:00	

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Er
1	Link-01	151.74	547.90	4.40	542.86	5.36	5.04	3.3200	User-Defined	0.330	14.000	0.0320	
2	Link-02	253.20	542.65	5.65	534.99	5.99	7.66	3.0300	User-Defined	0.330	14.000	0.0320	
3	Link-03	303.55	534.99	5.99	520.24	7.24	14.75	4.8600	User-Defined	0.330	14.000	0.0320	
4	Link-04	302.16	520.24	7.24	513.25	11.25	6.99	2.3100	User-Defined	0.330	14.000	0.0320	
5	Link-06	192.70	508.19	15.19	490.69	9.69	17.50	9.0800	User-Defined	0.330	14.000	0.0320	
6	Link-07	295.35	491.89	6.39	474.00	4.56	17.89	6.0600	User-Defined	0.330	14.000	0.0320	
7	Link-09	172.84	533.32	5.32	517.04	7.04	16.28	9.4200	User-Defined	0.330	14.000	0.0320	
8	Link-10	156.96	517.04	7.04	515.89	7.39	1.15	0.7300	User-Defined	0.330	14.000	0.0320	
9	Link-11	80.56	516.98	7.48	515.89	7.39	1.09	1.3500	User-Defined	0.330	14.000	0.0320	
10	Link-12	172.11	524.64	9.64	516.98	7.48	7.67	4.4500	User-Defined	0.330	14.000	0.0320	
11	Link-13	228.53	524.80	9.80	507.00	11.00	17.80	7.7900	User-Defined	0.330	14.000	0.0320	
12	Link-14	236.24	500.50	4.50	482.00	-2.50	18.50	7.8300	User-Defined	0.330	14.000	0.0320	
13	Link-15	208.04	506.87	12.37	490.69	12.19	16.18	7.7800	User-Defined	0.330	14.000	0.0320	
14	Link-16	218.60	490.69	12.19	474.00	4.90	16.69	7.6400	User-Defined	0.330	14.000	0.0320	
15	Link-17	291.31	488.57	4.07	465.82	3.74	22.75	7.8100	User-Defined	0.330	14.000	0.0320	
16	Link-18	126.47	474.00	4.56	465.77	4.02	8.23	6.5100	User-Defined	0.330	14.000	0.0320	
17	Link-19	176.20	547.88	3.88	542.65	5.65	5.23	2.9700	User-Defined	0.330	14.000	0.0320	
18	Link-20	282.13	490.69	9.69	474.00	4.90	16.70	5.9200	User-Defined	0.330	14.000	0.0320	
19	Link-24	316.29	542.86	5.36	535.29	4.79	7.57	2.3900	User-Defined	0.330	14.000	0.0320	
20	Link-28	204.60	549.87	3.87	0.00	0.00	549.87	268.7500	User-Defined	0.330	14.000	0.0320	
21	Link-38	44.72	465.77	4.02	462.30	0.00	3.47	7.7600	User-Defined	0.330	14.000	0.0320	
22	Link-40	97.13	549.37	4.87	538.50	0.00	10.87	11.1900	User-Defined	0.330	14.000	0.0320	

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froud Numb
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)	
1	Link-01	0.04	0 00:19	5.85	0.01	1.60	1.58	0.03	0.09	0.00	
2	Link-02	0.01	0 00:15	5.59	0.00	0.24	17.58	0.08	0.24	0.00	
3	Link-03	0.67	0 00:14	7.51	0.09	1.01	5.01	0.18	0.54	0.00	
4	Link-04	1.61	0 00:15	4.19	0.38	0.97	5.19	0.28	0.85	0.00	
5	Link-06	0.00	0 00:13	9.68	0.00	0.42	7.65	0.06	0.17	0.00	
6	Link-07	0.65	0 00:16	7.90	0.08	0.58	8.49	0.23	0.69	0.00	
7	Link-09	0.01	0 00:11	9.88	0.00	0.53	5.44	0.11	0.32	0.00	
8	Link-10	0.71	0 00:19	2.67	0.27	0.48	5.45	0.26	0.80	0.00	
9	Link-11	0.10	0 00:16	3.74	0.03	0.11	12.21	0.21	0.62	0.00	
10	Link-12	0.05	0 00:08	6.78	0.01	1.91	1.50	0.05	0.14	0.00	
11	Link-13	0.78	0 00:09	8.96	0.09	3.74	1.02	0.10	0.29	0.00	
12	Link-14	0.21	0 00:17	8.97	0.02	1.28	3.08	0.09	0.26	0.00	
13	Link-15	0.12	0 00:14	8.96	0.01	2.05	1.69	0.05	0.15	0.00	
14	Link-16	0.02	0 00:16	8.87	0.00	0.03	121.44	0.18	0.55	0.00	
15	Link-17	0.35	0 00:17	8.97	0.04	1.54	3.15	0.10	0.32	0.00	
16	Link-18	0.00	0 00:00	8.19	0.00	0.00		0.01	0.02	0.00	
17	Link-19	0.06	0 00:16	5.53	0.01	1.13	2.60	0.05	0.14	0.00	
18	Link-20	0.36	0 00:10	7.81	0.05	0.66	7.12	0.19	0.56	0.00	
19	Link-24	0.00	0 00:17	4.97	0.00	0.00		0.17	0.50	0.00	
20	Link-28	0.00	0 00:00	52.65	0.00	0.00		0.00	0.00	0.00	
21	Link-38	0.01	0 00:06	8.95	0.00	0.05	14.91	0.17	0.51	0.00	
22	Link-40	0.00	0 00:00	10.74	0.00	0.00		0.17	0.50	0.00	

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Mai Roug
1	Link-05	406.55	517.00	3.00	503.00	10.00	14.00	3.4400	CIRCULAR	18.000	18.000	
2	Link-08	30.00	462.75	0.00	462.25	-0.05	0.50	1.6700	CIRCULAR	15.000	15.000	
3	Link-30	30.83	462.08	0.00	462.75	0.00	-0.67	-2.1800	CIRCULAR	18.000	18.000	
4	Link-33	33.60	461.75	0.00	461.00	0.00	0.75	2.2300	CIRCULAR	24.000	24.000	
5	Link-37	0.96	462.30	0.00	462.25	0.00	0.05	5.2100	CIRCULAR	15.000	15.000	
6	Link-39	0.36	538.50	0.00	538.50	0.00	0.00	0.0000	CIRCULAR	18.000	18.000	
7	L-SDPIPE-8	70.00	471.00	0.00	468.00	0.00	3.00	4.2900	CIRCULAR	18.000	18.000	
8	SDPIPE-10	187.03	493.00	0.00	486.75	5.75	6.25	3.3400	CIRCULAR	18.000	18.000	
9	SDPIPE-11	66.59	502.00	0.00	498.50	5.50	3.50	5.2600	CIRCULAR	18.000	18.000	
10	SDPIPE-12	297.35	513.00	0.00	503.00	1.00	10.00	3.3600	CIRCULAR	18.000	18.000	
11	SDPIPE-13	64.00	514.00	0.00	513.00	0.00	1.00	1.5600	CIRCULAR	18.000	18.000	
12	SDPIPE-14	322.00	528.00	0.00	514.00	0.00	14.00	4.3500	CIRCULAR	18.000	18.000	
13	SDPIPE-15	42.43	529.00	0.00	528.00	0.00	1.00	2.3600	CIRCULAR	18.000	18.000	
14	SDPIPE-16	131.65	504.25	0.00	502.00	0.00	2.25	1.7100	CIRCULAR	24.000	24.000	
15	SDPIPE-17	32.94	508.50	0.00	508.00	3.75	0.50	1.5200	CIRCULAR	24.000	24.000	
16	SDPIPE-18	77.00	510.00	0.00	508.50	0.00	1.50	1.9500	CIRCULAR	18.000	18.000	
17	SDPIPE-19	75.59	509.50	0.00	508.50	0.00	1.00	1.3200	CIRCULAR	18.000	18.000	
18	SDPIPE-2	99.00	462.74	0.00	461.75	0.00	0.99	1.0000	CIRCULAR	24.000	24.000	
19	SDPIPE-20	256.11	526.00	0.00	508.50	0.00	17.50	6.8300	CIRCULAR	18.000	18.000	
20	SDPIPE-21	69.87	527.00	0.00	526.00	0.00	1.00	1.4300	CIRCULAR	18.000	18.000	
21	SDPIPE-22	33.08	530.50	0.00	527.00	0.00	3.50	10.5800	CIRCULAR	18.000	18.000	
22	SDPIPE-23	222.35	534.00	0.00	527.00	0.00	7.00	3.1500	CIRCULAR	18.000	18.000	
23	SDPIPE-24	73.59	537.00	0.00	534.00	0.00	3.00	4.0800	CIRCULAR	18.000	18.000	
24	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	
25	SDPIPE-25 (1)	44.82	537.50	0.00	537.00	0.00	0.50	1.1200	CIRCULAR	18.000	18.000	
26	SDPIPE-25 (12)	42.57	484.50	0.00	484.00	5.50	0.50	1.1700	CIRCULAR	18.000	18.000	
27	SDPIPE-25 (13)	33.23	496.00	0.00	494.50	0.00	1.50	4.5100	CIRCULAR	18.000	18.000	
28	SDPIPE-25 (14)	46.24	515.00	0.00	514.00	4.00	1.00	2.1600	CIRCULAR	18.000	18.000	
29	SDPIPE-25 (15)	248.75	502.00	0.00	468.50	0.00	33.50	13.4700	CIRCULAR	24.000	24.000	
30	SDPIPE-25 (15) (1)	24.21	468.50	0.00	468.25	0.00	0.25	1.0300	CIRCULAR	30.000	30.000	
31	SDPIPE-25 (17)	32.91	462.08	0.00	461.75	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	
32	SDPIPE-25 (2)	150.25	543.50	0.00	537.50	0.00	6.00	3.9900	CIRCULAR	18.000	18.000	
33	SDPIPE-25 (3)	33.25	544.00	0.00	543.50	0.00	0.50	1.5000	CIRCULAR	18.000	18.000	
34	SDPIPE-25 (6)	87.00	478.50	0.00	472.00	0.00	6.50	7.4700	CIRCULAR	18.000	18.000	
35	SDPIPE-25 (7)	201.54	494.50	0.00	485.00	6.50	9.50	4.7100	CIRCULAR	18.000	18.000	
36	SDPIPE-25 (8)	196.25	510.00	0.00	498.00	3.50	12.00	6.1100	CIRCULAR	18.000	18.000	
37	SDPIPE-25 (9)	51.51	515.00	0.00	514.00	4.00	1.00	1.9400	CIRCULAR	18.000	18.000	
38	SDPIPE-32	95.98	544.50	0.00	538.50	0.00	6.00	6.2500	CIRCULAR	18.000	18.000	
39	SDPIPE-36	30.02	441.30	0.00	441.00	0.00	0.30	1.0000	CIRCULAR	18.000	18.000	
40	SDPIPE-4	112.76	468.00	0.00	462.74	0.00	5.26	4.6600	CIRCULAR	24.000	24.000	
41	SDPIPE-5	41.13	468.50	0.00	468.00	0.00	0.50	1.2200	CIRCULAR	24.000	24.000	
42	SDPIPE-6	55.12	469.10	0.00	468.50	0.00	0.60	1.0900	CIRCULAR	24.000	24.000	
43	SDPIPE-7	33.11	469.43	0.00	469.10	0.00	0.33	1.0100	CIRCULAR	24.000	24.000	
44	SDPIPE-8 (1)	127.57	481.00	0.00	471.00	0.00	10.00	7.8400	CIRCULAR	18.000	18.000	
45	SDPIPE-9	35.93	485.50	0.00	483.00	2.00	2.50	6.9600	CIRCULAR	18.000	18.000	

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Ti Surcharg
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(m
1	Link-05	0.01	0 00:11	15.32	0.00	2.00	3.39	0.03	0.02	0
2	Link-08	0.74	0 00:17	8.57	0.09	3.26	0.15	0.31	0.25	0
3	Link-30	0.62	0 00:21	28.73	0.02	4.44	0.12	0.20	0.13	0
4	Link-33	1.82	0 00:22	29.29	0.06	4.69	0.12	0.36	0.18	0
5	Link-37	0.72	0 00:17	15.97	0.05	3.96	0.00	0.26	0.21	0
6	Link-39	1.33	0 00:17	5.54	0.24	2.60	0.00	0.50	0.33	0
7	L-SDPIPE-8	13.61	0 00:14	18.85	0.72	10.05	0.12	1.07	0.72	0
8	SDPIPE-10	11.00	0 00:14	20.80	0.53	11.06	0.28	0.82	0.55	0
9	SDPIPE-11	10.06	0 00:15	24.08	0.42	11.23	0.10	0.76	0.51	0
10	SDPIPE-12	6.05	0 00:14	20.87	0.29	9.88	0.50	0.57	0.38	0
11	SDPIPE-13	3.59	0 00:10	13.13	0.27	5.55	0.19	0.59	0.40	0
12	SDPIPE-14	2.44	0 00:09	21.90	0.11	5.46	0.98	0.48	0.32	0
13	SDPIPE-15	1.95	0 00:14	16.13	0.12	5.81	0.12	0.37	0.25	0
14	SDPIPE-16	14.11	0 00:17	32.04	0.44	10.66	0.21	0.88	0.44	0
15	SDPIPE-17	13.66	0 00:18	30.19	0.45	7.31	0.08	1.15	0.58	0
16	SDPIPE-18	3.06	0 00:19	15.88	0.19	3.42	0.38	0.90	0.60	0
17	SDPIPE-19	2.70	0 00:16	13.09	0.21	2.81	0.45	0.90	0.60	0
18	SDPIPE-2	0.00	0 00:00	22.62	0.00	0.00		0.19	0.10	0
19	SDPIPE-20	5.95	0 00:07	29.75	0.20	7.01	0.61	0.89	0.59	0
20	SDPIPE-21	5.96	0 00:07	13.61	0.44	7.80	0.15	0.67	0.45	0
21	SDPIPE-22	0.93	0 00:08	34.17	0.03	2.34	0.24	0.53	0.35	0
22	SDPIPE-23	4.82	0 00:17	20.19	0.24	6.51	0.57	0.65	0.44	0
23	SDPIPE-24	4.82	0 00:17	21.21	0.23	8.71	0.14	0.53	0.35	0
24	SDPIPE-25	0.81	0 00:15	14.89	0.05	4.34	0.29	0.24	0.16	0
25	SDPIPE-25 (1)	3.77	0 00:17	11.09	0.34	5.24	0.14	0.64	0.43	0
26	SDPIPE-25 (12)	1.69	0 00:17	11.38	0.15	4.17	0.17	0.42	0.28	0
27	SDPIPE-25 (13)	1.62	0 00:09	22.32	0.07	5.56	0.10	0.40	0.26	0
28	SDPIPE-25 (14)	1.04	0 00:08	15.45	0.07	4.60	0.17	0.28	0.19	0
29	SDPIPE-25 (15)	14.11	0 00:17	89.94	0.16	7.88	0.53	1.17	0.58	0
30	SDPIPE-25 (15) (1)	22.69	0 00:19	45.15	0.50	7.20	0.06	1.53	0.61	0
31	SDPIPE-25 (17)	1.82	0 00:21	10.50	0.17	4.19	0.13	0.44	0.29	0
32	SDPIPE-25 (2)	2.73	0 00:16	22.74	0.12	4.80	0.52	0.54	0.36	0
33	SDPIPE-25 (3)	1.42	0 00:16	12.88	0.11	4.17	0.13	0.37	0.25	0
34	SDPIPE-25 (6)	7.04	0 00:10	31.10	0.23	12.88	0.11	0.52	0.35	0
35	SDPIPE-25 (7)	5.36	0 00:10	24.71	0.22	10.70	0.31	0.49	0.33	0
36	SDPIPE-25 (8)	2.73	0 00:09	28.14	0.10	9.82	0.33	0.32	0.21	0
37	SDPIPE-25 (9)	1.86	0 00:09	14.64	0.13	5.18	0.17	0.39	0.26	0
38	SDPIPE-32	1.43	0 00:15	26.26	0.05	4.74	0.34	0.40	0.27	0
39	SDPIPE-36	4.75	0 00:25	9.10	0.52	4.53	0.11	0.86	0.57	0
40	SDPIPE-4	0.00	0 00:00	48.86	0.00	0.00		0.00	0.00	0
41	SDPIPE-5	2.83	0 00:18	27.02	0.10	4.84	0.14	0.48	0.24	0
42	SDPIPE-6	2.83	0 00:18	25.54	0.11	4.26	0.22	0.53	0.26	0
43	SDPIPE-7	2.03	0 00:17	22.70	0.09	3.22	0.17	0.51	0.26	0
44	SDPIPE-8 (1)	13.61	0 00:13	31.86	0.43	11.49	0.19	0.95	0.64	0

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	4.56	469.43	0.00
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	9.69	481.00	0.00
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	6.39	485.50	0.00
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	15.19	493.00	0.00
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	11.25	502.00	0.00
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	5.39	513.00	0.00
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	5.70	514.00	0.00
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	5.32	528.00	0.00
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	5.99	529.00	0.00
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	4.02	461.75	0.00
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	11.64	504.25	0.00
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	7.39	508.50	0.00
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	6.97	510.00	0.00
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	7.48	509.50	0.00
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	8.29	527.00	0.00
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	4.79	530.50	0.00
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	5.65	537.00	0.00
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	5.36	537.50	0.00
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	4.40	543.50	0.00
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0.00
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	3.87	546.00	0.00
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	3.88	544.00	0.00
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	12.19	478.50	0.00
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	12.37	494.50	0.00
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	9.80	515.00	0.00
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	4.07	484.50	0.00
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	11.00	496.00	0.00
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	9.64	515.00	0.00
29	CB-51	FHWA HEC-22 GENERIC	N/A	On Grade	1	462.08	465.82	3.74	462.08	0.00
30	CB-9	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.10	474.00	4.90	469.10	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB-10	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
2	CB-11	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
3	CB-12	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
4	CB-13	0.0232	0.0254	0.0150	0.0200	1.00	0.1312	8.50
5	CB-14	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
6	CB-15	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
7	CB-16	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
8	CB-17	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
9	CB-18	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
10	CB-2	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
11	CB-20	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
12	CB-21	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
13	CB-22	0.0780	0.0254	0.0150	0.0200	1.00	0.1312	8.50
14	CB-23	0.0381	0.0254	0.0150	0.0200	1.00	0.1312	8.50
15	CB-25	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
16	CB-26	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
17	CB-28	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
18	CB-29	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
19	CB-30	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
20	CB-31	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
21	CB-32	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
22	CB-33	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
23	CB-37	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
24	CB-38	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
25	CB-40	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
26	CB-43	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
27	CB-44	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
28	CB-45	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
29	CB-51	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
30	CB-9	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	T Floo Volu (ac
1	CB-10	2.39	1.89	N/A	N/A	N/A	2.05	474.22	0.22	0 00:17	0
2	CB-11	1.81	1.81	1.45	0.36	79.91	5.02	490.82	0.12	0 00:13	0
3	CB-12	2.33	2.33	1.69	0.65	72.27	5.54	492.02	0.14	0 00:16	0
4	CB-13	1.53	1.52	1.50	0.03	98.04	6.10	508.34	0.15	0 00:13	0
5	CB-14	4.25	3.29	N/A	N/A	N/A	9.47	513.66	0.41	0 00:15	0
6	CB-15	4.81	4.20	2.73	2.09	56.69	7.90	518.59	0.20	0 00:14	0
7	CB-16	1.28	1.28	1.21	0.07	94.33	4.82	519.82	0.12	0 00:09	0
8	CB-17	1.12	1.12	1.09	0.03	97.12	4.58	533.43	0.11	0 00:09	0
9	CB-18	2.63	2.62	1.94	0.68	74.03	6.30	535.15	0.15	0 00:14	0
10	CB-2	0.75	0.75	0.75	0.00	100.00	3.76	465.86	0.09	0 00:21	0
11	CB-20	2.57	2.57	N/A	N/A	N/A	6.77	516.23	0.34	0 00:17	0
12	CB-21	3.22	2.63	N/A	N/A	N/A	7.87	516.25	0.37	0 00:18	0
13	CB-22	3.79	3.79	3.07	0.72	80.96	6.85	517.14	0.17	0 00:19	0
14	CB-23	2.82	2.82	2.71	0.11	96.23	6.99	517.15	0.17	0 00:16	0
15	CB-25	3.41	3.41	N/A	N/A	N/A	8.18	535.66	0.37	0 00:07	0
16	CB-26	2.35	2.35	N/A	N/A	N/A	6.38	535.62	0.33	0 00:08	0
17	CB-28	1.26	1.22	1.24	0.02	98.78	5.31	542.78	0.13	0 00:17	0
18	CB-29	1.06	1.04	1.06	0.00	100.00	4.98	542.98	0.12	0 00:17	0
19	CB-30	1.43	1.43	1.38	0.05	96.64	5.58	548.04	0.14	0 00:16	0
20	CB-31	0.71	0.71	0.71	0.00	100.00	4.25	549.47	0.10	0 00:15	0
21	CB-32	0.82	0.82	0.82	0.00	100.00	4.48	549.98	0.11	0 00:15	0
22	CB-33	1.48	1.48	1.42	0.06	95.96	5.64	548.02	0.14	0 00:16	0
23	CB-37	1.02	0.92	0.98	0.03	96.73	4.19	490.79	0.10	0 00:10	0
24	CB-38	1.41	1.41	1.26	0.16	88.98	4.72	506.98	0.11	0 00:10	0
25	CB-40	2.66	2.66	1.87	0.79	70.30	5.98	524.95	0.15	0 00:09	0
26	CB-43	2.05	1.85	1.60	0.45	78.09	5.43	488.70	0.13	0 00:17	0
27	CB-44	1.65	1.55	1.40	0.26	84.54	5.00	507.12	0.12	0 00:09	0
28	CB-45	1.11	1.11	1.06	0.06	94.90	4.32	524.75	0.10	0 00:08	0
29	CB-51	2.37	2.23	1.75	0.62	73.92	5.72	465.96	0.14	0 00:21	0
30	CB-9	1.73	1.70	N/A	N/A	N/A	7.09	474.34	0.35	0 00:18	0

25 Year Design Storm

Project Description

File Name	HILLTOP 9-21-2026.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	33
Nodes	52
Junctions	13
Outfalls	9
Flow Diversions	0
Inlets	30
Storage Nodes	0
Links	67
Channels	22
Pipes	45
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	25 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-AD-49	4.59	0.7000	1.95	1.36	6.26	14.26	0 00:26:24
2	Sub-CB-10	0.54	0.7000	1.37	0.96	0.52	2.17	0 00:14:15
3	Sub-CB-11	0.44	0.7000	1.15	0.80	0.35	2.08	0 00:10:06
4	Sub-CB-12	0.70	0.7000	1.46	1.02	0.72	2.68	0 00:15:59
5	Sub-CB-13	0.37	0.7000	1.14	0.80	0.30	1.75	0 00:10:09
6	Sub-CB-14	0.87	0.7000	1.24	0.87	0.76	3.79	0 00:12:04
7	Sub-CB-15	1.24	0.7000	1.42	1.00	1.23	4.83	0 00:15:19
8	Sub-CB-16	0.30	0.7000	1.09	0.76	0.23	1.47	0 00:09:21
9	Sub-CB-17	0.25	0.7000	1.04	0.73	0.18	1.29	0 00:08:26
10	Sub-CB-18	0.76	0.7000	1.38	0.97	0.74	3.01	0 00:14:44
11	Sub-CB-2	0.15	0.7000	0.92	0.64	0.10	0.87	0 00:06:39
12	Sub-CB-20	0.61	0.7000	1.12	0.78	0.48	2.96	0 00:09:37
13	Sub-CB-21	0.81	0.7000	1.50	1.05	0.85	3.03	0 00:16:54
14	Sub-CB-22	1.23	0.7000	1.62	1.13	1.39	4.36	0 00:19:13
15	Sub-CB-23	0.85	0.7000	1.47	1.03	0.87	3.24	0 00:16:07
16	Sub-CB-25	0.66	0.7000	0.90	0.63	0.41	3.92	0 00:06:15
17	Sub-CB-26	0.41	0.7000	0.79	0.55	0.23	2.71	0 00:05:00
18	Sub-CB-28	0.35	0.7000	1.37	0.96	0.34	1.41	0 00:14:16
19	Sub-CB-29	0.32	0.7000	1.49	1.04	0.33	1.20	0 00:16:41
20	Sub-CB-30	0.44	0.7000	1.53	1.07	0.48	1.65	0 00:17:16
21	Sub-CB-31	0.28	0.5000	1.35	0.67	0.19	0.82	0 00:13:48
22	Sub-CB-32	0.24	0.7000	1.44	1.01	0.25	0.94	0 00:15:37
23	Sub-CB-33	0.45	0.7000	1.47	1.03	0.46	1.70	0 00:16:22
24	Sub-CB-37	0.27	0.7000	1.42	1.00	0.27	1.06	0 00:15:16
25	Sub-CB-38	0.38	0.7000	1.27	0.89	0.34	1.62	0 00:12:34
26	Sub-CB-40	0.63	0.7000	1.10	0.77	0.48	3.06	0 00:09:30
27	Sub-CB-43	0.57	0.7000	1.50	1.05	0.60	2.13	0 00:16:54
28	Sub-CB-44	0.48	0.7000	1.52	1.06	0.51	1.78	0 00:17:09
29	Sub-CB-45	0.24	0.7000	0.99	0.70	0.17	1.28	0 00:07:51
30	Sub-CB-51	0.76	0.7000	1.74	1.22	0.93	2.56	0 00:21:40
31	Sub-CB-9	0.54	0.7000	1.58	1.10	0.60	1.96	0 00:18:21
32	Sub-SDPIPE-35	0.16	0.7000	1.18	0.82	0.13	0.74	0 00:10:36
33	Sub-SDPIPE-36	1.73	0.7000	1.91	1.33	2.31	5.47	0 00:25:20

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	M Freeboa Attain (
1	AD-49	Junction	468.50	472.65	468.50	472.65	10.00	26.08	470.48	0.00	2.
2	CB-47	Junction	471.00	479.32	471.00	479.32	10.00	15.61	472.72	0.00	6.
3	CB-8	Junction	468.50	474.72	468.50	474.72	10.00	3.42	469.09	0.00	5.
4	JB	Junction	462.30	468.30	462.30	468.30	0.00	0.99	462.70	0.00	5.
5	JB-19	Junction	502.00	509.27	502.00	509.27	10.00	16.22	502.58	0.00	6.
6	JB-24	Junction	526.00	535.80	526.00	535.80	10.00	6.84	526.49	0.00	9.
7	JB-27	Junction	534.00	539.80	534.00	539.80	10.00	5.52	534.54	0.00	5.
8	JB-39	Junction	510.00	521.73	510.00	521.73	10.00	3.00	510.34	0.00	11.
9	JB-4	Junction	462.74	473.05	462.74	473.05	10.00	0.00	462.74	0.00	10.
10	JB-SDPIPE35	Junction	462.75	464.00	462.75	0.00	100.00	0.99	463.09	0.00	1.
11	JB-SDPIPE36	Junction	441.30	442.80	441.30	0.00	1000.00	5.47	442.36	0.00	0.
12	8-Jun	Junction	538.50	544.50	538.50	544.50	0.00	1.64	539.11	0.00	5.
13	WIER-6	Junction	468.00	472.50	468.00	472.50	10.00	0.00	468.00	0.00	4.
14	FES-1	Outfall	461.00					2.07	461.36		
15	FES-3	Outfall	538.50					1.54	538.97		
16	FES-36	Outfall	472.00					8.02	472.52		
17	FES-46	Outfall	468.25					26.08	469.61		
18	FES-48	Outfall	468.00					15.54	469.04		
19	FES-7	Outfall	468.00					3.42	468.48		
20	3-Jun	Outfall	0.00					0.00	0.00		
21	OUT-SDPIPE35	Outfall	462.25					0.98	462.46		
22	Out-SDPIPE-36	Outfall	441.00					5.46	441.84		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
1	Link-05	Pipe	CB-16	CB-13	406.55	517.00	503.00	3.4400	18.000	0.0150	0.05	15.32	0.00	2.65	0.
2	Link-08	Pipe	JB-SDPIPE35	JB	30.00	462.75	462.25	1.6700	15.000	0.0120	0.99	8.57	0.12	3.40	0.
3	Link-30	Pipe	CB-51	JB-SDPIPE35	30.83	462.08	462.75	-2.1800	18.000	0.0150	0.86	28.73	0.03	4.76	0.
4	Link-33	Pipe	CB-2	FES-1	33.60	461.75	461.00	2.2300	24.000	0.0150	2.07	29.29	0.07	4.85	0.
5	Link-37	Pipe	JB	OUT-SDPIPE35	0.96	462.30	462.25	5.2100	15.000	0.0120	0.98	15.97	0.06	4.25	0.
6	Link-39	Pipe	8-Jun	FES-3	0.36	538.50	538.50	0.0000	18.000	0.0130	1.54	5.54	0.28	2.71	0.
7	L-SDPIPE-8	Pipe	CB-47	FES-48	70.00	471.00	468.00	4.2900	18.000	0.0150	15.54	18.85	0.82	10.15	1.
8	SDPIPE-10	Pipe	CB-13	CB-11	187.03	493.00	486.75	3.3400	18.000	0.0120	12.72	20.80	0.61	11.37	0.
9	SDPIPE-11	Pipe	CB-14	CB-13	66.59	502.00	498.50	5.2600	18.000	0.0130	11.61	24.08	0.48	11.52	0.
10	SDPIPE-12	Pipe	CB-15	CB-14	297.35	513.00	503.00	3.3600	18.000	0.0120	6.79	20.87	0.33	10.17	0.
11	SDPIPE-13	Pipe	CB-16	CB-15	64.00	514.00	513.00	1.5600	18.000	0.0130	3.98	13.13	0.30	5.65	0.
12	SDPIPE-14	Pipe	CB-17	CB-16	322.00	528.00	514.00	4.3500	18.000	0.0130	2.70	21.90	0.12	5.58	0.
13	SDPIPE-15	Pipe	CB-18	CB-17	42.43	529.00	528.00	2.3600	18.000	0.0130	2.14	16.13	0.13	5.95	0.
14	SDPIPE-16	Pipe	CB-20	JB-19	131.65	504.25	502.00	1.7100	24.000	0.0120	16.22	32.04	0.51	10.91	0.
15	SDPIPE-17	Pipe	CB-21	CB-20	32.94	508.50	508.00	1.5200	24.000	0.0120	15.69	30.19	0.52	7.54	1.
16	SDPIPE-18	Pipe	CB-22	CB-21	77.00	510.00	508.50	1.9500	18.000	0.0120	3.34	15.88	0.21	3.54	0.
17	SDPIPE-19	Pipe	CB-23	CB-21	75.59	509.50	508.50	1.3200	18.000	0.0120	2.99	13.09	0.23	2.91	1.
18	SDPIPE-2	Pipe	JB-4	CB-2	99.00	462.74	461.75	1.0000	24.000	0.0130	0.00	22.62	0.00	0.00	0.
19	SDPIPE-20	Pipe	JB-24	CB-21	256.11	526.00	508.50	6.8300	18.000	0.0120	6.83	29.75	0.23	7.23	0.
20	SDPIPE-21	Pipe	CB-25	JB-24	69.87	527.00	526.00	1.4300	18.000	0.0120	6.84	13.61	0.50	8.01	0.
21	SDPIPE-22	Pipe	CB-26	CB-25	33.08	530.50	527.00	10.5800	18.000	0.0130	1.18	34.17	0.03	2.31	0.
22	SDPIPE-23	Pipe	JB-27	CB-25	222.35	534.00	527.00	3.1500	18.000	0.0120	5.51	20.19	0.27	6.69	0.
23	SDPIPE-24	Pipe	CB-28	JB-27	73.59	537.00	534.00	4.0800	18.000	0.0130	5.52	21.21	0.26	8.98	0.
24	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	0.94	14.89	0.06	4.50	0.
25	SDPIPE-25 (1)	Pipe	CB-29	CB-28	44.82	537.50	537.00	1.1200	18.000	0.0130	4.27	11.09	0.38	5.37	0.
26	SDPIPE-25 (12)	Pipe	CB-43	CB-37	42.57	484.50	484.00	1.1700	18.000	0.0130	1.94	11.38	0.17	4.30	0.
27	SDPIPE-25 (13)	Pipe	CB-44	CB-38	33.23	496.00	494.50	4.5100	18.000	0.0130	1.96	22.32	0.09	5.75	0.
28	SDPIPE-25 (14)	Pipe	CB-45	JB-39	46.24	515.00	514.00	2.1600	18.000	0.0130	1.15	15.45	0.07	4.75	0.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
46	Link-01	Channel	CB-30	CB-29	151.74	547.90	542.86	3.3200	3.960	0.0320	0.10	5.85	0.02	1.56	0.
47	Link-02	Channel	CB-28	CB-18	253.20	542.65	534.99	3.0300	3.960	0.0320	0.04	5.59	0.01	0.26	0.
48	Link-03	Channel	CB-18	CB-15	303.55	534.99	520.24	4.8600	3.960	0.0320	0.90	7.51	0.12	1.11	0.
49	Link-04	Channel	CB-15	CB-14	302.16	520.24	513.25	2.3100	3.960	0.0320	2.04	4.19	0.49	1.14	0.
50	Link-06	Channel	CB-13	CB-11	192.70	508.19	490.69	9.0800	3.960	0.0320	0.03	9.68	0.00	0.57	0.
51	Link-07	Channel	CB-12	CB-10	295.35	491.89	474.00	6.0600	3.960	0.0320	0.85	7.90	0.11	0.72	0.
52	Link-09	Channel	CB-17	CB-22	172.84	533.32	517.04	9.4200	3.960	0.0320	0.03	9.88	0.00	0.59	0.
53	Link-10	Channel	CB-22	CB-21	156.96	517.04	515.89	0.7300	3.960	0.0320	1.00	2.67	0.38	0.61	0.
54	Link-11	Channel	CB-23	CB-21	80.56	516.98	515.89	1.3500	3.960	0.0320	0.22	3.74	0.06	0.21	0.
55	Link-12	Channel	CB-45	CB-23	172.11	524.64	516.98	4.4500	3.960	0.0320	0.10	6.78	0.02	2.36	0.
56	Link-13	Channel	CB-40	CB-44	228.53	524.80	507.00	7.7900	3.960	0.0320	1.03	8.96	0.11	3.90	0.
57	Link-14	Channel	CB-44	CB-43	236.24	500.50	482.00	7.8300	3.960	0.0320	0.32	8.97	0.04	1.46	0.
58	Link-15	Channel	CB-38	CB-37	208.04	506.87	490.69	7.7800	3.960	0.0320	0.20	8.96	0.02	2.40	0.
59	Link-16	Channel	CB-37	CB-9	218.60	490.69	474.00	7.6400	3.960	0.0320	0.04	8.87	0.00	0.06	0.
60	Link-17	Channel	CB-43	CB-51	291.31	488.57	465.82	7.8100	3.960	0.0320	0.49	8.97	0.05	1.62	0.
61	Link-18	Channel	CB-10	CB-2	126.47	474.00	465.77	6.5100	3.960	0.0320	0.00	8.19	0.00	0.00	0.
62	Link-19	Channel	CB-33	CB-28	176.20	547.88	542.65	2.9700	3.960	0.0320	0.13	5.53	0.02	1.28	0.
63	Link-20	Channel	CB-11	CB-9	282.13	490.69	474.00	5.9200	3.960	0.0320	0.50	7.81	0.06	0.72	0.
64	Link-24	Channel	CB-29	CB-26	316.29	542.86	535.29	2.3900	3.960	0.0320	0.01	4.97	0.00	0.46	0.
65	Link-28	Channel	CB-32	3-Jun	204.60	549.87	0.00	268.7500	3.960	0.0320	0.00	52.65	0.00	0.00	0.
66	Link-38	Channel	CB-2	JB	44.72	465.77	462.30	7.7600	3.960	0.0320	0.02	8.95	0.00	0.06	0.
67	Link-40	Channel	CB-31	8-Jun	97.13	549.37	538.50	11.1900	3.960	0.0320	0.00	10.74	0.00	0.00	0.

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutt Sprea during Pea Flo (f
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	469.43	10.00	2.85	N/A	N/A	N/A	8.50	4.4
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	481.00	N/A	2.09	1.58	0.51	75.59	8.50	5.3
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	485.50	N/A	2.68	1.83	0.85	68.21	8.50	5.8
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	493.00	N/A	1.78	1.70	0.09	95.06	8.50	6.4
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	502.00	10.00	5.06	N/A	N/A	N/A	8.50	10.6
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	513.00	N/A	5.66	2.98	2.68	52.63	8.50	8.3
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	514.00	N/A	1.47	1.34	0.13	90.97	8.50	5.0
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	528.00	N/A	1.29	1.21	0.07	94.21	8.50	4.8
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	529.00	N/A	3.05	2.13	0.92	69.72	8.50	6.6
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	461.75	N/A	0.87	0.86	0.01	99.24	8.50	3.9
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	504.25	10.00	2.96	N/A	N/A	N/A	8.50	7.4
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	508.50	10.00	3.95	N/A	N/A	N/A	8.50	9.0
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	510.00	N/A	4.36	3.35	1.01	76.79	8.50	7.2
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	509.50	N/A	3.24	3.02	0.23	93.04	8.50	7.3
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	527.00	10.00	3.92	N/A	N/A	N/A	8.50	8.9
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	530.50	10.00	2.70	N/A	N/A	N/A	8.50	7.0
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	537.00	N/A	1.47	1.41	0.06	96.15	8.50	5.6
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	537.50	N/A	1.26	1.25	0.02	98.75	8.50	5.3
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	543.50	N/A	1.65	1.54	0.11	93.57	8.50	5.8
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.82	0.82	0.00	100.00	8.50	4.4
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	546.00	N/A	0.94	0.94	0.00	100.00	8.50	4.7
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	544.00	N/A	1.70	1.58	0.12	92.74	8.50	5.9
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	478.50	N/A	1.22	1.13	0.09	92.86	8.50	4.4
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	494.50	N/A	1.62	1.38	0.24	85.04	8.50	4.9
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	515.00	N/A	3.06	2.02	1.03	66.18	8.50	6.3
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	484.50	N/A	2.43	1.78	0.66	73.05	8.50	5.7
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	496.00	N/A	2.02	1.59	0.43	78.59	8.50	5.3
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	515.00	N/A	1.28	1.17	0.11	91.56	8.50	4.5

Subbasin Hydrology

Subbasin : Sub-AD-49

Input Data

Area (ac) 4.59
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	4.59	-	0.7
Composite Area & Weighted Runoff Coeff.	4.59		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	299.3	0	0
Slope (%) :	8.53	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	24.81	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	184.58	0	0
Slope (%) :	14.79	0	0
Surface Type :	Woodland	Paved	Paved
Velocity (ft/sec) :	1.92	0	0
Computed Flow Time (min) :	1.6	0	0

Total TOC (min) 26.41

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.54
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	62.75	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.31	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	287	0	0
Slope (%) :	6.16	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.05	0	0
Computed Flow Time (min) :	0.95	0	0

Total TOC (min) 14.26

Subbasin : Sub-CB-11

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	87.01933392	0	0
Slope (%) :	4.23334562	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	9.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	144.6117952	0	0
Slope (%) :	9.33800334	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.21	0	0
Computed Flow Time (min) :	0.39	0	0

Total TOC (min) 10.10

Subbasin : Sub-CB-12

Input Data

Area (ac) 0.7
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.7	-	0.7
Composite Area & Weighted Runoff Coeff.	0.7		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.34441067	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.92	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	290.7440621	0	0
Slope (%) :	7.85301046	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	4.52	0	0
Computed Flow Time (min) :	1.07	0	0

Total TOC (min) 15.99

Subbasin : Sub-CB-13

Input Data

Area (ac) 0.37
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.7
Composite Area & Weighted Runoff Coeff.	0.37		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.99	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	326.6	0	0
Slope (%) :	3.5	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.8	0	0
Computed Flow Time (min) :	1.43	0	0

Total TOC (min) 10.16

Subbasin : Sub-CB-14

Input Data

Area (ac) 0.87
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.87	-	0.7
Composite Area & Weighted Runoff Coeff.	0.87		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	133.09	0	0
Slope (%) :	7.48	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	10.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	224.63	0	0
Slope (%) :	2.32	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.1	0	0
Computed Flow Time (min) :	1.21	0	0

Total TOC (min) 12.07

Subbasin : Sub-CB-15

Input Data

Area (ac) 1.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.24	-	0.7
Composite Area & Weighted Runoff Coeff.	1.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	129.63	0	0
Slope (%) :	3.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	13.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	369.75	0	0
Slope (%) :	4.45	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	1.44	0	0

Total TOC (min) 15.32

Subbasin : Sub-CB-16

Input Data

Area (ac) 0.3
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.3	-	0.7
Composite Area & Weighted Runoff Coeff.	0.3		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	35.63	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.47	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.56	0	0
Slope (%) :	4.29	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.21	0	0
Computed Flow Time (min) :	0.89	0	0

Total TOC (min) 9.36

Subbasin : Sub-CB-17

Input Data

Area (ac) 0.25
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.25	-	0.7
Composite Area & Weighted Runoff Coeff.	0.25		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	30.83	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	7.54	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221.33	0	0
Slope (%) :	4.052	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.09	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 8.44

Subbasin : Sub-CB-18

Input Data

Area (ac) 0.76
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	169.6828048	0	0
Slope (%) :	5.92476783	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	14.48	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.81153859	0	0
Slope (%) :	5.8473515	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.92	0	0
Computed Flow Time (min) :	0.26	0	0

Total TOC (min) 14.74

Subbasin : Sub-CB-2

Input Data

Area (ac) 0.15
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.15	-	0.7
Composite Area & Weighted Runoff Coeff.	0.15		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	49.14	0	0
Slope (%) :	3.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	6.63	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	7.8	0	0
Slope (%) :	7.9	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 6.65

Subbasin : Sub-CB-20

Input Data

Area (ac) 0.61
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.61	-	0.7
Composite Area & Weighted Runoff Coeff.	0.61		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.97	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	228.24	0	0
Slope (%) :	4.33669128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.23	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 9.62

Subbasin : Sub-CB-21

Input Data

Area (ac) 0.81
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.81	-	0.7
Composite Area & Weighted Runoff Coeff.	0.81		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	225.91	0	0
Slope (%) :	7.69	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	74	0	0
Slope (%) :	1.44	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.44	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-22

Input Data

Area (ac) 1.23
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.23	-	0.7
Composite Area & Weighted Runoff Coeff.	1.23		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	227.07	0	0
Slope (%) :	5.59	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	18.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	150.89	0	0
Slope (%) :	5.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.52	0	0

Total TOC (min) 19.23

Subbasin : Sub-CB-23

Input Data

Area (ac) 0.85
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.85	-	0.7
Composite Area & Weighted Runoff Coeff.	0.85		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	226.71	0	0
Slope (%) :	8.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.24	0	0
Computed Flow Time (min) :	15.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.07	0	0
Slope (%) :	3.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.93	0	0
Computed Flow Time (min) :	0.32	0	0

Total TOC (min) 16.12

Subbasin : Sub-CB-25

Input Data

Area (ac) 0.66
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.7
Composite Area & Weighted Runoff Coeff.	0.66		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.69	0	0
Slope (%) :	3.98	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	4.99	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	218	0	0
Slope (%) :	1.9995265	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.26	0	0

Total TOC (min) 6.25

Subbasin : Sub-CB-26

Input Data

Area (ac) 0.41
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.41	-	0.7
Composite Area & Weighted Runoff Coeff.	0.41		0.7

Time of Concentration

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	391.04	0	0
Slope (%) :	2.05	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.91	0	0
Computed Flow Time (min) :	2.24	0	0

Total TOC (min) 2.24

Subbasin : Sub-CB-28

Input Data

Area (ac) 0.35
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.7
Composite Area & Weighted Runoff Coeff.	0.35		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.21	0	0
Slope (%) :	1.57	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	13.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	96.33	0	0
Slope (%) :	2.66	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.32	0	0
Computed Flow Time (min) :	0.48	0	0

Total TOC (min) 14.28

Subbasin : Sub-CB-29

Input Data

Area (ac) 0.32
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.32	-	0.7
Composite Area & Weighted Runoff Coeff.	0.32		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	79.19359172	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.04	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	145.6546025	0	0
Slope (%) :	3.30814128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.7	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 16.69

Subbasin : Sub-CB-30

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.06466793	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.18	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.4355599	0	0
Slope (%) :	2.37620836	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	1.09	0	0

Total TOC (min) 17.27

Subbasin : Sub-CB-31

Input Data

Area (ac) 0.28
Weighted Runoff Coefficient 0.5

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.5
Composite Area & Weighted Runoff Coeff.	0.28		0.5

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	61.18415656	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.05	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	147.427748	0	0
Slope (%) :	2.48368186	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.2	0	0
Computed Flow Time (min) :	0.77	0	0

Total TOC (min) 13.81

Subbasin : Sub-CB-32

Input Data

Area (ac) 0.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.82652581	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	123.3068858	0	0
Slope (%) :	2.56696146	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.26	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 15.63

Subbasin : Sub-CB-33

Input Data

Area (ac) 0.45
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.7
Composite Area & Weighted Runoff Coeff.	0.45		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	74.8476514	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15.33	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	205.0538871	0	0
Slope (%) :	2.54735015	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.24	0	0
Computed Flow Time (min) :	1.05	0	0

Total TOC (min) 16.38

Subbasin : Sub-CB-37

Input Data

Area (ac) 0.27
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.27	-	0.7
Composite Area & Weighted Runoff Coeff.	0.27		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	70.96	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.69	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.13	0	0
Slope (%) :	7.95	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.59	0	0

Total TOC (min) 15.28

Subbasin : Sub-CB-38

Input Data

Area (ac) 0.38
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.7
Composite Area & Weighted Runoff Coeff.	0.38		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	56.31288611	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	12.21	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	122.2285539	0	0
Slope (%) :	7.88883657	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.36	0	0

Total TOC (min) 12.57

Subbasin : Sub-CB-40

Input Data

Area (ac) 0.63
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	-	0.7
Composite Area & Weighted Runoff Coeff.	0.63		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.47168729	0	0
Slope (%) :	4.83233018	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	8.82	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.6819013	0	0
Slope (%) :	7.22299665	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.69	0	0

Total TOC (min) 9.51

Subbasin : Sub-CB-43

Input Data

Area (ac) 0.57
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.7
Composite Area & Weighted Runoff Coeff.	0.57		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.44365706	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.24	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	230.963887	0	0
Slope (%) :	7.93293268	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.67	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-44

Input Data

Area (ac)	0.48
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.48	-	0.7
Composite Area & Weighted Runoff Coeff.	0.48		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.23540495	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.53	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	215.6393568	0	0
Slope (%) :	7.93956492	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 17.16

Subbasin : Sub-CB-45

Input Data

Area (ac)	0.24
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	26.67	0	0
Slope (%) :	0.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	7.2	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221	0	0
Slope (%) :	7.58	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.6	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 7.86

Subbasin : Sub-CB-51

Input Data

Area (ac)	0.76
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	109.87	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	20.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	284.96	0	0
Slope (%) :	7.93363114	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.83	0	0

Total TOC (min) 21.67

Subbasin : Sub-CB-9

Input Data

Area (ac)	0.54
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	94.51887751	0	0
Slope (%) :	1.1562359	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	17.43	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	272.2215693	0	0
Slope (%) :	5.96622322	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.97	0	0
Computed Flow Time (min) :	0.91	0	0

Total TOC (min) 18.35

Subbasin : Sub-SDPIPE-35

Input Data

Area (ac)	0.16
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.16	-	0.7
Composite Area & Weighted Runoff Coeff.	0.16		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	117.01	0	0
Slope (%) :	6.14	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	10.61	0	0

Total TOC (min) 10.61

Subbasin : Sub-SDPIPE-36

Input Data

Area (ac)	1.73
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.73	-	0.7
Composite Area & Weighted Runoff Coeff.	1.73		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	299.51	0	0
Slope (%) :	6	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.22	0	0
Computed Flow Time (min) :	22.7	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	546	0	0
Slope (%) :	5.3	0	0
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	3.45	0	0
Computed Flow Time (min) :	2.64	0	0

Total TOC (min) 25.34

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	AD-49	468.50	472.65	4.15	468.50	0.00	472.65	0.00	10.00	19.85
2	CB-47	471.00	479.32	8.32	471.00	0.00	479.32	0.00	10.00	81.81
3	CB-8	468.50	474.72	6.22	468.50	0.00	474.72	0.00	10.00	50.59
4	JB	462.30	468.30	6.00	462.30	0.00	468.30	0.00	0.00	57.00
5	JB-19	502.00	509.27	7.27	502.00	0.00	509.27	0.00	10.00	63.30
6	JB-24	526.00	535.80	9.80	526.00	0.00	535.80	0.00	10.00	99.54
7	JB-27	534.00	539.80	5.80	534.00	0.00	539.80	0.00	10.00	51.59
8	JB-39	510.00	521.73	11.73	510.00	0.00	521.73	0.00	10.00	74.75
9	JB-4	462.74	473.05	10.31	462.74	0.00	473.05	0.00	10.00	99.76
10	JB-SDPIPE35	462.75	464.00	1.25	462.75	0.00	0.00	-464.00	100.00	0.00
11	JB-SDPIPE36	441.30	442.80	1.50	441.30	0.00	0.00	-442.80	1000.00	0.00
12	8-Jun	538.50	544.50	6.00	538.50	0.00	544.50	0.00	0.00	54.00
13	WIER-6	468.00	472.50	4.50	468.00	0.00	472.50	0.00	10.00	30.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Oc (days
1	AD-49	26.08	14.26	470.48	1.98	0.00	2.17	468.58	0.08	0 00:19	
2	CB-47	15.61	0.00	472.72	1.72	0.00	6.60	471.04	0.04	0 00:14	
3	CB-8	3.42	0.00	469.09	0.59	0.00	5.63	468.52	0.02	0 00:17	
4	JB	0.99	0.00	462.70	0.40	0.00	5.60	462.31	0.01	0 00:17	
5	JB-19	16.22	0.00	502.58	0.58	0.00	6.70	502.02	0.02	0 00:17	
6	JB-24	6.84	0.00	526.49	0.49	0.00	9.31	526.02	0.02	0 00:07	
7	JB-27	5.52	0.00	534.54	0.54	0.00	5.26	534.02	0.02	0 00:17	
8	JB-39	3.00	0.00	510.34	0.34	0.00	11.38	510.01	0.01	0 00:09	
9	JB-4	0.00	0.00	462.74	0.00	0.00	10.31	462.74	0.00	0 00:00	
10	JB-SDPIPE35	0.99	0.74	463.09	0.34	0.00	1.16	462.76	0.01	0 00:17	
11	JB-SDPIPE36	5.47	5.47	442.36	1.06	0.00	0.44	441.34	0.04	0 00:25	
12	8-Jun	1.64	0.00	539.11	0.61	0.00	5.39	538.52	0.02	0 00:16	
13	WIER-6	0.00	0.00	468.00	0.00	0.00	4.50	468.00	0.00	0 00:00	

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Er
1	Link-01	151.74	547.90	4.40	542.86	5.36	5.04	3.3200	User-Defined	0.330	14.000	0.0320	
2	Link-02	253.20	542.65	5.65	534.99	5.99	7.66	3.0300	User-Defined	0.330	14.000	0.0320	
3	Link-03	303.55	534.99	5.99	520.24	7.24	14.75	4.8600	User-Defined	0.330	14.000	0.0320	
4	Link-04	302.16	520.24	7.24	513.25	11.25	6.99	2.3100	User-Defined	0.330	14.000	0.0320	
5	Link-06	192.70	508.19	15.19	490.69	9.69	17.50	9.0800	User-Defined	0.330	14.000	0.0320	
6	Link-07	295.35	491.89	6.39	474.00	4.56	17.89	6.0600	User-Defined	0.330	14.000	0.0320	
7	Link-09	172.84	533.32	5.32	517.04	7.04	16.28	9.4200	User-Defined	0.330	14.000	0.0320	
8	Link-10	156.96	517.04	7.04	515.89	7.39	1.15	0.7300	User-Defined	0.330	14.000	0.0320	
9	Link-11	80.56	516.98	7.48	515.89	7.39	1.09	1.3500	User-Defined	0.330	14.000	0.0320	
10	Link-12	172.11	524.64	9.64	516.98	7.48	7.67	4.4500	User-Defined	0.330	14.000	0.0320	
11	Link-13	228.53	524.80	9.80	507.00	11.00	17.80	7.7900	User-Defined	0.330	14.000	0.0320	
12	Link-14	236.24	500.50	4.50	482.00	-2.50	18.50	7.8300	User-Defined	0.330	14.000	0.0320	
13	Link-15	208.04	506.87	12.37	490.69	12.19	16.18	7.7800	User-Defined	0.330	14.000	0.0320	
14	Link-16	218.60	490.69	12.19	474.00	4.90	16.69	7.6400	User-Defined	0.330	14.000	0.0320	
15	Link-17	291.31	488.57	4.07	465.82	3.74	22.75	7.8100	User-Defined	0.330	14.000	0.0320	
16	Link-18	126.47	474.00	4.56	465.77	4.02	8.23	6.5100	User-Defined	0.330	14.000	0.0320	
17	Link-19	176.20	547.88	3.88	542.65	5.65	5.23	2.9700	User-Defined	0.330	14.000	0.0320	
18	Link-20	282.13	490.69	9.69	474.00	4.90	16.70	5.9200	User-Defined	0.330	14.000	0.0320	
19	Link-24	316.29	542.86	5.36	535.29	4.79	7.57	2.3900	User-Defined	0.330	14.000	0.0320	
20	Link-28	204.60	549.87	3.87	0.00	0.00	549.87	268.7500	User-Defined	0.330	14.000	0.0320	
21	Link-38	44.72	465.77	4.02	462.30	0.00	3.47	7.7600	User-Defined	0.330	14.000	0.0320	
22	Link-40	97.13	549.37	4.87	538.50	0.00	10.87	11.1900	User-Defined	0.330	14.000	0.0320	

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Numbe
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)	
1	Link-01	0.10	0 00:18	5.85	0.02	1.56	1.62	0.05	0.15	0.00	
2	Link-02	0.04	0 00:15	5.59	0.01	0.26	16.23	0.10	0.30	0.00	
3	Link-03	0.90	0 00:14	7.51	0.12	1.11	4.56	0.20	0.59	0.00	
4	Link-04	2.04	0 00:15	4.19	0.49	1.14	4.42	0.29	0.88	0.00	
5	Link-06	0.03	0 00:11	9.68	0.00	0.57	5.63	0.07	0.21	0.00	
6	Link-07	0.85	0 00:16	7.90	0.11	0.72	6.84	0.24	0.71	0.00	
7	Link-09	0.03	0 00:10	9.88	0.00	0.59	4.88	0.12	0.37	0.00	
8	Link-10	1.00	0 00:19	2.67	0.38	0.61	4.29	0.28	0.84	0.00	
9	Link-11	0.22	0 00:16	3.74	0.06	0.21	6.39	0.22	0.67	0.00	
10	Link-12	0.10	0 00:08	6.78	0.02	2.36	1.22	0.06	0.19	0.00	
11	Link-13	1.03	0 00:09	8.96	0.11	3.90	0.98	0.11	0.33	0.00	
12	Link-14	0.32	0 00:17	8.97	0.04	1.46	2.70	0.10	0.30	0.00	
13	Link-15	0.20	0 00:13	8.96	0.02	2.40	1.44	0.06	0.18	0.00	
14	Link-16	0.04	0 00:15	8.87	0.00	0.06	60.72	0.19	0.56	0.00	
15	Link-17	0.49	0 00:17	8.97	0.05	1.62	3.00	0.12	0.37	0.00	
16	Link-18	0.00	0 00:00	8.19	0.00	0.00		0.01	0.03	0.00	
17	Link-19	0.13	0 00:16	5.53	0.02	1.28	2.29	0.07	0.20	0.00	
18	Link-20	0.50	0 00:10	7.81	0.06	0.72	6.53	0.20	0.62	0.00	
19	Link-24	0.01	0 00:19	4.97	0.00	0.46	11.46	0.17	0.50	0.00	
20	Link-28	0.00	0 00:00	52.65	0.00	0.00		0.00	0.00	0.00	
21	Link-38	0.02	0 00:06	8.95	0.00	0.06	12.42	0.17	0.53	0.00	
22	Link-40	0.00	0 00:00	10.74	0.00	0.00		0.17	0.50	0.00	

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Mai Roug
1	Link-05	406.55	517.00	3.00	503.00	10.00	14.00	3.4400	CIRCULAR	18.000	18.000	
2	Link-08	30.00	462.75	0.00	462.25	-0.05	0.50	1.6700	CIRCULAR	15.000	15.000	
3	Link-30	30.83	462.08	0.00	462.75	0.00	-0.67	-2.1800	CIRCULAR	18.000	18.000	
4	Link-33	33.60	461.75	0.00	461.00	0.00	0.75	2.2300	CIRCULAR	24.000	24.000	
5	Link-37	0.96	462.30	0.00	462.25	0.00	0.05	5.2100	CIRCULAR	15.000	15.000	
6	Link-39	0.36	538.50	0.00	538.50	0.00	0.00	0.0000	CIRCULAR	18.000	18.000	
7	L-SDPIPE-8	70.00	471.00	0.00	468.00	0.00	3.00	4.2900	CIRCULAR	18.000	18.000	
8	SDPIPE-10	187.03	493.00	0.00	486.75	5.75	6.25	3.3400	CIRCULAR	18.000	18.000	
9	SDPIPE-11	66.59	502.00	0.00	498.50	5.50	3.50	5.2600	CIRCULAR	18.000	18.000	
10	SDPIPE-12	297.35	513.00	0.00	503.00	1.00	10.00	3.3600	CIRCULAR	18.000	18.000	
11	SDPIPE-13	64.00	514.00	0.00	513.00	0.00	1.00	1.5600	CIRCULAR	18.000	18.000	
12	SDPIPE-14	322.00	528.00	0.00	514.00	0.00	14.00	4.3500	CIRCULAR	18.000	18.000	
13	SDPIPE-15	42.43	529.00	0.00	528.00	0.00	1.00	2.3600	CIRCULAR	18.000	18.000	
14	SDPIPE-16	131.65	504.25	0.00	502.00	0.00	2.25	1.7100	CIRCULAR	24.000	24.000	
15	SDPIPE-17	32.94	508.50	0.00	508.00	3.75	0.50	1.5200	CIRCULAR	24.000	24.000	
16	SDPIPE-18	77.00	510.00	0.00	508.50	0.00	1.50	1.9500	CIRCULAR	18.000	18.000	
17	SDPIPE-19	75.59	509.50	0.00	508.50	0.00	1.00	1.3200	CIRCULAR	18.000	18.000	
18	SDPIPE-2	99.00	462.74	0.00	461.75	0.00	0.99	1.0000	CIRCULAR	24.000	24.000	
19	SDPIPE-20	256.11	526.00	0.00	508.50	0.00	17.50	6.8300	CIRCULAR	18.000	18.000	
20	SDPIPE-21	69.87	527.00	0.00	526.00	0.00	1.00	1.4300	CIRCULAR	18.000	18.000	
21	SDPIPE-22	33.08	530.50	0.00	527.00	0.00	3.50	10.5800	CIRCULAR	18.000	18.000	
22	SDPIPE-23	222.35	534.00	0.00	527.00	0.00	7.00	3.1500	CIRCULAR	18.000	18.000	
23	SDPIPE-24	73.59	537.00	0.00	534.00	0.00	3.00	4.0800	CIRCULAR	18.000	18.000	
24	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	
25	SDPIPE-25 (1)	44.82	537.50	0.00	537.00	0.00	0.50	1.1200	CIRCULAR	18.000	18.000	
26	SDPIPE-25 (12)	42.57	484.50	0.00	484.00	5.50	0.50	1.1700	CIRCULAR	18.000	18.000	
27	SDPIPE-25 (13)	33.23	496.00	0.00	494.50	0.00	1.50	4.5100	CIRCULAR	18.000	18.000	
28	SDPIPE-25 (14)	46.24	515.00	0.00	514.00	4.00	1.00	2.1600	CIRCULAR	18.000	18.000	
29	SDPIPE-25 (15)	248.75	502.00	0.00	468.50	0.00	33.50	13.4700	CIRCULAR	24.000	24.000	
30	SDPIPE-25 (15) (1)	24.21	468.50	0.00	468.25	0.00	0.25	1.0300	CIRCULAR	30.000	30.000	
31	SDPIPE-25 (17)	32.91	462.08	0.00	461.75	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	
32	SDPIPE-25 (2)	150.25	543.50	0.00	537.50	0.00	6.00	3.9900	CIRCULAR	18.000	18.000	
33	SDPIPE-25 (3)	33.25	544.00	0.00	543.50	0.00	0.50	1.5000	CIRCULAR	18.000	18.000	
34	SDPIPE-25 (6)	87.00	478.50	0.00	472.00	0.00	6.50	7.4700	CIRCULAR	18.000	18.000	
35	SDPIPE-25 (7)	201.54	494.50	0.00	485.00	6.50	9.50	4.7100	CIRCULAR	18.000	18.000	
36	SDPIPE-25 (8)	196.25	510.00	0.00	498.00	3.50	12.00	6.1100	CIRCULAR	18.000	18.000	
37	SDPIPE-25 (9)	51.51	515.00	0.00	514.00	4.00	1.00	1.9400	CIRCULAR	18.000	18.000	
38	SDPIPE-32	95.98	544.50	0.00	538.50	0.00	6.00	6.2500	CIRCULAR	18.000	18.000	
39	SDPIPE-36	30.02	441.30	0.00	441.00	0.00	0.30	1.0000	CIRCULAR	18.000	18.000	
40	SDPIPE-4	112.76	468.00	0.00	462.74	0.00	5.26	4.6600	CIRCULAR	24.000	24.000	
41	SDPIPE-5	41.13	468.50	0.00	468.00	0.00	0.50	1.2200	CIRCULAR	24.000	24.000	
42	SDPIPE-6	55.12	469.10	0.00	468.50	0.00	0.60	1.0900	CIRCULAR	24.000	24.000	
43	SDPIPE-7	33.11	469.43	0.00	469.10	0.00	0.33	1.0100	CIRCULAR	24.000	24.000	
44	SDPIPE-8 (1)	127.57	481.00	0.00	471.00	0.00	10.00	7.8400	CIRCULAR	18.000	18.000	
45	SDPIPE-9	35.93	485.50	0.00	483.00	2.00	2.50	6.9600	CIRCULAR	18.000	18.000	

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Ti Surcharg
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(m
1	Link-05	0.05	0 00:11	15.32	0.00	2.65	2.56	0.05	0.03	0
2	Link-08	0.99	0 00:17	8.57	0.12	3.40	0.15	0.37	0.29	0
3	Link-30	0.86	0 00:21	28.73	0.03	4.76	0.11	0.24	0.16	0
4	Link-33	2.07	0 00:17	29.29	0.07	4.85	0.12	0.39	0.19	0
5	Link-37	0.98	0 00:17	15.97	0.06	4.25	0.00	0.30	0.24	0
6	Link-39	1.54	0 00:16	5.54	0.28	2.71	0.00	0.54	0.36	0
7	L-SDPIPE-8	15.54	0 00:14	18.85	0.82	10.15	0.11	1.27	0.85	0
8	SDPIPE-10	12.72	0 00:13	20.80	0.61	11.37	0.27	0.91	0.61	0
9	SDPIPE-11	11.61	0 00:14	24.08	0.48	11.52	0.10	0.83	0.56	0
10	SDPIPE-12	6.79	0 00:14	20.87	0.33	10.17	0.49	0.61	0.40	0
11	SDPIPE-13	3.98	0 00:10	13.13	0.30	5.65	0.19	0.63	0.42	0
12	SDPIPE-14	2.70	0 00:10	21.90	0.12	5.58	0.96	0.51	0.34	0
13	SDPIPE-15	2.14	0 00:14	16.13	0.13	5.95	0.12	0.39	0.26	0
14	SDPIPE-16	16.22	0 00:17	32.04	0.51	10.91	0.20	0.96	0.48	0
15	SDPIPE-17	15.69	0 00:18	30.19	0.52	7.54	0.07	1.26	0.63	0
16	SDPIPE-18	3.34	0 00:19	15.88	0.21	3.54	0.36	0.98	0.65	0
17	SDPIPE-19	2.99	0 00:16	13.09	0.23	2.91	0.43	1.01	0.67	0
18	SDPIPE-2	0.00	0 00:00	22.62	0.00	0.00		0.21	0.10	0
19	SDPIPE-20	6.83	0 00:07	29.75	0.23	7.23	0.59	0.97	0.65	0
20	SDPIPE-21	6.84	0 00:07	13.61	0.50	8.01	0.15	0.73	0.49	0
21	SDPIPE-22	1.18	0 00:08	34.17	0.03	2.31	0.24	0.58	0.39	0
22	SDPIPE-23	5.51	0 00:17	20.19	0.27	6.69	0.55	0.71	0.47	0
23	SDPIPE-24	5.52	0 00:17	21.21	0.26	8.98	0.14	0.57	0.38	0
24	SDPIPE-25	0.94	0 00:15	14.89	0.06	4.50	0.28	0.26	0.18	0
25	SDPIPE-25 (1)	4.27	0 00:17	11.09	0.38	5.37	0.14	0.69	0.46	0
26	SDPIPE-25 (12)	1.94	0 00:17	11.38	0.17	4.30	0.16	0.45	0.30	0
27	SDPIPE-25 (13)	1.96	0 00:09	22.32	0.09	5.75	0.10	0.43	0.29	0
28	SDPIPE-25 (14)	1.15	0 00:08	15.45	0.07	4.75	0.16	0.29	0.19	0
29	SDPIPE-25 (15)	16.22	0 00:17	89.94	0.18	8.18	0.51	1.28	0.64	0
30	SDPIPE-25 (15) (1)	26.08	0 00:19	45.15	0.58	7.47	0.05	1.67	0.67	0
31	SDPIPE-25 (17)	2.07	0 00:17	10.50	0.20	4.32	0.13	0.47	0.32	0
32	SDPIPE-25 (2)	3.05	0 00:16	22.74	0.13	4.87	0.51	0.58	0.39	0
33	SDPIPE-25 (3)	1.57	0 00:16	12.88	0.12	4.26	0.13	0.39	0.26	0
34	SDPIPE-25 (6)	8.02	0 00:10	31.10	0.26	13.26	0.11	0.56	0.37	0
35	SDPIPE-25 (7)	6.08	0 00:10	24.71	0.25	11.04	0.30	0.52	0.35	0
36	SDPIPE-25 (8)	3.00	0 00:09	28.14	0.11	10.07	0.32	0.34	0.22	0
37	SDPIPE-25 (9)	2.02	0 00:09	14.64	0.14	5.29	0.16	0.40	0.27	0
38	SDPIPE-32	1.64	0 00:15	26.26	0.06	4.92	0.33	0.43	0.29	0
39	SDPIPE-36	5.46	0 00:25	9.10	0.60	4.65	0.11	0.95	0.63	0
40	SDPIPE-4	0.00	0 00:00	48.86	0.00	0.00		0.00	0.00	0
41	SDPIPE-5	3.42	0 00:17	27.02	0.13	5.06	0.14	0.54	0.27	0
42	SDPIPE-6	3.42	0 00:17	25.54	0.13	4.41	0.21	0.59	0.30	0
43	SDPIPE-7	2.54	0 00:17	22.70	0.11	3.39	0.16	0.58	0.29	0
44	SDPIPE-8 (1)	15.61	0 00:13	31.86	0.49	11.57	0.18	1.13	0.76	0

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	4.56	469.43	0.00
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	9.69	481.00	0.00
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	6.39	485.50	0.00
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	15.19	493.00	0.00
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	11.25	502.00	0.00
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	5.39	513.00	0.00
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	5.70	514.00	0.00
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	5.32	528.00	0.00
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	5.99	529.00	0.00
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	4.02	461.75	0.00
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	11.64	504.25	0.00
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	7.39	508.50	0.00
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	6.97	510.00	0.00
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	7.48	509.50	0.00
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	8.29	527.00	0.00
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	4.79	530.50	0.00
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	5.65	537.00	0.00
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	5.36	537.50	0.00
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	4.40	543.50	0.00
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0.00
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	3.87	546.00	0.00
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	3.88	544.00	0.00
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	12.19	478.50	0.00
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	12.37	494.50	0.00
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	9.80	515.00	0.00
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	4.07	484.50	0.00
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	11.00	496.00	0.00
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	9.64	515.00	0.00
29	CB-51	FHWA HEC-22 GENERIC	N/A	On Grade	1	462.08	465.82	3.74	462.08	0.00
30	CB-9	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.10	474.00	4.90	469.10	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB-10	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
2	CB-11	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
3	CB-12	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
4	CB-13	0.0232	0.0254	0.0150	0.0200	1.00	0.1312	8.50
5	CB-14	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
6	CB-15	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
7	CB-16	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
8	CB-17	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
9	CB-18	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
10	CB-2	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
11	CB-20	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
12	CB-21	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
13	CB-22	0.0780	0.0254	0.0150	0.0200	1.00	0.1312	8.50
14	CB-23	0.0381	0.0254	0.0150	0.0200	1.00	0.1312	8.50
15	CB-25	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
16	CB-26	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
17	CB-28	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
18	CB-29	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
19	CB-30	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
20	CB-31	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
21	CB-32	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
22	CB-33	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
23	CB-37	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
24	CB-38	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
25	CB-40	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
26	CB-43	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
27	CB-44	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
28	CB-45	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
29	CB-51	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
30	CB-9	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	T Floo Volu (ac
1	CB-10	2.85	2.17	N/A	N/A	N/A	4.46	474.28	0.28	0 00:17	0
2	CB-11	2.09	2.08	1.58	0.51	75.59	5.30	490.82	0.13	0 00:14	0
3	CB-12	2.68	2.68	1.83	0.85	68.21	5.81	492.03	0.14	0 00:16	0
4	CB-13	1.78	1.75	1.70	0.09	95.06	6.47	508.35	0.16	0 00:13	0
5	CB-14	5.06	3.79	N/A	N/A	N/A	10.63	513.69	0.44	0 00:14	0
6	CB-15	5.66	4.83	2.98	2.68	52.63	8.33	518.60	0.21	0 00:14	0
7	CB-16	1.47	1.47	1.34	0.13	90.97	5.05	519.82	0.12	0 00:09	0
8	CB-17	1.29	1.29	1.21	0.07	94.21	4.82	533.43	0.12	0 00:10	0
9	CB-18	3.05	3.01	2.13	0.92	69.72	6.61	535.15	0.16	0 00:14	0
10	CB-2	0.87	0.87	0.86	0.01	99.24	3.96	465.86	0.10	0 00:17	0
11	CB-20	2.96	2.96	N/A	N/A	N/A	7.43	516.24	0.36	0 00:17	0
12	CB-21	3.95	3.03	N/A	N/A	N/A	9.02	516.28	0.40	0 00:18	0
13	CB-22	4.36	4.36	3.35	1.01	76.79	7.20	517.15	0.18	0 00:19	0
14	CB-23	3.24	3.24	3.02	0.23	93.04	7.38	517.16	0.18	0 00:18	0
15	CB-25	3.92	3.92	N/A	N/A	N/A	8.97	535.68	0.39	0 00:07	0
16	CB-26	2.70	2.70	N/A	N/A	N/A	7.00	535.63	0.34	0 00:08	0
17	CB-28	1.47	1.41	1.41	0.06	96.15	5.62	542.79	0.14	0 00:17	0
18	CB-29	1.26	1.20	1.25	0.02	98.75	5.31	542.99	0.13	0 00:17	0
19	CB-30	1.65	1.65	1.54	0.11	93.57	5.88	548.05	0.14	0 00:16	0
20	CB-31	0.82	0.82	0.82	0.00	100.00	4.48	549.48	0.11	0 00:15	0
21	CB-32	0.94	0.94	0.94	0.00	100.00	4.72	549.98	0.11	0 00:15	0
22	CB-33	1.70	1.70	1.58	0.12	92.74	5.95	548.02	0.15	0 00:16	0
23	CB-37	1.22	1.06	1.13	0.09	92.86	4.46	490.80	0.11	0 00:10	0
24	CB-38	1.62	1.62	1.38	0.24	85.04	4.97	506.99	0.12	0 00:10	0
25	CB-40	3.06	3.06	2.02	1.03	66.18	6.31	524.96	0.15	0 00:09	0
26	CB-43	2.43	2.13	1.78	0.66	73.05	5.76	488.71	0.14	0 00:17	0
27	CB-44	2.02	1.78	1.59	0.43	78.59	5.38	507.13	0.13	0 00:09	0
28	CB-45	1.28	1.28	1.17	0.11	91.56	4.56	524.75	0.11	0 00:08	0
29	CB-51	2.77	2.56	1.92	0.85	69.21	6.07	465.97	0.15	0 00:17	0
30	CB-9	1.99	1.95	N/A	N/A	N/A	7.80	474.36	0.36	0 00:17	0

50 Year Design Storm

Project Description

File Name	HILLTOP 9-21-2026.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	33
Nodes	52
Junctions	13
Outfalls	9
Flow Diversions	0
Inlets	30
Storage Nodes	0
Links	67
Channels	22
Pipes	45
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	50 year(s)

Subbasin Summary

SN	Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ac-in)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
1	Sub-AD-49	4.59	0.7000	2.14	1.50	6.87	15.65	0 00:26:24
2	Sub-CB-10	0.54	0.7000	1.50	1.05	0.57	2.38	0 00:14:15
3	Sub-CB-11	0.44	0.7000	1.26	0.88	0.39	2.28	0 00:10:06
4	Sub-CB-12	0.70	0.7000	1.60	1.12	0.78	2.94	0 00:15:59
5	Sub-CB-13	0.37	0.7000	1.25	0.88	0.32	1.91	0 00:10:09
6	Sub-CB-14	0.87	0.7000	1.36	0.95	0.83	4.15	0 00:12:04
7	Sub-CB-15	1.24	0.7000	1.56	1.09	1.35	5.29	0 00:15:19
8	Sub-CB-16	0.30	0.7000	1.19	0.84	0.25	1.61	0 00:09:21
9	Sub-CB-17	0.25	0.7000	1.14	0.80	0.20	1.41	0 00:08:26
10	Sub-CB-18	0.76	0.7000	1.52	1.06	0.81	3.30	0 00:14:44
11	Sub-CB-2	0.15	0.7000	1.00	0.70	0.11	0.95	0 00:06:39
12	Sub-CB-20	0.61	0.7000	1.22	0.85	0.52	3.24	0 00:09:37
13	Sub-CB-21	0.81	0.7000	1.64	1.15	0.93	3.32	0 00:16:54
14	Sub-CB-22	1.23	0.7000	1.77	1.24	1.53	4.78	0 00:19:13
15	Sub-CB-23	0.85	0.7000	1.61	1.13	0.96	3.55	0 00:16:07
16	Sub-CB-25	0.66	0.7000	0.98	0.69	0.45	4.29	0 00:06:15
17	Sub-CB-26	0.41	0.7000	0.86	0.60	0.25	2.96	0 00:05:00
18	Sub-CB-28	0.35	0.7000	1.50	1.05	0.37	1.54	0 00:14:16
19	Sub-CB-29	0.32	0.7000	1.64	1.14	0.37	1.32	0 00:16:41
20	Sub-CB-30	0.44	0.7000	1.68	1.17	0.52	1.80	0 00:17:16
21	Sub-CB-31	0.28	0.5000	1.47	0.74	0.21	0.89	0 00:13:48
22	Sub-CB-32	0.24	0.7000	1.58	1.11	0.27	1.03	0 00:15:37
23	Sub-CB-33	0.45	0.7000	1.61	1.13	0.51	1.87	0 00:16:22
24	Sub-CB-37	0.27	0.7000	1.56	1.09	0.30	1.16	0 00:15:16
25	Sub-CB-38	0.38	0.7000	1.39	0.97	0.37	1.78	0 00:12:34
26	Sub-CB-40	0.63	0.7000	1.21	0.84	0.53	3.35	0 00:09:30
27	Sub-CB-43	0.57	0.7000	1.64	1.15	0.66	2.34	0 00:16:54
28	Sub-CB-44	0.48	0.7000	1.67	1.17	0.56	1.96	0 00:17:09
29	Sub-CB-45	0.24	0.7000	1.09	0.76	0.18	1.40	0 00:07:51
30	Sub-CB-51	0.76	0.7000	1.91	1.34	1.02	2.81	0 00:21:40
31	Sub-CB-9	0.54	0.7000	1.73	1.21	0.65	2.14	0 00:18:21
32	Sub-SDPIPE-35	0.16	0.7000	1.29	0.90	0.14	0.81	0 00:10:36
33	Sub-SDPIPE-36	1.73	0.7000	2.09	1.46	2.53	6.00	0 00:25:20

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	M Freeboa Attain (
1	AD-49	Junction	468.50	472.65	468.50	472.65	10.00	28.58	470.62	0.00	2.
2	CB-47	Junction	471.00	479.32	471.00	479.32	10.00	17.05	474.95	0.00	4.
3	CB-8	Junction	468.50	474.72	468.50	474.72	10.00	3.98	469.14	0.00	5.
4	JB	Junction	462.30	468.30	462.30	468.30	0.00	1.21	462.74	0.00	5.
5	JB-19	Junction	502.00	509.27	502.00	509.27	10.00	17.74	502.60	0.00	6.
6	JB-24	Junction	526.00	535.80	526.00	535.80	10.00	7.75	526.52	0.00	9.
7	JB-27	Junction	534.00	539.80	534.00	539.80	10.00	6.03	534.56	0.00	5.
8	JB-39	Junction	510.00	521.73	510.00	521.73	10.00	3.17	510.35	0.00	11.
9	JB-4	Junction	462.74	473.05	462.74	473.05	10.00	0.00	462.74	0.00	10.
10	JB-SDPIPE35	Junction	462.75	464.00	462.75	0.00	100.00	1.21	463.13	0.00	1.
11	JB-SDPIPE36	Junction	441.30	442.80	441.30	0.00	1000.00	6.00	442.44	0.00	0.
12	8-Jun	Junction	538.50	544.50	538.50	544.50	0.00	1.80	539.14	0.00	5.
13	WIER-6	Junction	468.00	472.50	468.00	472.50	10.00	0.00	468.00	0.00	4.
14	FES-1	Outfall	461.00					2.26	461.38		
15	FES-3	Outfall	538.50					1.70	538.99		
16	FES-36	Outfall	472.00					8.73	472.54		
17	FES-46	Outfall	468.25					28.58	469.69		
18	FES-48	Outfall	468.00					17.05	469.12		
19	FES-7	Outfall	468.00					3.98	468.52		
20	3-Jun	Outfall	0.00					0.00	0.01		
21	OUT-SDPIPE35	Outfall	462.25					1.18	462.48		
22	Out-SDPIPE-36	Outfall	441.00					5.99	441.89		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
1	Link-05	Pipe	CB-16	CB-13	406.55	517.00	503.00	3.4400	18.000	0.0150	0.09	15.32	0.01	2.99	0.
2	Link-08	Pipe	JB-SDPIPE35	JB	30.00	462.75	462.25	1.6700	15.000	0.0120	1.21	8.57	0.14	3.49	0.
3	Link-30	Pipe	CB-51	JB-SDPIPE35	30.83	462.08	462.75	-2.1800	18.000	0.0150	1.05	28.73	0.04	4.96	0.
4	Link-33	Pipe	CB-2	FES-1	33.60	461.75	461.00	2.2300	24.000	0.0150	2.26	29.29	0.08	4.97	0.
5	Link-37	Pipe	JB	OUT-SDPIPE35	0.96	462.30	462.25	5.2100	15.000	0.0120	1.18	15.97	0.07	4.47	0.
6	Link-39	Pipe	8-Jun	FES-3	0.36	538.50	538.50	0.0000	18.000	0.0130	1.70	5.54	0.31	2.78	0.
7	L-SDPIPE-8	Pipe	CB-47	FES-48	70.00	471.00	468.00	4.2900	18.000	0.0150	17.05	18.85	0.90	10.42	1.
8	SDPIPE-10	Pipe	CB-13	CB-11	187.03	493.00	486.75	3.3400	18.000	0.0120	13.98	20.80	0.67	11.56	0.
9	SDPIPE-11	Pipe	CB-14	CB-13	66.59	502.00	498.50	5.2600	18.000	0.0130	12.76	24.08	0.53	11.70	0.
10	SDPIPE-12	Pipe	CB-15	CB-14	297.35	513.00	503.00	3.3600	18.000	0.0120	7.33	20.87	0.35	10.36	0.
11	SDPIPE-13	Pipe	CB-16	CB-15	64.00	514.00	513.00	1.5600	18.000	0.0130	4.25	13.13	0.32	5.72	0.
12	SDPIPE-14	Pipe	CB-17	CB-16	322.00	528.00	514.00	4.3500	18.000	0.0130	2.87	21.90	0.13	5.67	0.
13	SDPIPE-15	Pipe	CB-18	CB-17	42.43	529.00	528.00	2.3600	18.000	0.0130	2.28	16.13	0.14	6.03	0.
14	SDPIPE-16	Pipe	CB-20	JB-19	131.65	504.25	502.00	1.7100	24.000	0.0120	17.74	32.04	0.55	11.04	1.
15	SDPIPE-17	Pipe	CB-21	CB-20	32.94	508.50	508.00	1.5200	24.000	0.0120	17.18	30.19	0.57	7.69	1.
16	SDPIPE-18	Pipe	CB-22	CB-21	77.00	510.00	508.50	1.9500	18.000	0.0120	3.54	15.88	0.22	3.63	0.
17	SDPIPE-19	Pipe	CB-23	CB-21	75.59	509.50	508.50	1.3200	18.000	0.0120	3.17	13.09	0.24	2.97	1.
18	SDPIPE-2	Pipe	JB-4	CB-2	99.00	462.74	461.75	1.0000	24.000	0.0130	0.00	22.62	0.00	0.00	0.
19	SDPIPE-20	Pipe	JB-24	CB-21	256.11	526.00	508.50	6.8300	18.000	0.0120	7.75	29.75	0.26	7.42	0.
20	SDPIPE-21	Pipe	CB-25	JB-24	69.87	527.00	526.00	1.4300	18.000	0.0120	7.75	13.61	0.57	8.20	0.
21	SDPIPE-22	Pipe	CB-26	CB-25	33.08	530.50	527.00	10.5800	18.000	0.0130	1.49	34.17	0.04	2.30	0.
22	SDPIPE-23	Pipe	JB-27	CB-25	222.35	534.00	527.00	3.1500	18.000	0.0120	6.02	20.19	0.30	6.83	0.
23	SDPIPE-24	Pipe	CB-28	JB-27	73.59	537.00	534.00	4.0800	18.000	0.0130	6.03	21.21	0.28	9.16	0.
24	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	1.02	14.89	0.07	4.61	0.
25	SDPIPE-25 (1)	Pipe	CB-29	CB-28	44.82	537.50	537.00	1.1200	18.000	0.0130	4.64	11.09	0.42	5.44	0.
26	SDPIPE-25 (12)	Pipe	CB-43	CB-37	42.57	484.50	484.00	1.1700	18.000	0.0130	2.11	11.38	0.19	4.39	0.
27	SDPIPE-25 (13)	Pipe	CB-44	CB-38	33.23	496.00	494.50	4.5100	18.000	0.0130	2.15	22.32	0.10	5.87	0.
28	SDPIPE-25 (14)	Pipe	CB-45	JB-39	46.24	515.00	514.00	2.1600	18.000	0.0130	1.23	15.45	0.08	4.84	0.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
46	Link-01	Channel	CB-30	CB-29	151.74	547.90	542.86	3.3200	3.960	0.0320	0.15	5.85	0.03	1.57	0.
47	Link-02	Channel	CB-28	CB-18	253.20	542.65	534.99	3.0300	3.960	0.0320	0.07	5.59	0.01	0.26	0.
48	Link-03	Channel	CB-18	CB-15	303.55	534.99	520.24	4.8600	3.960	0.0320	1.08	7.51	0.14	1.17	0.
49	Link-04	Channel	CB-15	CB-14	302.16	520.24	513.25	2.3100	3.960	0.0320	2.37	4.19	0.57	1.27	0.
50	Link-06	Channel	CB-13	CB-11	192.70	508.19	490.69	9.0800	3.960	0.0320	0.07	9.68	0.01	0.61	0.
51	Link-07	Channel	CB-12	CB-10	295.35	491.89	474.00	6.0600	3.960	0.0320	1.01	7.90	0.13	0.82	0.
52	Link-09	Channel	CB-17	CB-22	172.84	533.32	517.04	9.4200	3.960	0.0320	0.07	9.88	0.01	0.62	0.
53	Link-10	Channel	CB-22	CB-21	156.96	517.04	515.89	0.7300	3.960	0.0320	1.23	2.67	0.46	0.70	0.
54	Link-11	Channel	CB-23	CB-21	80.56	516.98	515.89	1.3500	3.960	0.0320	0.32	3.74	0.09	0.29	0.
55	Link-12	Channel	CB-45	CB-23	172.11	524.64	516.98	4.4500	3.960	0.0320	0.15	6.78	0.02	2.57	0.
56	Link-13	Channel	CB-40	CB-44	228.53	524.80	507.00	7.7900	3.960	0.0320	1.22	8.96	0.14	3.91	0.
57	Link-14	Channel	CB-44	CB-43	236.24	500.50	482.00	7.8300	3.960	0.0320	0.40	8.97	0.04	1.55	0.
58	Link-15	Channel	CB-38	CB-37	208.04	506.87	490.69	7.7800	3.960	0.0320	0.28	8.96	0.03	2.64	0.
59	Link-16	Channel	CB-37	CB-9	218.60	490.69	474.00	7.6400	3.960	0.0320	0.07	8.87	0.01	0.10	0.
60	Link-17	Channel	CB-43	CB-51	291.31	488.57	465.82	7.8100	3.960	0.0320	0.60	8.97	0.07	1.65	0.
61	Link-18	Channel	CB-10	CB-2	126.47	474.00	465.77	6.5100	3.960	0.0320	0.00	8.19	0.00	0.00	0.
62	Link-19	Channel	CB-33	CB-28	176.20	547.88	542.65	2.9700	3.960	0.0320	0.18	5.53	0.03	1.40	0.
63	Link-20	Channel	CB-11	CB-9	282.13	490.69	474.00	5.9200	3.960	0.0320	0.61	7.81	0.08	0.76	0.
64	Link-24	Channel	CB-29	CB-26	316.29	542.86	535.29	2.3900	3.960	0.0320	0.02	4.97	0.00	0.60	0.
65	Link-28	Channel	CB-32	3-Jun	204.60	549.87	0.00	268.7500	3.960	0.0320	0.00	52.65	0.00	0.00	0.
66	Link-38	Channel	CB-2	JB	44.72	465.77	462.30	7.7600	3.960	0.0320	0.03	8.95	0.00	0.06	0.
67	Link-40	Channel	CB-31	8-Jun	97.13	549.37	538.50	11.1900	3.960	0.0320	0.00	10.74	0.00	0.00	0.

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutt Sprea during Pea Flo (f
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	469.43	10.00	3.20	N/A	N/A	N/A	8.50	6.5
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	481.00	N/A	2.32	1.68	0.64	72.48	8.50	5.5
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	485.50	N/A	2.94	1.93	1.01	65.53	8.50	6.(
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	493.00	N/A	1.98	1.84	0.15	92.56	8.50	6.7
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	502.00	10.00	5.66	N/A	N/A	N/A	8.50	11.4
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	513.00	N/A	6.28	3.14	3.15	49.92	8.50	8.7
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	514.00	N/A	1.61	1.43	0.19	88.46	8.50	5.2
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	528.00	N/A	1.41	1.30	0.11	92.04	8.50	4.9
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	529.00	N/A	3.36	2.25	1.12	66.74	8.50	6.8
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	461.75	N/A	0.95	0.93	0.02	98.06	8.50	4.(
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	504.25	10.00	3.23	N/A	N/A	N/A	8.50	7.8
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	508.50	10.00	4.53	N/A	N/A	N/A	8.50	9.8
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	510.00	N/A	4.78	3.54	1.24	74.00	8.50	7.4
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	509.50	N/A	3.55	3.23	0.33	90.77	8.50	7.6
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	527.00	10.00	4.29	N/A	N/A	N/A	8.50	9.5
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	530.50	10.00	2.95	N/A	N/A	N/A	8.50	7.4
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	537.00	N/A	1.65	1.54	0.11	93.55	8.50	5.8
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	537.50	N/A	1.44	1.39	0.05	96.58	8.50	5.5
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	543.50	N/A	1.80	1.65	0.16	91.35	8.50	6.(
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.89	0.89	0.00	100.00	8.50	4.6
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	546.00	N/A	1.03	1.03	0.00	100.00	8.50	4.9
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	544.00	N/A	1.87	1.69	0.18	90.46	8.50	6.7
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	478.50	N/A	1.37	1.23	0.14	89.84	8.50	4.6
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	494.50	N/A	1.78	1.46	0.31	82.38	8.50	5.7
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	515.00	N/A	3.35	2.13	1.22	63.67	8.50	6.5
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	484.50	N/A	2.72	1.89	0.82	69.69	8.50	6.(
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	496.00	N/A	2.31	1.72	0.59	74.58	8.50	5.6
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	515.00	N/A	1.40	1.25	0.15	89.20	8.50	4.7

Subbasin Hydrology

Subbasin : Sub-AD-49

Input Data

Area (ac) 4.59
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	4.59	-	0.7
Composite Area & Weighted Runoff Coeff.	4.59		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	299.3	0	0
Slope (%) :	8.53	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	24.81	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	184.58	0	0
Slope (%) :	14.79	0	0
Surface Type :	Woodland	Paved	Paved
Velocity (ft/sec) :	1.92	0	0
Computed Flow Time (min) :	1.6	0	0

Total TOC (min) 26.41

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.54
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	62.75	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.31	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	287	0	0
Slope (%) :	6.16	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.05	0	0
Computed Flow Time (min) :	0.95	0	0

Total TOC (min) 14.26

Subbasin : Sub-CB-11

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	87.01933392	0	0
Slope (%) :	4.23334562	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	9.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	144.6117952	0	0
Slope (%) :	9.33800334	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.21	0	0
Computed Flow Time (min) :	0.39	0	0

Total TOC (min) 10.10

Subbasin : Sub-CB-12

Input Data

Area (ac) 0.7
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.7	-	0.7
Composite Area & Weighted Runoff Coeff.	0.7		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.34441067	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.92	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	290.7440621	0	0
Slope (%) :	7.85301046	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	4.52	0	0
Computed Flow Time (min) :	1.07	0	0

Total TOC (min) 15.99

Subbasin : Sub-CB-13

Input Data

Area (ac) 0.37
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.7
Composite Area & Weighted Runoff Coeff.	0.37		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.99	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	326.6	0	0
Slope (%) :	3.5	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.8	0	0
Computed Flow Time (min) :	1.43	0	0

Total TOC (min) 10.16

Subbasin : Sub-CB-14

Input Data

Area (ac) 0.87
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.87	-	0.7
Composite Area & Weighted Runoff Coeff.	0.87		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	133.09	0	0
Slope (%) :	7.48	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	10.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	224.63	0	0
Slope (%) :	2.32	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.1	0	0
Computed Flow Time (min) :	1.21	0	0

Total TOC (min) 12.07

Subbasin : Sub-CB-15

Input Data

Area (ac) 1.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.24	-	0.7
Composite Area & Weighted Runoff Coeff.	1.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	129.63	0	0
Slope (%) :	3.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	13.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	369.75	0	0
Slope (%) :	4.45	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	1.44	0	0

Total TOC (min) 15.32

Subbasin : Sub-CB-16

Input Data

Area (ac) 0.3
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.3	-	0.7
Composite Area & Weighted Runoff Coeff.	0.3		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	35.63	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.47	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.56	0	0
Slope (%) :	4.29	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.21	0	0
Computed Flow Time (min) :	0.89	0	0

Total TOC (min) 9.36

Subbasin : Sub-CB-17

Input Data

Area (ac) 0.25
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.25	-	0.7
Composite Area & Weighted Runoff Coeff.	0.25		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	30.83	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	7.54	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221.33	0	0
Slope (%) :	4.052	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.09	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 8.44

Subbasin : Sub-CB-18

Input Data

Area (ac) 0.76
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	169.6828048	0	0
Slope (%) :	5.92476783	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	14.48	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.81153859	0	0
Slope (%) :	5.8473515	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.92	0	0
Computed Flow Time (min) :	0.26	0	0

Total TOC (min) 14.74

Subbasin : Sub-CB-2

Input Data

Area (ac) 0.15
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.15	-	0.7
Composite Area & Weighted Runoff Coeff.	0.15		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	49.14	0	0
Slope (%) :	3.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	6.63	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	7.8	0	0
Slope (%) :	7.9	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 6.65

Subbasin : Sub-CB-20

Input Data

Area (ac) 0.61
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.61	-	0.7
Composite Area & Weighted Runoff Coeff.	0.61		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.97	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	228.24	0	0
Slope (%) :	4.33669128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.23	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 9.62

Subbasin : Sub-CB-21

Input Data

Area (ac) 0.81
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.81	-	0.7
Composite Area & Weighted Runoff Coeff.	0.81		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	225.91	0	0
Slope (%) :	7.69	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	74	0	0
Slope (%) :	1.44	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.44	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-22

Input Data

Area (ac) 1.23
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.23	-	0.7
Composite Area & Weighted Runoff Coeff.	1.23		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	227.07	0	0
Slope (%) :	5.59	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	18.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	150.89	0	0
Slope (%) :	5.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.52	0	0

Total TOC (min) 19.23

Subbasin : Sub-CB-23

Input Data

Area (ac) 0.85
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.85	-	0.7
Composite Area & Weighted Runoff Coeff.	0.85		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	226.71	0	0
Slope (%) :	8.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.24	0	0
Computed Flow Time (min) :	15.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.07	0	0
Slope (%) :	3.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.93	0	0
Computed Flow Time (min) :	0.32	0	0

Total TOC (min) 16.12

Subbasin : Sub-CB-25

Input Data

Area (ac) 0.66
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.7
Composite Area & Weighted Runoff Coeff.	0.66		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.69	0	0
Slope (%) :	3.98	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	4.99	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	218	0	0
Slope (%) :	1.9995265	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.26	0	0

Total TOC (min) 6.25

Subbasin : Sub-CB-26

Input Data

Area (ac) 0.41
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.41	-	0.7
Composite Area & Weighted Runoff Coeff.	0.41		0.7

Time of Concentration

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	391.04	0	0
Slope (%) :	2.05	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.91	0	0
Computed Flow Time (min) :	2.24	0	0

Total TOC (min) 2.24

Subbasin : Sub-CB-28

Input Data

Area (ac) 0.35
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.7
Composite Area & Weighted Runoff Coeff.	0.35		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.21	0	0
Slope (%) :	1.57	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	13.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	96.33	0	0
Slope (%) :	2.66	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.32	0	0
Computed Flow Time (min) :	0.48	0	0

Total TOC (min) 14.28

Subbasin : Sub-CB-29

Input Data

Area (ac) 0.32
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.32	-	0.7
Composite Area & Weighted Runoff Coeff.	0.32		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	79.19359172	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.04	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	145.6546025	0	0
Slope (%) :	3.30814128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.7	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 16.69

Subbasin : Sub-CB-30

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.06466793	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.18	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.4355599	0	0
Slope (%) :	2.37620836	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	1.09	0	0

Total TOC (min) 17.27

Subbasin : Sub-CB-31

Input Data

Area (ac) 0.28
Weighted Runoff Coefficient 0.5

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.5
Composite Area & Weighted Runoff Coeff.	0.28		0.5

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	61.18415656	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.05	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	147.427748	0	0
Slope (%) :	2.48368186	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.2	0	0
Computed Flow Time (min) :	0.77	0	0

Total TOC (min) 13.81

Subbasin : Sub-CB-32

Input Data

Area (ac) 0.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.82652581	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	123.3068858	0	0
Slope (%) :	2.56696146	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.26	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 15.63

Subbasin : Sub-CB-33

Input Data

Area (ac) 0.45
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.7
Composite Area & Weighted Runoff Coeff.	0.45		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	74.8476514	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15.33	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	205.0538871	0	0
Slope (%) :	2.54735015	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.24	0	0
Computed Flow Time (min) :	1.05	0	0

Total TOC (min) 16.38

Subbasin : Sub-CB-37

Input Data

Area (ac) 0.27
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.27	-	0.7
Composite Area & Weighted Runoff Coeff.	0.27		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	70.96	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.69	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.13	0	0
Slope (%) :	7.95	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.59	0	0

Total TOC (min) 15.28

Subbasin : Sub-CB-38

Input Data

Area (ac) 0.38
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.7
Composite Area & Weighted Runoff Coeff.	0.38		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	56.31288611	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	12.21	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	122.2285539	0	0
Slope (%) :	7.88883657	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.36	0	0

Total TOC (min) 12.57

Subbasin : Sub-CB-40

Input Data

Area (ac) 0.63
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	-	0.7
Composite Area & Weighted Runoff Coeff.	0.63		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.47168729	0	0
Slope (%) :	4.83233018	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	8.82	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.6819013	0	0
Slope (%) :	7.22299665	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.69	0	0

Total TOC (min) 9.51

Subbasin : Sub-CB-43

Input Data

Area (ac) 0.57
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.7
Composite Area & Weighted Runoff Coeff.	0.57		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.44365706	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.24	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	230.963887	0	0
Slope (%) :	7.93293268	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.67	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-44

Input Data

Area (ac)	0.48
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.48	-	0.7
Composite Area & Weighted Runoff Coeff.	0.48		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.23540495	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.53	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	215.6393568	0	0
Slope (%) :	7.93956492	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 17.16

Subbasin : Sub-CB-45

Input Data

Area (ac)	0.24
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	26.67	0	0
Slope (%) :	0.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	7.2	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221	0	0
Slope (%) :	7.58	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.6	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 7.86

Subbasin : Sub-CB-51

Input Data

Area (ac)	0.76
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	109.87	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	20.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	284.96	0	0
Slope (%) :	7.93363114	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.83	0	0

Total TOC (min) 21.67

Subbasin : Sub-CB-9

Input Data

Area (ac)	0.54
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	94.51887751	0	0
Slope (%) :	1.1562359	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	17.43	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	272.2215693	0	0
Slope (%) :	5.96622322	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.97	0	0
Computed Flow Time (min) :	0.91	0	0

Total TOC (min) 18.35

Subbasin : Sub-SDPIPE-35

Input Data

Area (ac)	0.16
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.16	-	0.7
Composite Area & Weighted Runoff Coeff.	0.16		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	117.01	0	0
Slope (%) :	6.14	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	10.61	0	0

Total TOC (min) 10.61

Subbasin : Sub-SDPIPE-36

Input Data

Area (ac)	1.73
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.73	-	0.7
Composite Area & Weighted Runoff Coeff.	1.73		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	299.51	0	0
Slope (%) :	6	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.22	0	0
Computed Flow Time (min) :	22.7	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	546	0	0
Slope (%) :	5.3	0	0
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	3.45	0	0
Computed Flow Time (min) :	2.64	0	0

Total TOC (min) 25.34

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	AD-49	468.50	472.65	4.15	468.50	0.00	472.65	0.00	10.00	19.85
2	CB-47	471.00	479.32	8.32	471.00	0.00	479.32	0.00	10.00	81.81
3	CB-8	468.50	474.72	6.22	468.50	0.00	474.72	0.00	10.00	50.59
4	JB	462.30	468.30	6.00	462.30	0.00	468.30	0.00	0.00	57.00
5	JB-19	502.00	509.27	7.27	502.00	0.00	509.27	0.00	10.00	63.30
6	JB-24	526.00	535.80	9.80	526.00	0.00	535.80	0.00	10.00	99.54
7	JB-27	534.00	539.80	5.80	534.00	0.00	539.80	0.00	10.00	51.59
8	JB-39	510.00	521.73	11.73	510.00	0.00	521.73	0.00	10.00	74.75
9	JB-4	462.74	473.05	10.31	462.74	0.00	473.05	0.00	10.00	99.76
10	JB-SDPIPE35	462.75	464.00	1.25	462.75	0.00	0.00	-464.00	100.00	0.00
11	JB-SDPIPE36	441.30	442.80	1.50	441.30	0.00	0.00	-442.80	1000.00	0.00
12	8-Jun	538.50	544.50	6.00	538.50	0.00	544.50	0.00	0.00	54.00
13	WIER-6	468.00	472.50	4.50	468.00	0.00	472.50	0.00	10.00	30.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Oc (days
1	AD-49	28.58	15.65	470.62	2.12	0.00	2.04	468.58	0.08	0 00:19	
2	CB-47	17.05	0.00	474.95	3.95	0.00	4.37	471.04	0.04	0 00:11	
3	CB-8	3.98	0.00	469.14	0.64	0.00	5.57	468.52	0.02	0 00:19	
4	JB	1.21	0.00	462.74	0.44	0.00	5.56	462.31	0.01	0 00:17	
5	JB-19	17.74	0.00	502.60	0.60	0.00	6.67	502.02	0.02	0 00:17	
6	JB-24	7.75	0.00	526.52	0.52	0.00	9.27	526.02	0.02	0 00:07	
7	JB-27	6.03	0.00	534.56	0.56	0.00	5.24	534.02	0.02	0 00:17	
8	JB-39	3.17	0.00	510.35	0.35	0.00	11.37	510.01	0.01	0 00:09	
9	JB-4	0.00	0.00	462.74	0.00	0.00	10.31	462.74	0.00	0 00:00	
10	JB-SDPIPE35	1.21	0.81	463.13	0.38	0.00	1.12	462.76	0.01	0 00:17	
11	JB-SDPIPE36	6.00	6.00	442.44	1.14	0.00	0.36	441.34	0.04	0 00:25	
12	8-Jun	1.80	0.00	539.14	0.64	0.00	5.36	538.52	0.02	0 00:16	
13	WIER-6	0.00	0.00	468.00	0.00	0.00	4.50	468.00	0.00	0 00:00	

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Er
1	Link-01	151.74	547.90	4.40	542.86	5.36	5.04	3.3200	User-Defined	0.330	14.000	0.0320	
2	Link-02	253.20	542.65	5.65	534.99	5.99	7.66	3.0300	User-Defined	0.330	14.000	0.0320	
3	Link-03	303.55	534.99	5.99	520.24	7.24	14.75	4.8600	User-Defined	0.330	14.000	0.0320	
4	Link-04	302.16	520.24	7.24	513.25	11.25	6.99	2.3100	User-Defined	0.330	14.000	0.0320	
5	Link-06	192.70	508.19	15.19	490.69	9.69	17.50	9.0800	User-Defined	0.330	14.000	0.0320	
6	Link-07	295.35	491.89	6.39	474.00	4.56	17.89	6.0600	User-Defined	0.330	14.000	0.0320	
7	Link-09	172.84	533.32	5.32	517.04	7.04	16.28	9.4200	User-Defined	0.330	14.000	0.0320	
8	Link-10	156.96	517.04	7.04	515.89	7.39	1.15	0.7300	User-Defined	0.330	14.000	0.0320	
9	Link-11	80.56	516.98	7.48	515.89	7.39	1.09	1.3500	User-Defined	0.330	14.000	0.0320	
10	Link-12	172.11	524.64	9.64	516.98	7.48	7.67	4.4500	User-Defined	0.330	14.000	0.0320	
11	Link-13	228.53	524.80	9.80	507.00	11.00	17.80	7.7900	User-Defined	0.330	14.000	0.0320	
12	Link-14	236.24	500.50	4.50	482.00	-2.50	18.50	7.8300	User-Defined	0.330	14.000	0.0320	
13	Link-15	208.04	506.87	12.37	490.69	12.19	16.18	7.7800	User-Defined	0.330	14.000	0.0320	
14	Link-16	218.60	490.69	12.19	474.00	4.90	16.69	7.6400	User-Defined	0.330	14.000	0.0320	
15	Link-17	291.31	488.57	4.07	465.82	3.74	22.75	7.8100	User-Defined	0.330	14.000	0.0320	
16	Link-18	126.47	474.00	4.56	465.77	4.02	8.23	6.5100	User-Defined	0.330	14.000	0.0320	
17	Link-19	176.20	547.88	3.88	542.65	5.65	5.23	2.9700	User-Defined	0.330	14.000	0.0320	
18	Link-20	282.13	490.69	9.69	474.00	4.90	16.70	5.9200	User-Defined	0.330	14.000	0.0320	
19	Link-24	316.29	542.86	5.36	535.29	4.79	7.57	2.3900	User-Defined	0.330	14.000	0.0320	
20	Link-28	204.60	549.87	3.87	0.00	0.00	549.87	268.7500	User-Defined	0.330	14.000	0.0320	
21	Link-38	44.72	465.77	4.02	462.30	0.00	3.47	7.7600	User-Defined	0.330	14.000	0.0320	
22	Link-40	97.13	549.37	4.87	538.50	0.00	10.87	11.1900	User-Defined	0.330	14.000	0.0320	

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Numbe
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)	
1	Link-01	0.15	0 00:17	5.85	0.03	1.57	1.61	0.06	0.20	0.00	
2	Link-02	0.07	0 00:14	5.59	0.01	0.26	16.23	0.11	0.33	0.00	
3	Link-03	1.08	0 00:14	7.51	0.14	1.17	4.32	0.21	0.63	0.00	
4	Link-04	2.37	0 00:15	4.19	0.57	1.27	3.97	0.30	0.90	0.00	
5	Link-06	0.07	0 00:11	9.68	0.01	0.61	5.27	0.08	0.25	0.00	
6	Link-07	1.01	0 00:16	7.90	0.13	0.82	6.00	0.24	0.73	0.00	
7	Link-09	0.07	0 00:09	9.88	0.01	0.62	4.65	0.13	0.40	0.00	
8	Link-10	1.23	0 00:19	2.67	0.46	0.70	3.74	0.29	0.87	0.00	
9	Link-11	0.32	0 00:16	3.74	0.09	0.29	4.63	0.23	0.69	0.00	
10	Link-12	0.15	0 00:08	6.78	0.02	2.57	1.12	0.07	0.21	0.00	
11	Link-13	1.22	0 00:09	8.96	0.14	3.91	0.97	0.12	0.37	0.00	
12	Link-14	0.40	0 00:17	8.97	0.04	1.55	2.54	0.11	0.33	0.00	
13	Link-15	0.28	0 00:13	8.96	0.03	2.64	1.31	0.07	0.21	0.00	
14	Link-16	0.07	0 00:15	8.87	0.01	0.10	36.43	0.19	0.58	0.00	
15	Link-17	0.60	0 00:17	8.97	0.07	1.65	2.94	0.13	0.40	0.00	
16	Link-18	0.00	0 00:00	8.19	0.00	0.00		0.01	0.04	0.00	
17	Link-19	0.18	0 00:16	5.53	0.03	1.40	2.10	0.08	0.23	0.00	
18	Link-20	0.61	0 00:10	7.81	0.08	0.76	6.19	0.21	0.65	0.00	
19	Link-24	0.02	0 00:18	4.97	0.00	0.60	8.79	0.17	0.50	0.00	
20	Link-28	0.00	0 00:15	52.65	0.00	0.00		0.00	0.01	0.00	
21	Link-38	0.03	0 00:06	8.95	0.00	0.06	12.42	0.18	0.54	0.00	
22	Link-40	0.00	0 00:00	10.74	0.00	0.00		0.17	0.50	0.00	

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Mai Roug
1	Link-05	406.55	517.00	3.00	503.00	10.00	14.00	3.4400	CIRCULAR	18.000	18.000	
2	Link-08	30.00	462.75	0.00	462.25	-0.05	0.50	1.6700	CIRCULAR	15.000	15.000	
3	Link-30	30.83	462.08	0.00	462.75	0.00	-0.67	-2.1800	CIRCULAR	18.000	18.000	
4	Link-33	33.60	461.75	0.00	461.00	0.00	0.75	2.2300	CIRCULAR	24.000	24.000	
5	Link-37	0.96	462.30	0.00	462.25	0.00	0.05	5.2100	CIRCULAR	15.000	15.000	
6	Link-39	0.36	538.50	0.00	538.50	0.00	0.00	0.0000	CIRCULAR	18.000	18.000	
7	L-SDPIPE-8	70.00	471.00	0.00	468.00	0.00	3.00	4.2900	CIRCULAR	18.000	18.000	
8	SDPIPE-10	187.03	493.00	0.00	486.75	5.75	6.25	3.3400	CIRCULAR	18.000	18.000	
9	SDPIPE-11	66.59	502.00	0.00	498.50	5.50	3.50	5.2600	CIRCULAR	18.000	18.000	
10	SDPIPE-12	297.35	513.00	0.00	503.00	1.00	10.00	3.3600	CIRCULAR	18.000	18.000	
11	SDPIPE-13	64.00	514.00	0.00	513.00	0.00	1.00	1.5600	CIRCULAR	18.000	18.000	
12	SDPIPE-14	322.00	528.00	0.00	514.00	0.00	14.00	4.3500	CIRCULAR	18.000	18.000	
13	SDPIPE-15	42.43	529.00	0.00	528.00	0.00	1.00	2.3600	CIRCULAR	18.000	18.000	
14	SDPIPE-16	131.65	504.25	0.00	502.00	0.00	2.25	1.7100	CIRCULAR	24.000	24.000	
15	SDPIPE-17	32.94	508.50	0.00	508.00	3.75	0.50	1.5200	CIRCULAR	24.000	24.000	
16	SDPIPE-18	77.00	510.00	0.00	508.50	0.00	1.50	1.9500	CIRCULAR	18.000	18.000	
17	SDPIPE-19	75.59	509.50	0.00	508.50	0.00	1.00	1.3200	CIRCULAR	18.000	18.000	
18	SDPIPE-2	99.00	462.74	0.00	461.75	0.00	0.99	1.0000	CIRCULAR	24.000	24.000	
19	SDPIPE-20	256.11	526.00	0.00	508.50	0.00	17.50	6.8300	CIRCULAR	18.000	18.000	
20	SDPIPE-21	69.87	527.00	0.00	526.00	0.00	1.00	1.4300	CIRCULAR	18.000	18.000	
21	SDPIPE-22	33.08	530.50	0.00	527.00	0.00	3.50	10.5800	CIRCULAR	18.000	18.000	
22	SDPIPE-23	222.35	534.00	0.00	527.00	0.00	7.00	3.1500	CIRCULAR	18.000	18.000	
23	SDPIPE-24	73.59	537.00	0.00	534.00	0.00	3.00	4.0800	CIRCULAR	18.000	18.000	
24	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	
25	SDPIPE-25 (1)	44.82	537.50	0.00	537.00	0.00	0.50	1.1200	CIRCULAR	18.000	18.000	
26	SDPIPE-25 (12)	42.57	484.50	0.00	484.00	5.50	0.50	1.1700	CIRCULAR	18.000	18.000	
27	SDPIPE-25 (13)	33.23	496.00	0.00	494.50	0.00	1.50	4.5100	CIRCULAR	18.000	18.000	
28	SDPIPE-25 (14)	46.24	515.00	0.00	514.00	4.00	1.00	2.1600	CIRCULAR	18.000	18.000	
29	SDPIPE-25 (15)	248.75	502.00	0.00	468.50	0.00	33.50	13.4700	CIRCULAR	24.000	24.000	
30	SDPIPE-25 (15) (1)	24.21	468.50	0.00	468.25	0.00	0.25	1.0300	CIRCULAR	30.000	30.000	
31	SDPIPE-25 (17)	32.91	462.08	0.00	461.75	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	
32	SDPIPE-25 (2)	150.25	543.50	0.00	537.50	0.00	6.00	3.9900	CIRCULAR	18.000	18.000	
33	SDPIPE-25 (3)	33.25	544.00	0.00	543.50	0.00	0.50	1.5000	CIRCULAR	18.000	18.000	
34	SDPIPE-25 (6)	87.00	478.50	0.00	472.00	0.00	6.50	7.4700	CIRCULAR	18.000	18.000	
35	SDPIPE-25 (7)	201.54	494.50	0.00	485.00	6.50	9.50	4.7100	CIRCULAR	18.000	18.000	
36	SDPIPE-25 (8)	196.25	510.00	0.00	498.00	3.50	12.00	6.1100	CIRCULAR	18.000	18.000	
37	SDPIPE-25 (9)	51.51	515.00	0.00	514.00	4.00	1.00	1.9400	CIRCULAR	18.000	18.000	
38	SDPIPE-32	95.98	544.50	0.00	538.50	0.00	6.00	6.2500	CIRCULAR	18.000	18.000	
39	SDPIPE-36	30.02	441.30	0.00	441.00	0.00	0.30	1.0000	CIRCULAR	18.000	18.000	
40	SDPIPE-4	112.76	468.00	0.00	462.74	0.00	5.26	4.6600	CIRCULAR	24.000	24.000	
41	SDPIPE-5	41.13	468.50	0.00	468.00	0.00	0.50	1.2200	CIRCULAR	24.000	24.000	
42	SDPIPE-6	55.12	469.10	0.00	468.50	0.00	0.60	1.0900	CIRCULAR	24.000	24.000	
43	SDPIPE-7	33.11	469.43	0.00	469.10	0.00	0.33	1.0100	CIRCULAR	24.000	24.000	
44	SDPIPE-8 (1)	127.57	481.00	0.00	471.00	0.00	10.00	7.8400	CIRCULAR	18.000	18.000	
45	SDPIPE-9	35.93	485.50	0.00	483.00	2.00	2.50	6.9600	CIRCULAR	18.000	18.000	

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Ti Surcharg
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(m
1	Link-05	0.09	0 00:11	15.32	0.01	2.99	2.27	0.07	0.05	0
2	Link-08	1.21	0 00:17	8.57	0.14	3.49	0.14	0.41	0.33	0
3	Link-30	1.05	0 00:21	28.73	0.04	4.96	0.10	0.27	0.18	0
4	Link-33	2.26	0 00:17	29.29	0.08	4.97	0.11	0.41	0.20	0
5	Link-37	1.18	0 00:17	15.97	0.07	4.47	0.00	0.33	0.27	0
6	Link-39	1.70	0 00:16	5.54	0.31	2.78	0.00	0.57	0.38	0
7	L-SDPIPE-8	17.05	0 00:13	18.85	0.90	10.42	0.11	1.31	0.87	0
8	SDPIPE-10	13.98	0 00:13	20.80	0.67	11.56	0.27	0.97	0.65	0
9	SDPIPE-11	12.76	0 00:14	24.08	0.53	11.70	0.09	0.89	0.59	0
10	SDPIPE-12	7.33	0 00:14	20.87	0.35	10.36	0.48	0.63	0.42	0
11	SDPIPE-13	4.25	0 00:10	13.13	0.32	5.72	0.19	0.66	0.44	0
12	SDPIPE-14	2.87	0 00:09	21.90	0.13	5.67	0.95	0.53	0.35	0
13	SDPIPE-15	2.28	0 00:14	16.13	0.14	6.03	0.12	0.40	0.27	0
14	SDPIPE-16	17.74	0 00:17	32.04	0.55	11.04	0.20	1.02	0.51	0
15	SDPIPE-17	17.18	0 00:18	30.19	0.57	7.69	0.07	1.34	0.67	0
16	SDPIPE-18	3.54	0 00:19	15.88	0.22	3.63	0.35	0.99	0.66	0
17	SDPIPE-19	3.17	0 00:16	13.09	0.24	2.97	0.42	1.07	0.71	0
18	SDPIPE-2	0.00	0 00:00	22.62	0.00	0.00		0.22	0.11	0
19	SDPIPE-20	7.75	0 00:07	29.75	0.26	7.42	0.58	0.99	0.66	0
20	SDPIPE-21	7.75	0 00:07	13.61	0.57	8.20	0.14	0.79	0.53	0
21	SDPIPE-22	1.49	0 00:07	34.17	0.04	2.30	0.24	0.64	0.42	0
22	SDPIPE-23	6.02	0 00:17	20.19	0.30	6.83	0.54	0.75	0.50	0
23	SDPIPE-24	6.03	0 00:17	21.21	0.28	9.16	0.13	0.60	0.40	0
24	SDPIPE-25	1.02	0 00:15	14.89	0.07	4.61	0.27	0.27	0.18	0
25	SDPIPE-25 (1)	4.64	0 00:17	11.09	0.42	5.44	0.14	0.73	0.49	0
26	SDPIPE-25 (12)	2.11	0 00:17	11.38	0.19	4.39	0.16	0.48	0.32	0
27	SDPIPE-25 (13)	2.15	0 00:09	22.32	0.10	5.87	0.09	0.45	0.30	0
28	SDPIPE-25 (14)	1.23	0 00:08	15.45	0.08	4.84	0.16	0.30	0.20	0
29	SDPIPE-25 (15)	17.74	0 00:17	89.94	0.20	8.42	0.49	1.30	0.65	0
30	SDPIPE-25 (15) (1)	28.58	0 00:19	45.15	0.63	7.64	0.05	1.78	0.71	0
31	SDPIPE-25 (17)	2.27	0 00:17	10.50	0.22	4.40	0.12	0.50	0.33	0
32	SDPIPE-25 (2)	3.26	0 00:16	22.74	0.14	4.89	0.51	0.61	0.40	0
33	SDPIPE-25 (3)	1.68	0 00:16	12.88	0.13	4.33	0.13	0.41	0.27	0
34	SDPIPE-25 (6)	8.73	0 00:10	31.10	0.28	13.51	0.11	0.59	0.39	0
35	SDPIPE-25 (7)	6.52	0 00:10	24.71	0.26	11.24	0.30	0.55	0.36	0
36	SDPIPE-25 (8)	3.17	0 00:09	28.14	0.11	10.22	0.32	0.35	0.23	0
37	SDPIPE-25 (9)	2.12	0 00:09	14.64	0.14	5.35	0.16	0.41	0.28	0
38	SDPIPE-32	1.80	0 00:15	26.26	0.07	5.04	0.32	0.45	0.30	0
39	SDPIPE-36	5.99	0 00:25	9.10	0.66	4.73	0.11	1.01	0.67	0
40	SDPIPE-4	0.00	0 00:00	48.86	0.00	0.00		0.00	0.00	0
41	SDPIPE-5	3.98	0 00:19	27.02	0.15	5.24	0.13	0.58	0.29	0
42	SDPIPE-6	3.98	0 00:19	25.54	0.16	4.53	0.20	0.65	0.32	0
43	SDPIPE-7	2.90	0 00:17	22.70	0.13	3.48	0.16	0.62	0.31	0
44	SDPIPE-8 (1)	17.05	0 00:13	31.86	0.54	11.60	0.18	1.18	0.79	0

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	4.56	469.43	0.00
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	9.69	481.00	0.00
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	6.39	485.50	0.00
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	15.19	493.00	0.00
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	11.25	502.00	0.00
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	5.39	513.00	0.00
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	5.70	514.00	0.00
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	5.32	528.00	0.00
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	5.99	529.00	0.00
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	4.02	461.75	0.00
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	11.64	504.25	0.00
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	7.39	508.50	0.00
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	6.97	510.00	0.00
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	7.48	509.50	0.00
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	8.29	527.00	0.00
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	4.79	530.50	0.00
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	5.65	537.00	0.00
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	5.36	537.50	0.00
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	4.40	543.50	0.00
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0.00
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	3.87	546.00	0.00
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	3.88	544.00	0.00
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	12.19	478.50	0.00
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	12.37	494.50	0.00
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	9.80	515.00	0.00
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	4.07	484.50	0.00
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	11.00	496.00	0.00
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	9.64	515.00	0.00
29	CB-51	FHWA HEC-22 GENERIC	N/A	On Grade	1	462.08	465.82	3.74	462.08	0.00
30	CB-9	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.10	474.00	4.90	469.10	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB-10	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
2	CB-11	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
3	CB-12	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
4	CB-13	0.0232	0.0254	0.0150	0.0200	1.00	0.1312	8.50
5	CB-14	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
6	CB-15	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
7	CB-16	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
8	CB-17	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
9	CB-18	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
10	CB-2	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
11	CB-20	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
12	CB-21	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
13	CB-22	0.0780	0.0254	0.0150	0.0200	1.00	0.1312	8.50
14	CB-23	0.0381	0.0254	0.0150	0.0200	1.00	0.1312	8.50
15	CB-25	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
16	CB-26	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
17	CB-28	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
18	CB-29	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
19	CB-30	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
20	CB-31	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
21	CB-32	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
22	CB-33	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
23	CB-37	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
24	CB-38	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
25	CB-40	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
26	CB-43	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
27	CB-44	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
28	CB-45	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
29	CB-51	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
30	CB-9	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	T Floo Volu (ac
1	CB-10	3.20	2.38	N/A	N/A	N/A	6.55	474.33	0.33	0 00:17	0
2	CB-11	2.32	2.28	1.68	0.64	72.48	5.52	490.83	0.13	0 00:13	0
3	CB-12	2.94	2.94	1.93	1.01	65.53	6.01	492.04	0.15	0 00:16	0
4	CB-13	1.98	1.91	1.84	0.15	92.56	6.73	508.36	0.17	0 00:13	0
5	CB-14	5.66	4.15	N/A	N/A	N/A	11.46	513.71	0.46	0 00:14	0
6	CB-15	6.28	5.29	3.14	3.15	49.92	8.71	518.61	0.22	0 00:14	0
7	CB-16	1.61	1.61	1.43	0.19	88.46	5.25	519.83	0.13	0 00:09	0
8	CB-17	1.41	1.41	1.30	0.11	92.04	4.98	533.44	0.12	0 00:09	0
9	CB-18	3.36	3.30	2.25	1.12	66.74	6.89	535.16	0.17	0 00:14	0
10	CB-2	0.95	0.95	0.93	0.02	98.06	4.08	465.87	0.10	0 00:17	0
11	CB-20	3.23	3.23	N/A	N/A	N/A	7.89	516.25	0.37	0 00:17	0
12	CB-21	4.53	3.32	N/A	N/A	N/A	9.87	516.30	0.42	0 00:18	0
13	CB-22	4.78	4.78	3.54	1.24	74.00	7.46	517.15	0.18	0 00:19	0
14	CB-23	3.55	3.55	3.23	0.33	90.77	7.61	517.17	0.19	0 00:18	0
15	CB-25	4.29	4.29	N/A	N/A	N/A	9.52	535.70	0.41	0 00:07	0
16	CB-26	2.95	2.95	N/A	N/A	N/A	7.42	535.64	0.36	0 00:07	0
17	CB-28	1.65	1.54	1.54	0.11	93.55	5.88	542.79	0.14	0 00:17	0
18	CB-29	1.44	1.32	1.39	0.05	96.58	5.58	543.00	0.14	0 00:17	0
19	CB-30	1.80	1.80	1.65	0.16	91.35	6.06	548.05	0.15	0 00:16	0
20	CB-31	0.89	0.89	0.89	0.00	100.00	4.65	549.48	0.11	0 00:15	0
21	CB-32	1.03	1.03	1.03	0.00	100.00	4.91	549.99	0.12	0 00:15	0
22	CB-33	1.87	1.87	1.69	0.18	90.46	6.13	548.03	0.15	0 00:16	0
23	CB-37	1.37	1.16	1.23	0.14	89.84	4.67	490.80	0.11	0 00:10	0
24	CB-38	1.78	1.78	1.46	0.31	82.38	5.14	506.99	0.13	0 00:10	0
25	CB-40	3.35	3.35	2.13	1.22	63.67	6.50	524.96	0.16	0 00:09	0
26	CB-43	2.72	2.34	1.89	0.82	69.69	6.02	488.72	0.15	0 00:17	0
27	CB-44	2.31	1.96	1.72	0.59	74.58	5.66	507.14	0.14	0 00:09	0
28	CB-45	1.40	1.40	1.25	0.15	89.20	4.71	524.76	0.11	0 00:08	0
29	CB-51	3.09	2.81	2.04	1.05	65.99	6.34	465.98	0.16	0 00:17	0
30	CB-9	2.19	2.14	N/A	N/A	N/A	8.31	474.37	0.38	0 00:19	0

100 Year Design Storm

Project Description

File Name	HILLTOP 9-21-2026.SPF

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	0
Subbasins	33
Nodes	52
Junctions	13
Outfalls	9
Flow Diversions	0
Inlets	30
Storage Nodes	0
Links	67
Channels	22
Pipes	45
Pumps	0
Orifices	0
Weirs	0
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	100 year(s)

Subbasin Summary

SN	Subbasin ID	Area	Weighted Runoff Coefficient	Total Rainfall	Total Runoff	Total Runoff Volume	Peak Runoff	Time of Concentration
		(ac)		(in)	(in)	(ac-in)	(cfs)	(days hh:mm:ss)
1	Sub-AD-49	4.59	0.7000	2.32	1.62	7.44	16.97	0 00:26:24
2	Sub-CB-10	0.54	0.7000	1.63	1.14	0.62	2.58	0 00:14:15
3	Sub-CB-11	0.44	0.7000	1.36	0.95	0.42	2.48	0 00:10:06
4	Sub-CB-12	0.70	0.7000	1.73	1.21	0.85	3.19	0 00:15:59
5	Sub-CB-13	0.37	0.7000	1.36	0.95	0.35	2.08	0 00:10:09
6	Sub-CB-14	0.87	0.7000	1.48	1.04	0.90	4.50	0 00:12:04
7	Sub-CB-15	1.24	0.7000	1.69	1.18	1.47	5.74	0 00:15:19
8	Sub-CB-16	0.30	0.7000	1.30	0.91	0.27	1.75	0 00:09:21
9	Sub-CB-17	0.25	0.7000	1.24	0.87	0.22	1.53	0 00:08:26
10	Sub-CB-18	0.76	0.7000	1.64	1.15	0.87	3.58	0 00:14:44
11	Sub-CB-2	0.15	0.7000	1.09	0.76	0.11	1.03	0 00:06:39
12	Sub-CB-20	0.61	0.7000	1.33	0.93	0.57	3.51	0 00:09:37
13	Sub-CB-21	0.81	0.7000	1.78	1.25	1.01	3.60	0 00:16:54
14	Sub-CB-22	1.23	0.7000	1.92	1.35	1.66	5.18	0 00:19:13
15	Sub-CB-23	0.85	0.7000	1.75	1.22	1.04	3.85	0 00:16:07
16	Sub-CB-25	0.66	0.7000	1.06	0.75	0.49	4.66	0 00:06:15
17	Sub-CB-26	0.41	0.7000	0.93	0.65	0.27	3.21	0 00:05:00
18	Sub-CB-28	0.35	0.7000	1.63	1.14	0.40	1.67	0 00:14:16
19	Sub-CB-29	0.32	0.7000	1.77	1.24	0.40	1.43	0 00:16:41
20	Sub-CB-30	0.44	0.7000	1.82	1.27	0.57	1.96	0 00:17:16
21	Sub-CB-31	0.28	0.5000	1.60	0.80	0.22	0.97	0 00:13:48
22	Sub-CB-32	0.24	0.7000	1.71	1.20	0.29	1.12	0 00:15:37
23	Sub-CB-33	0.45	0.7000	1.75	1.23	0.55	2.03	0 00:16:22
24	Sub-CB-37	0.27	0.7000	1.69	1.18	0.32	1.26	0 00:15:16
25	Sub-CB-38	0.38	0.7000	1.51	1.06	0.40	1.93	0 00:12:34
26	Sub-CB-40	0.63	0.7000	1.31	0.92	0.58	3.63	0 00:09:30
27	Sub-CB-43	0.57	0.7000	1.78	1.25	0.71	2.53	0 00:16:54
28	Sub-CB-44	0.48	0.7000	1.81	1.26	0.61	2.12	0 00:17:09
29	Sub-CB-45	0.24	0.7000	1.18	0.83	0.20	1.52	0 00:07:51
30	Sub-CB-51	0.76	0.7000	2.07	1.45	1.10	3.05	0 00:21:40
31	Sub-CB-9	0.54	0.7000	1.88	1.31	0.71	2.33	0 00:18:21
32	Sub-SDPIPE-35	0.16	0.7000	1.40	0.98	0.16	0.88	0 00:10:36
33	Sub-SDPIPE-36	1.73	0.7000	2.27	1.59	2.75	6.51	0 00:25:20

Node Summary

SN	Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Initial Water Elevation (ft)	Surcharge Elevation (ft)	Ponded Area (ft²)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	M Freeboa Attain (
1	AD-49	Junction	468.50	472.65	468.50	472.65	10.00	30.96	470.75	0.00	1.
2	CB-47	Junction	471.00	479.32	471.00	479.32	10.00	18.44	475.71	0.00	3.
3	CB-8	Junction	468.50	474.72	468.50	474.72	10.00	4.65	469.21	0.00	5.
4	JB	Junction	462.30	468.30	462.30	468.30	0.00	1.42	462.78	0.00	5.
5	JB-19	Junction	502.00	509.27	502.00	509.27	10.00	19.21	502.63	0.00	6.
6	JB-24	Junction	526.00	535.80	526.00	535.80	10.00	8.63	526.55	0.00	9.
7	JB-27	Junction	534.00	539.80	534.00	539.80	10.00	6.53	534.59	0.00	5.
8	JB-39	Junction	510.00	521.73	510.00	521.73	10.00	3.33	510.36	0.00	11.
9	JB-4	Junction	462.74	473.05	462.74	473.05	10.00	0.00	462.74	0.00	10.
10	JB-SDPIPE35	Junction	462.75	464.00	462.75	0.00	100.00	1.42	463.17	0.00	1.
11	JB-SDPIPE36	Junction	441.30	442.80	441.30	0.00	1000.00	6.51	442.52	0.00	0.
12	8-Jun	Junction	538.50	544.50	538.50	544.50	0.00	1.95	539.17	0.00	5.
13	WIER-6	Junction	468.00	472.50	468.00	472.50	10.00	0.00	468.00	0.00	4.
14	FES-1	Outfall	461.00					2.45	461.39		
15	FES-3	Outfall	538.50					1.84	539.01		
16	FES-36	Outfall	472.00					9.43	472.57		
17	FES-46	Outfall	468.25					30.96	469.77		
18	FES-48	Outfall	468.00					18.44	469.20		
19	FES-7	Outfall	468.00					4.65	468.56		
20	3-Jun	Outfall	0.00					0.02	0.02		
21	OUT-SDPIPE35	Outfall	462.25					1.39	462.50		
22	Out-SDPIPE-36	Outfall	441.00					6.50	441.94		

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
1	Link-05	Pipe	CB-16	CB-13	406.55	517.00	503.00	3.4400	18.000	0.0150	0.13	15.32	0.01	3.41	0.
2	Link-08	Pipe	JB-SDPIPE35	JB	30.00	462.75	462.25	1.6700	15.000	0.0120	1.41	8.57	0.16	3.58	0.
3	Link-30	Pipe	CB-51	JB-SDPIPE35	30.83	462.08	462.75	-2.1800	18.000	0.0150	1.24	28.73	0.04	5.12	0.
4	Link-33	Pipe	CB-2	FES-1	33.60	461.75	461.00	2.2300	24.000	0.0150	2.45	29.29	0.08	5.06	0.
5	Link-37	Pipe	JB	OUT-SDPIPE35	0.96	462.30	462.25	5.2100	15.000	0.0120	1.39	15.97	0.09	4.65	0.
6	Link-39	Pipe	8-Jun	FES-3	0.36	538.50	538.50	0.0000	18.000	0.0130	1.84	5.54	0.33	2.85	0.
7	L-SDPIPE-8	Pipe	CB-47	FES-48	70.00	471.00	468.00	4.2900	18.000	0.0150	18.44	18.85	0.98	11.00	1.
8	SDPIPE-10	Pipe	CB-13	CB-11	187.03	493.00	486.75	3.3400	18.000	0.0120	15.20	20.80	0.73	11.70	1.
9	SDPIPE-11	Pipe	CB-14	CB-13	66.59	502.00	498.50	5.2600	18.000	0.0130	13.85	24.08	0.58	11.84	0.
10	SDPIPE-12	Pipe	CB-15	CB-14	297.35	513.00	503.00	3.3600	18.000	0.0120	7.82	20.87	0.37	10.53	0.
11	SDPIPE-13	Pipe	CB-16	CB-15	64.00	514.00	513.00	1.5600	18.000	0.0130	4.50	13.13	0.34	5.78	0.
12	SDPIPE-14	Pipe	CB-17	CB-16	322.00	528.00	514.00	4.3500	18.000	0.0130	3.04	21.90	0.14	5.74	0.
13	SDPIPE-15	Pipe	CB-18	CB-17	42.43	529.00	528.00	2.3600	18.000	0.0130	2.43	16.13	0.15	6.11	0.
14	SDPIPE-16	Pipe	CB-20	JB-19	131.65	504.25	502.00	1.7100	24.000	0.0120	19.21	32.04	0.60	11.15	1.
15	SDPIPE-17	Pipe	CB-21	CB-20	32.94	508.50	508.00	1.5200	24.000	0.0120	18.60	30.19	0.62	7.82	1.
16	SDPIPE-18	Pipe	CB-22	CB-21	77.00	510.00	508.50	1.9500	18.000	0.0120	3.71	15.88	0.23	3.70	1.
17	SDPIPE-19	Pipe	CB-23	CB-21	75.59	509.50	508.50	1.3200	18.000	0.0120	3.34	13.09	0.26	3.02	1.
18	SDPIPE-2	Pipe	JB-4	CB-2	99.00	462.74	461.75	1.0000	24.000	0.0130	0.00	22.62	0.00	0.00	0.
19	SDPIPE-20	Pipe	JB-24	CB-21	256.11	526.00	508.50	6.8300	18.000	0.0120	8.62	29.75	0.29	7.70	1.
20	SDPIPE-21	Pipe	CB-25	JB-24	69.87	527.00	526.00	1.4300	18.000	0.0120	8.63	13.61	0.63	8.35	0.
21	SDPIPE-22	Pipe	CB-26	CB-25	33.08	530.50	527.00	10.5800	18.000	0.0130	1.77	34.17	0.05	2.29	0.
22	SDPIPE-23	Pipe	JB-27	CB-25	222.35	534.00	527.00	3.1500	18.000	0.0120	6.52	20.19	0.32	6.95	0.
23	SDPIPE-24	Pipe	CB-28	JB-27	73.59	537.00	534.00	4.0800	18.000	0.0130	6.53	21.21	0.31	9.31	0.
24	SDPIPE-25	Pipe	CB-32	CB-31	74.63	546.00	544.50	2.0100	18.000	0.0130	1.10	14.89	0.07	4.69	0.
25	SDPIPE-25 (1)	Pipe	CB-29	CB-28	44.82	537.50	537.00	1.1200	18.000	0.0130	4.99	11.09	0.45	5.50	0.
26	SDPIPE-25 (12)	Pipe	CB-43	CB-37	42.57	484.50	484.00	1.1700	18.000	0.0130	2.28	11.38	0.20	4.48	0.
27	SDPIPE-25 (13)	Pipe	CB-44	CB-38	33.23	496.00	494.50	4.5100	18.000	0.0130	2.34	22.32	0.10	5.96	0.
28	SDPIPE-25 (14)	Pipe	CB-45	JB-39	46.24	515.00	514.00	2.1600	18.000	0.0130	1.31	15.45	0.08	4.91	0.

Link Summary

SN	Element ID	Element Type	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Peak Fl Dep
					(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)		(ft/sec)	
46	Link-01	Channel	CB-30	CB-29	151.74	547.90	542.86	3.3200	3.960	0.0320	0.20	5.85	0.03	1.57	0.
47	Link-02	Channel	CB-28	CB-18	253.20	542.65	534.99	3.0300	3.960	0.0320	0.11	5.59	0.02	0.35	0.
48	Link-03	Channel	CB-18	CB-15	303.55	534.99	520.24	4.8600	3.960	0.0320	1.25	7.51	0.17	1.22	0.
49	Link-04	Channel	CB-15	CB-14	302.16	520.24	513.25	2.3100	3.960	0.0320	2.74	4.19	0.65	1.39	0.
50	Link-06	Channel	CB-13	CB-11	192.70	508.19	490.69	9.0800	3.960	0.0320	0.12	9.68	0.01	0.64	0.
51	Link-07	Channel	CB-12	CB-10	295.35	491.89	474.00	6.0600	3.960	0.0320	1.17	7.90	0.15	0.92	0.
52	Link-09	Channel	CB-17	CB-22	172.84	533.32	517.04	9.4200	3.960	0.0320	0.10	9.88	0.01	0.67	0.
53	Link-10	Channel	CB-22	CB-21	156.96	517.04	515.89	0.7300	3.960	0.0320	1.46	2.67	0.55	0.79	0.
54	Link-11	Channel	CB-23	CB-21	80.56	516.98	515.89	1.3500	3.960	0.0320	0.44	3.74	0.12	0.36	0.
55	Link-12	Channel	CB-45	CB-23	172.11	524.64	516.98	4.4500	3.960	0.0320	0.19	6.78	0.03	2.75	0.
56	Link-13	Channel	CB-40	CB-44	228.53	524.80	507.00	7.7900	3.960	0.0320	1.40	8.96	0.16	3.91	0.
57	Link-14	Channel	CB-44	CB-43	236.24	500.50	482.00	7.8300	3.960	0.0320	0.49	8.97	0.05	1.76	0.
58	Link-15	Channel	CB-38	CB-37	208.04	506.87	490.69	7.7800	3.960	0.0320	0.36	8.96	0.04	2.78	0.
59	Link-16	Channel	CB-37	CB-9	218.60	490.69	474.00	7.6400	3.960	0.0320	0.11	8.87	0.01	0.13	0.
60	Link-17	Channel	CB-43	CB-51	291.31	488.57	465.82	7.8100	3.960	0.0320	0.71	8.97	0.08	1.68	0.
61	Link-18	Channel	CB-10	CB-2	126.47	474.00	465.77	6.5100	3.960	0.0320	0.00	8.19	0.00	0.00	0.
62	Link-19	Channel	CB-33	CB-28	176.20	547.88	542.65	2.9700	3.960	0.0320	0.24	5.53	0.04	1.49	0.
63	Link-20	Channel	CB-11	CB-9	282.13	490.69	474.00	5.9200	3.960	0.0320	0.72	7.81	0.09	0.80	0.
64	Link-24	Channel	CB-29	CB-26	316.29	542.86	535.29	2.3900	3.960	0.0320	0.04	4.97	0.01	0.62	0.
65	Link-28	Channel	CB-32	3-Jun	204.60	549.87	0.00	268.7500	3.960	0.0320	0.02	52.65	0.00	4.51	0.
66	Link-38	Channel	CB-2	JB	44.72	465.77	462.30	7.7600	3.960	0.0320	0.04	8.95	0.00	0.08	0.
67	Link-40	Channel	CB-31	8-Jun	97.13	549.37	538.50	11.1900	3.960	0.0320	0.00	10.74	0.00	0.00	0.

Inlet Summary

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Initial Water Elevation (ft)	Ponded Area (ft^2)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutt Sprea during Pea Flo (f
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	469.43	10.00	3.54	N/A	N/A	N/A	8.50	8.8
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	481.00	N/A	2.56	1.78	0.78	69.65	8.50	5.7
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	485.50	N/A	3.19	2.02	1.17	63.20	8.50	6.2
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	493.00	N/A	2.20	1.98	0.22	89.89	8.50	6.9
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	502.00	10.00	6.25	N/A	N/A	N/A	8.50	12.2
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	513.00	N/A	6.90	3.29	3.60	47.77	8.50	8.9
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	514.00	N/A	1.75	1.51	0.24	86.23	8.50	5.3
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	528.00	N/A	1.53	1.38	0.15	89.89	8.50	5.1
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	529.00	N/A	3.69	2.37	1.32	64.19	8.50	7.1
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	461.75	N/A	1.03	0.99	0.03	96.61	8.50	4.2
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	504.25	10.00	3.51	N/A	N/A	N/A	8.50	8.3
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	508.50	10.00	5.10	N/A	N/A	N/A	8.50	10.6
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	510.00	N/A	5.19	3.72	1.47	71.65	8.50	7.6
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	509.50	N/A	3.85	3.41	0.44	88.55	8.50	7.8
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	527.00	10.00	4.66	N/A	N/A	N/A	8.50	10.0
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	530.50	10.00	3.21	N/A	N/A	N/A	8.50	7.8
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	537.00	N/A	1.82	1.66	0.16	91.08	8.50	6.0
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	537.50	N/A	1.60	1.51	0.09	94.26	8.50	5.8
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	543.50	N/A	1.96	1.74	0.21	89.17	8.50	6.2
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	544.50	N/A	0.97	0.97	0.00	100.00	8.50	4.7
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	546.00	N/A	1.12	1.12	0.00	99.80	8.50	5.0
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	544.00	N/A	2.03	1.79	0.24	88.15	8.50	6.3
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	478.50	N/A	1.51	1.32	0.19	87.09	8.50	4.8
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	494.50	N/A	1.93	1.54	0.39	79.95	8.50	5.3
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	515.00	N/A	3.63	2.23	1.40	61.34	8.50	6.7
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	484.50	N/A	3.00	2.00	0.99	66.83	8.50	6.2
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	496.00	N/A	2.58	1.84	0.75	71.13	8.50	5.9
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	515.00	N/A	1.52	1.32	0.20	86.92	8.50	4.8

Subbasin Hydrology

Subbasin : Sub-AD-49

Input Data

Area (ac) 4.59
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	4.59	-	0.7
Composite Area & Weighted Runoff Coeff.	4.59		0.7

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	299.3	0	0
Slope (%) :	8.53	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	24.81	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	184.58	0	0
Slope (%) :	14.79	0	0
Surface Type :	Woodland	Paved	Paved
Velocity (ft/sec) :	1.92	0	0
Computed Flow Time (min) :	1.6	0	0

Total TOC (min) 26.41

Subbasin : Sub-CB-10

Input Data

Area (ac) 0.54
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	62.75	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.31	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	287	0	0
Slope (%) :	6.16	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.05	0	0
Computed Flow Time (min) :	0.95	0	0

Total TOC (min) 14.26

Subbasin : Sub-CB-11

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	87.01933392	0	0
Slope (%) :	4.23334562	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.15	0	0
Computed Flow Time (min) :	9.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	144.6117952	0	0
Slope (%) :	9.33800334	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	6.21	0	0
Computed Flow Time (min) :	0.39	0	0

Total TOC (min) 10.10

Subbasin : Sub-CB-12

Input Data

Area (ac) 0.7
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.7	-	0.7
Composite Area & Weighted Runoff Coeff.	0.7		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.34441067	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.92	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	290.7440621	0	0
Slope (%) :	7.85301046	0	0
Surface Type :	Unpaved	Paved	Paved
Velocity (ft/sec) :	4.52	0	0
Computed Flow Time (min) :	1.07	0	0

Total TOC (min) 15.99

Subbasin : Sub-CB-13

Input Data

Area (ac) 0.37
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.7
Composite Area & Weighted Runoff Coeff.	0.37		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.99	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	326.6	0	0
Slope (%) :	3.5	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.8	0	0
Computed Flow Time (min) :	1.43	0	0

Total TOC (min) 10.16

Subbasin : Sub-CB-14

Input Data

Area (ac) 0.87
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.87	-	0.7
Composite Area & Weighted Runoff Coeff.	0.87		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	133.09	0	0
Slope (%) :	7.48	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	10.86	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	224.63	0	0
Slope (%) :	2.32	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.1	0	0
Computed Flow Time (min) :	1.21	0	0

Total TOC (min) 12.07

Subbasin : Sub-CB-15

Input Data

Area (ac) 1.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.24	-	0.7
Composite Area & Weighted Runoff Coeff.	1.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	129.63	0	0
Slope (%) :	3.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	13.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	369.75	0	0
Slope (%) :	4.45	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	1.44	0	0

Total TOC (min) 15.32

Subbasin : Sub-CB-16

Input Data

Area (ac) 0.3
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.3	-	0.7
Composite Area & Weighted Runoff Coeff.	0.3		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	35.63	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.47	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.56	0	0
Slope (%) :	4.29	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.21	0	0
Computed Flow Time (min) :	0.89	0	0

Total TOC (min) 9.36

Subbasin : Sub-CB-17

Input Data

Area (ac) 0.25
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.25	-	0.7
Composite Area & Weighted Runoff Coeff.	0.25		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	30.83	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	7.54	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221.33	0	0
Slope (%) :	4.052	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.09	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 8.44

Subbasin : Sub-CB-18

Input Data

Area (ac) 0.76
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	169.6828048	0	0
Slope (%) :	5.92476783	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	14.48	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.81153859	0	0
Slope (%) :	5.8473515	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.92	0	0
Computed Flow Time (min) :	0.26	0	0

Total TOC (min) 14.74

Subbasin : Sub-CB-2

Input Data

Area (ac) 0.15
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.15	-	0.7
Composite Area & Weighted Runoff Coeff.	0.15		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	49.14	0	0
Slope (%) :	3.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	6.63	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	7.8	0	0
Slope (%) :	7.9	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 6.65

Subbasin : Sub-CB-20

Input Data

Area (ac) 0.61
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.61	-	0.7
Composite Area & Weighted Runoff Coeff.	0.61		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.97	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.07	0	0
Computed Flow Time (min) :	8.72	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	228.24	0	0
Slope (%) :	4.33669128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.23	0	0
Computed Flow Time (min) :	0.9	0	0

Total TOC (min) 9.62

Subbasin : Sub-CB-21

Input Data

Area (ac) 0.81
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.81	-	0.7
Composite Area & Weighted Runoff Coeff.	0.81		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	225.91	0	0
Slope (%) :	7.69	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.23	0	0
Computed Flow Time (min) :	16.41	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	74	0	0
Slope (%) :	1.44	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.44	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-22

Input Data

Area (ac) 1.23
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.23	-	0.7
Composite Area & Weighted Runoff Coeff.	1.23		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	227.07	0	0
Slope (%) :	5.59	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	18.71	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	150.89	0	0
Slope (%) :	5.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.87	0	0
Computed Flow Time (min) :	0.52	0	0

Total TOC (min) 19.23

Subbasin : Sub-CB-23

Input Data

Area (ac) 0.85
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.85	-	0.7
Composite Area & Weighted Runoff Coeff.	0.85		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	226.71	0	0
Slope (%) :	8.51	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.24	0	0
Computed Flow Time (min) :	15.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	75.07	0	0
Slope (%) :	3.73	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.93	0	0
Computed Flow Time (min) :	0.32	0	0

Total TOC (min) 16.12

Subbasin : Sub-CB-25

Input Data

Area (ac) 0.66
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.7
Composite Area & Weighted Runoff Coeff.	0.66		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	36.69	0	0
Slope (%) :	3.98	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.12	0	0
Computed Flow Time (min) :	4.99	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	218	0	0
Slope (%) :	1.9995265	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.87	0	0
Computed Flow Time (min) :	1.26	0	0

Total TOC (min) 6.25

Subbasin : Sub-CB-26

Input Data

Area (ac) 0.41
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.41	-	0.7
Composite Area & Weighted Runoff Coeff.	0.41		0.7

Time of Concentration

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	391.04	0	0
Slope (%) :	2.05	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	2.91	0	0
Computed Flow Time (min) :	2.24	0	0

Total TOC (min) 2.24

Subbasin : Sub-CB-28

Input Data

Area (ac) 0.35
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.7
Composite Area & Weighted Runoff Coeff.	0.35		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.21	0	0
Slope (%) :	1.57	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.1	0	0
Computed Flow Time (min) :	13.8	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	96.33	0	0
Slope (%) :	2.66	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.32	0	0
Computed Flow Time (min) :	0.48	0	0

Total TOC (min) 14.28

Subbasin : Sub-CB-29

Input Data

Area (ac) 0.32
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.32	-	0.7
Composite Area & Weighted Runoff Coeff.	0.32		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	79.19359172	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.04	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	145.6546025	0	0
Slope (%) :	3.30814128	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.7	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 16.69

Subbasin : Sub-CB-30

Input Data

Area (ac) 0.44
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.7
Composite Area & Weighted Runoff Coeff.	0.44		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.06466793	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.18	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.4355599	0	0
Slope (%) :	2.37620836	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	1.09	0	0

Total TOC (min) 17.27

Subbasin : Sub-CB-31

Input Data

Area (ac) 0.28
Weighted Runoff Coefficient 0.5

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.5
Composite Area & Weighted Runoff Coeff.	0.28		0.5

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	61.18415656	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	13.05	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	147.427748	0	0
Slope (%) :	2.48368186	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.2	0	0
Computed Flow Time (min) :	0.77	0	0

Total TOC (min) 13.81

Subbasin : Sub-CB-32

Input Data

Area (ac) 0.24
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	72.82652581	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	123.3068858	0	0
Slope (%) :	2.56696146	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.26	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 15.63

Subbasin : Sub-CB-33

Input Data

Area (ac) 0.45
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.7
Composite Area & Weighted Runoff Coeff.	0.45		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	74.8476514	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	15.33	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	205.0538871	0	0
Slope (%) :	2.54735015	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	3.24	0	0
Computed Flow Time (min) :	1.05	0	0

Total TOC (min) 16.38

Subbasin : Sub-CB-37

Input Data

Area (ac) 0.27
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.27	-	0.7
Composite Area & Weighted Runoff Coeff.	0.27		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	70.96	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	14.69	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	204.13	0	0
Slope (%) :	7.95	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.59	0	0

Total TOC (min) 15.28

Subbasin : Sub-CB-38

Input Data

Area (ac) 0.38
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.7
Composite Area & Weighted Runoff Coeff.	0.38		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	56.31288611	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	12.21	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	122.2285539	0	0
Slope (%) :	7.88883657	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.71	0	0
Computed Flow Time (min) :	0.36	0	0

Total TOC (min) 12.57

Subbasin : Sub-CB-40

Input Data

Area (ac) 0.63
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.63	-	0.7
Composite Area & Weighted Runoff Coeff.	0.63		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.47168729	0	0
Slope (%) :	4.83233018	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.16	0	0
Computed Flow Time (min) :	8.82	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	225.6819013	0	0
Slope (%) :	7.22299665	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.69	0	0

Total TOC (min) 9.51

Subbasin : Sub-CB-43

Input Data

Area (ac) 0.57
Weighted Runoff Coefficient 0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.7
Composite Area & Weighted Runoff Coeff.	0.57		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	80.44365706	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.24	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	230.963887	0	0
Slope (%) :	7.93293268	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.67	0	0

Total TOC (min) 16.91

Subbasin : Sub-CB-44

Input Data

Area (ac)	0.48
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.48	-	0.7
Composite Area & Weighted Runoff Coeff.	0.48		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	82.23540495	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.08	0	0
Computed Flow Time (min) :	16.53	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	215.6393568	0	0
Slope (%) :	7.93956492	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.63	0	0

Total TOC (min) 17.16

Subbasin : Sub-CB-45

Input Data

Area (ac)	0.24
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.24	-	0.7
Composite Area & Weighted Runoff Coeff.	0.24		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	26.67	0	0
Slope (%) :	0.84	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.06	0	0
Computed Flow Time (min) :	7.2	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	221	0	0
Slope (%) :	7.58	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.6	0	0
Computed Flow Time (min) :	0.66	0	0

Total TOC (min) 7.86

Subbasin : Sub-CB-51

Input Data

Area (ac)	0.76
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.76	-	0.7
Composite Area & Weighted Runoff Coeff.	0.76		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	109.87	0	0
Slope (%) :	1	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	20.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	284.96	0	0
Slope (%) :	7.93363114	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	5.73	0	0
Computed Flow Time (min) :	0.83	0	0

Total TOC (min) 21.67

Subbasin : Sub-CB-9

Input Data

Area (ac)	0.54
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.54	-	0.7
Composite Area & Weighted Runoff Coeff.	0.54		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	94.51887751	0	0
Slope (%) :	1.1562359	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.09	0	0
Computed Flow Time (min) :	17.43	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	272.2215693	0	0
Slope (%) :	5.96622322	0	0
Surface Type :	Paved	Paved	Paved
Velocity (ft/sec) :	4.97	0	0
Computed Flow Time (min) :	0.91	0	0

Total TOC (min) 18.35

Subbasin : Sub-SDPIPE-35

Input Data

Area (ac)	0.16
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.16	-	0.7
Composite Area & Weighted Runoff Coeff.	0.16		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	117.01	0	0
Slope (%) :	6.14	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.18	0	0
Computed Flow Time (min) :	10.61	0	0

Total TOC (min) 10.61

Subbasin : Sub-SDPIPE-36

Input Data

Area (ac)	1.73
Weighted Runoff Coefficient	0.7

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.73	-	0.7
Composite Area & Weighted Runoff Coeff.	1.73		0.7

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.3	0	0
Flow Length (ft) :	299.51	0	0
Slope (%) :	6	0	0
2 yr, 24 hr Rainfall (in) :	4.34	0	0
Velocity (ft/sec) :	0.22	0	0
Computed Flow Time (min) :	22.7	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	546	0	0
Slope (%) :	5.3	0	0
Surface Type :	Grassed waterway	Unpaved	Unpaved
Velocity (ft/sec) :	3.45	0	0
Computed Flow Time (min) :	2.64	0	0

Total TOC (min) 25.34

Junction Input

SN	Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Ground/Rim (Max) Offset (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)	Surcharge Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft²)	Minimum Pipe Cover (in)
1	AD-49	468.50	472.65	4.15	468.50	0.00	472.65	0.00	10.00	19.85
2	CB-47	471.00	479.32	8.32	471.00	0.00	479.32	0.00	10.00	81.81
3	CB-8	468.50	474.72	6.22	468.50	0.00	474.72	0.00	10.00	50.59
4	JB	462.30	468.30	6.00	462.30	0.00	468.30	0.00	0.00	57.00
5	JB-19	502.00	509.27	7.27	502.00	0.00	509.27	0.00	10.00	63.30
6	JB-24	526.00	535.80	9.80	526.00	0.00	535.80	0.00	10.00	99.54
7	JB-27	534.00	539.80	5.80	534.00	0.00	539.80	0.00	10.00	51.59
8	JB-39	510.00	521.73	11.73	510.00	0.00	521.73	0.00	10.00	74.75
9	JB-4	462.74	473.05	10.31	462.74	0.00	473.05	0.00	10.00	99.76
10	JB-SDPIPE35	462.75	464.00	1.25	462.75	0.00	0.00	-464.00	100.00	0.00
11	JB-SDPIPE36	441.30	442.80	1.50	441.30	0.00	0.00	-442.80	1000.00	0.00
12	8-Jun	538.50	544.50	6.00	538.50	0.00	544.50	0.00	0.00	54.00
13	WIER-6	468.00	472.50	4.50	468.00	0.00	472.50	0.00	10.00	30.00

Junction Results

SN	Element ID	Peak Inflow (cfs)	Peak Lateral Inflow (cfs)	Max HGL Elevation Attained (ft)	Max HGL Depth Attained (ft)	Max Surcharge Depth Attained (ft)	Min Freeboard Attained (ft)	Average HGL Elevation Attained (ft)	Average HGL Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Oc (days
1	AD-49	30.96	16.97	470.75	2.25	0.00	1.91	468.59	0.09	0 00:19	
2	CB-47	18.44	0.00	475.71	4.71	0.00	3.61	471.05	0.05	0 00:10	
3	CB-8	4.65	0.00	469.21	0.71	0.00	5.51	468.52	0.02	0 00:19	
4	JB	1.42	0.00	462.78	0.48	0.00	5.52	462.32	0.02	0 00:17	
5	JB-19	19.21	0.00	502.63	0.63	0.00	6.65	502.02	0.02	0 00:17	
6	JB-24	8.63	0.00	526.55	0.55	0.00	9.24	526.02	0.02	0 00:07	
7	JB-27	6.53	0.00	534.59	0.59	0.00	5.21	534.02	0.02	0 00:17	
8	JB-39	3.33	0.00	510.36	0.36	0.00	11.37	510.01	0.01	0 00:09	
9	JB-4	0.00	0.00	462.74	0.00	0.00	10.31	462.74	0.00	0 00:00	
10	JB-SDPIPE35	1.42	0.88	463.17	0.42	0.00	1.08	462.76	0.01	0 00:17	
11	JB-SDPIPE36	6.51	6.51	442.52	1.22	0.00	0.28	441.34	0.04	0 00:25	
12	8-Jun	1.95	0.00	539.17	0.67	0.00	5.33	538.52	0.02	0 00:16	
13	WIER-6	0.00	0.00	468.00	0.00	0.00	4.50	468.00	0.00	0 00:00	

Channel Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Shape	Height (ft)	Width (ft)	Manning's Roughness	Er
1	Link-01	151.74	547.90	4.40	542.86	5.36	5.04	3.3200	User-Defined	0.330	14.000	0.0320	
2	Link-02	253.20	542.65	5.65	534.99	5.99	7.66	3.0300	User-Defined	0.330	14.000	0.0320	
3	Link-03	303.55	534.99	5.99	520.24	7.24	14.75	4.8600	User-Defined	0.330	14.000	0.0320	
4	Link-04	302.16	520.24	7.24	513.25	11.25	6.99	2.3100	User-Defined	0.330	14.000	0.0320	
5	Link-06	192.70	508.19	15.19	490.69	9.69	17.50	9.0800	User-Defined	0.330	14.000	0.0320	
6	Link-07	295.35	491.89	6.39	474.00	4.56	17.89	6.0600	User-Defined	0.330	14.000	0.0320	
7	Link-09	172.84	533.32	5.32	517.04	7.04	16.28	9.4200	User-Defined	0.330	14.000	0.0320	
8	Link-10	156.96	517.04	7.04	515.89	7.39	1.15	0.7300	User-Defined	0.330	14.000	0.0320	
9	Link-11	80.56	516.98	7.48	515.89	7.39	1.09	1.3500	User-Defined	0.330	14.000	0.0320	
10	Link-12	172.11	524.64	9.64	516.98	7.48	7.67	4.4500	User-Defined	0.330	14.000	0.0320	
11	Link-13	228.53	524.80	9.80	507.00	11.00	17.80	7.7900	User-Defined	0.330	14.000	0.0320	
12	Link-14	236.24	500.50	4.50	482.00	-2.50	18.50	7.8300	User-Defined	0.330	14.000	0.0320	
13	Link-15	208.04	506.87	12.37	490.69	12.19	16.18	7.7800	User-Defined	0.330	14.000	0.0320	
14	Link-16	218.60	490.69	12.19	474.00	4.90	16.69	7.6400	User-Defined	0.330	14.000	0.0320	
15	Link-17	291.31	488.57	4.07	465.82	3.74	22.75	7.8100	User-Defined	0.330	14.000	0.0320	
16	Link-18	126.47	474.00	4.56	465.77	4.02	8.23	6.5100	User-Defined	0.330	14.000	0.0320	
17	Link-19	176.20	547.88	3.88	542.65	5.65	5.23	2.9700	User-Defined	0.330	14.000	0.0320	
18	Link-20	282.13	490.69	9.69	474.00	4.90	16.70	5.9200	User-Defined	0.330	14.000	0.0320	
19	Link-24	316.29	542.86	5.36	535.29	4.79	7.57	2.3900	User-Defined	0.330	14.000	0.0320	
20	Link-28	204.60	549.87	3.87	0.00	0.00	549.87	268.7500	User-Defined	0.330	14.000	0.0320	
21	Link-38	44.72	465.77	4.02	462.30	0.00	3.47	7.7600	User-Defined	0.330	14.000	0.0320	
22	Link-40	97.13	549.37	4.87	538.50	0.00	10.87	11.1900	User-Defined	0.330	14.000	0.0320	

Channel Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Time Surcharged	Froude Numbe
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(min)	
1	Link-01	0.20	0 00:17	5.85	0.03	1.57	1.61	0.08	0.23	0.00	
2	Link-02	0.11	0 00:14	5.59	0.02	0.35	12.06	0.12	0.36	0.00	
3	Link-03	1.25	0 00:14	7.51	0.17	1.22	4.15	0.22	0.67	0.00	
4	Link-04	2.74	0 00:15	4.19	0.65	1.39	3.62	0.31	0.93	0.00	
5	Link-06	0.12	0 00:11	9.68	0.01	0.64	5.02	0.09	0.29	0.00	
6	Link-07	1.17	0 00:16	7.90	0.15	0.92	5.35	0.24	0.74	0.00	
7	Link-09	0.10	0 00:09	9.88	0.01	0.67	4.30	0.14	0.42	0.00	
8	Link-10	1.46	0 00:19	2.67	0.55	0.79	3.31	0.30	0.90	0.00	
9	Link-11	0.44	0 00:16	3.74	0.12	0.36	3.73	0.24	0.72	0.00	
10	Link-12	0.19	0 00:08	6.78	0.03	2.75	1.04	0.08	0.24	0.00	
11	Link-13	1.40	0 00:09	8.96	0.16	3.91	0.97	0.13	0.40	0.00	
12	Link-14	0.49	0 00:17	8.97	0.05	1.76	2.24	0.12	0.35	0.00	
13	Link-15	0.36	0 00:13	8.96	0.04	2.78	1.25	0.08	0.23	0.00	
14	Link-16	0.11	0 00:15	8.87	0.01	0.13	28.03	0.19	0.59	0.00	
15	Link-17	0.71	0 00:17	8.97	0.08	1.68	2.89	0.14	0.43	0.00	
16	Link-18	0.00	0 00:00	8.19	0.00	0.00		0.01	0.04	0.00	
17	Link-19	0.24	0 00:16	5.53	0.04	1.49	1.97	0.08	0.25	0.00	
18	Link-20	0.72	0 00:10	7.81	0.09	0.80	5.88	0.22	0.68	0.00	
19	Link-24	0.04	0 00:18	4.97	0.01	0.62	8.50	0.17	0.50	0.00	
20	Link-28	0.02	0 00:15	52.65	0.00	4.51	0.76	0.01	0.04	0.00	
21	Link-38	0.04	0 00:06	8.95	0.00	0.08	9.32	0.18	0.54	0.00	
22	Link-40	0.00	0 00:00	10.74	0.00	0.00		0.17	0.50	0.00	

Pipe Input

SN	Element ID	Length (ft)	Inlet Invert Elevation (ft)	Inlet Invert Offset (ft)	Outlet Invert Elevation (ft)	Outlet Invert Offset (ft)	Total Drop (ft)	Average Slope (%)	Pipe Shape	Pipe Diameter or Height (in)	Pipe Width (in)	Mai Roug
1	Link-05	406.55	517.00	3.00	503.00	10.00	14.00	3.4400	CIRCULAR	18.000	18.000	
2	Link-08	30.00	462.75	0.00	462.25	-0.05	0.50	1.6700	CIRCULAR	15.000	15.000	
3	Link-30	30.83	462.08	0.00	462.75	0.00	-0.67	-2.1800	CIRCULAR	18.000	18.000	
4	Link-33	33.60	461.75	0.00	461.00	0.00	0.75	2.2300	CIRCULAR	24.000	24.000	
5	Link-37	0.96	462.30	0.00	462.25	0.00	0.05	5.2100	CIRCULAR	15.000	15.000	
6	Link-39	0.36	538.50	0.00	538.50	0.00	0.00	0.0000	CIRCULAR	18.000	18.000	
7	L-SDPIPE-8	70.00	471.00	0.00	468.00	0.00	3.00	4.2900	CIRCULAR	18.000	18.000	
8	SDPIPE-10	187.03	493.00	0.00	486.75	5.75	6.25	3.3400	CIRCULAR	18.000	18.000	
9	SDPIPE-11	66.59	502.00	0.00	498.50	5.50	3.50	5.2600	CIRCULAR	18.000	18.000	
10	SDPIPE-12	297.35	513.00	0.00	503.00	1.00	10.00	3.3600	CIRCULAR	18.000	18.000	
11	SDPIPE-13	64.00	514.00	0.00	513.00	0.00	1.00	1.5600	CIRCULAR	18.000	18.000	
12	SDPIPE-14	322.00	528.00	0.00	514.00	0.00	14.00	4.3500	CIRCULAR	18.000	18.000	
13	SDPIPE-15	42.43	529.00	0.00	528.00	0.00	1.00	2.3600	CIRCULAR	18.000	18.000	
14	SDPIPE-16	131.65	504.25	0.00	502.00	0.00	2.25	1.7100	CIRCULAR	24.000	24.000	
15	SDPIPE-17	32.94	508.50	0.00	508.00	3.75	0.50	1.5200	CIRCULAR	24.000	24.000	
16	SDPIPE-18	77.00	510.00	0.00	508.50	0.00	1.50	1.9500	CIRCULAR	18.000	18.000	
17	SDPIPE-19	75.59	509.50	0.00	508.50	0.00	1.00	1.3200	CIRCULAR	18.000	18.000	
18	SDPIPE-2	99.00	462.74	0.00	461.75	0.00	0.99	1.0000	CIRCULAR	24.000	24.000	
19	SDPIPE-20	256.11	526.00	0.00	508.50	0.00	17.50	6.8300	CIRCULAR	18.000	18.000	
20	SDPIPE-21	69.87	527.00	0.00	526.00	0.00	1.00	1.4300	CIRCULAR	18.000	18.000	
21	SDPIPE-22	33.08	530.50	0.00	527.00	0.00	3.50	10.5800	CIRCULAR	18.000	18.000	
22	SDPIPE-23	222.35	534.00	0.00	527.00	0.00	7.00	3.1500	CIRCULAR	18.000	18.000	
23	SDPIPE-24	73.59	537.00	0.00	534.00	0.00	3.00	4.0800	CIRCULAR	18.000	18.000	
24	SDPIPE-25	74.63	546.00	0.00	544.50	0.00	1.50	2.0100	CIRCULAR	18.000	18.000	
25	SDPIPE-25 (1)	44.82	537.50	0.00	537.00	0.00	0.50	1.1200	CIRCULAR	18.000	18.000	
26	SDPIPE-25 (12)	42.57	484.50	0.00	484.00	5.50	0.50	1.1700	CIRCULAR	18.000	18.000	
27	SDPIPE-25 (13)	33.23	496.00	0.00	494.50	0.00	1.50	4.5100	CIRCULAR	18.000	18.000	
28	SDPIPE-25 (14)	46.24	515.00	0.00	514.00	4.00	1.00	2.1600	CIRCULAR	18.000	18.000	
29	SDPIPE-25 (15)	248.75	502.00	0.00	468.50	0.00	33.50	13.4700	CIRCULAR	24.000	24.000	
30	SDPIPE-25 (15) (1)	24.21	468.50	0.00	468.25	0.00	0.25	1.0300	CIRCULAR	30.000	30.000	
31	SDPIPE-25 (17)	32.91	462.08	0.00	461.75	0.00	0.33	1.0000	CIRCULAR	18.000	18.000	
32	SDPIPE-25 (2)	150.25	543.50	0.00	537.50	0.00	6.00	3.9900	CIRCULAR	18.000	18.000	
33	SDPIPE-25 (3)	33.25	544.00	0.00	543.50	0.00	0.50	1.5000	CIRCULAR	18.000	18.000	
34	SDPIPE-25 (6)	87.00	478.50	0.00	472.00	0.00	6.50	7.4700	CIRCULAR	18.000	18.000	
35	SDPIPE-25 (7)	201.54	494.50	0.00	485.00	6.50	9.50	4.7100	CIRCULAR	18.000	18.000	
36	SDPIPE-25 (8)	196.25	510.00	0.00	498.00	3.50	12.00	6.1100	CIRCULAR	18.000	18.000	
37	SDPIPE-25 (9)	51.51	515.00	0.00	514.00	4.00	1.00	1.9400	CIRCULAR	18.000	18.000	
38	SDPIPE-32	95.98	544.50	0.00	538.50	0.00	6.00	6.2500	CIRCULAR	18.000	18.000	
39	SDPIPE-36	30.02	441.30	0.00	441.00	0.00	0.30	1.0000	CIRCULAR	18.000	18.000	
40	SDPIPE-4	112.76	468.00	0.00	462.74	0.00	5.26	4.6600	CIRCULAR	24.000	24.000	
41	SDPIPE-5	41.13	468.50	0.00	468.00	0.00	0.50	1.2200	CIRCULAR	24.000	24.000	
42	SDPIPE-6	55.12	469.10	0.00	468.50	0.00	0.60	1.0900	CIRCULAR	24.000	24.000	
43	SDPIPE-7	33.11	469.43	0.00	469.10	0.00	0.33	1.0100	CIRCULAR	24.000	24.000	
44	SDPIPE-8 (1)	127.57	481.00	0.00	471.00	0.00	10.00	7.8400	CIRCULAR	18.000	18.000	
45	SDPIPE-9	35.93	485.50	0.00	483.00	2.00	2.50	6.9600	CIRCULAR	18.000	18.000	

Pipe Results

SN	Element ID	Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow/ Design Flow Ratio	Peak Flow Velocity	Travel Time	Peak Flow Depth	Peak Flow Depth/ Total Depth Ratio	Total Ti Surcharg
		(cfs)	(days hh:mm)	(cfs)		(ft/sec)	(min)	(ft)		(m
1	Link-05	0.13	0 00:11	15.32	0.01	3.41	1.99	0.08	0.06	0
2	Link-08	1.41	0 00:17	8.57	0.16	3.58	0.14	0.45	0.36	0
3	Link-30	1.24	0 00:21	28.73	0.04	5.12	0.10	0.29	0.20	0
4	Link-33	2.45	0 00:17	29.29	0.08	5.06	0.11	0.42	0.21	0
5	Link-37	1.39	0 00:17	15.97	0.09	4.65	0.00	0.37	0.29	0
6	Link-39	1.84	0 00:16	5.54	0.33	2.85	0.00	0.59	0.39	0
7	L-SDPIPE-8	18.44	0 00:13	18.85	0.98	11.00	0.11	1.35	0.90	0
8	SDPIPE-10	15.20	0 00:13	20.80	0.73	11.70	0.27	1.03	0.69	0
9	SDPIPE-11	13.85	0 00:14	24.08	0.58	11.84	0.09	0.94	0.63	0
10	SDPIPE-12	7.82	0 00:14	20.87	0.37	10.53	0.47	0.66	0.44	0
11	SDPIPE-13	4.50	0 00:10	13.13	0.34	5.78	0.18	0.68	0.46	0
12	SDPIPE-14	3.04	0 00:09	21.90	0.14	5.74	0.93	0.55	0.36	0
13	SDPIPE-15	2.43	0 00:14	16.13	0.15	6.11	0.12	0.42	0.28	0
14	SDPIPE-16	19.21	0 00:17	32.04	0.60	11.15	0.20	1.08	0.54	0
15	SDPIPE-17	18.60	0 00:18	30.19	0.62	7.82	0.07	1.42	0.71	0
16	SDPIPE-18	3.71	0 00:19	15.88	0.23	3.70	0.35	1.00	0.66	0
17	SDPIPE-19	3.34	0 00:16	13.09	0.26	3.02	0.42	1.13	0.75	0
18	SDPIPE-2	0.00	0 00:00	22.62	0.00	0.00		0.23	0.11	0
19	SDPIPE-20	8.62	0 00:07	29.75	0.29	7.70	0.55	1.00	0.67	0
20	SDPIPE-21	8.63	0 00:07	13.61	0.63	8.35	0.14	0.85	0.57	0
21	SDPIPE-22	1.77	0 00:07	34.17	0.05	2.29	0.24	0.69	0.46	0
22	SDPIPE-23	6.52	0 00:17	20.19	0.32	6.95	0.53	0.79	0.52	0
23	SDPIPE-24	6.53	0 00:17	21.21	0.31	9.31	0.13	0.63	0.42	0
24	SDPIPE-25	1.10	0 00:15	14.89	0.07	4.69	0.27	0.29	0.19	0
25	SDPIPE-25 (1)	4.99	0 00:17	11.09	0.45	5.50	0.14	0.77	0.51	0
26	SDPIPE-25 (12)	2.28	0 00:17	11.38	0.20	4.48	0.16	0.50	0.33	0
27	SDPIPE-25 (13)	2.34	0 00:09	22.32	0.10	5.96	0.09	0.47	0.32	0
28	SDPIPE-25 (14)	1.31	0 00:08	15.45	0.08	4.91	0.16	0.31	0.21	0
29	SDPIPE-25 (15)	19.21	0 00:17	89.94	0.21	8.78	0.47	1.31	0.66	0
30	SDPIPE-25 (15) (1)	30.96	0 00:19	45.15	0.69	7.80	0.05	1.88	0.75	0
31	SDPIPE-25 (17)	2.45	0 00:17	10.50	0.23	4.48	0.12	0.52	0.35	0
32	SDPIPE-25 (2)	3.46	0 00:16	22.74	0.15	4.91	0.51	0.63	0.42	0
33	SDPIPE-25 (3)	1.78	0 00:16	12.88	0.14	4.39	0.13	0.42	0.28	0
34	SDPIPE-25 (6)	9.43	0 00:10	31.10	0.30	13.72	0.11	0.62	0.41	0
35	SDPIPE-25 (7)	6.95	0 00:10	24.71	0.28	11.42	0.29	0.56	0.38	0
36	SDPIPE-25 (8)	3.33	0 00:09	28.14	0.12	10.35	0.32	0.36	0.24	0
37	SDPIPE-25 (9)	2.22	0 00:09	14.64	0.15	5.41	0.16	0.42	0.28	0
38	SDPIPE-32	1.95	0 00:14	26.26	0.07	5.14	0.31	0.47	0.31	0
39	SDPIPE-36	6.50	0 00:25	9.10	0.71	4.79	0.10	1.08	0.72	0
40	SDPIPE-4	0.00	0 00:00	48.86	0.00	0.00		0.00	0.00	0
41	SDPIPE-5	4.65	0 00:19	27.02	0.17	5.43	0.13	0.63	0.32	0
42	SDPIPE-6	4.65	0 00:19	25.54	0.18	4.66	0.20	0.71	0.35	0
43	SDPIPE-7	3.24	0 00:16	22.70	0.14	3.55	0.16	0.68	0.34	0
44	SDPIPE-8 (1)	18.44	0 00:13	31.86	0.58	11.91	0.18	1.23	0.82	0

Inlet Input

SN	Element ID	Inlet Manufacturer	Manufacturer Part Number	Inlet Location	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Initial Water Elevation (ft)	Initial Water Depth (ft)
1	CB-10	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.43	474.00	4.56	469.43	0.00
2	CB-11	FHWA HEC-22 GENERIC	N/A	On Grade	1	481.00	490.69	9.69	481.00	0.00
3	CB-12	FHWA HEC-22 GENERIC	N/A	On Grade	1	485.50	491.89	6.39	485.50	0.00
4	CB-13	FHWA HEC-22 GENERIC	N/A	On Grade	1	493.00	508.19	15.19	493.00	0.00
5	CB-14	FHWA HEC-22 GENERIC	N/A	On Sag	1	502.00	513.25	11.25	502.00	0.00
6	CB-15	FHWA HEC-22 GENERIC	N/A	On Grade	1	513.00	518.39	5.39	513.00	0.00
7	CB-16	FHWA HEC-22 GENERIC	N/A	On Grade	1	514.00	519.70	5.70	514.00	0.00
8	CB-17	FHWA HEC-22 GENERIC	N/A	On Grade	1	528.00	533.32	5.32	528.00	0.00
9	CB-18	FHWA HEC-22 GENERIC	N/A	On Grade	1	529.00	534.99	5.99	529.00	0.00
10	CB-2	FHWA HEC-22 GENERIC	N/A	On Grade	1	461.75	465.77	4.02	461.75	0.00
11	CB-20	FHWA HEC-22 GENERIC	N/A	On Sag	1	504.25	515.89	11.64	504.25	0.00
12	CB-21	FHWA HEC-22 GENERIC	N/A	On Sag	1	508.50	515.89	7.39	508.50	0.00
13	CB-22	FHWA HEC-22 GENERIC	N/A	On Grade	1	510.00	516.97	6.97	510.00	0.00
14	CB-23	FHWA HEC-22 GENERIC	N/A	On Grade	1	509.50	516.98	7.48	509.50	0.00
15	CB-25	FHWA HEC-22 GENERIC	N/A	On Sag	1	527.00	535.29	8.29	527.00	0.00
16	CB-26	FHWA HEC-22 GENERIC	N/A	On Sag	1	530.50	535.29	4.79	530.50	0.00
17	CB-28	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.00	542.65	5.65	537.00	0.00
18	CB-29	FHWA HEC-22 GENERIC	N/A	On Grade	1	537.50	542.86	5.36	537.50	0.00
19	CB-30	FHWA HEC-22 GENERIC	N/A	On Grade	1	543.50	547.90	4.40	543.50	0.00
20	CB-31	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.50	549.37	4.87	544.50	0.00
21	CB-32	FHWA HEC-22 GENERIC	N/A	On Grade	1	546.00	549.87	3.87	546.00	0.00
22	CB-33	FHWA HEC-22 GENERIC	N/A	On Grade	1	544.00	547.88	3.88	544.00	0.00
23	CB-37	FHWA HEC-22 GENERIC	N/A	On Grade	1	478.50	490.69	12.19	478.50	0.00
24	CB-38	FHWA HEC-22 GENERIC	N/A	On Grade	1	494.50	506.87	12.37	494.50	0.00
25	CB-40	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.80	9.80	515.00	0.00
26	CB-43	FHWA HEC-22 GENERIC	N/A	On Grade	1	484.50	488.57	4.07	484.50	0.00
27	CB-44	FHWA HEC-22 GENERIC	N/A	On Grade	1	496.00	507.00	11.00	496.00	0.00
28	CB-45	FHWA HEC-22 GENERIC	N/A	On Grade	1	515.00	524.64	9.64	515.00	0.00
29	CB-51	FHWA HEC-22 GENERIC	N/A	On Grade	1	462.08	465.82	3.74	462.08	0.00
30	CB-9	FHWA HEC-22 GENERIC	N/A	On Sag	1	469.10	474.00	4.90	469.10	0.00

Roadway & Gutter Input

SN	Element ID	Roadway Longitudinal Slope (ft/ft)	Roadway Cross Slope (ft/ft)	Roadway Manning's Roughness	Gutter Cross Slope (ft/ft)	Gutter Width (ft)	Gutter Depression (in)	Allowable Spread (ft)
1	CB-10	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
2	CB-11	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
3	CB-12	0.0935	0.0254	0.0150	0.0200	1.00	0.1312	8.50
4	CB-13	0.0232	0.0254	0.0150	0.0200	1.00	0.1312	8.50
5	CB-14	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
6	CB-15	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
7	CB-16	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
8	CB-17	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
9	CB-18	0.0591	0.0254	0.0150	0.0200	1.00	0.1312	8.50
10	CB-2	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
11	CB-20	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
12	CB-21	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
13	CB-22	0.0780	0.0254	0.0150	0.0200	1.00	0.1312	8.50
14	CB-23	0.0381	0.0254	0.0150	0.0200	1.00	0.1312	8.50
15	CB-25	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
16	CB-26	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50
17	CB-28	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
18	CB-29	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
19	CB-30	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
20	CB-31	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
21	CB-32	0.0351	0.0254	0.0150	0.0200	1.00	0.1312	8.50
22	CB-33	0.0336	0.0254	0.0150	0.0200	1.00	0.1312	8.50
23	CB-37	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
24	CB-38	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
25	CB-40	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
26	CB-43	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
27	CB-44	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
28	CB-45	0.0794	0.0254	0.0150	0.0200	1.00	0.1312	8.50
29	CB-51	0.0788	0.0254	0.0150	0.0200	1.00	0.1312	8.50
30	CB-9	N/A	0.0254	0.0150	0.0200	1.00	0.1312	8.50

Inlet Results

SN	Element ID	Peak Flow (cfs)	Peak Lateral Inflow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	T Floo Volu (ac
1	CB-10	3.54	2.58	N/A	N/A	N/A	8.84	474.39	0.39	0 00:17	0
2	CB-11	2.56	2.48	1.78	0.78	69.65	5.70	490.83	0.14	0 00:13	0
3	CB-12	3.19	3.19	2.02	1.17	63.20	6.20	492.04	0.15	0 00:16	0
4	CB-13	2.20	2.08	1.98	0.22	89.89	6.99	508.36	0.17	0 00:13	0
5	CB-14	6.25	4.50	N/A	N/A	N/A	12.25	513.73	0.48	0 00:14	0
6	CB-15	6.90	5.74	3.29	3.60	47.77	8.98	518.61	0.22	0 00:14	0
7	CB-16	1.75	1.75	1.51	0.24	86.23	5.38	519.83	0.13	0 00:09	0
8	CB-17	1.53	1.53	1.38	0.15	89.89	5.14	533.44	0.13	0 00:09	0
9	CB-18	3.69	3.58	2.37	1.32	64.19	7.10	535.17	0.17	0 00:14	0
10	CB-2	1.03	1.03	0.99	0.03	96.61	4.21	465.87	0.10	0 00:17	0
11	CB-20	3.51	3.51	N/A	N/A	N/A	8.34	516.26	0.38	0 00:17	0
12	CB-21	5.10	3.60	N/A	N/A	N/A	10.69	516.32	0.44	0 00:18	0
13	CB-22	5.19	5.18	3.72	1.47	71.65	7.66	517.16	0.19	0 00:19	0
14	CB-23	3.85	3.85	3.41	0.44	88.55	7.85	517.17	0.19	0 00:18	0
15	CB-25	4.66	4.66	N/A	N/A	N/A	10.06	535.71	0.42	0 00:07	0
16	CB-26	3.21	3.21	N/A	N/A	N/A	7.86	535.66	0.37	0 00:07	0
17	CB-28	1.82	1.67	1.66	0.16	91.08	6.08	542.80	0.15	0 00:17	0
18	CB-29	1.60	1.43	1.51	0.09	94.26	5.81	543.00	0.14	0 00:17	0
19	CB-30	1.96	1.96	1.74	0.21	89.17	6.25	548.06	0.15	0 00:16	0
20	CB-31	0.97	0.97	0.97	0.00	100.00	4.77	549.48	0.12	0 00:14	0
21	CB-32	1.12	1.12	1.12	0.00	99.80	5.03	549.99	0.12	0 00:15	0
22	CB-33	2.03	2.03	1.79	0.24	88.15	6.35	548.03	0.16	0 00:16	0
23	CB-37	1.51	1.26	1.32	0.19	87.09	4.84	490.81	0.12	0 00:10	0
24	CB-38	1.93	1.93	1.54	0.39	79.95	5.30	507.00	0.13	0 00:10	0
25	CB-40	3.63	3.63	2.23	1.40	61.34	6.70	524.97	0.16	0 00:09	0
26	CB-43	3.00	2.53	2.00	0.99	66.83	6.24	488.72	0.15	0 00:17	0
27	CB-44	2.58	2.12	1.84	0.75	71.13	5.92	507.14	0.15	0 00:09	0
28	CB-45	1.52	1.52	1.32	0.20	86.92	4.85	524.76	0.12	0 00:08	0
29	CB-51	3.39	3.05	2.15	1.24	63.40	6.53	465.98	0.16	0 00:17	0
30	CB-9	2.39	2.32	N/A	N/A	N/A	8.80	474.39	0.39	0 00:19	0

Detention Pond Outlet Schematics

Table | Structure | Plan / Profile | Stage vs. Q | Stage vs. Drain Time | Trial Route | Help

Target Qs | Struct HG | Ext Det | Flow Path

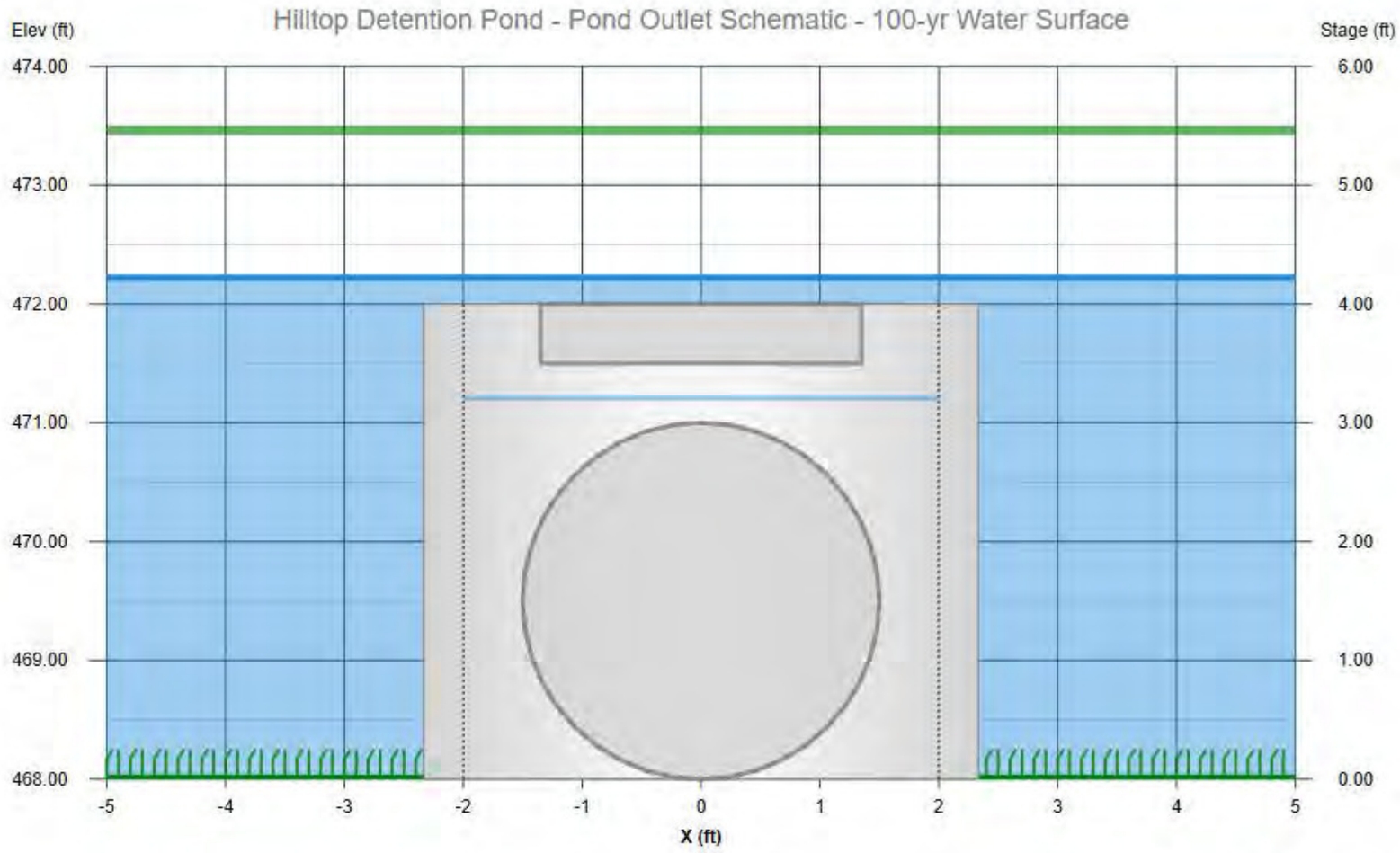
Culvert	Riser	Orifice	Weir
Exfiltration	User	Perf Riser	Tailwater

Orifice 1	Input
Outlet Structure =	Orifice 1
Shape =	Circular
Diameter (in) =	32
No. Holes =	1
Invert Elev. (ft) =	468.00
Orifice Coeff. (Co) =	0.6
Flows through Culvert =	☑
Active =	☑

Auto | Add/Update

Freq (Yr)	Q Targ (cfs)	Q Act (cfs)	Max Ele (ft)	Max Stor (cuft)
2	23.14	24.49	470.62	34,621
10	31.02	32.20	471.30	45,155
25	35.65	36.40	471.71	51,948
50	38.98	39.98	472.00	56,670
100	42.33	44.60	472.24	60,924

Auto Route | Trial Route



Click on a structure to select. Double-click to resize.

Numerical Output

X = 1.54 ft Y = 466.91 ft

< Create Pond | Finish

Detention Pond Storage Estimate

Estimate Storage* > Create Pond > Add Outlet Structures

1-Yr 2-Yr 3-Yr 5-Yr 10-Yr 25-Yr 50-Yr 100-Yr

Post-dev Hyd = 13 - Rational - Post-Dev Basin "E-1"

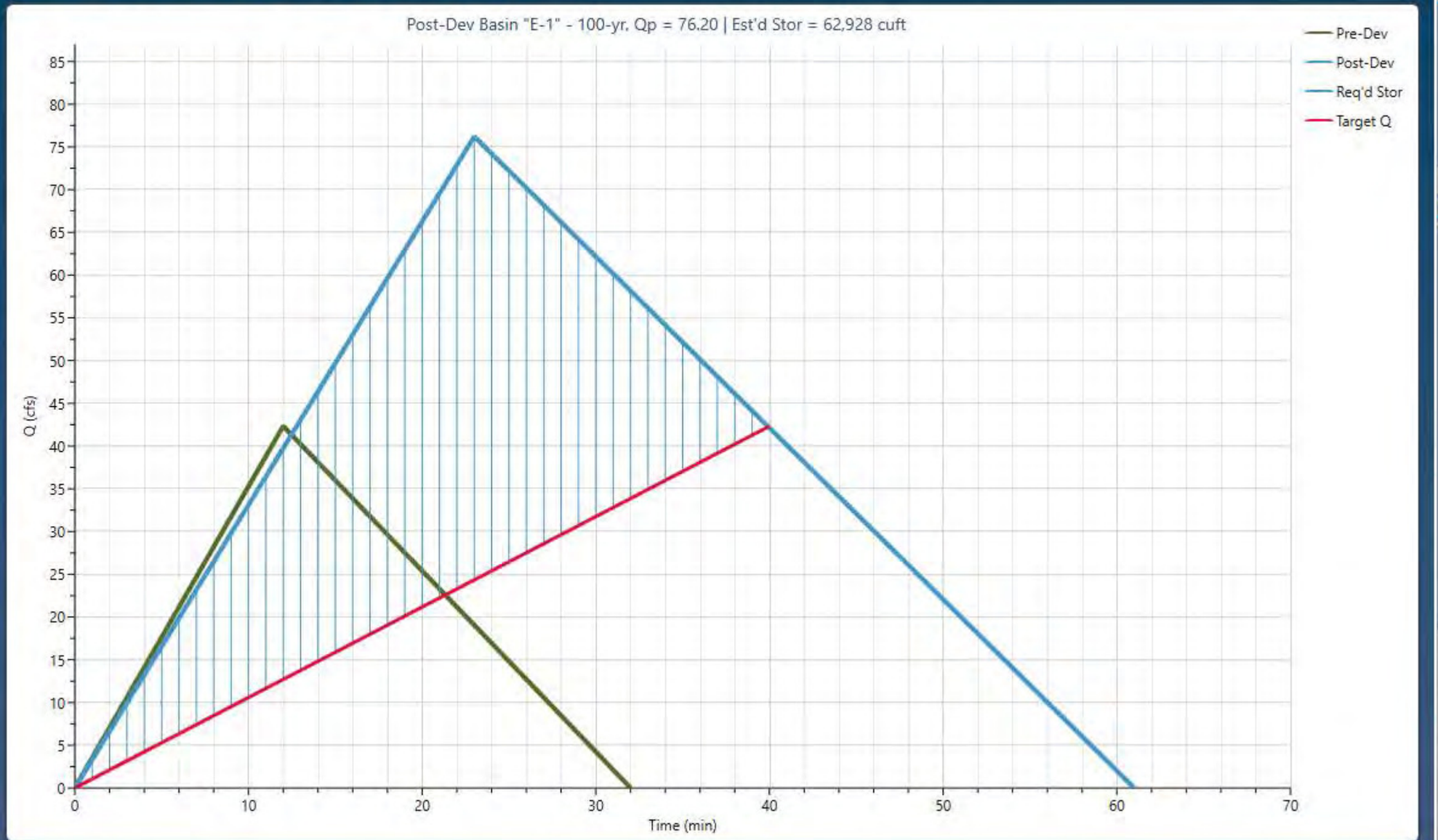
Pre-dev Hyd = 5 - Rational - Pre-Dev Basin "E-1"

Freq (Yr)	Vol Pre (cuft)	Vol Post (cuft)	Qp Post (cfs)	Q Targ (cfs)	Req Stor (cuft)
1					
2	22,242	76,570	41.56	23.14	34,223
3					
5					
10	29,819	102,852	55.83	31.02	46,086
25	34,268	118,247	64.18	35.65	53,007
50	37,472	129,411	70.24	38.98	58,077
100	40,692	140,392	76.20	42.33	62,928

Clear Estimate Storage

	Extended Detention Storage (optional)	
Zone	Description	Volume (cuft)
1	WQv	
2	CPv	
3	Custom	
4	Custom	

Clear Apply



Estimate Storage Step is Optional

Always skip this step

Create Pond >

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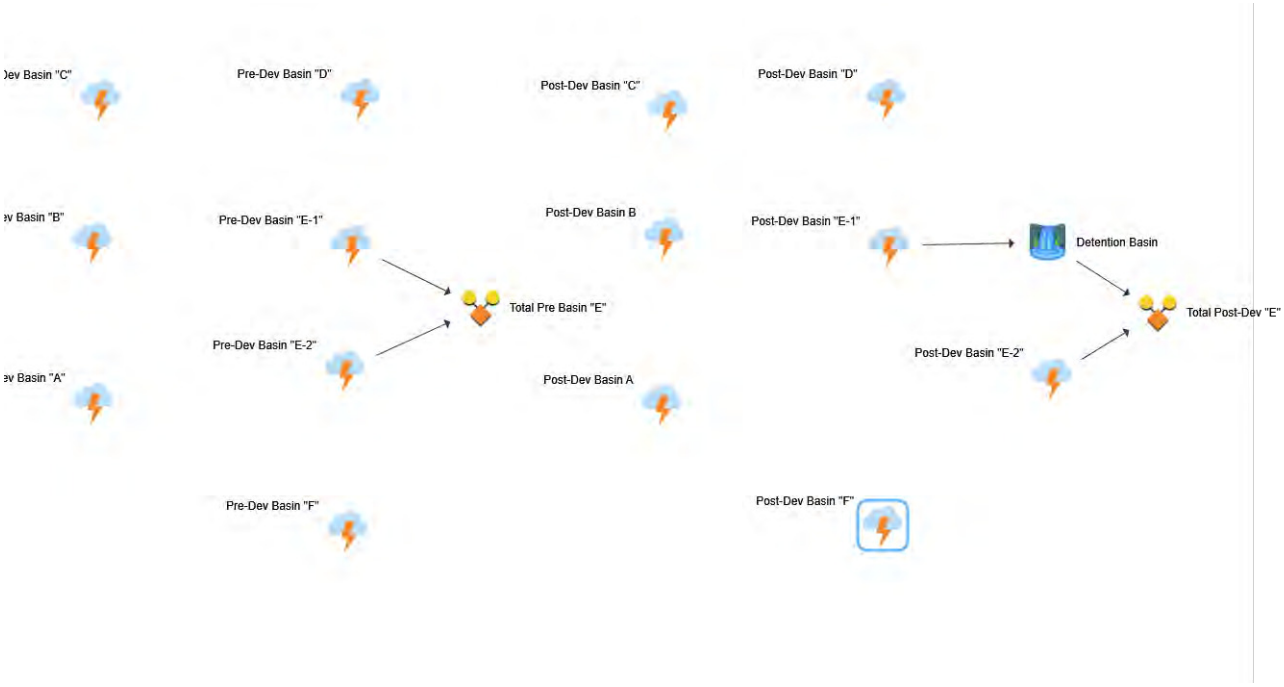
Basin Model

Hydrology Studio v 3.0.0.44

Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026



Hydrograph by Return Period

Hydrology Studio v 3.0.0.44

Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	Rational	Pre-Dev Basin "A"		8.527			11.43	13.13	14.36	15.60
2	Rational	Pre-Dev Basin "B"		28.63			38.41	44.15	48.29	52.42
3	Rational	Pre-Dev Basin "C"		16.17			21.67	24.90	27.23	29.57
4	Rational	Pre-Dev Basin "D"		7.322			9.804	11.26	12.31	13.38
5	Rational	Pre-Dev Basin "E-1"		23.14			31.02	35.65	38.98	42.33
6	Rational	Pre-Dev Basin "E-2"		39.29			52.69	60.55	66.22	71.90
7	Junction	Total Pre Basin "E"		61.27			82.16	94.42	103.3	112.1
8	Rational	Pre-Dev Basin "F"		24.68			33.12	38.07	41.64	45.20
9	Rational	Post-Dev Basin A		8.085			10.85	12.47	13.64	14.80
10	Rational	Post-Dev Basin B		22.11			29.69	34.13	37.35	40.52
11	Rational	Post-Dev Basin "C"		16.54			22.16	25.47	27.85	30.24
12	Rational	Post-Dev Basin "D"		8.404			11.25	12.93	14.13	15.35
13	Rational	Post-Dev Basin "E-1"		41.56			55.83	64.18	70.24	76.20
14	Pond Route	Detention Basin		24.49			32.20	36.40	39.98	44.60
15	Rational	Post-Dev Basin "E-2"		35.39			47.46	54.55	59.65	64.77
16	Junction	Total Post-Dev "E"		37.88			51.67	59.86	65.87	71.78
17	Rational	Post-Dev Basin "F"		23.59			31.65	36.38	39.79	43.19

Hydrograph 2-yr Summary

Hydrology Studio v 3.0.0.44

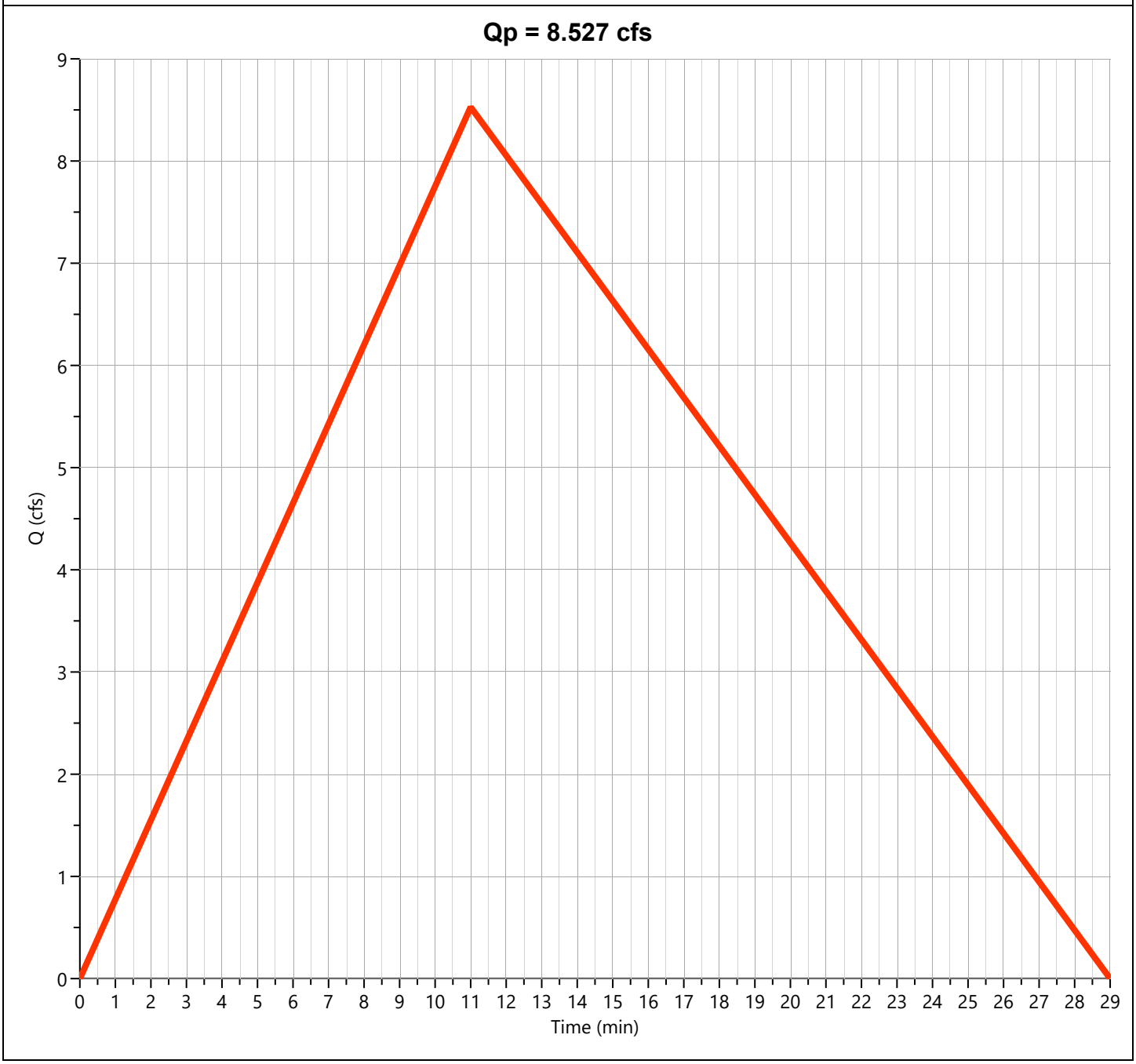
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Pre-Dev Basin "A"	8.527	0.18	7,513	----		
2	Rational	Pre-Dev Basin "B"	28.63	0.25	34,400	----		
3	Rational	Pre-Dev Basin "C"	16.17	0.18	14,247	----		
4	Rational	Pre-Dev Basin "D"	7.322	0.13	4,692	----		
5	Rational	Pre-Dev Basin "E-1"	23.14	0.20	22,242	----		
6	Rational	Pre-Dev Basin "E-2"	39.29	0.22	40,914	----		
7	Junction	Total Pre Basin "E"	61.27	0.22	62,291	5, 6		
8	Rational	Pre-Dev Basin "F"	24.68	0.28	33,601	----		
9	Rational	Post-Dev Basin A	8.085	0.25	9,714	----		
10	Rational	Post-Dev Basin B	22.11	0.35	37,188	----		
11	Rational	Post-Dev Basin "C"	16.54	0.18	14,570	----		
12	Rational	Post-Dev Basin "D"	8.404	0.13	5,385	----		
13	Rational	Post-Dev Basin "E-1"	41.56	0.38	76,570	----		
14	Pond Route	Detention Basin	24.49	0.65	76,014	13	470.62	34,621
15	Rational	Post-Dev Basin "E-2"	35.39	0.22	36,857	----		
16	Junction	Total Post-Dev "E"	37.88	0.22	112,117	14, 15		
17	Rational	Post-Dev Basin "F"	23.59	0.27	30,229	----		

Pre-Dev Basin "A"

Hyd. No. 1

Hydrograph Type	= Rational	Peak Flow	= 8.527 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 7,513 cuft
Drainage Area	= 3.2 ac	Runoff Coeff.	= 0.62
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Tc by TR55 Worksheet

Hydrology Studio v 3.0.0.44

09-25-2026

Pre-Dev Basin "A"
Rational

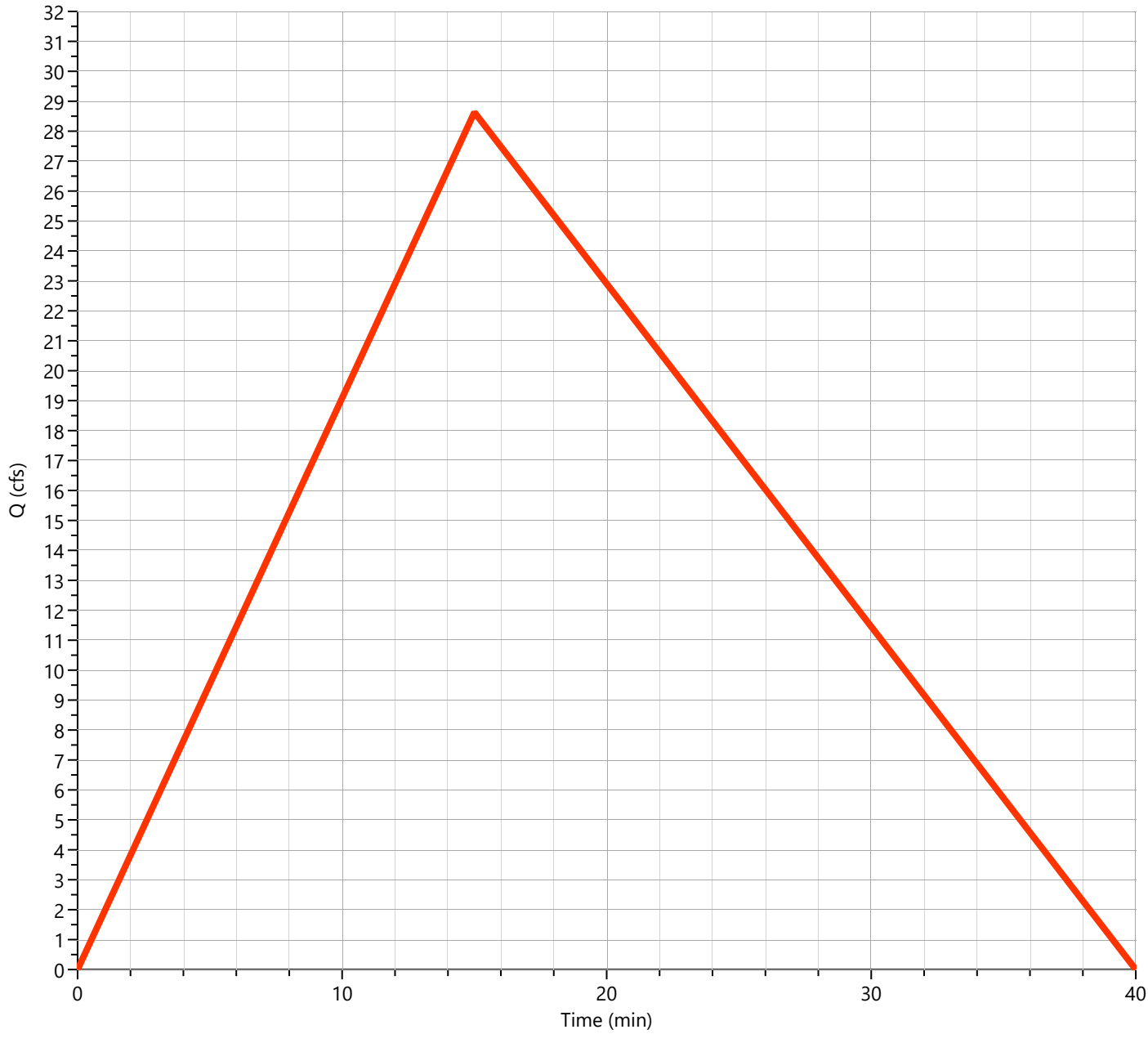
Hyd. No. 1

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	6			
Travel Time (min)	**9.43**	**0.00**	**0.00**	**9.43**
Shallow Concentrated Flow				
Flow Length (ft)	509			
Watercourse Slope (%)	8.35	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	4.66			
Travel Time (min)	**1.82**	**0.00**	**0.00**	**1.82**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**11 min**

Pre-Dev Basin "B"

Hyd. No. 2

Hydrograph Type	= Rational	Peak Flow	= 28.63 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 34,400 cuft
Drainage Area	= 14.74 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.74 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "B"
Rational

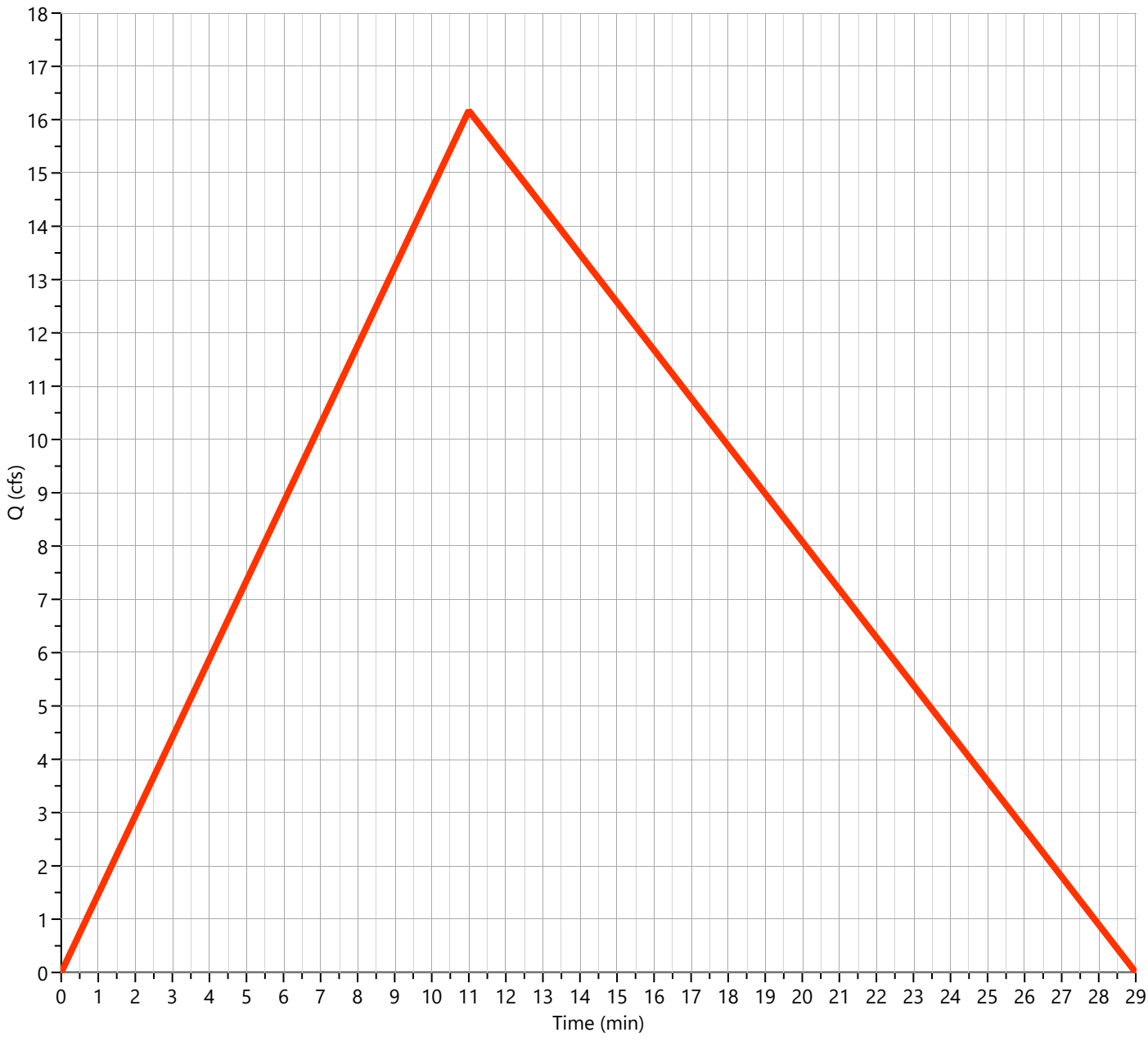
Hyd. No. 2

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	4			
Travel Time (min)	**11.09**	**0.00**	**0.00**	**11.09**
Shallow Concentrated Flow				
Flow Length (ft)	926			
Watercourse Slope (%)	5.90	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.92			
Travel Time (min)	**3.94**	**0.00**	**0.00**	**3.94**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**15 min**

Pre-Dev Basin "C"

Hyd. No. 3

Hydrograph Type	= Rational	Peak Flow	= 16.17 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 14,247 cuft
Drainage Area	= 6.84 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "C"
Rational

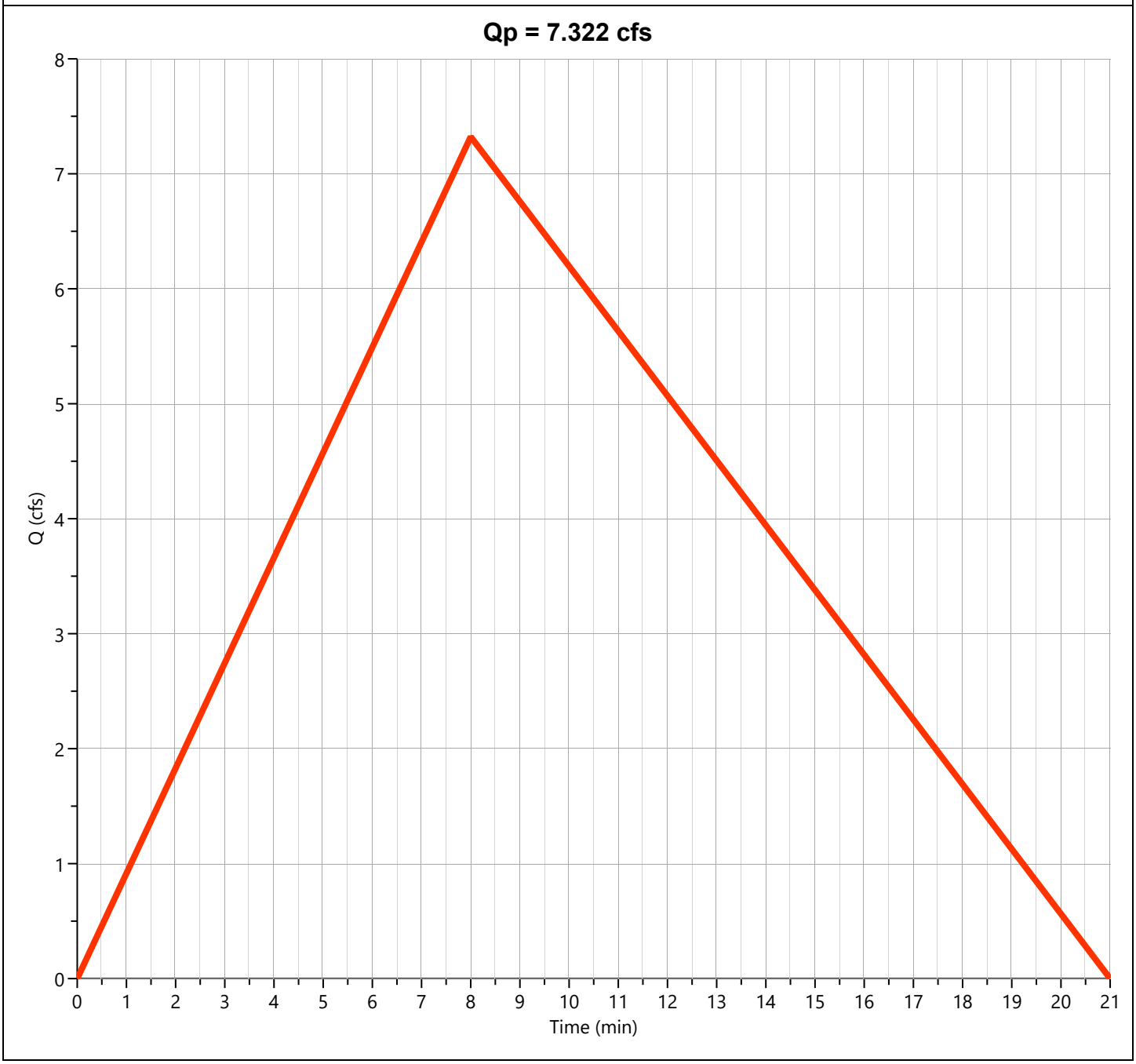
Hyd. No. 3

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	8			
Travel Time (min)	**8.40**	**0.00**	**0.00**	**8.40**
Shallow Concentrated Flow				
Flow Length (ft)	654	71		
Watercourse Slope (%)	5.68	6.20	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.85	5.06		
Travel Time (min)	**2.83**	**0.23**	**0.00**	**3.07**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**11 min**

Pre-Dev Basin "D"

Hyd. No. 4

Hydrograph Type	= Rational	Peak Flow	= 7.322 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 4,692 cuft
Drainage Area	= 2.95 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.96 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Tc by TR55 Worksheet

Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys

Hydrology Studio v 3.0.0.44

09-25-2026

Pre-Dev Basin "D"
Rational

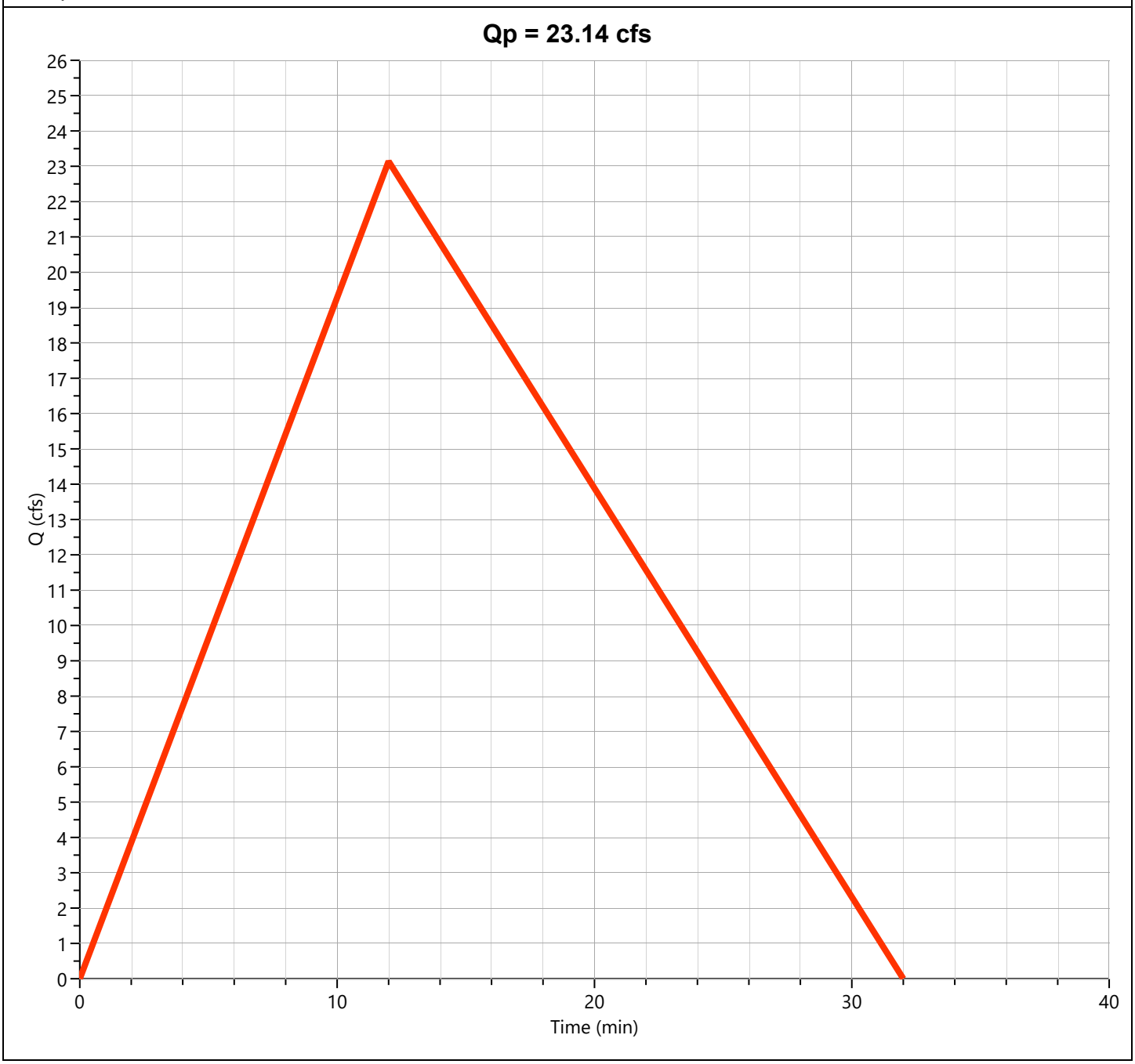
Hyd. No. 4

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	14			
Travel Time (min)	**6.72**	**0.00**	**0.00**	**6.72**
Shallow Concentrated Flow				
Flow Length (ft)	554			
Watercourse Slope (%)	11.00	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	5.35			
Travel Time (min)	**1.73**	**0.00**	**0.00**	**1.73**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**8 min**

Pre-Dev Basin "E-1"

Hyd. No. 5

Hydrograph Type	= Rational	Peak Flow	= 23.14 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.20 hrs
Time Interval	= 1 min	Runoff Volume	= 22,242 cuft
Drainage Area	= 11.2 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 12.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.13 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Tc by TR55 Worksheet

Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys

Hydrology Studio v 3.0.0.44

09-25-2026

Pre-Dev Basin "E-1"
Rational

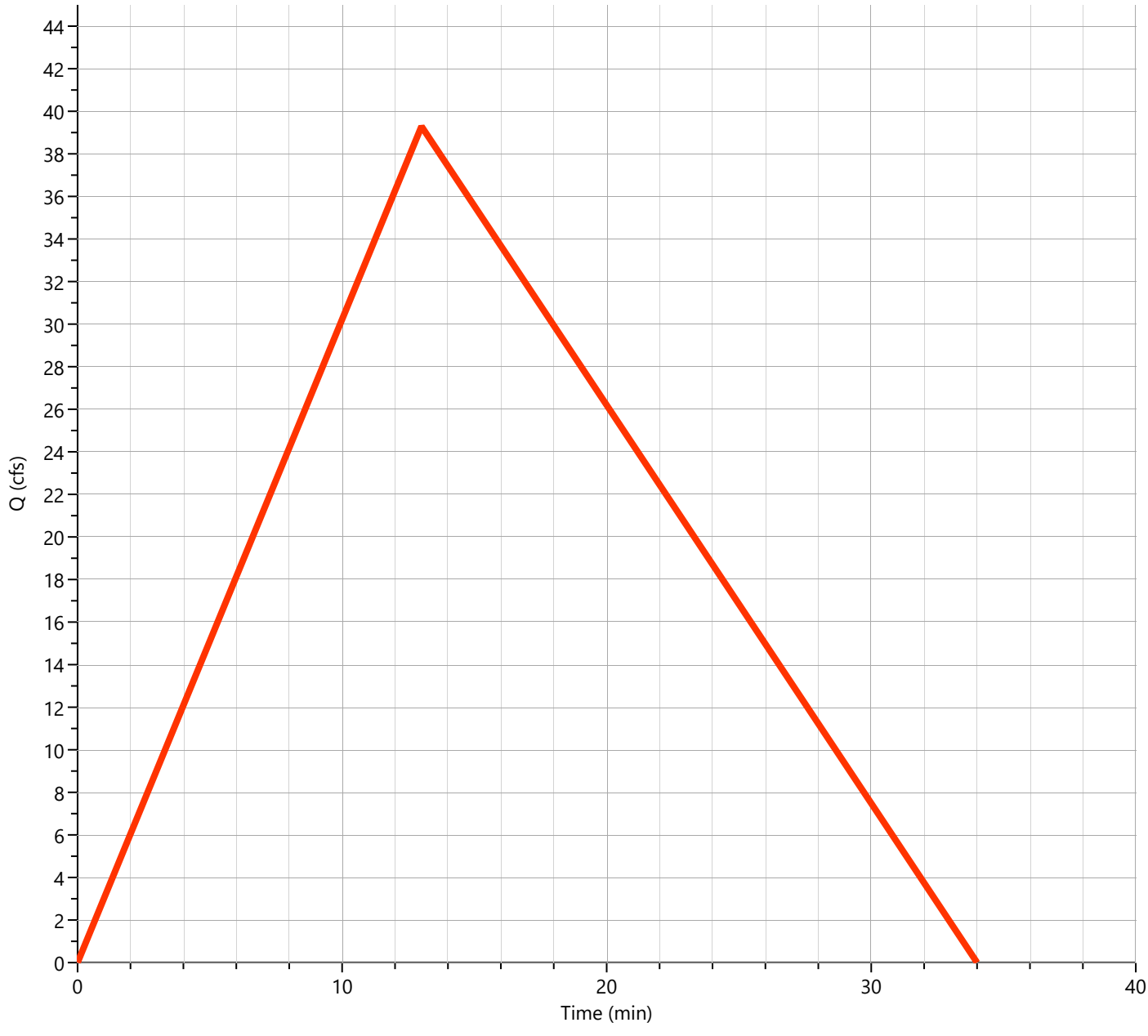
Hyd. No. 5

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	5			
Travel Time (min)	**10.14**	**0.00**	**0.00**	**10.14**
Shallow Concentrated Flow				
Flow Length (ft)	565			
Watercourse Slope (%)	13.00	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	5.82			
Travel Time (min)	**1.62**	**0.00**	**0.00**	**1.62**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**12 min**

Pre-Dev Basin "E-2"

Hyd. No. 6

Hydrograph Type	= Rational	Peak Flow	= 39.29 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 40,914 cuft
Drainage Area	= 18.96 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.99 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-2"
Rational

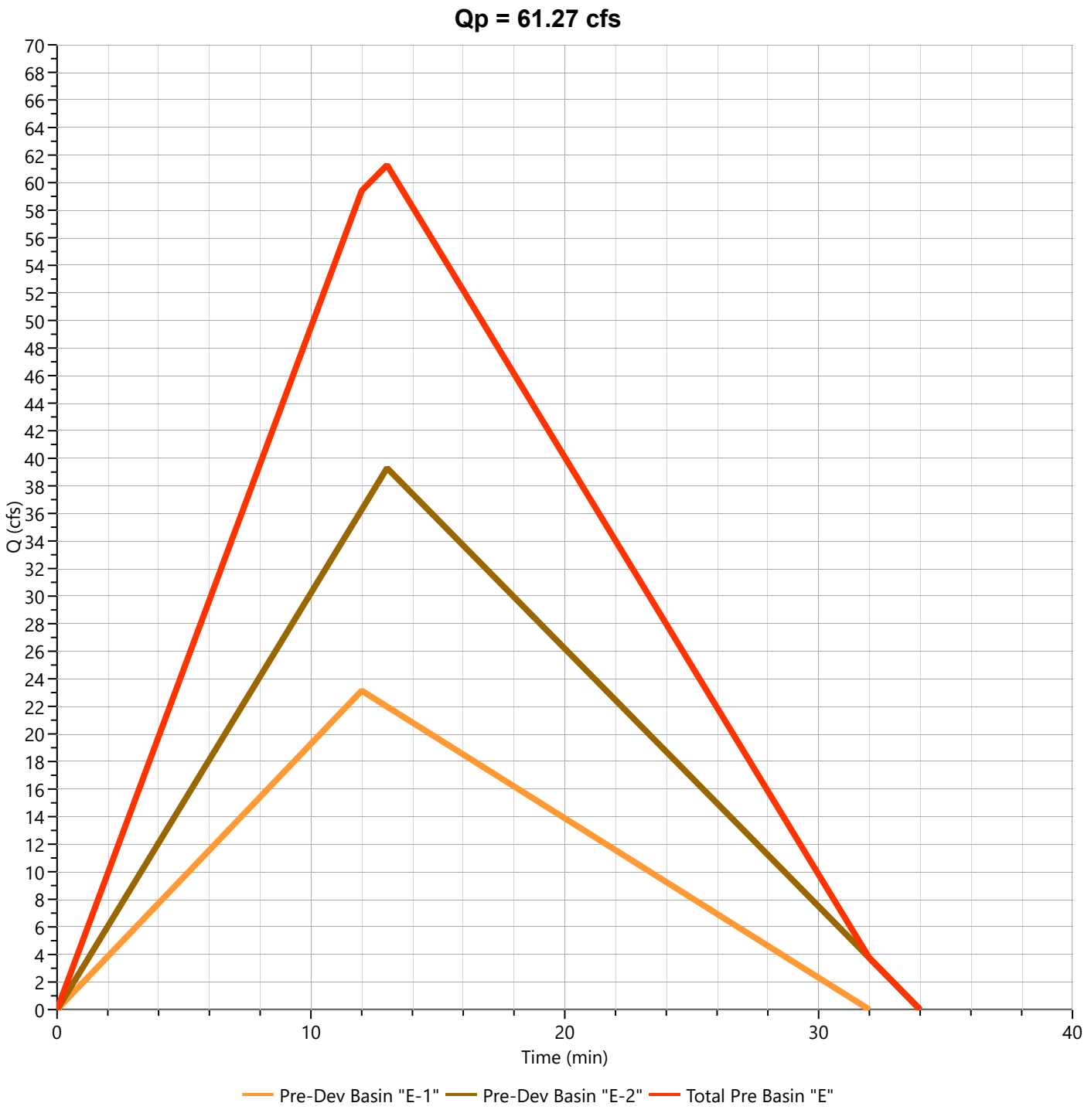
Hyd. No. 6

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	7.25			
Travel Time (min)	**8.74**	**0.00**	**0.00**	**8.74**
Shallow Concentrated Flow				
Flow Length (ft)	1070			
Watercourse Slope (%)	6.23	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	4.03			
Travel Time (min)	**4.43**	**0.00**	**0.00**	**4.43**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**13 min**

Total Pre Basin "E"

Hyd. No. 7

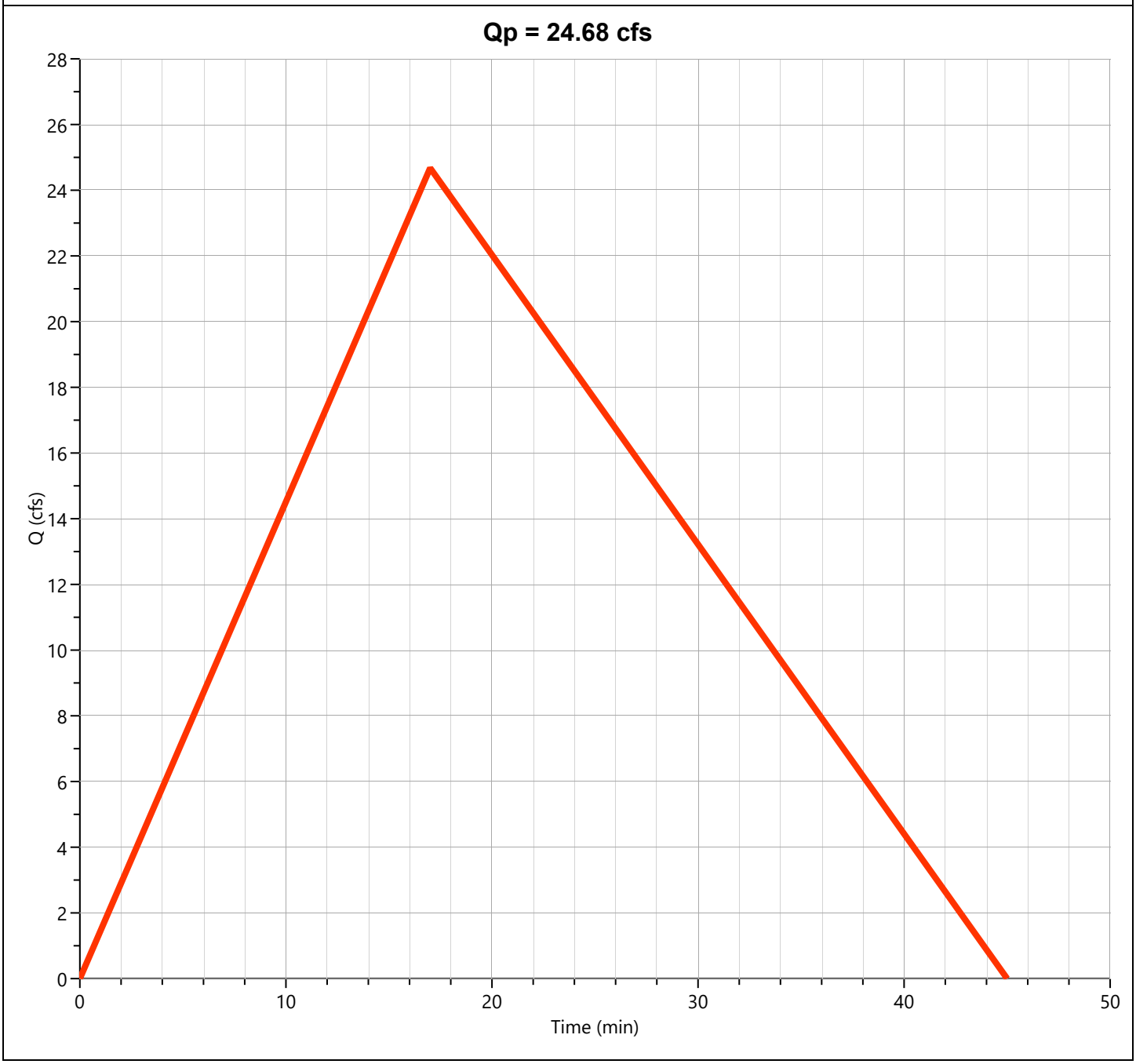
Hydrograph Type	= Junction	Peak Flow	= 61.27 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 62,291 cuft
Inflow Hydrographs	= 5, 6	Total Contrib. Area	= 30.16 ac



Pre-Dev Basin "F"

Hyd. No. 8

Hydrograph Type	= Rational	Peak Flow	= 24.68 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 33,601 cuft
Drainage Area	= 13.19 ac	Runoff Coeff.	= 0.53
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.53 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "F"
Rational

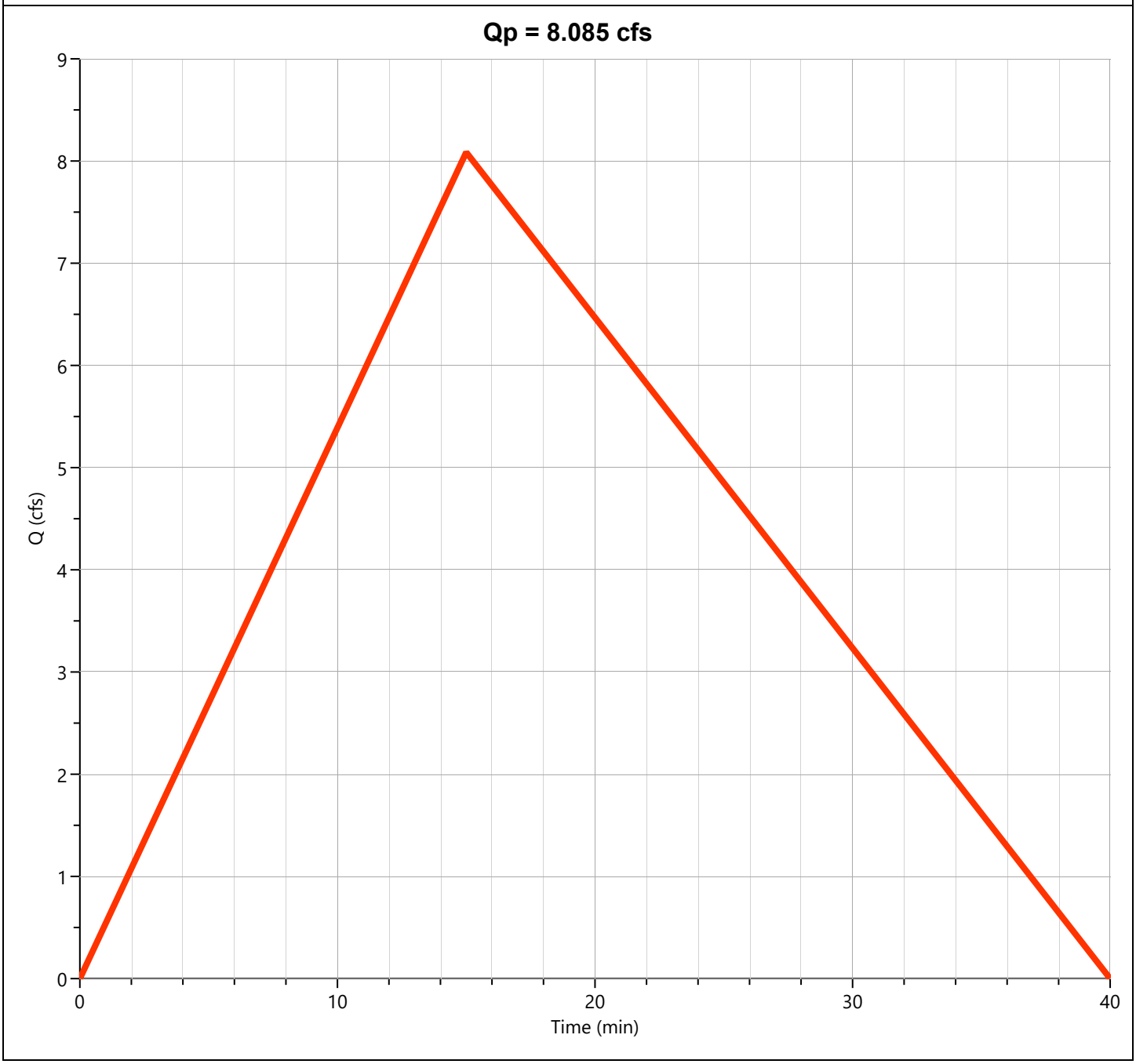
Hyd. No. 8

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	5			
Travel Time (min)	**10.14**	**0.00**	**0.00**	**10.14**
Shallow Concentrated Flow				
Flow Length (ft)	1477			
Watercourse Slope (%)	4.90	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.57			
Travel Time (min)	**6.89**	**0.00**	**0.00**	**6.89**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**17 min**

Post-Dev Basin A

Hyd. No. 9

Hydrograph Type	= Rational	Peak Flow	= 8.085 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 9,714 cuft
Drainage Area	= 3.33 ac	Runoff Coeff.	= 0.65
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.74 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin A
Rational

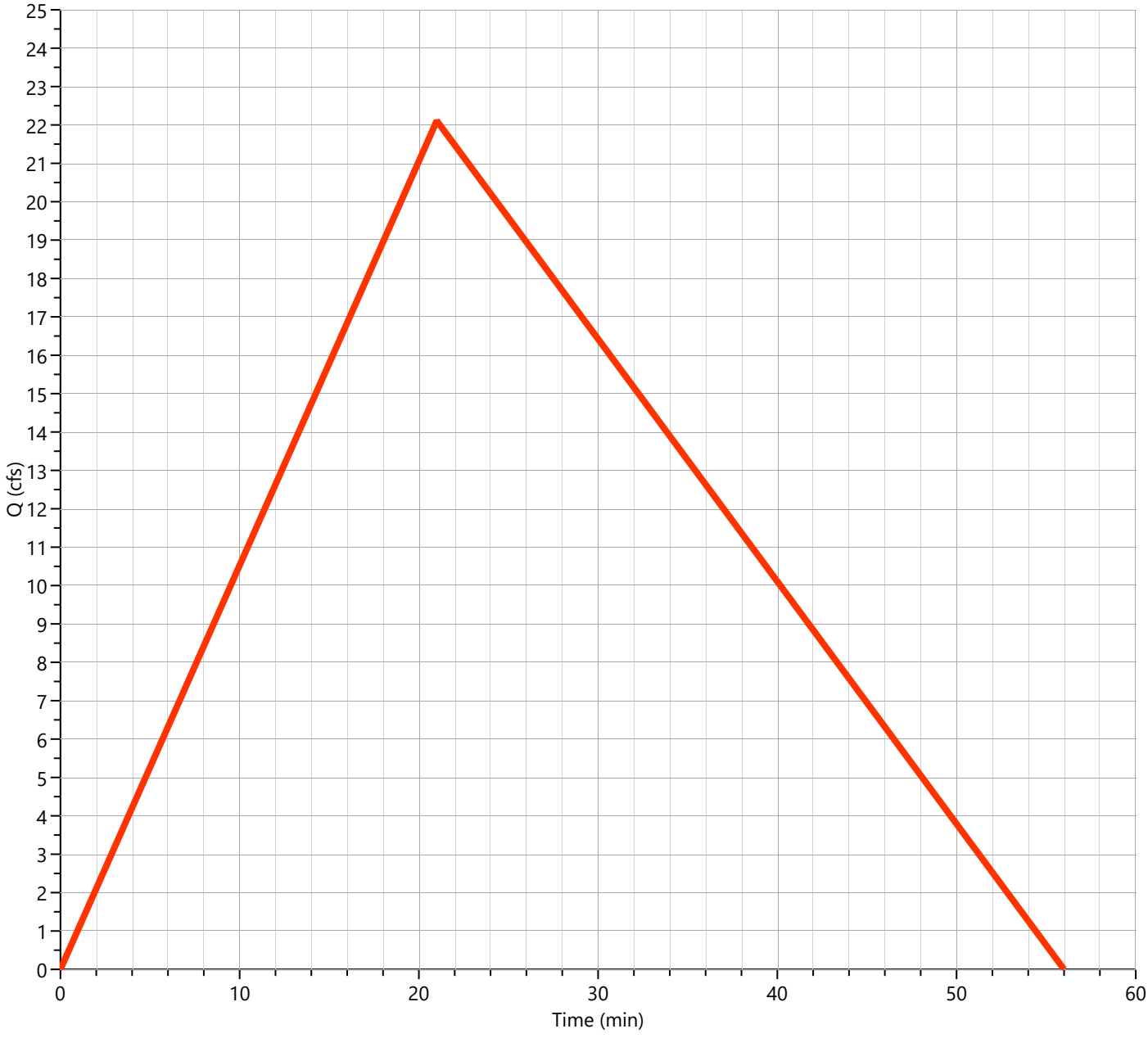
Hyd. No. 9

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	2.5			
Travel Time (min)	**13.38**	**0.00**	**0.00**	**13.38**
Shallow Concentrated Flow				
Flow Length (ft)	519			
Watercourse Slope (%)	7.80	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	4.51			
Travel Time (min)	**1.92**	**0.00**	**0.00**	**1.92**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**15 min**

Post-Dev Basin B

Hyd. No. 10

Hydrograph Type	= Rational	Peak Flow	= 22.11 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.35 hrs
Time Interval	= 1 min	Runoff Volume	= 37,188 cuft
Drainage Area	= 12.53 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 21.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.21 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin B
Rational

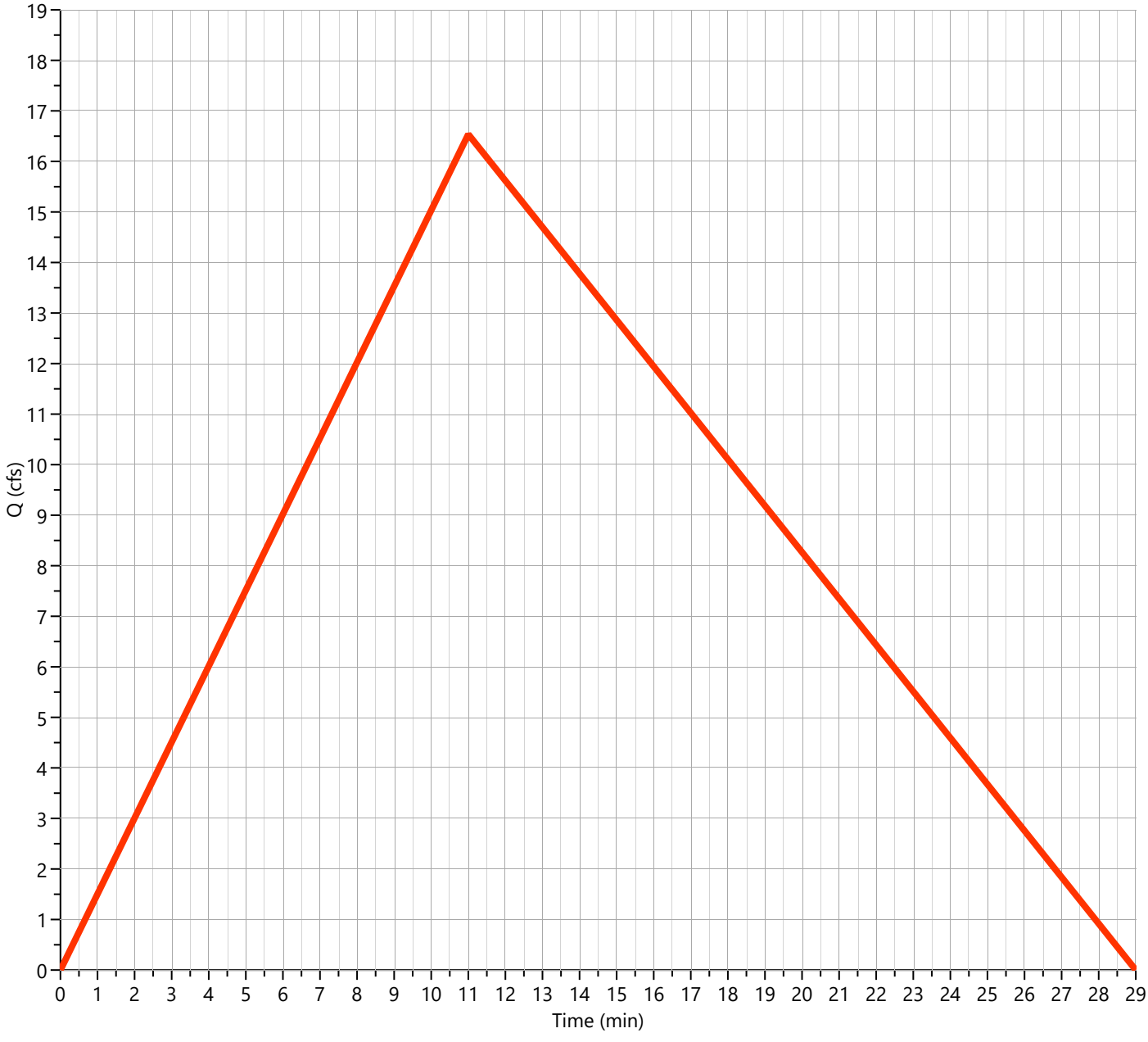
Hyd. No. 10

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	1.5			
Travel Time (min)	**16.42**	**0.00**	**0.00**	**16.42**
Shallow Concentrated Flow				
Flow Length (ft)	1025			
Watercourse Slope (%)	5.00	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.61			
Travel Time (min)	**4.73**	**0.00**	**0.00**	**4.73**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**21 min**

Post-Dev Basin "C"

Hyd. No. 11

Hydrograph Type	= Rational	Peak Flow	= 16.54 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 14,570 cuft
Drainage Area	= 6.75 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "C"
Rational

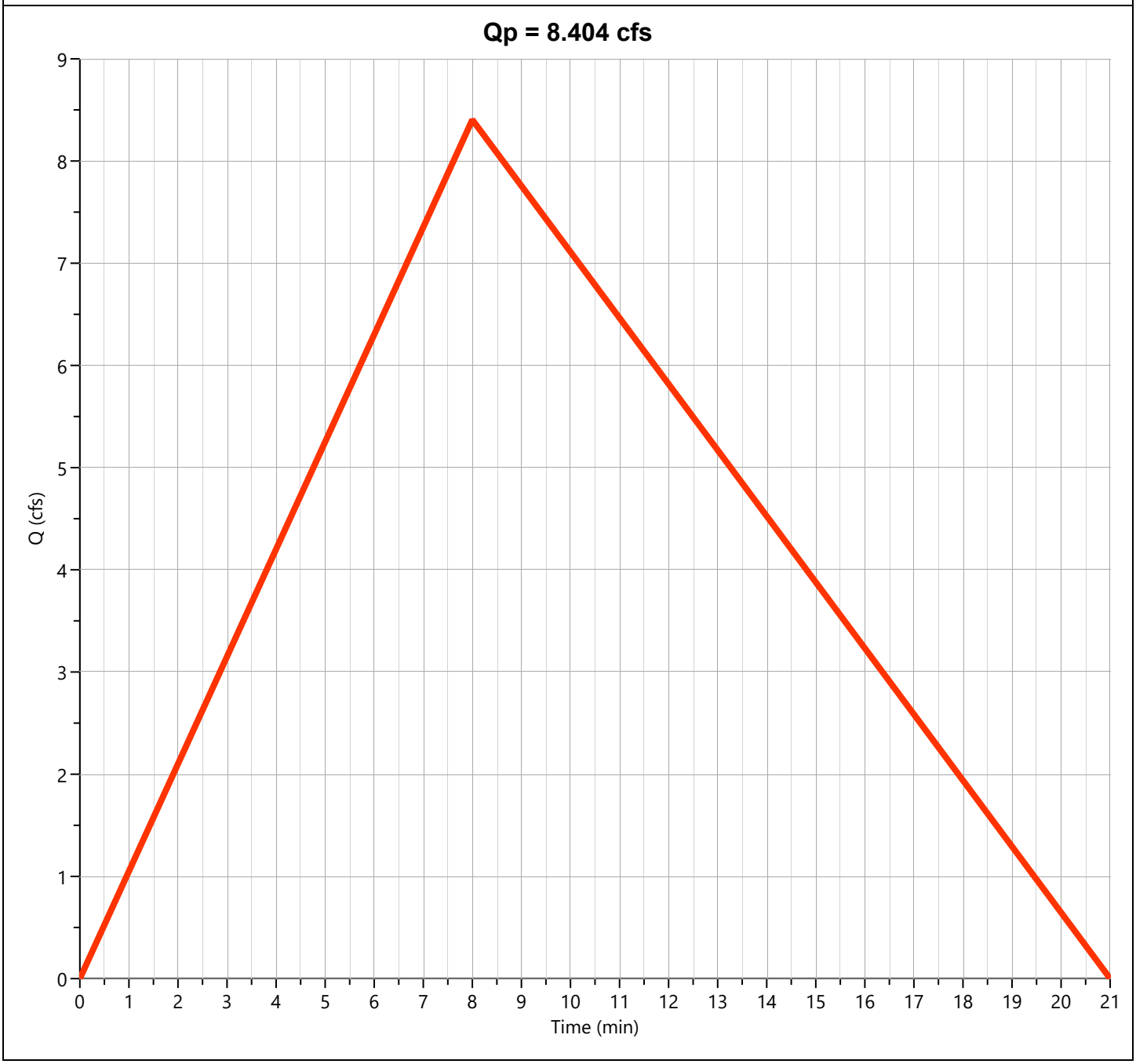
Hyd. No. 11

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	8			
Travel Time (min)	**8.40**	**0.00**	**0.00**	**8.40**
Shallow Concentrated Flow				
Flow Length (ft)	654			
Watercourse Slope (%)	5.68	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.85			
Travel Time (min)	**2.83**	**0.00**	**0.00**	**2.83**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**11 min**

Post-Dev Basin "D"

Hyd. No. 12

Hydrograph Type	= Rational	Peak Flow	= 8.404 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 5,385 cuft
Drainage Area	= 2.97 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.96 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "D"
Rational

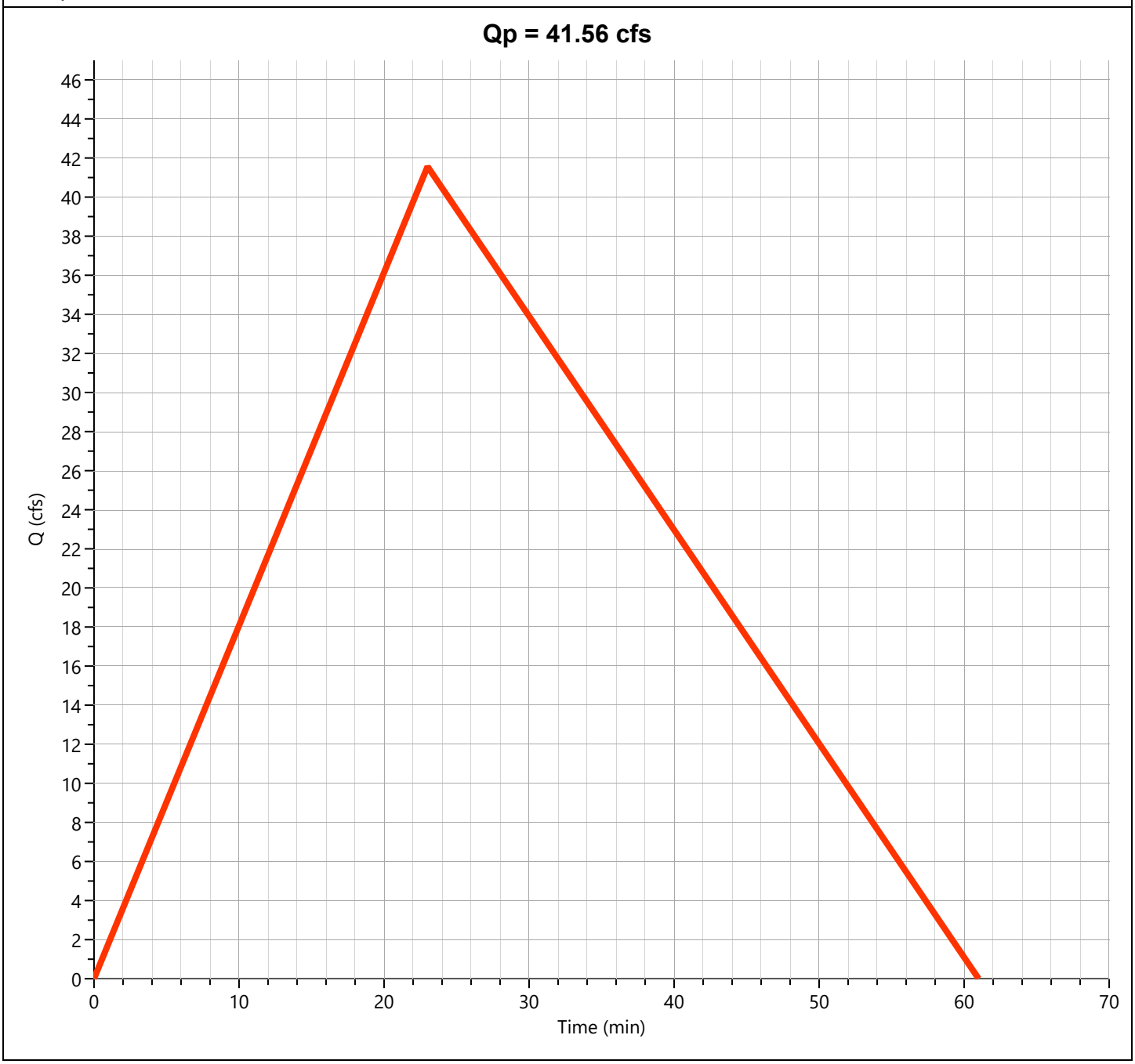
Hyd. No. 12

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	14.2			
Travel Time (min)	**6.68**	**0.00**	**0.00**	**6.68**
Shallow Concentrated Flow				
Flow Length (ft)	554			
Watercourse Slope (%)	11.00	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	5.35			
Travel Time (min)	**1.73**	**0.00**	**0.00**	**1.73**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**8 min**

Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Rational	Peak Flow	= 41.56 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.38 hrs
Time Interval	= 1 min	Runoff Volume	= 76,570 cuft
Drainage Area	= 18.0 ac	Runoff Coeff.	= 0.75
Tc Method	= User	Time of Conc. (Tc)	= 23.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.08 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



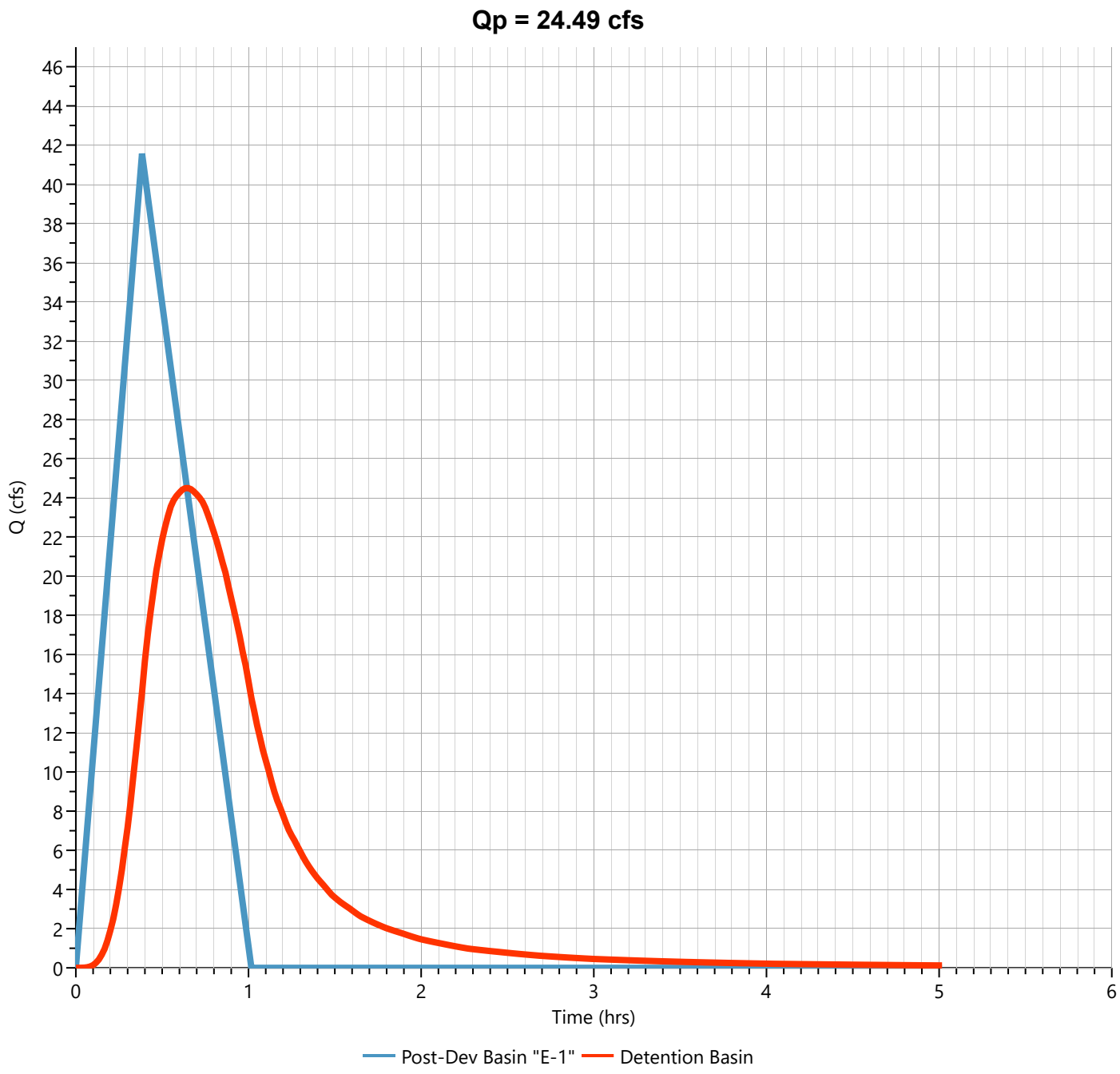
Detention Basin

Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 24.49 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.65 hrs
Time Interval	= 1 min	Hydrograph Volume	= 76,014 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 470.62 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 34,621 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 27 min



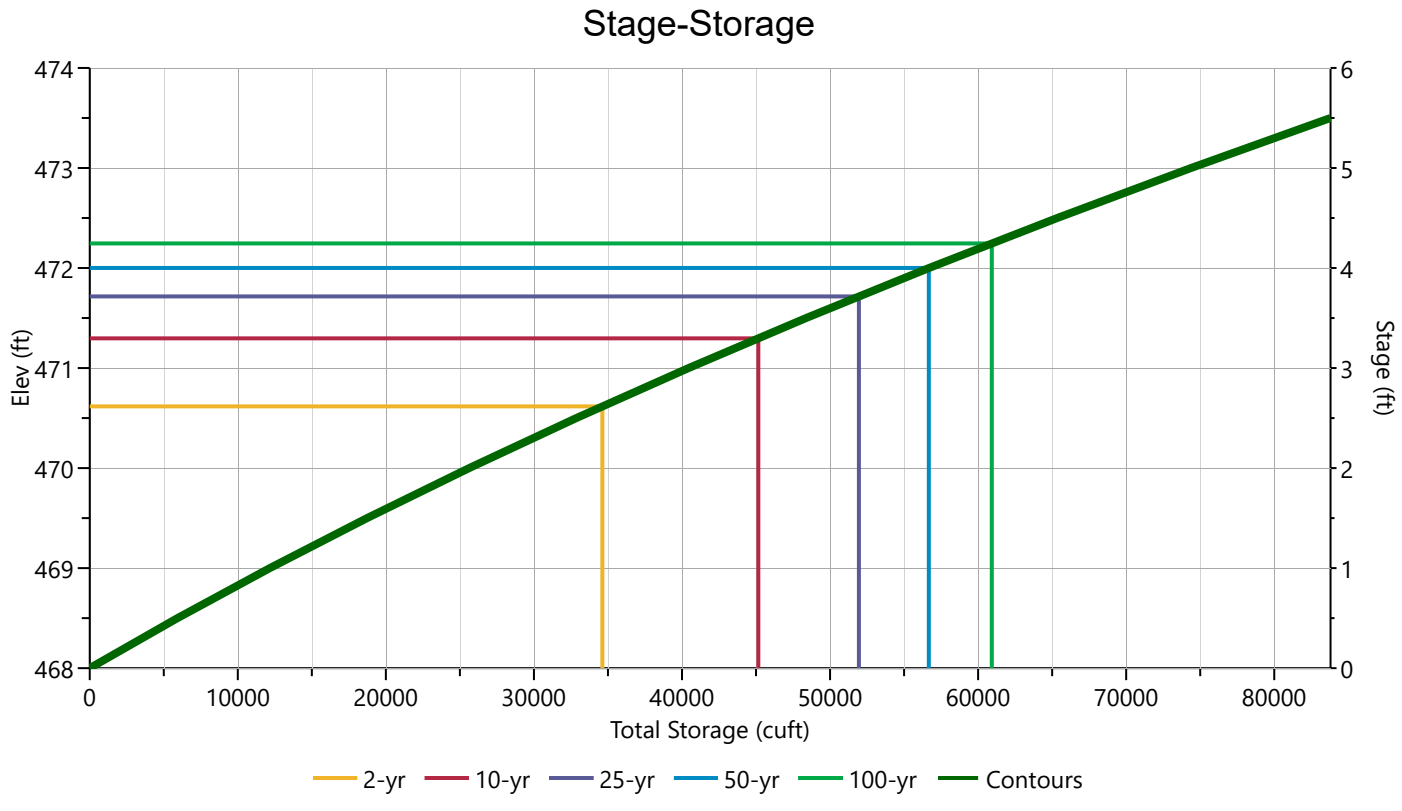
Hilltop Detention Pond

Stage-Storage

User Defined Contours	
Description	**Input**
Bottom Elevation, ft	468.00
Voids (%)	100.00
Volume Calc	None

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	468.00	11,529	0.000	0.000
0.50	468.50	12,158	5,922	5,922
1.00	469.00	12,801	6,240	12,162
1.50	469.50	13,459	6,565	18,727
2.00	470.00	14,131	6,898	25,624
2.50	470.50	14,817	7,237	32,861
3.00	471.00	15,517	7,584	40,445
3.50	471.50	16,230	7,937	48,381
4.00	472.00	16,958	8,297	56,678
4.50	472.50	17,700	8,665	65,343
5.00	473.00	18,455	9,039	74,382
5.50	473.50	19,225	9,420	83,802

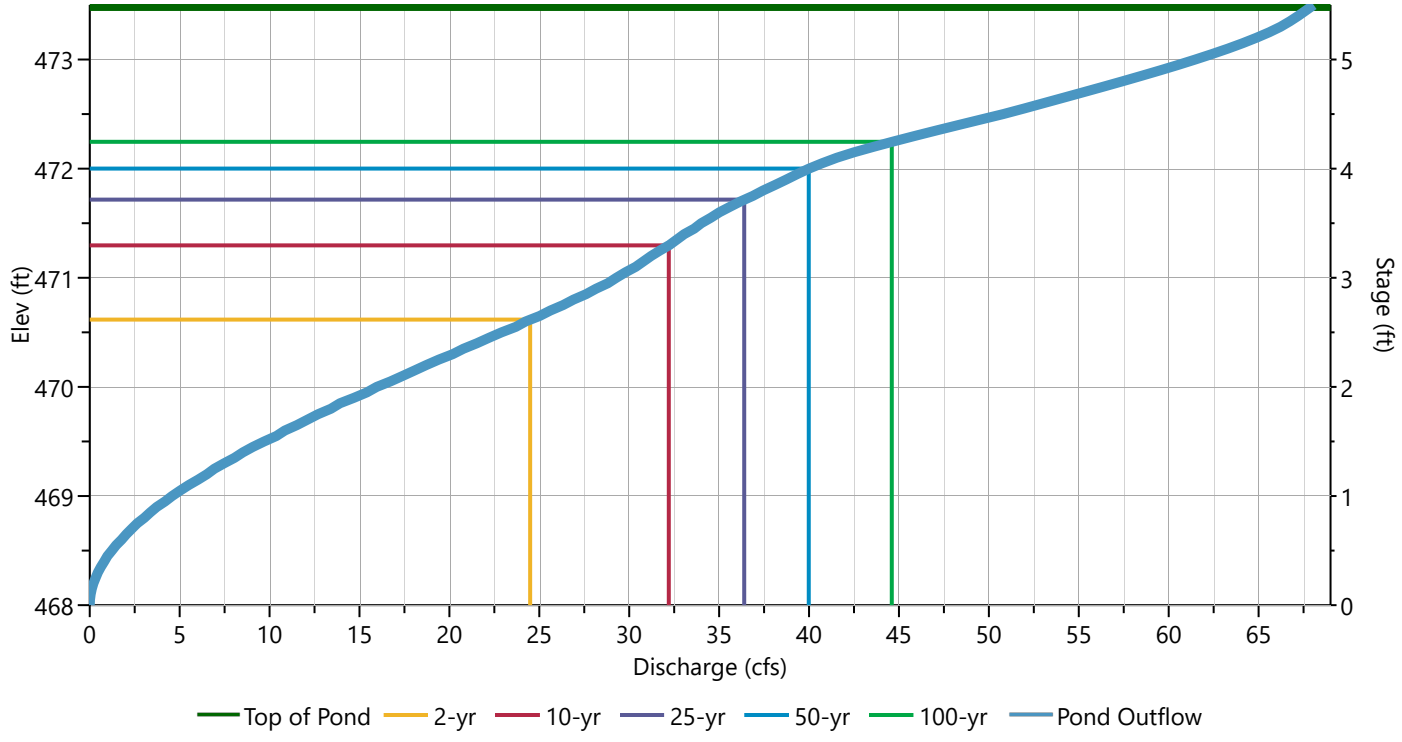


Hilltop Detention Pond

Stage-Discharge

Culvert / Orifices	Cir Culvert	Orifice			Orifice Plate	
		1 (m)	2 (m)	3		
Rise, in	36	36	6		Orifice Dia, in	
Span, in	36	36	36		No. Orifices	
No. Barrels	1	1	1	1	Invert Elevation, ft	
Invert Elevation, ft	468.00	468.00	471.50	468.01	Height, ft	
Orifice Coefficient, Co	0.60	0.60	0.60	0.60	Orifice Coefficient, Co	
Length, ft	113					
Barrel Slope, %	4.66					
N-Value, n	0.013					
Weirs	**Riser**	**Weir**			**Ancillary**	
		1	2	3		
Shape / Type	Circular				Exfiltration, in/hr	
Crest Elevation, ft	472	479.5				
Crest Length, ft	12.56	14				
Angle, deg		45 (1:1)				
Weir Coefficient, Cw	3.3	3.3				

m = Flows through Culvert, i = Independent



Hilltop Detention Pond

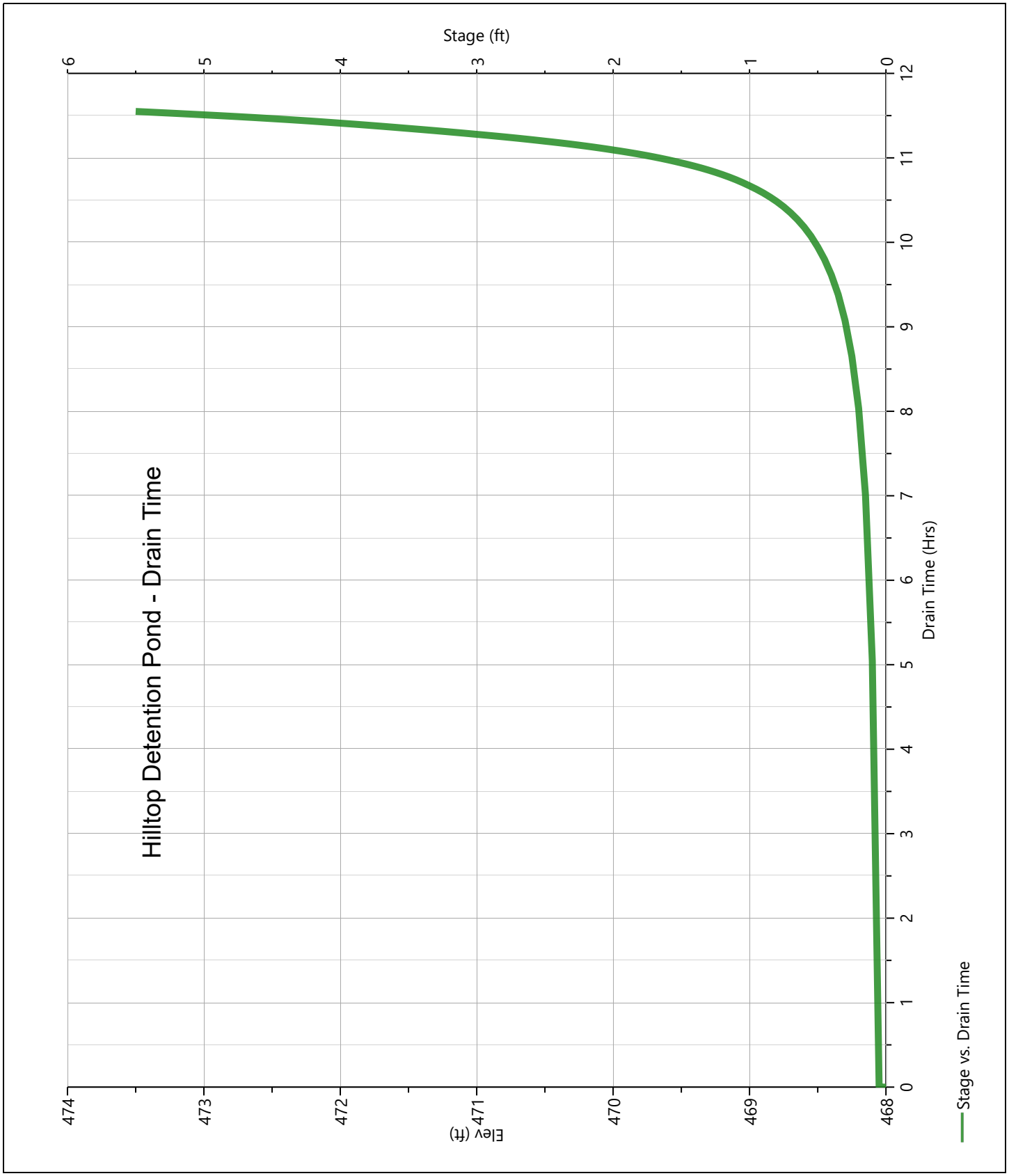
Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	468.00	0.000	0.000	0.000	0.000		0.000	0.000						0.000
0.50	468.50	5,922	1.229 ic	1.229	0.000		0.000	0.000						1.229
1.00	469.00	12,162	4.579 ic	4.579	0.000		0.000	0.000						4.579
1.50	469.50	18,727	9.699 ic	9.699	0.000		0.000	0.000						9.699
2.00	470.00	25,624	15.96 ic	15.96	0.000		0.000	0.000						15.96
2.50	470.50	32,861	22.90 ic	22.90	0.000		0.000	0.000						22.90
3.00	471.00	40,445	29.28 ic	29.28	0.000		0.000	0.000						29.28
3.50	471.50	48,381	34.01 ic	34.01	0.000		0.000	0.000						34.01
4.00	472.00	56,678	39.99 ic	36.38	3.611		0.000	0.000						39.99
4.50	472.50	65,343	50.80 ic	29.89	6.255		14.65	0.000						50.80
5.00	473.00	74,382	61.48 ic	16.52	3.507		41.45	0.000						61.48
5.50	473.50	83,802	68.06 ic	0.000	0.000		0.000	0.000						68.06

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Hilltop Detention Pond

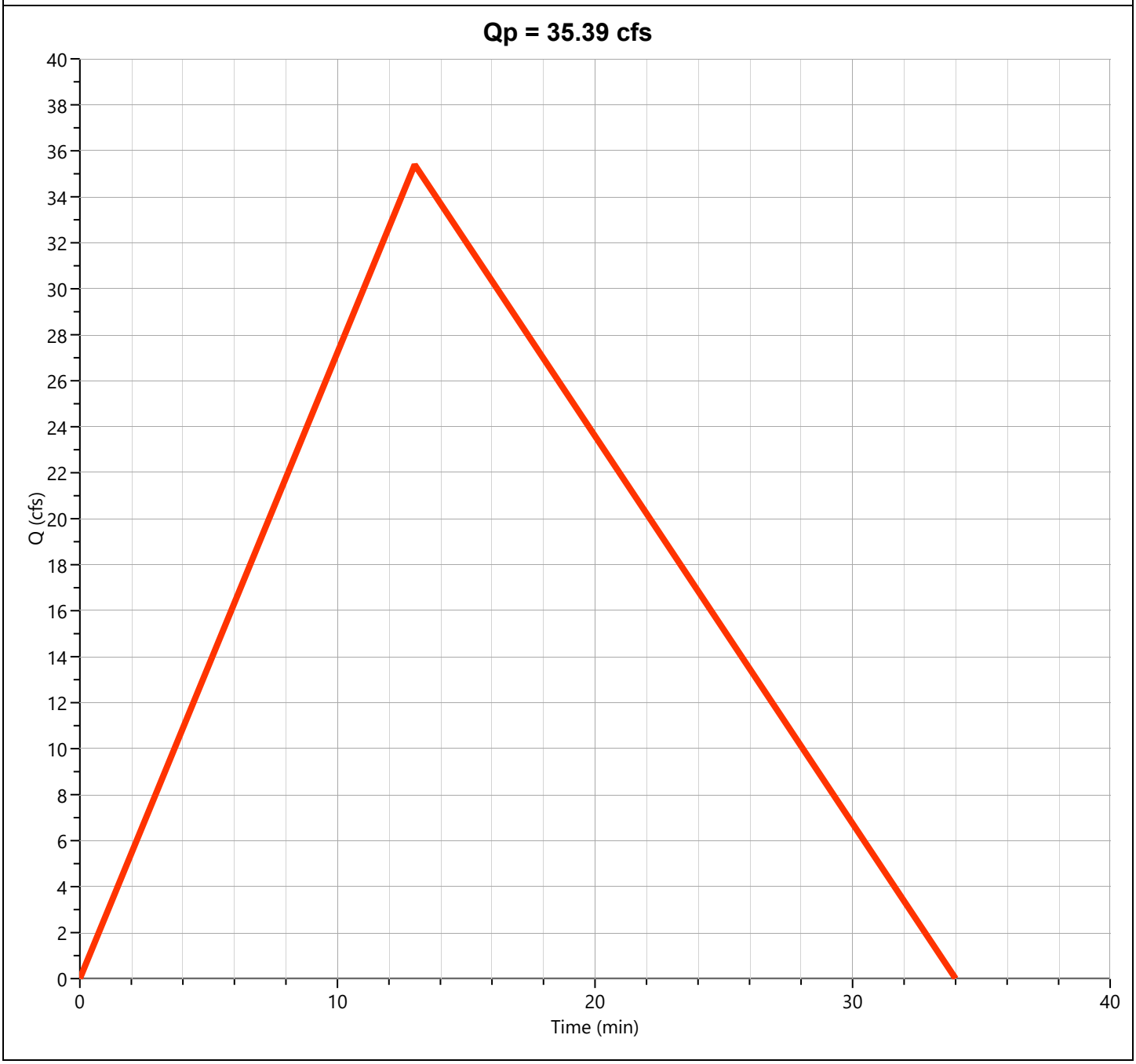
Pond Drawdown



Post-Dev Basin "E-2"

Hyd. No. 15

Hydrograph Type	= Rational	Peak Flow	= 35.39 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 36,857 cuft
Drainage Area	= 15.86 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.99 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "E-2"
Rational

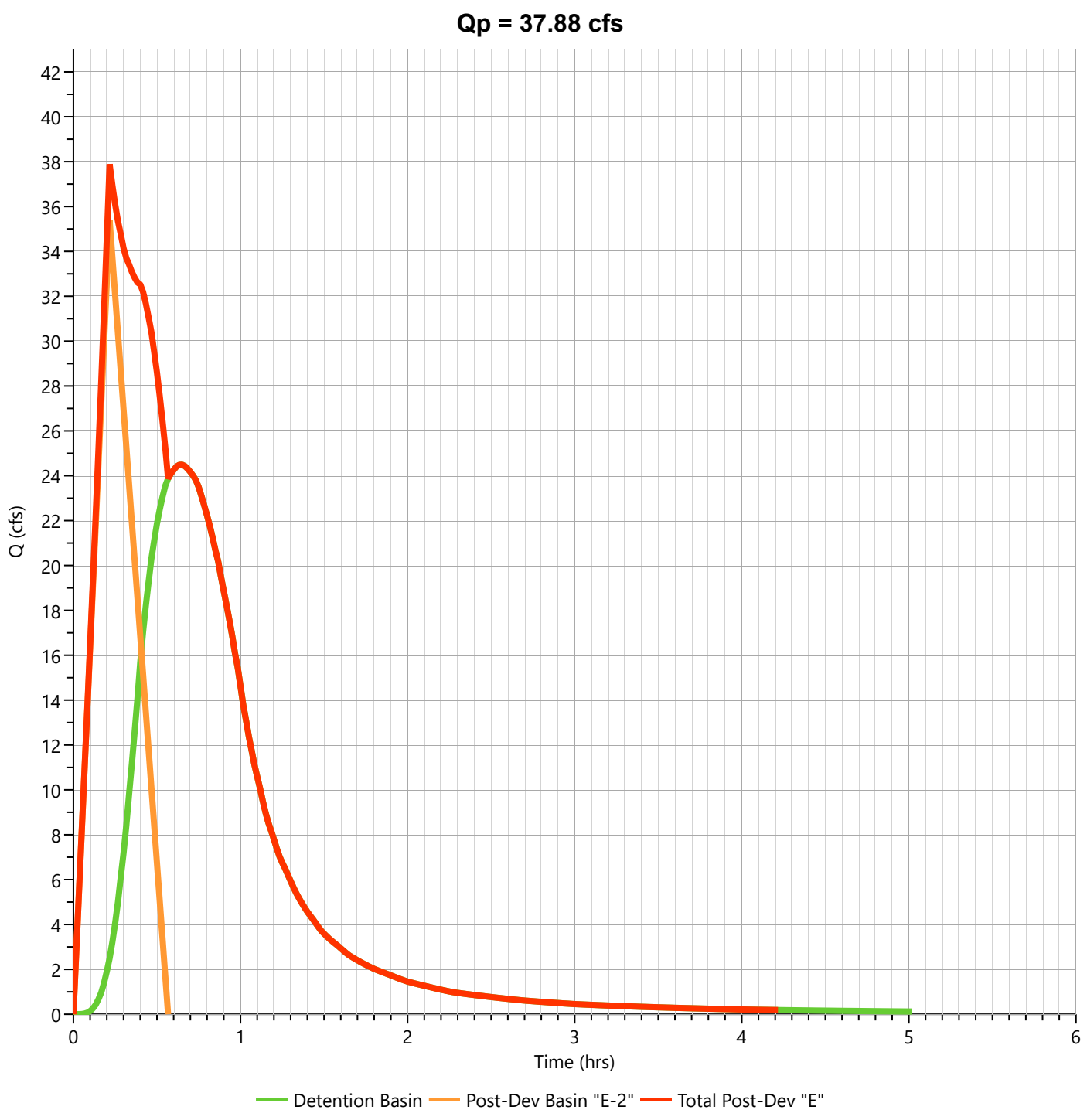
Hyd. No. 15

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	7.25			
Travel Time (min)	**8.74**	**0.00**	**0.00**	**8.74**
Shallow Concentrated Flow				
Flow Length (ft)	1070			
Watercourse Slope (%)	6.23	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	4.03			
Travel Time (min)	**4.43**	**0.00**	**0.00**	**4.43**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**13 min**

Total Post-Dev "E"

Hyd. No. 16

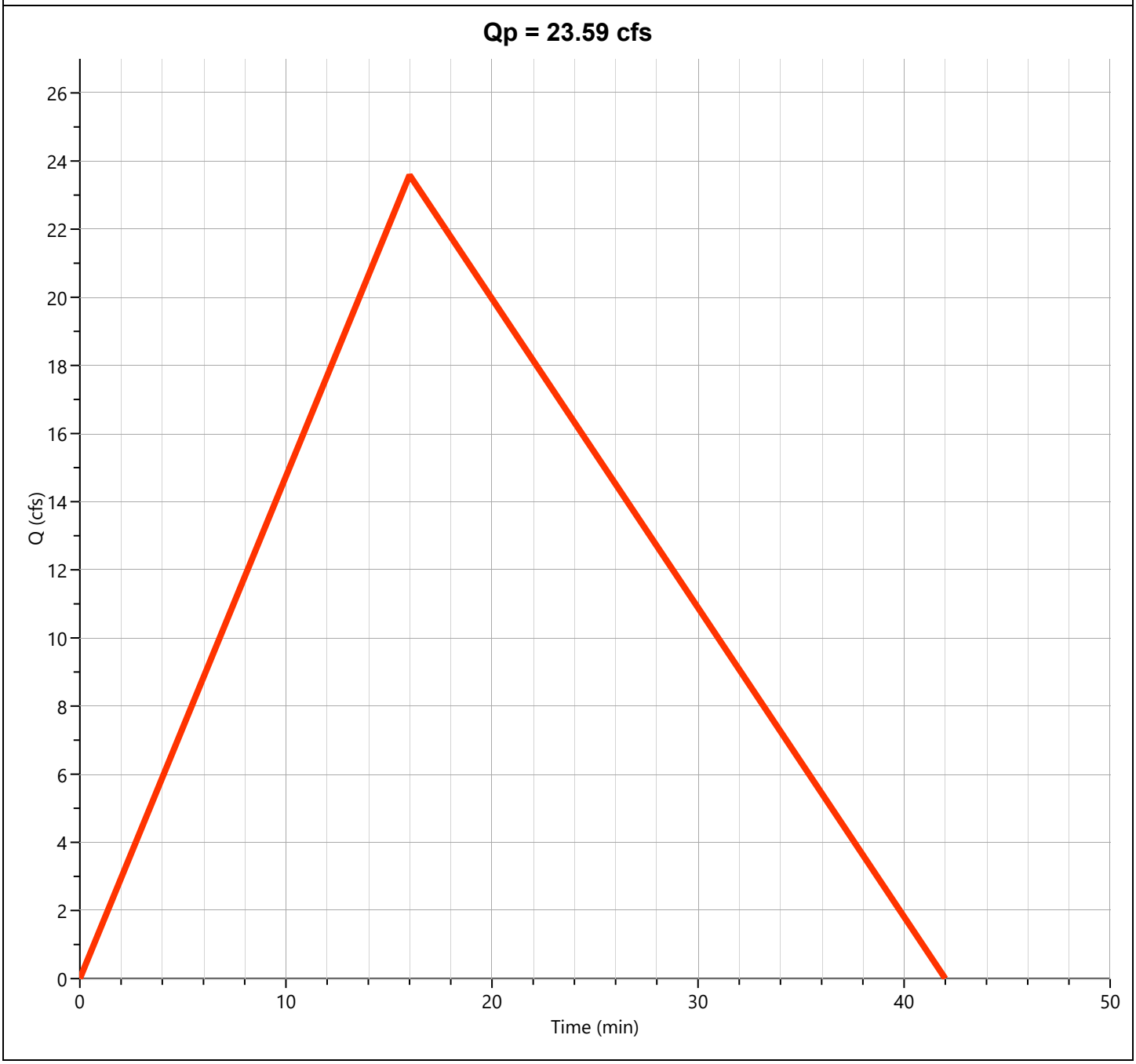
Hydrograph Type	= Junction	Peak Flow	= 37.88 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 112,117 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 15.86 ac



Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 23.59 cfs
Storm Frequency	= 2-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 30,229 cuft
Drainage Area	= 11.61 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 16.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 3.63 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "F"
Rational

Hyd. No. 17

Description	Segments			
	A	B	C	Tc (min)
Sheet Flow				
Description				
Manning's n	0.300	0.013	0.013	
Flow Length (ft)	100			
2-yr, 24-hr Precip. (in)	4.35	2.28	2.28	
Land Slope (%)	6			
Travel Time (min)	**9.43**	**0.00**	**0.00**	**9.43**
Shallow Concentrated Flow				
Flow Length (ft)	1362			
Watercourse Slope (%)	4.65	0.00	0.00	
Surface Description	Unpaved	Paved	Paved	
Average Velocity (ft/s)	3.48			
Travel Time (min)	**6.52**	**0.00**	**0.00**	**6.52**
Channel Flow				
X-sectional Flow Area (sqft)				
Wetted Perimeter (ft)				
Channel Slope (%)				
Manning's n	0.013	0.013	0.013	
Velocity (ft/s)				
Flow Length (ft)				
Travel Time (min)	**0.00**	**0.00**	**0.00**	**0.00**
Total Travel Time				**16 min**

Design Storm Report

Custom Storm filename:

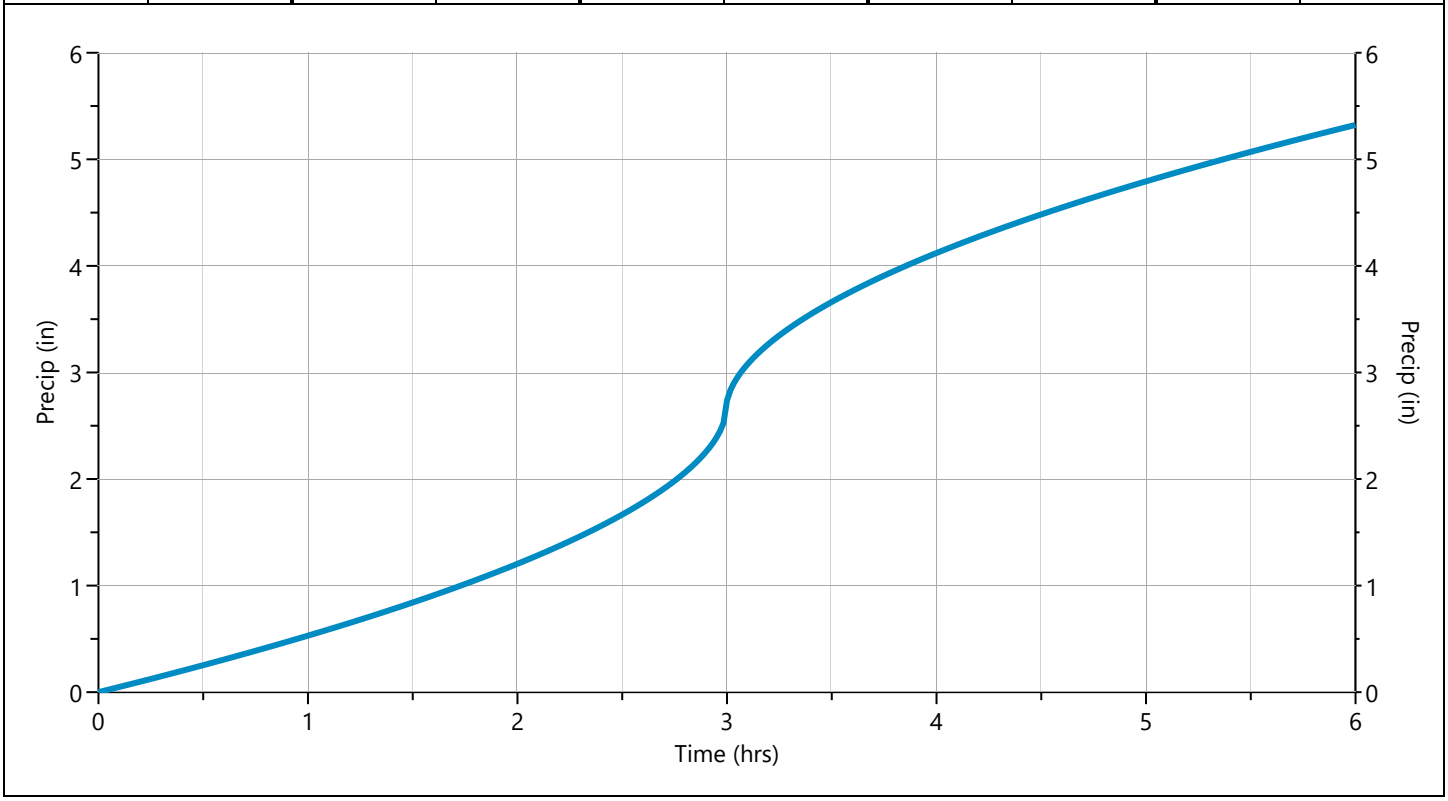
Hydrology Studio v 3.0.0.44

09-25-2026

Storm Distribution: IDF Based - Synthetic, 6-hr

Storm Duration	Total Rainfall Volume (in)								
	1-yr	✔ 2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
6 hrs	0	5.32	0	6.37	7.21	8.30	9.12	9.85	

Incremental Rainfall Distribution, 2-yr									
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
2.50	0.018143	2.68	0.022259	2.87	0.032659	3.05	0.053726	3.23	0.025919
2.52	0.018421	2.70	0.022803	2.88	0.034626	3.07	0.046673	3.25	0.025108
2.53	0.018713	2.72	0.023391	2.90	0.037032	3.08	0.041932	3.27	0.024374
2.55	0.019021	2.73	0.024032	2.92	0.040074	3.10	0.038457	3.28	0.023705
2.57	0.019345	2.75	0.024733	2.93	0.044099	3.12	0.035764	3.30	0.023091
2.58	0.019688	2.77	0.025503	2.95	0.049802	3.13	0.033596	3.32	0.022526
2.60	0.020051	2.78	0.026357	2.97	0.058857	3.15	0.031801	3.33	0.022002
2.62	0.020437	2.80	0.027310	2.98	0.077022	3.17	0.030281	3.35	0.021516
2.63	0.020847	2.82	0.028382	**3.00**	**0.211936**	3.18	0.028972	3.37	0.021063
2.65	0.021286	2.83	0.029603	3.02	0.097849	3.20	0.027829	3.38	0.020639
2.67	0.021755	2.85	0.031011	3.03	0.066003	3.22	0.026819	3.40	0.020241



Hydrograph 10-yr Summary

Hydrology Studio v 3.0.0.44

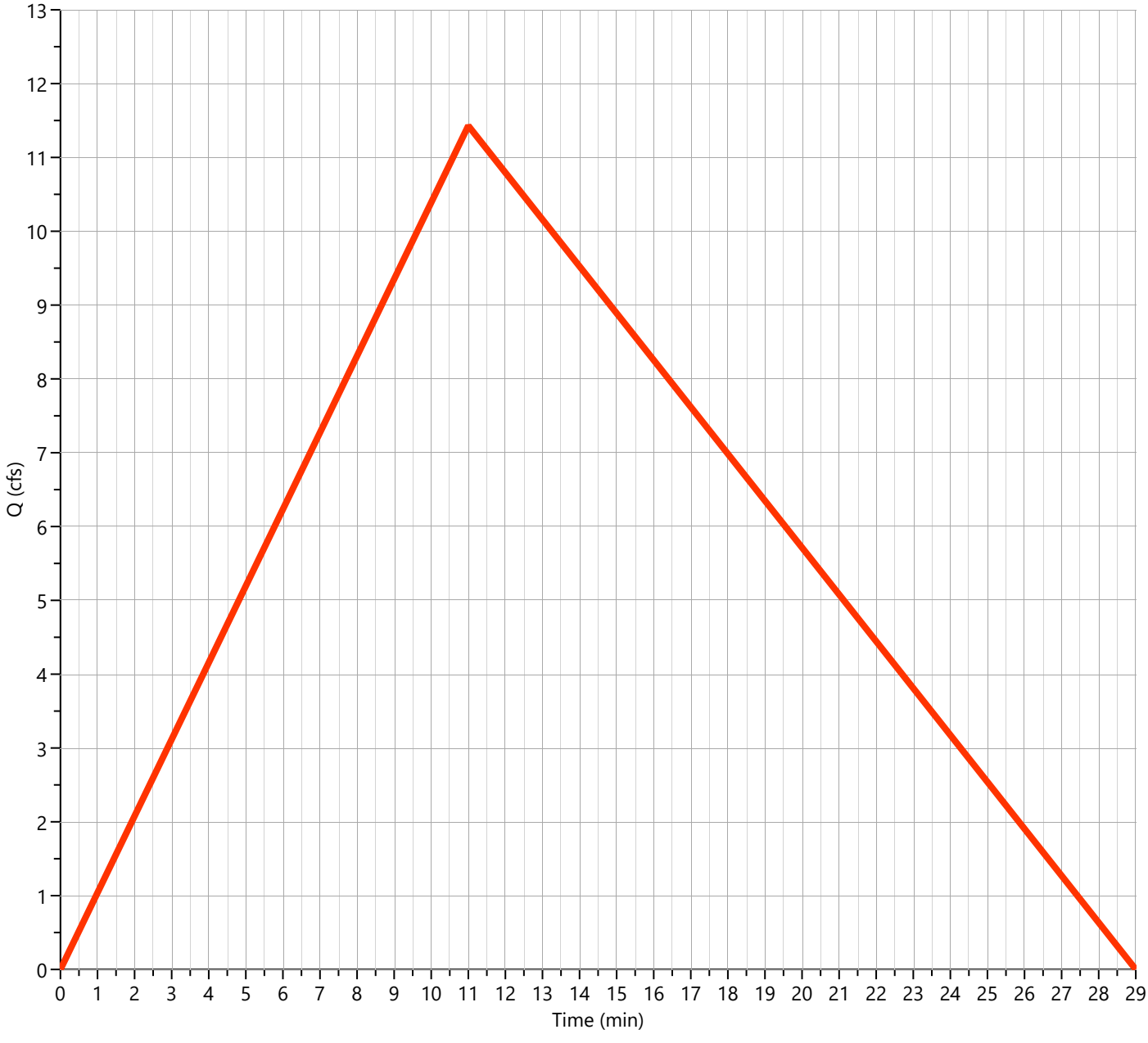
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Pre-Dev Basin "A"	11.43	0.18	10,070	----		
2	Rational	Pre-Dev Basin "B"	38.41	0.25	46,149	----		
3	Rational	Pre-Dev Basin "C"	21.67	0.18	19,095	----		
4	Rational	Pre-Dev Basin "D"	9.804	0.13	6,283	----		
5	Rational	Pre-Dev Basin "E-1"	31.02	0.20	29,819	----		
6	Rational	Pre-Dev Basin "E-2"	52.69	0.22	54,864	----		
7	Junction	Total Pre Basin "E"	82.16	0.22	83,523	5, 6		
8	Rational	Pre-Dev Basin "F"	33.12	0.28	45,094	----		
9	Rational	Post-Dev Basin A	10.85	0.25	13,032	----		
10	Rational	Post-Dev Basin B	29.69	0.35	49,939	----		
11	Rational	Post-Dev Basin "C"	22.16	0.18	19,529	----		
12	Rational	Post-Dev Basin "D"	11.25	0.13	7,211	----		
13	Rational	Post-Dev Basin "E-1"	55.83	0.38	102,852	----		
14	Pond Route	Detention Basin	32.20	0.65	102,121	13	471.30	45,155
15	Rational	Post-Dev Basin "E-2"	47.46	0.22	49,424	----		
16	Junction	Total Post-Dev "E"	51.67	0.22	150,534	14, 15		
17	Rational	Post-Dev Basin "F"	31.65	0.27	40,562	----		

Pre-Dev Basin "A"

Hyd. No. 1

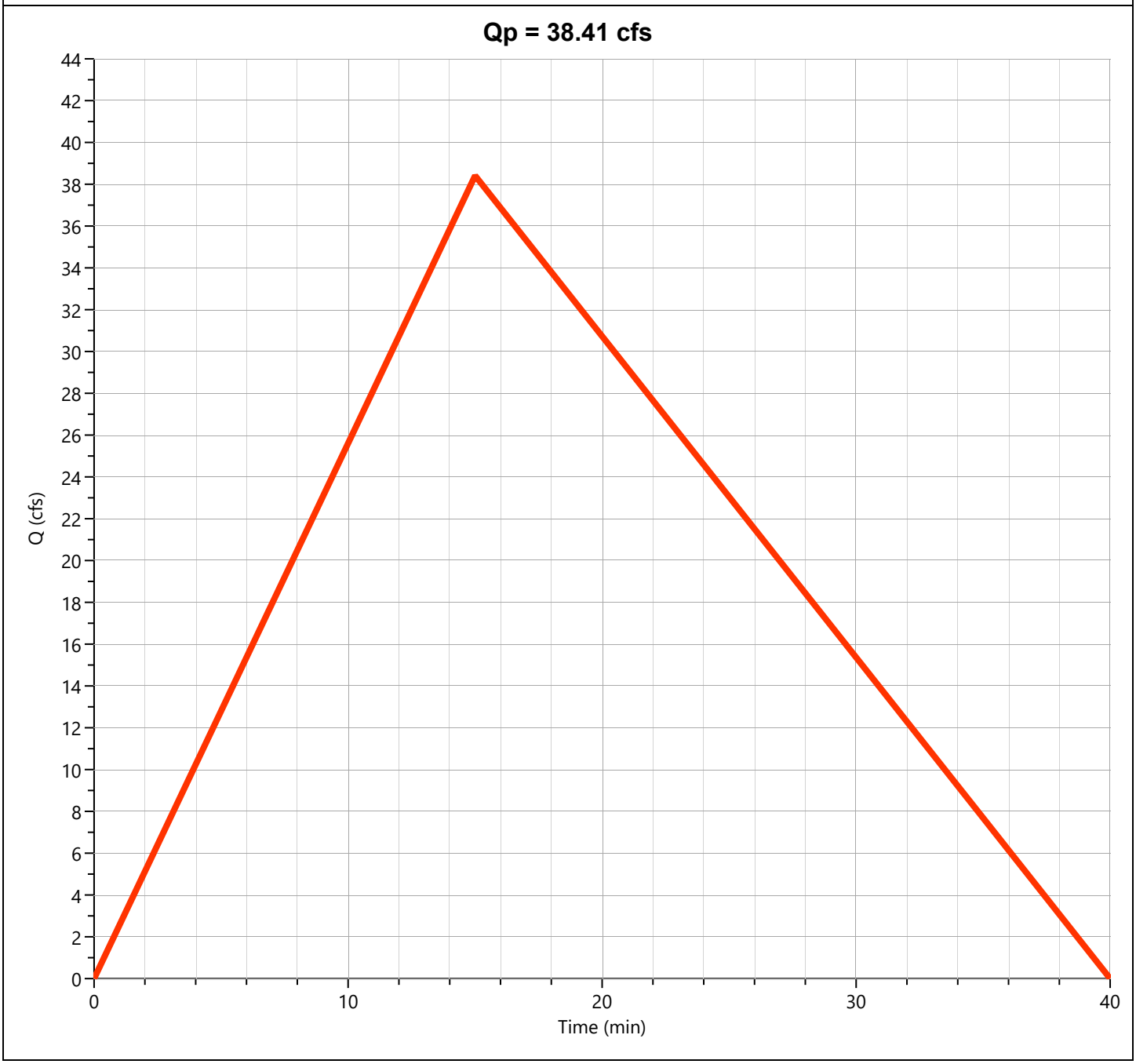
Hydrograph Type	= Rational	Peak Flow	= 11.43 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 10,070 cuft
Drainage Area	= 3.2 ac	Runoff Coeff.	= 0.62
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.76 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "B"

Hyd. No. 2

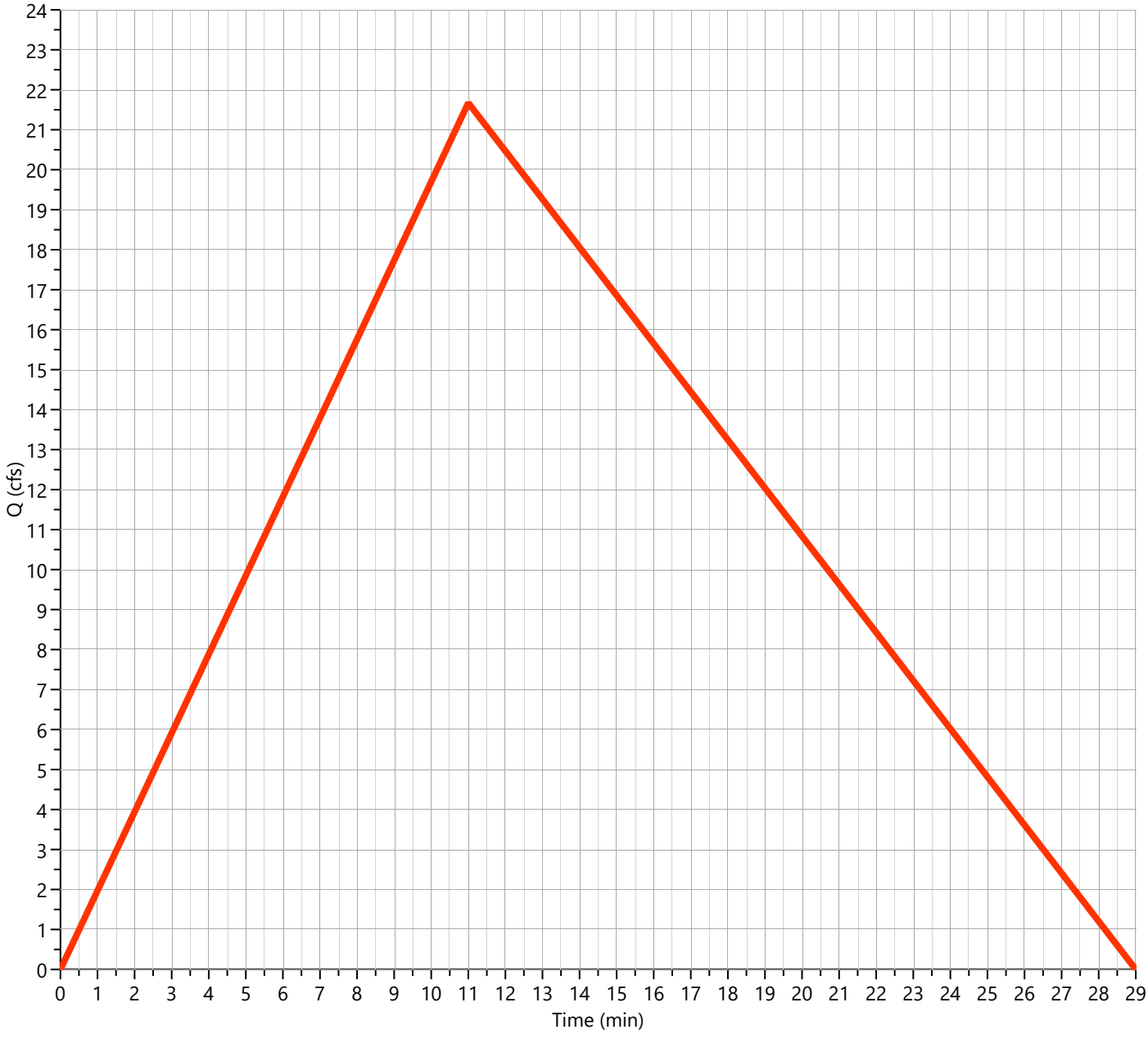
Hydrograph Type	= Rational	Peak Flow	= 38.41 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 46,149 cuft
Drainage Area	= 14.74 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.01 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "C"

Hyd. No. 3

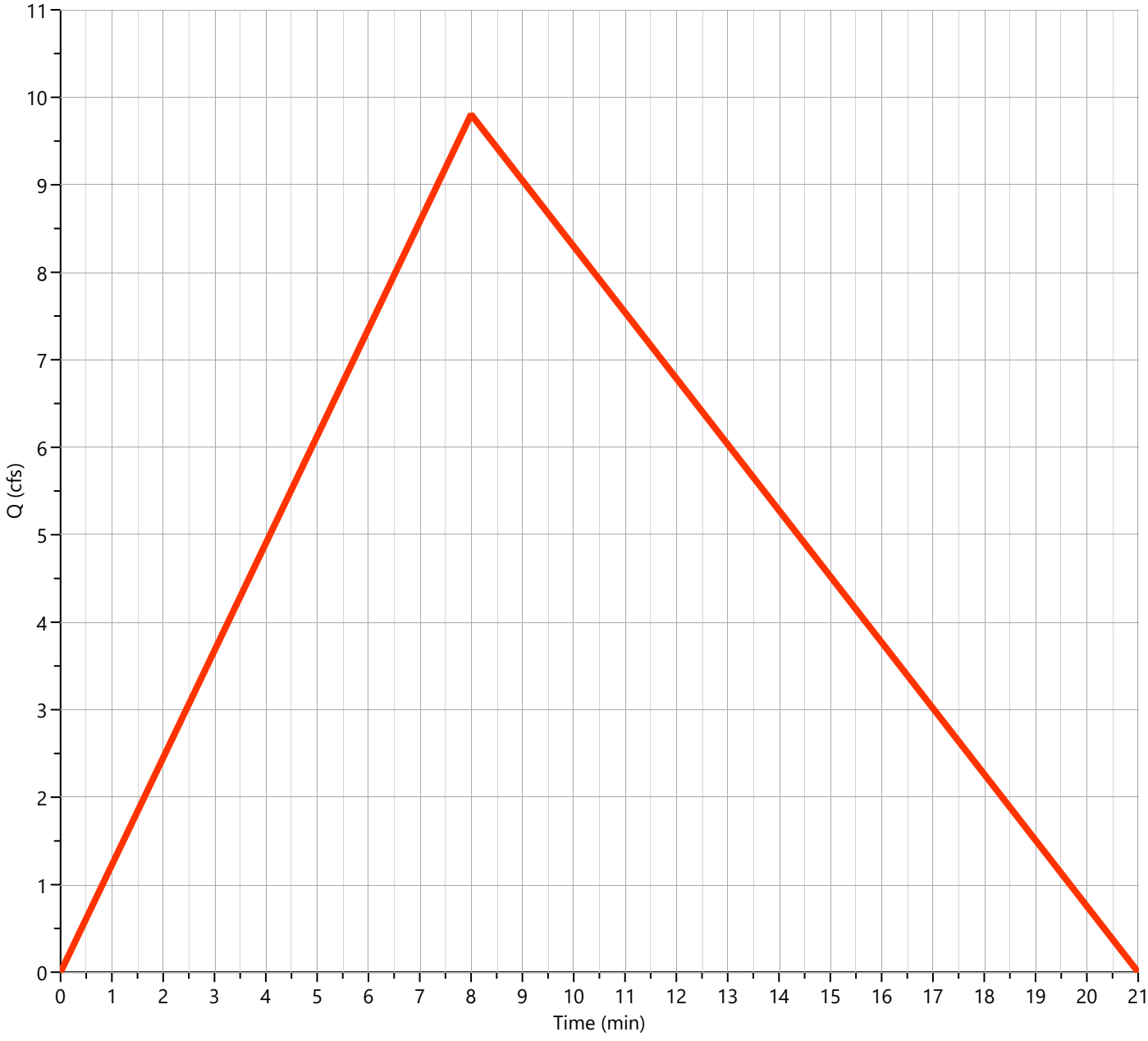
Hydrograph Type	= Rational	Peak Flow	= 21.67 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 19,095 cuft
Drainage Area	= 6.84 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.76 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "D"

Hyd. No. 4

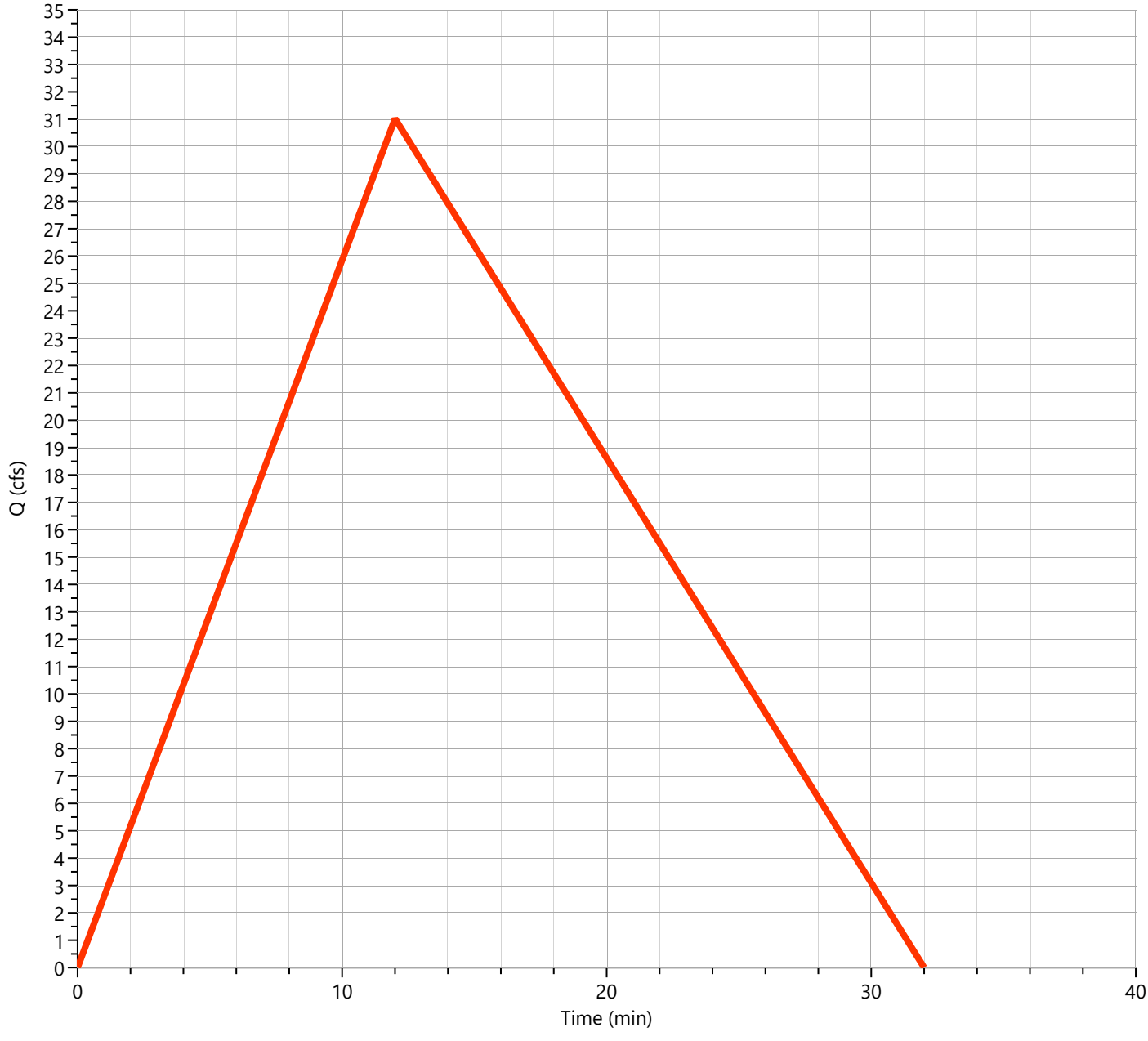
Hydrograph Type	= Rational	Peak Flow	= 9.804 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 6,283 cuft
Drainage Area	= 2.95 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.65 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-1"

Hyd. No. 5

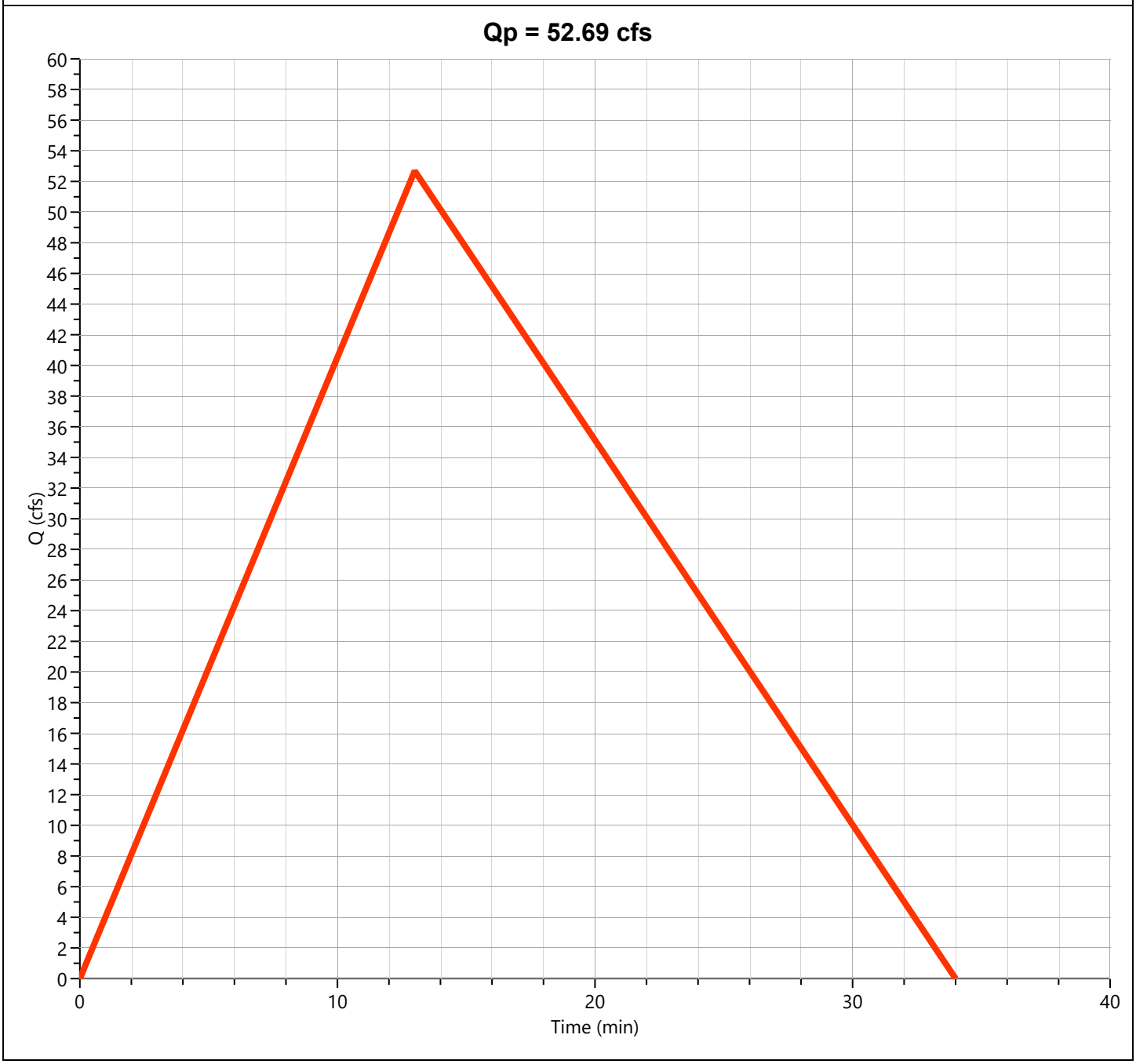
Hydrograph Type	= Rational	Peak Flow	= 31.02 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.20 hrs
Time Interval	= 1 min	Runoff Volume	= 29,819 cuft
Drainage Area	= 11.2 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 12.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.54 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-2"

Hyd. No. 6

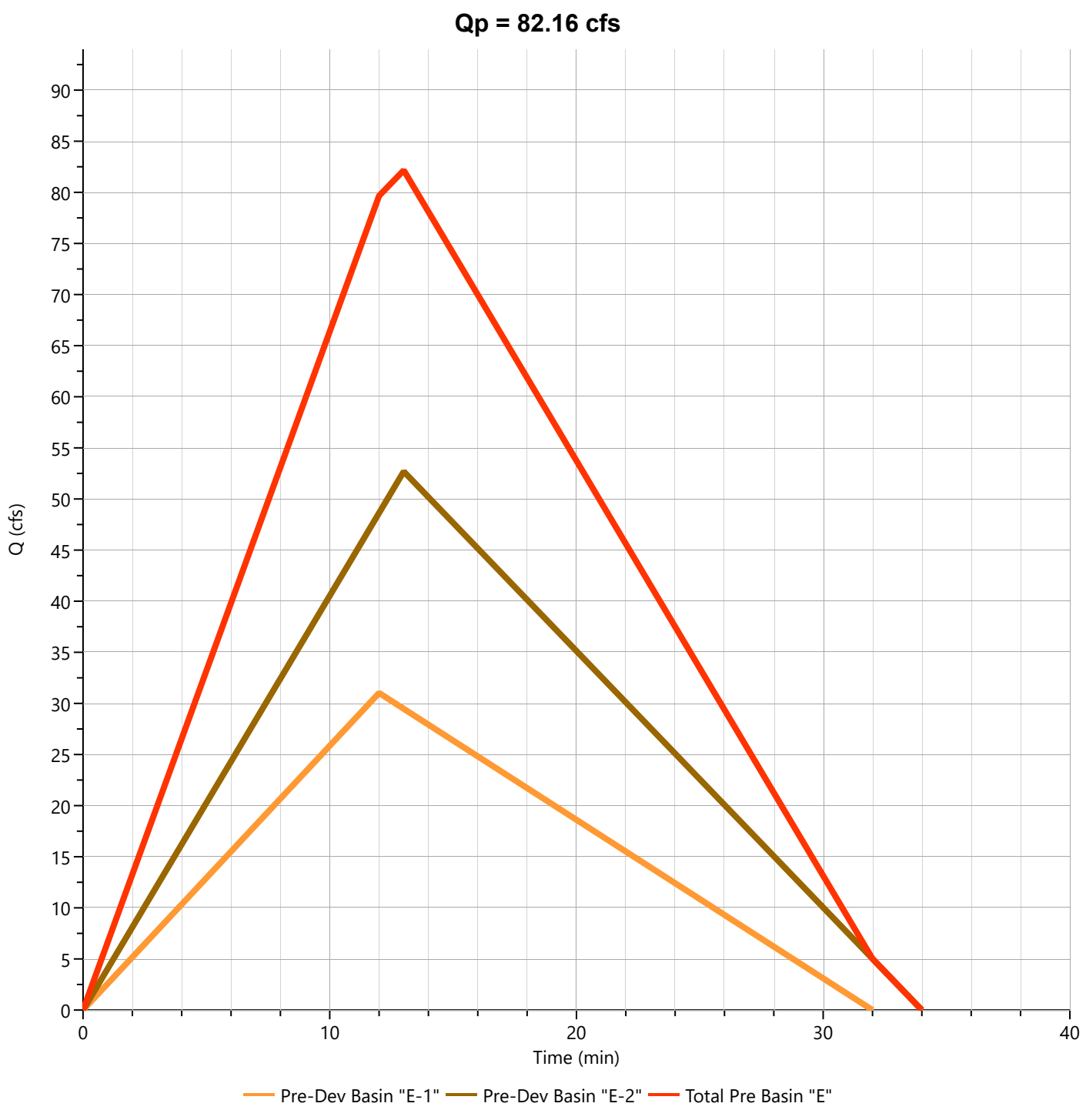
Hydrograph Type	= Rational	Peak Flow	= 52.69 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 54,864 cuft
Drainage Area	= 18.96 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.34 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Pre Basin "E"

Hyd. No. 7

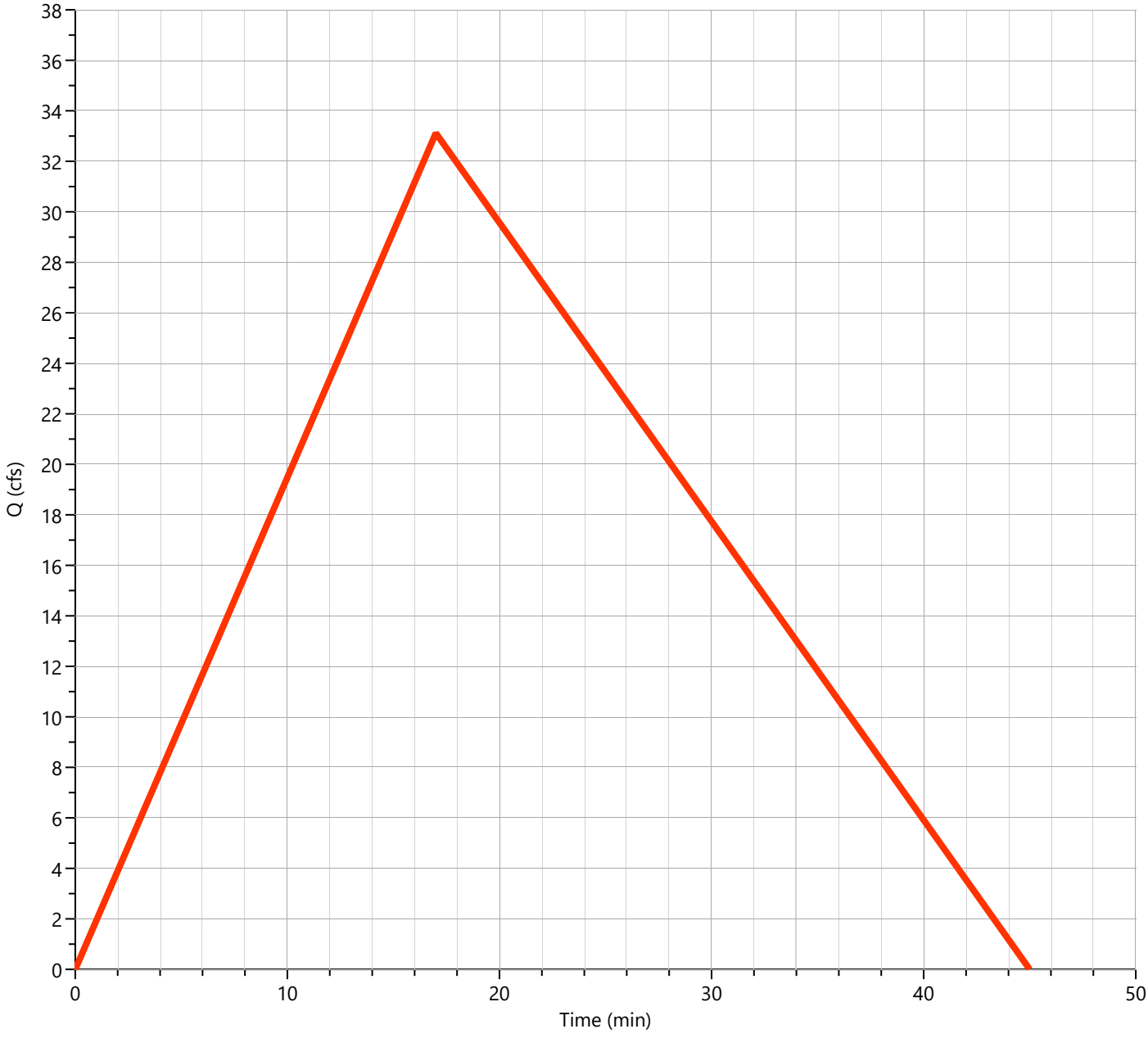
Hydrograph Type	= Junction	Peak Flow	= 82.16 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 83,523 cuft
Inflow Hydrographs	= 5, 6	Total Contrib. Area	= 30.16 ac



Pre-Dev Basin "F"

Hyd. No. 8

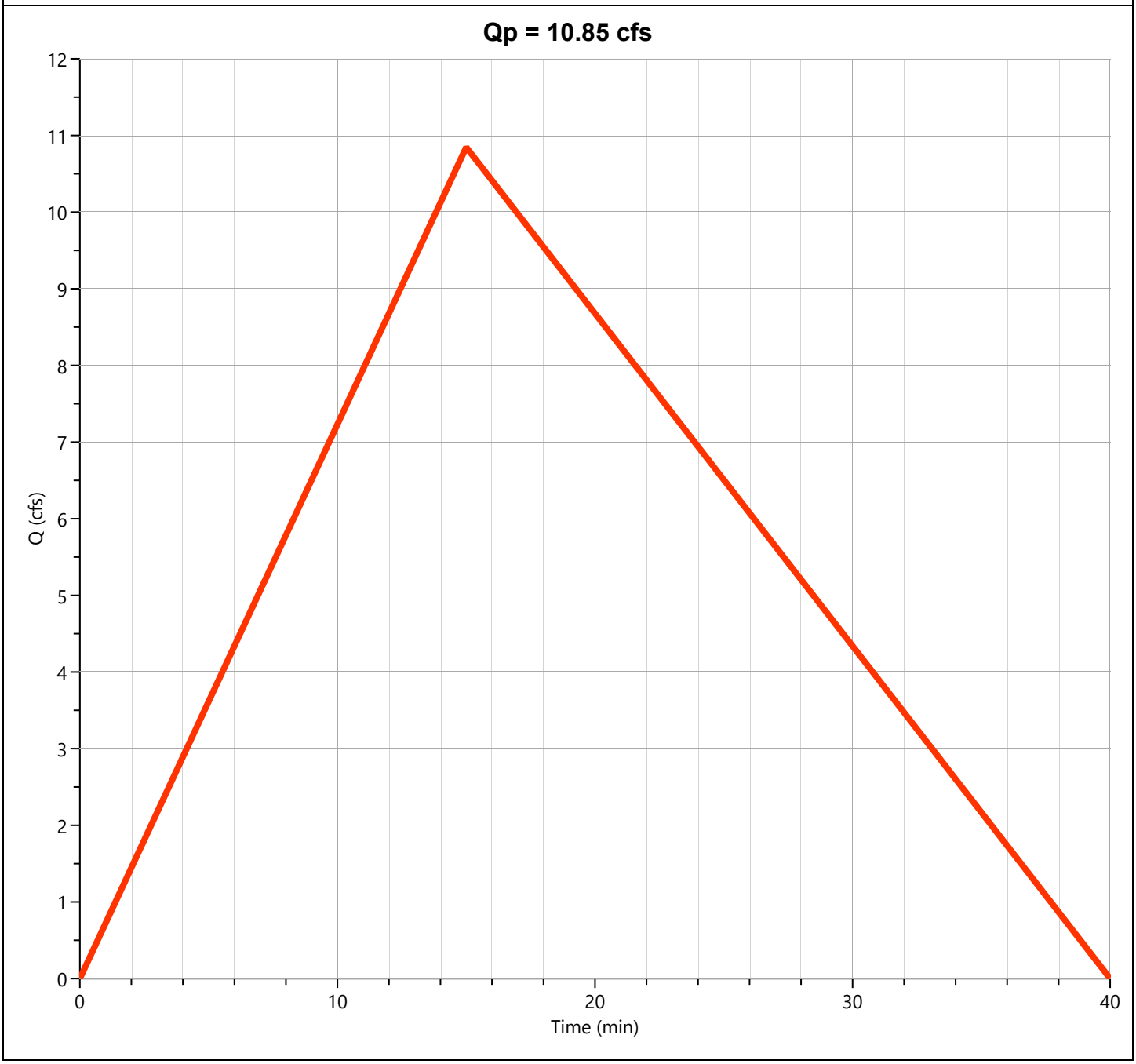
Hydrograph Type	= Rational	Peak Flow	= 33.12 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 45,094 cuft
Drainage Area	= 13.19 ac	Runoff Coeff.	= 0.53
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.74 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin A

Hyd. No. 9

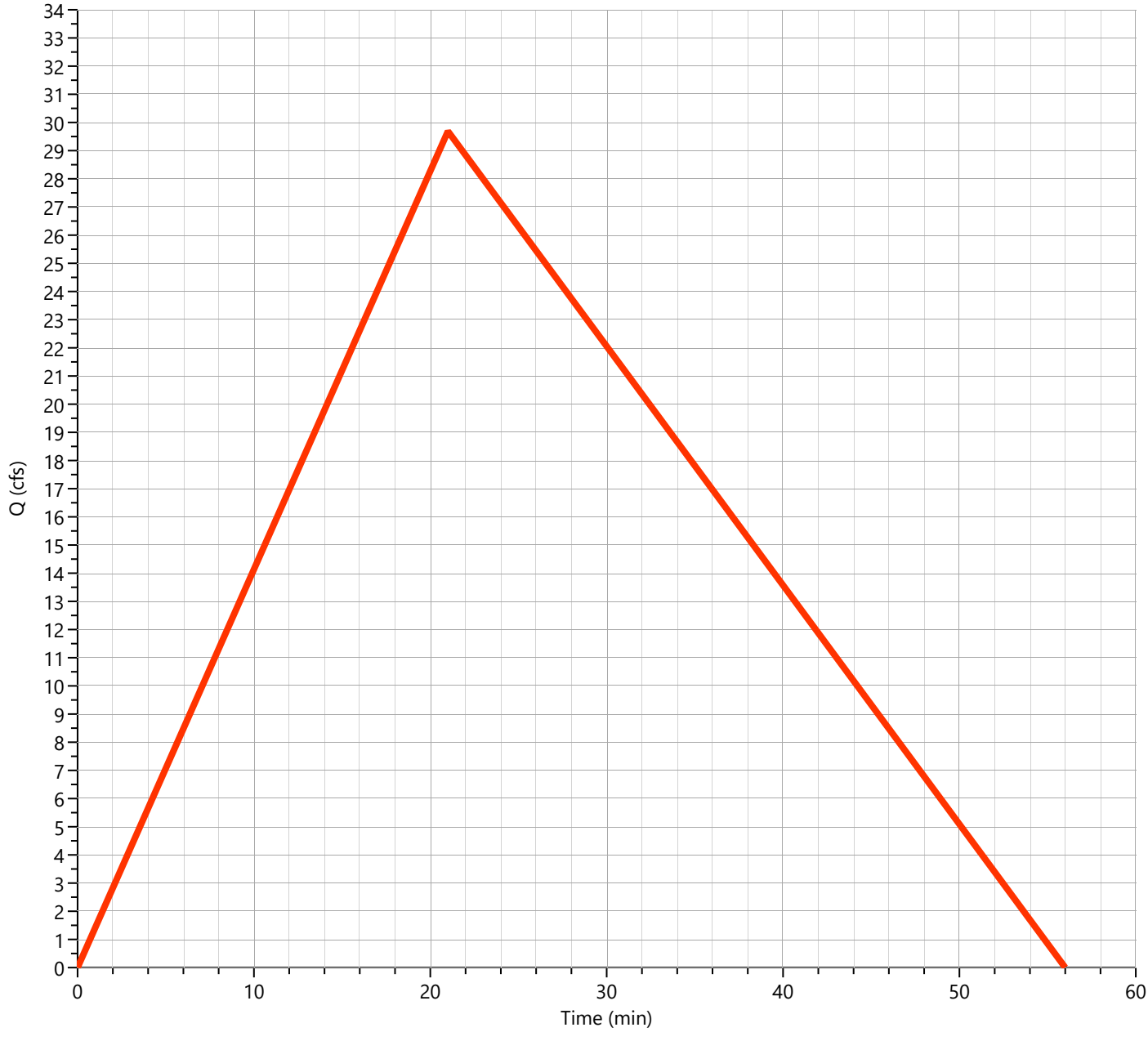
Hydrograph Type	= Rational	Peak Flow	= 10.85 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 13,032 cuft
Drainage Area	= 3.33 ac	Runoff Coeff.	= 0.65
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.01 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin B

Hyd. No. 10

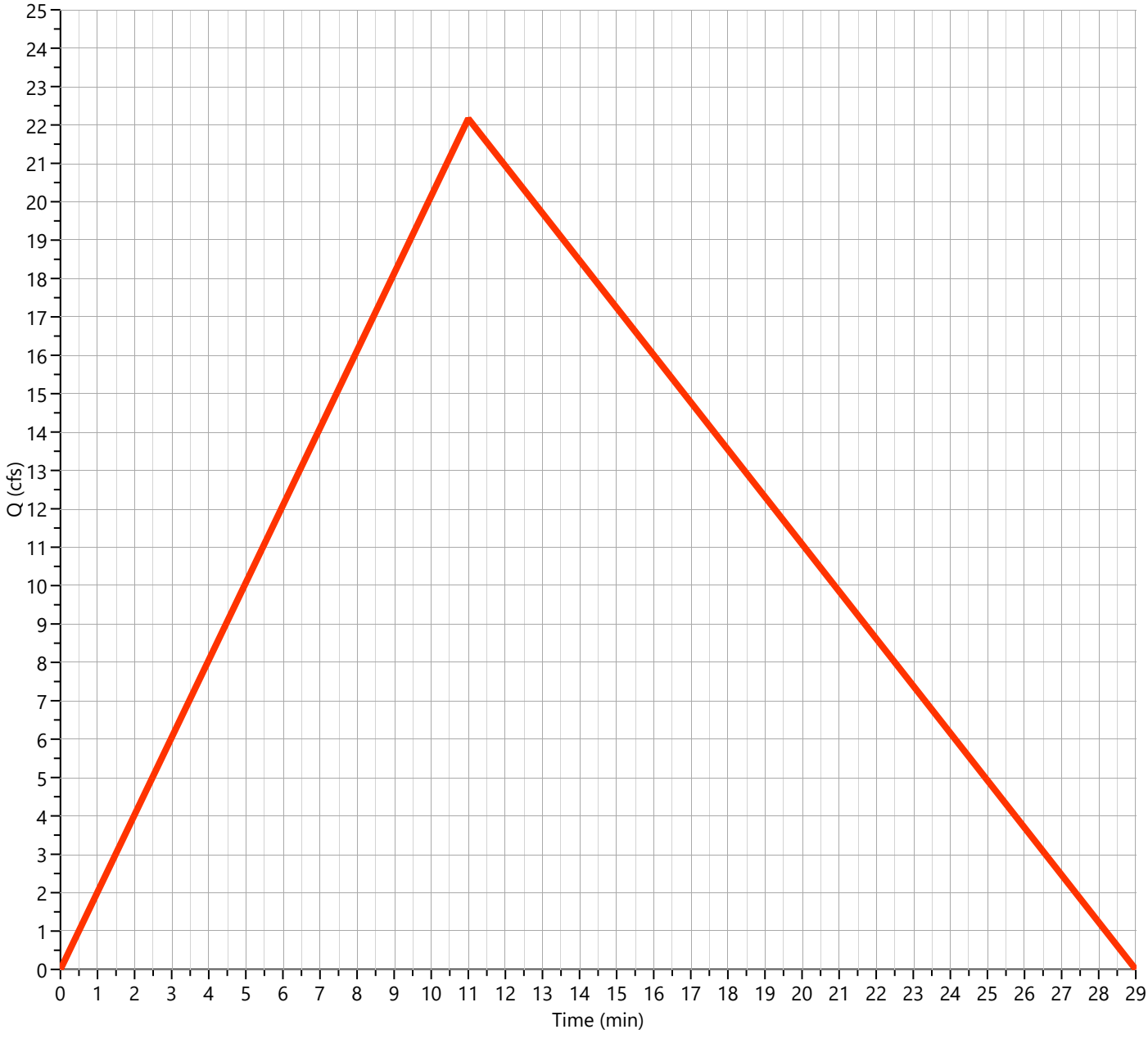
Hydrograph Type	= Rational	Peak Flow	= 29.69 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.35 hrs
Time Interval	= 1 min	Runoff Volume	= 49,939 cuft
Drainage Area	= 12.53 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 21.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.31 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "C"

Hyd. No. 11

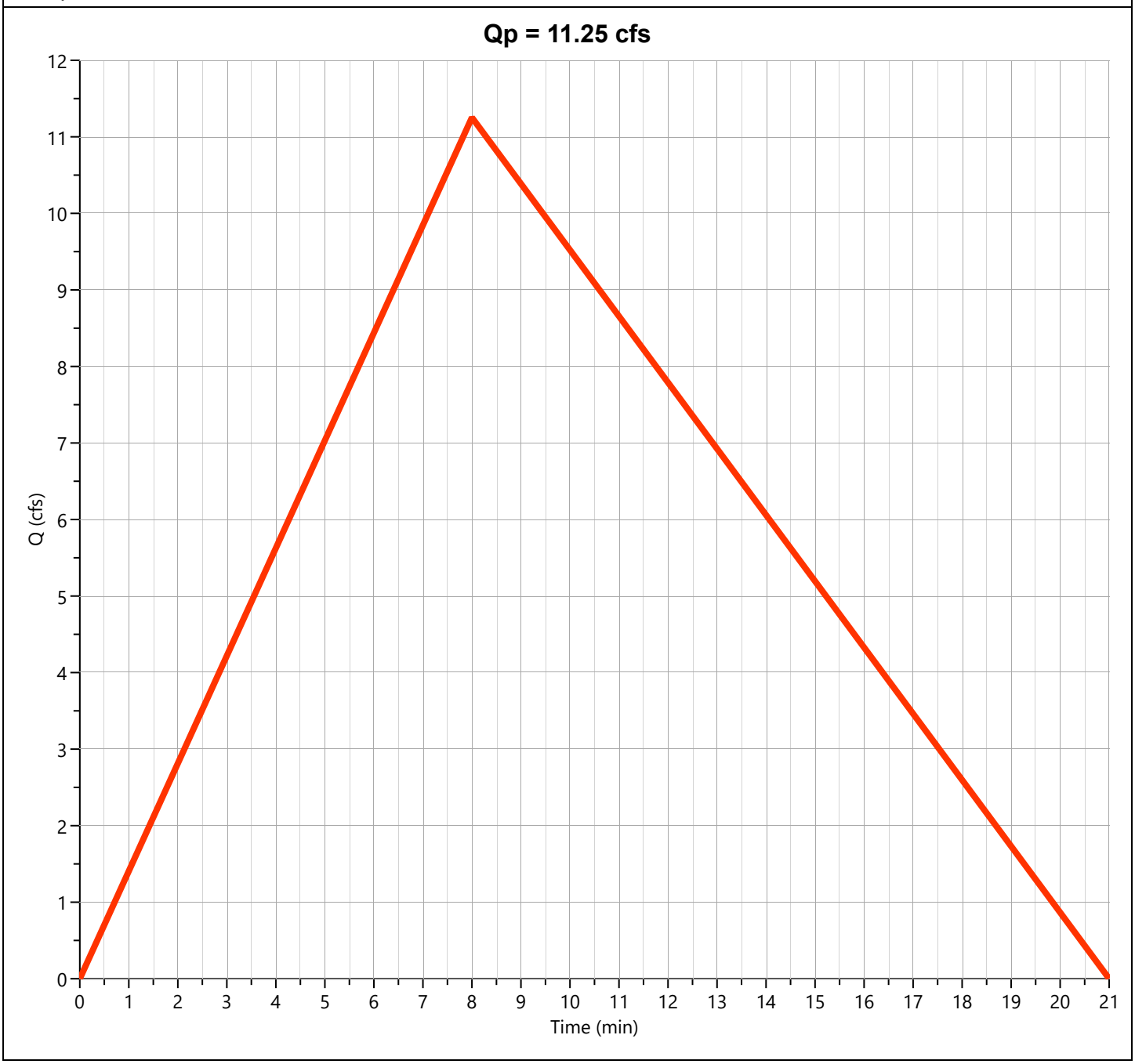
Hydrograph Type	= Rational	Peak Flow	= 22.16 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 19,529 cuft
Drainage Area	= 6.75 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.76 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "D"

Hyd. No. 12

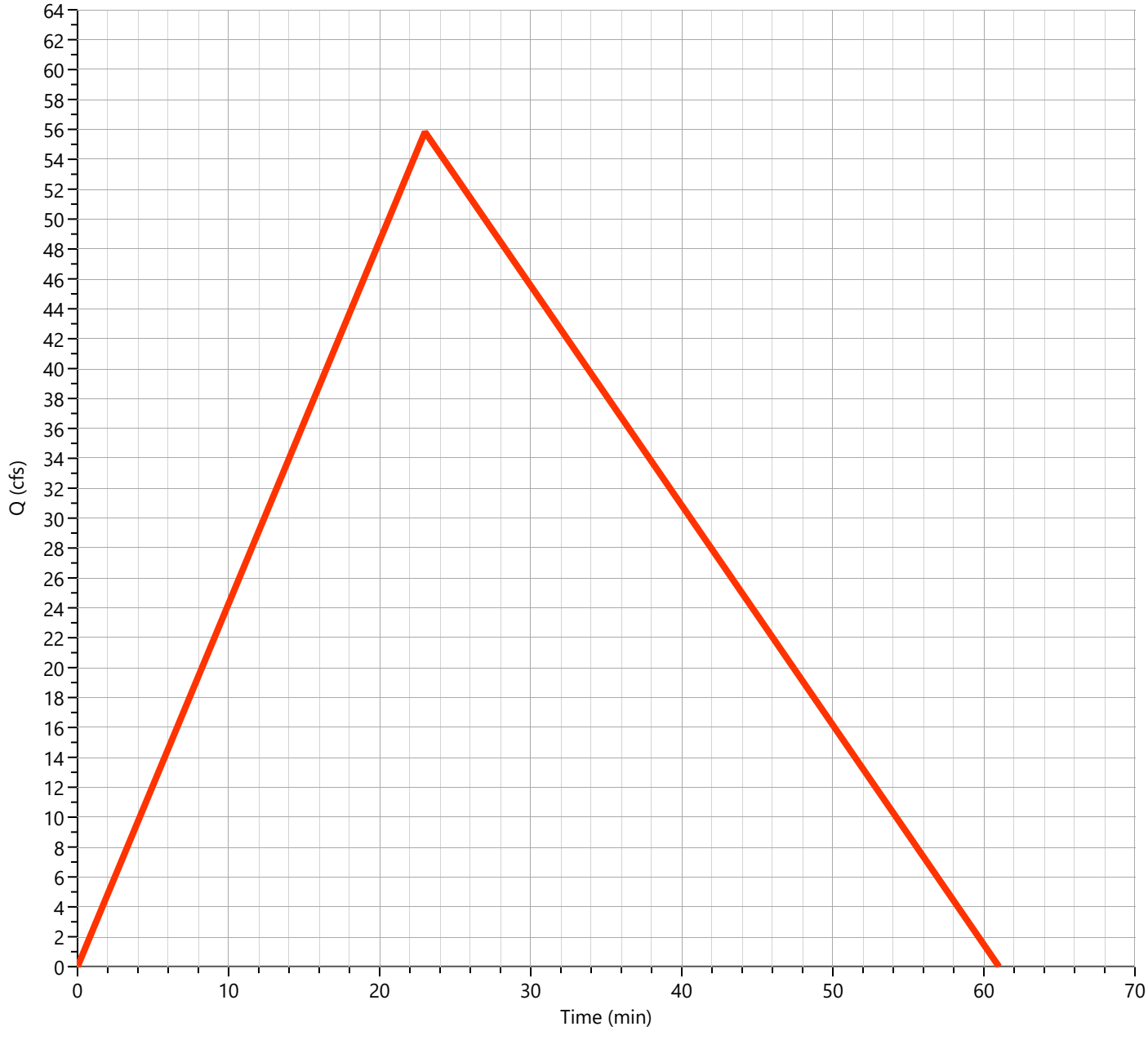
Hydrograph Type	= Rational	Peak Flow	= 11.25 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 7,211 cuft
Drainage Area	= 2.97 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.65 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Rational	Peak Flow	= 55.83 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.38 hrs
Time Interval	= 1 min	Runoff Volume	= 102,852 cuft
Drainage Area	= 18.0 ac	Runoff Coeff.	= 0.75
Tc Method	= User	Time of Conc. (Tc)	= 23.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.14 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



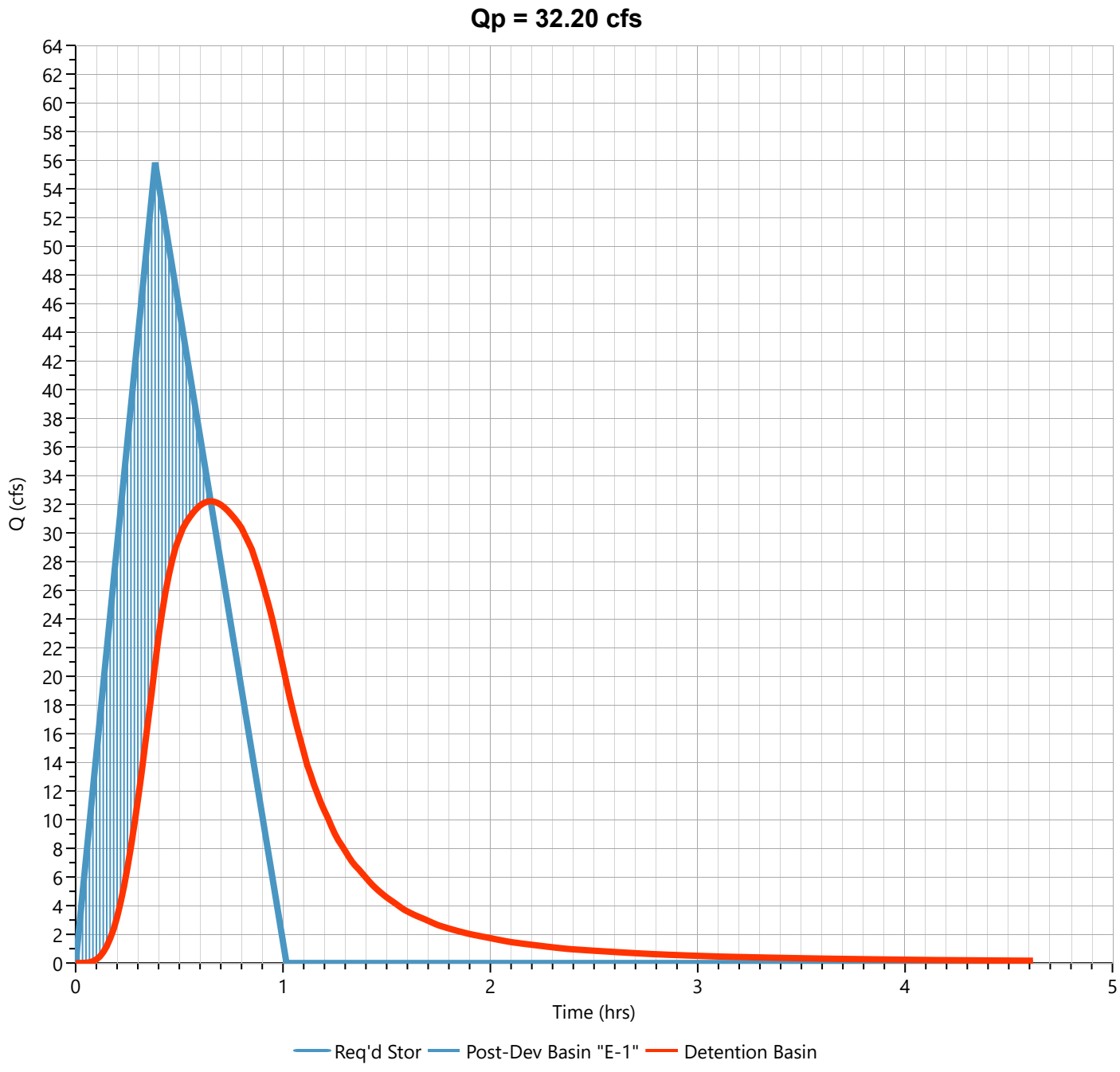
Detention Basin

Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 32.20 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.65 hrs
Time Interval	= 1 min	Hydrograph Volume	= 102,121 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 471.30 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 45,155 cuft

Pond Routing by Storage Indication Method

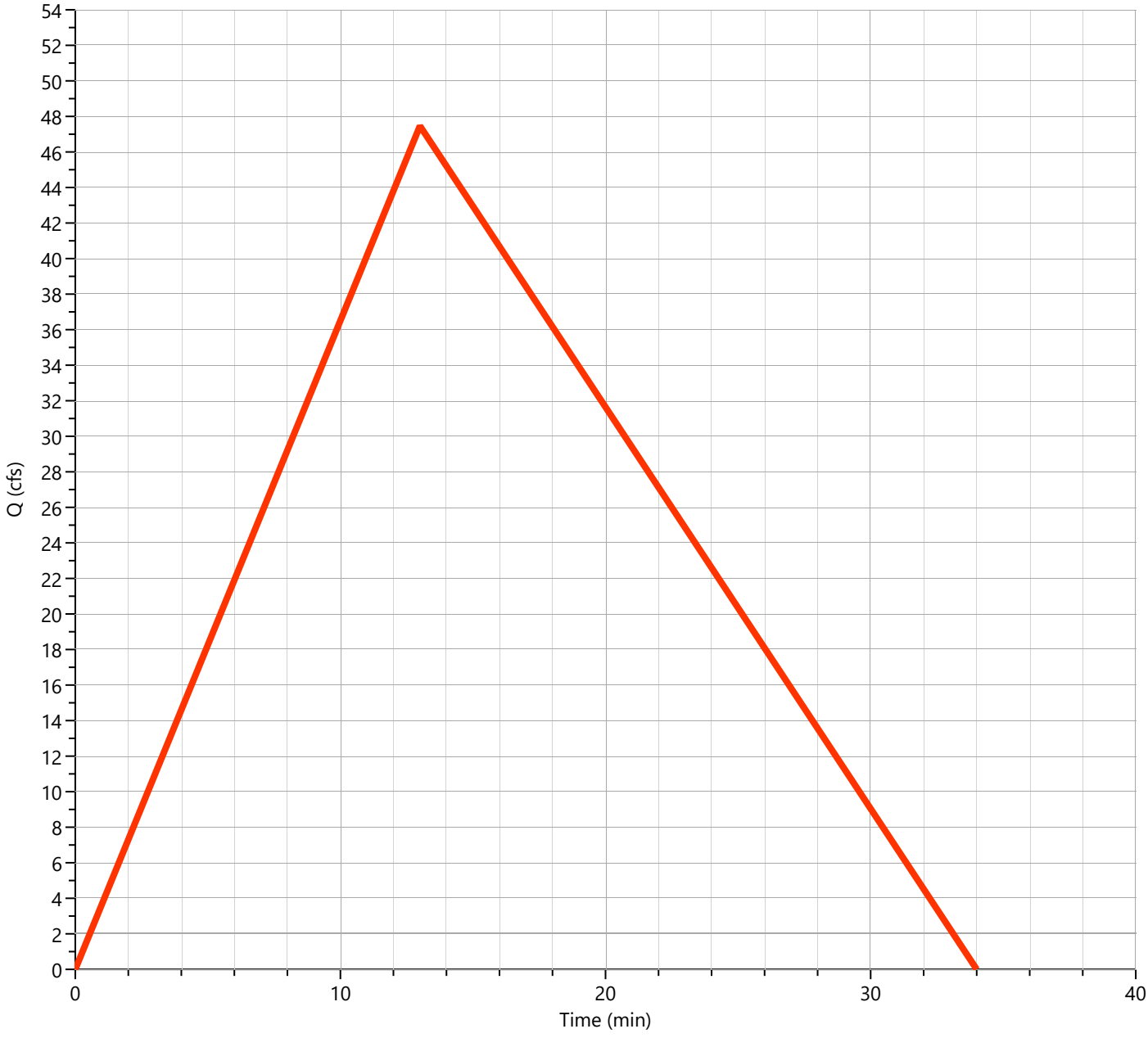
Center of mass detention time = 25 min



Post-Dev Basin "E-2"

Hyd. No. 15

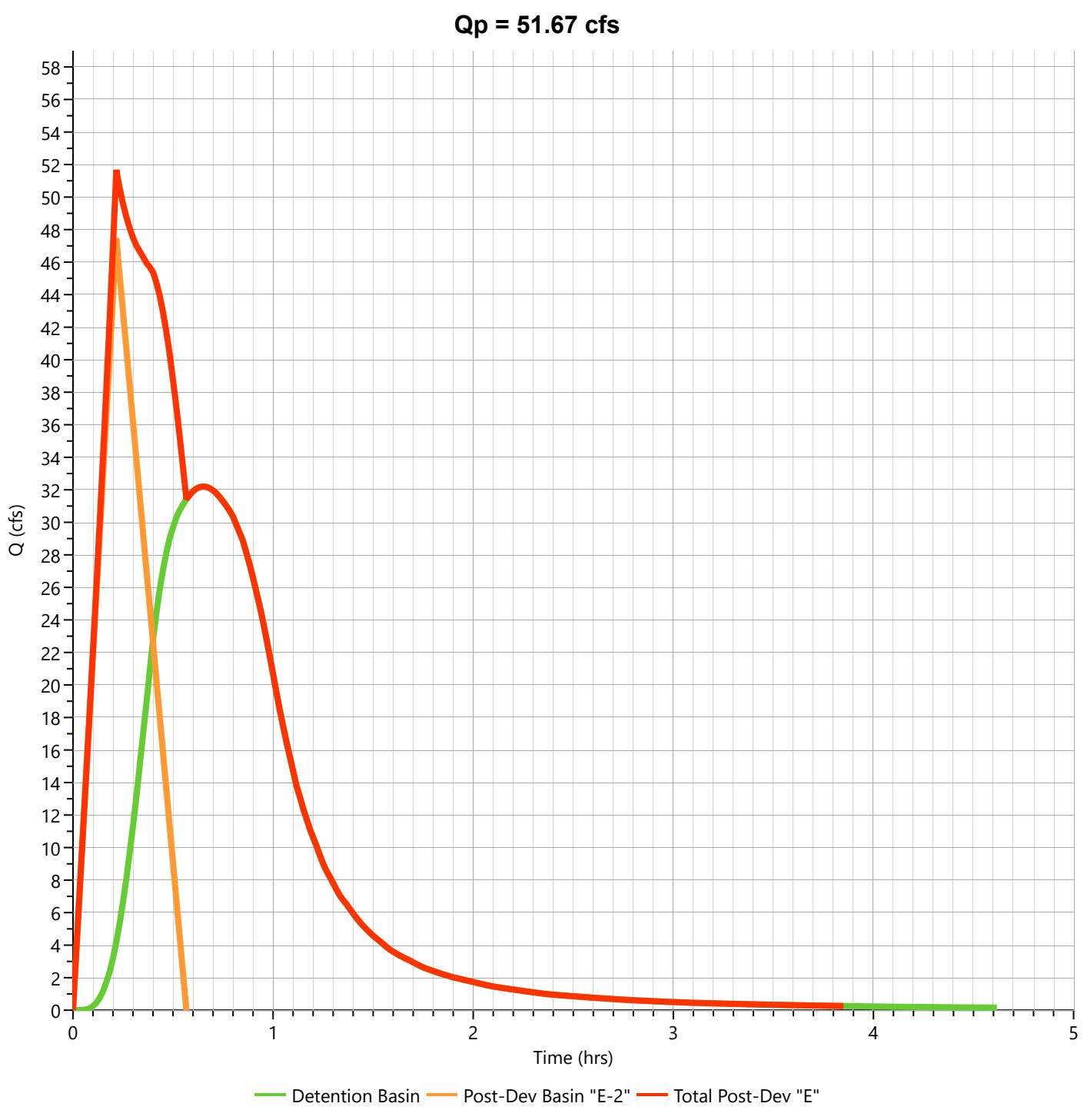
Hydrograph Type	= Rational	Peak Flow	= 47.46 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 49,424 cuft
Drainage Area	= 15.86 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.34 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Post-Dev "E"

Hyd. No. 16

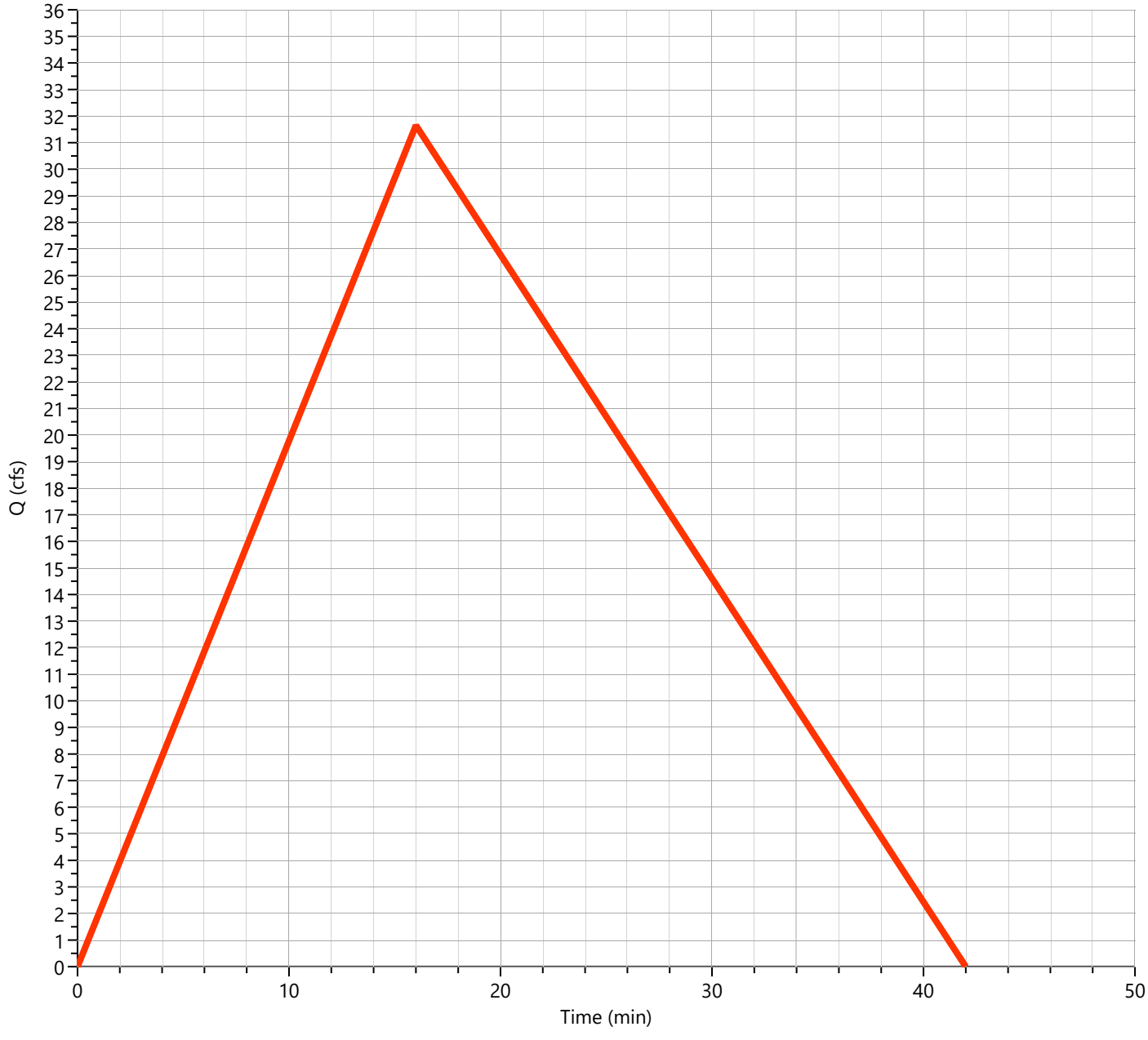
Hydrograph Type	= Junction	Peak Flow	= 51.67 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 150,534 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 15.86 ac



Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 31.65 cfs
Storm Frequency	= 10-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 40,562 cuft
Drainage Area	= 11.61 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 16.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.87 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Design Storm Report

Custom Storm filename:

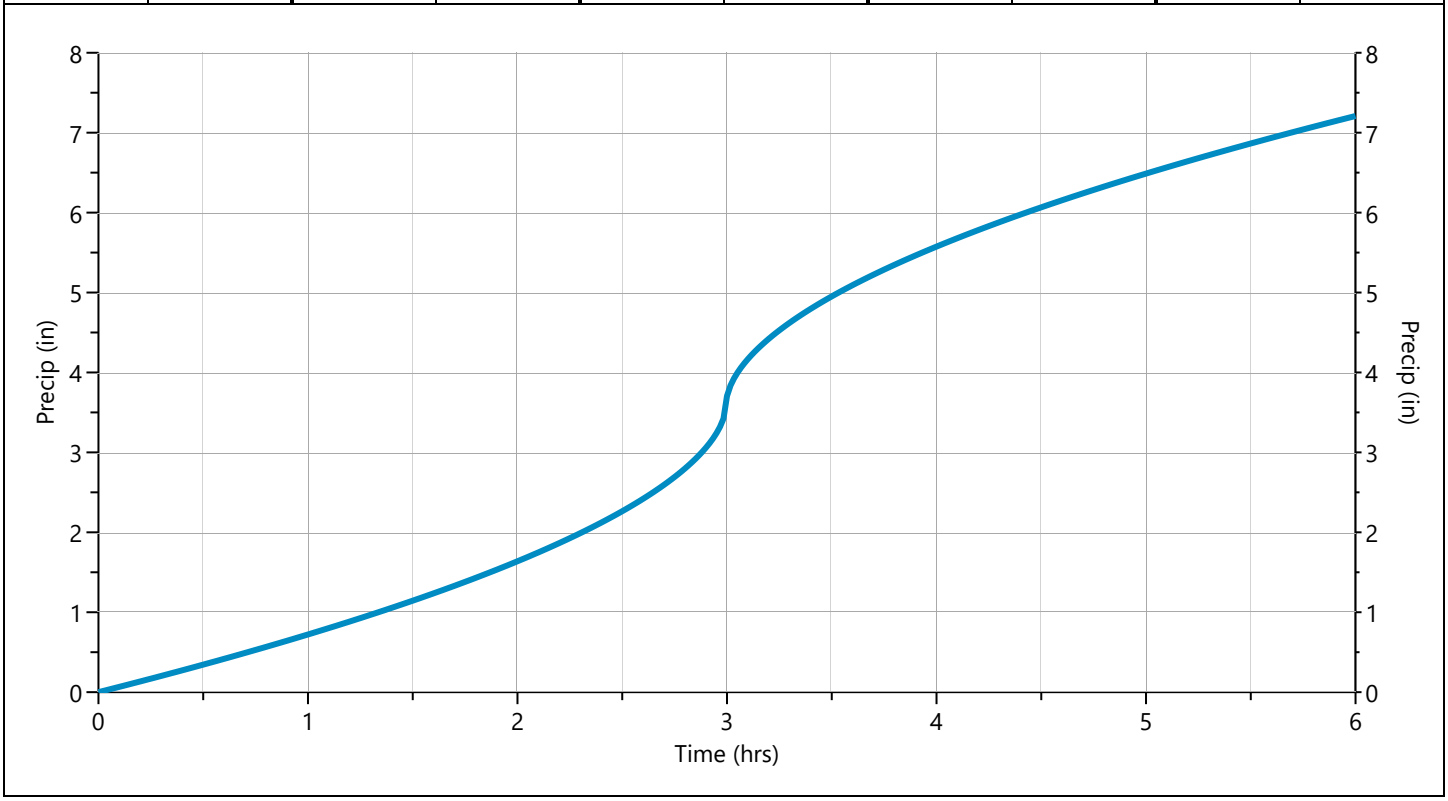
Hydrology Studio v 3.0.0.44

09-25-2026

Storm Distribution: IDF Based - Synthetic, 6-hr

Storm Duration	Total Rainfall Volume (in)								
	1-yr	2-yr	3-yr	5-yr	✔ 10-yr	25-yr	50-yr	100-yr	
6 hrs	0	5.32	0	6.37	7.21	8.30	9.12	9.85	

Incremental Rainfall Distribution, 10-yr									
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
2.50	0.024575	2.68	0.030109	2.87	0.044065	3.05	0.072251	3.23	0.035025
2.52	0.024949	2.70	0.030840	2.88	0.046700	3.07	0.062825	3.25	0.033937
2.53	0.025342	2.72	0.031631	2.90	0.049924	3.08	0.056483	3.27	0.032951
2.55	0.025755	2.73	0.032491	2.92	0.053996	3.10	0.051831	3.28	0.032052
2.57	0.026192	2.75	0.033432	2.93	0.059383	3.12	0.048225	3.30	0.031227
2.58	0.026653	2.77	0.034467	2.95	0.067008	3.13	0.045321	3.32	0.030468
2.60	0.027142	2.78	0.035612	2.97	0.079104	3.15	0.042915	3.33	0.029764
2.62	0.027660	2.80	0.036891	2.98	0.103333	3.17	0.040877	3.35	0.029111
2.63	0.028212	2.82	0.038330	**3.00**	**0.282025**	3.18	0.039122	3.37	0.028502
2.65	0.028801	2.83	0.039968	3.02	0.131064	3.20	0.037588	3.38	0.027932
2.67	0.029432	2.85	0.041856	3.03	0.088640	3.22	0.036234	3.40	0.027397



Hydrograph 25-yr Summary

Hydrology Studio v 3.0.0.44

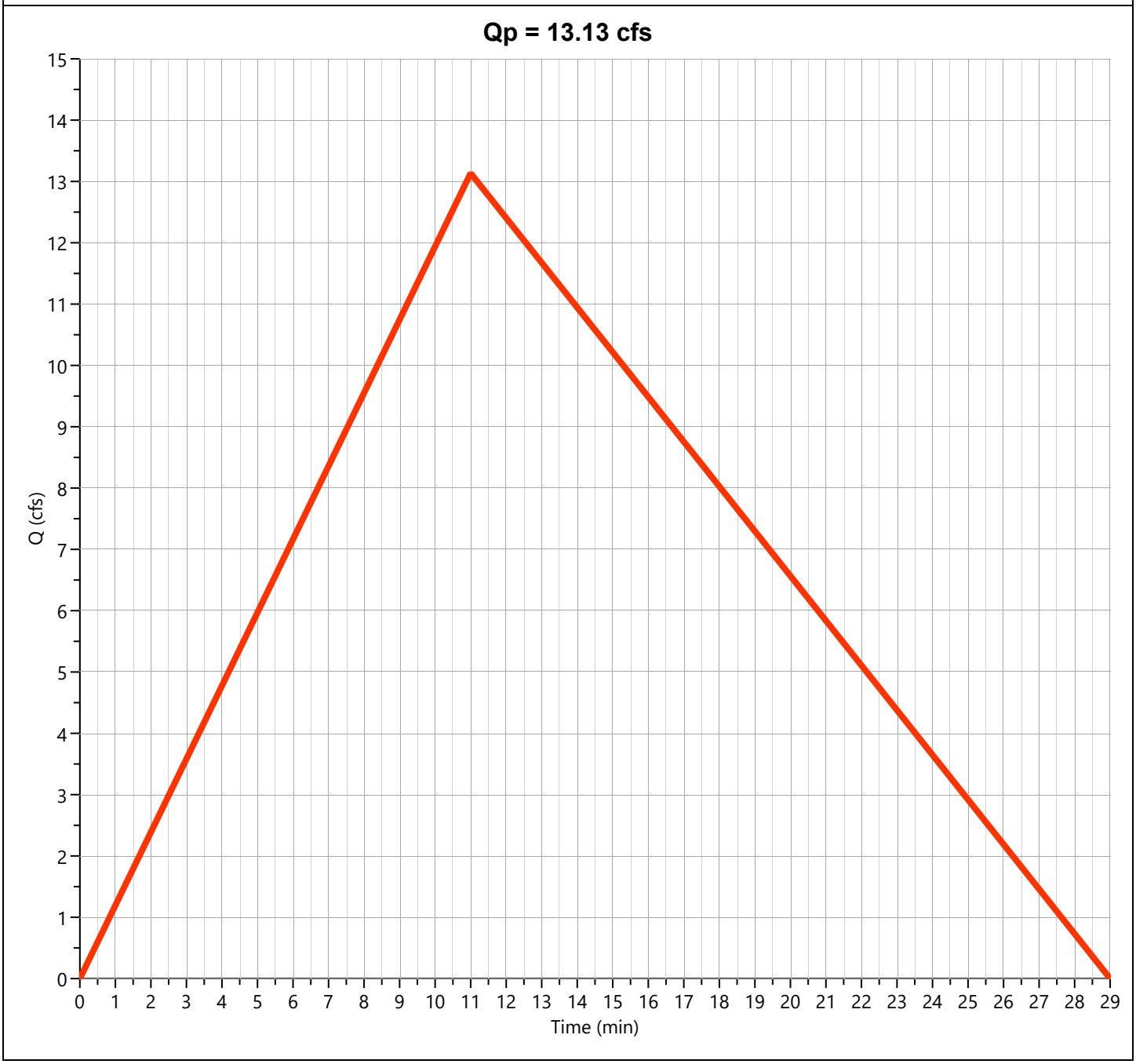
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Pre-Dev Basin "A"	13.13	0.18	11,572	----		
2	Rational	Pre-Dev Basin "B"	44.15	0.25	53,043	----		
3	Rational	Pre-Dev Basin "C"	24.90	0.18	21,943	----		
4	Rational	Pre-Dev Basin "D"	11.26	0.13	7,218	----		
5	Rational	Pre-Dev Basin "E-1"	35.65	0.20	34,268	----		
6	Rational	Pre-Dev Basin "E-2"	60.55	0.22	63,053	----		
7	Junction	Total Pre Basin "E"	94.42	0.22	95,989	5, 6		
8	Rational	Pre-Dev Basin "F"	38.07	0.28	51,833	----		
9	Rational	Post-Dev Basin A	12.47	0.25	14,979	----		
10	Rational	Post-Dev Basin B	34.13	0.35	57,410	----		
11	Rational	Post-Dev Basin "C"	25.47	0.18	22,441	----		
12	Rational	Post-Dev Basin "D"	12.93	0.13	8,284	----		
13	Rational	Post-Dev Basin "E-1"	64.18	0.38	118,247	----		
14	Pond Route	Detention Basin	36.40	0.65	117,413	13	471.72	51,948
15	Rational	Post-Dev Basin "E-2"	54.55	0.22	56,801	----		
16	Junction	Total Post-Dev "E"	59.86	0.22	173,052	14, 15		
17	Rational	Post-Dev Basin "F"	36.38	0.27	46,623	----		

Pre-Dev Basin "A"

Hyd. No. 1

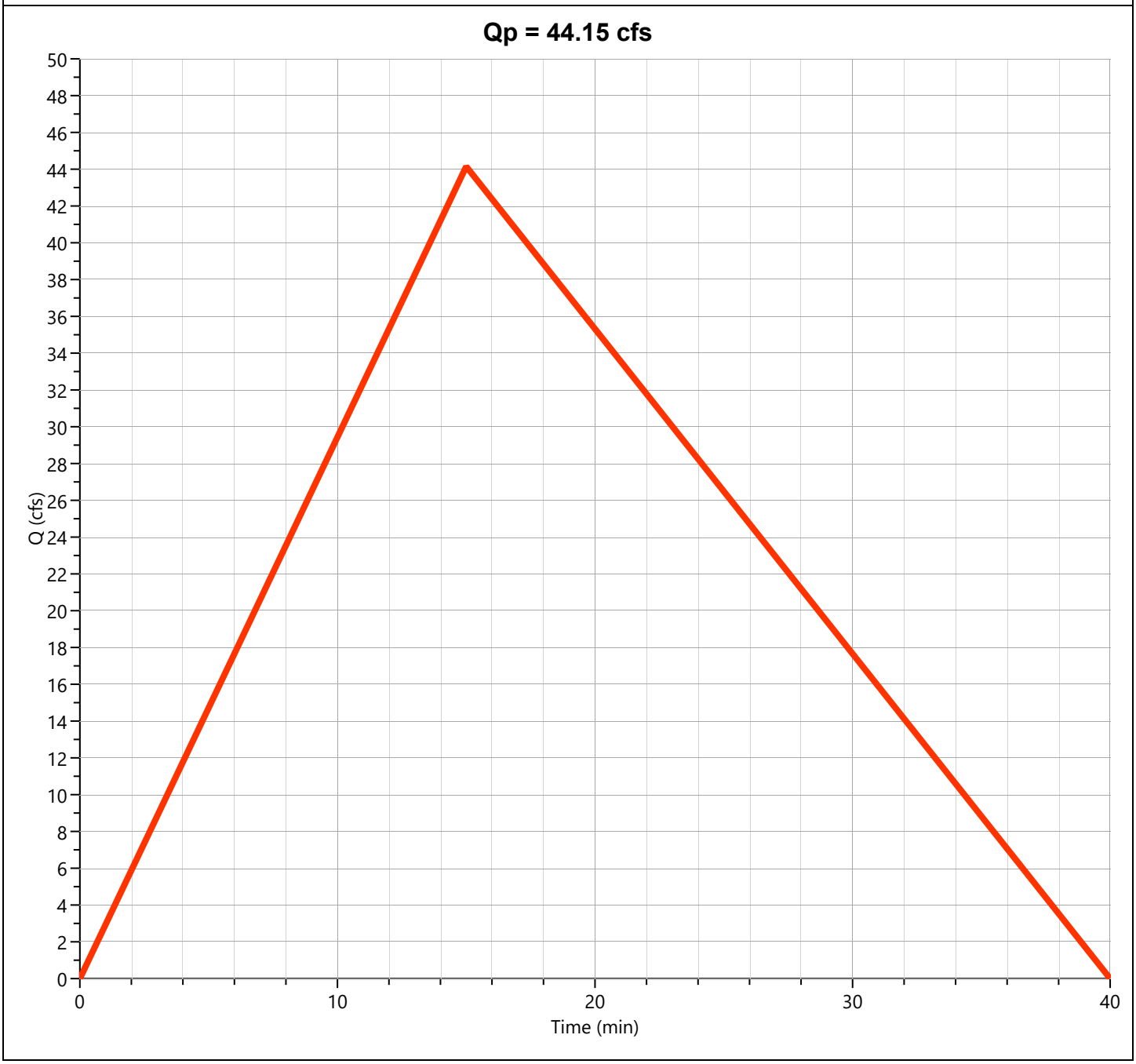
Hydrograph Type	= Rational	Peak Flow	= 13.13 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 11,572 cuft
Drainage Area	= 3.2 ac	Runoff Coeff.	= 0.62
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.62 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "B"

Hyd. No. 2

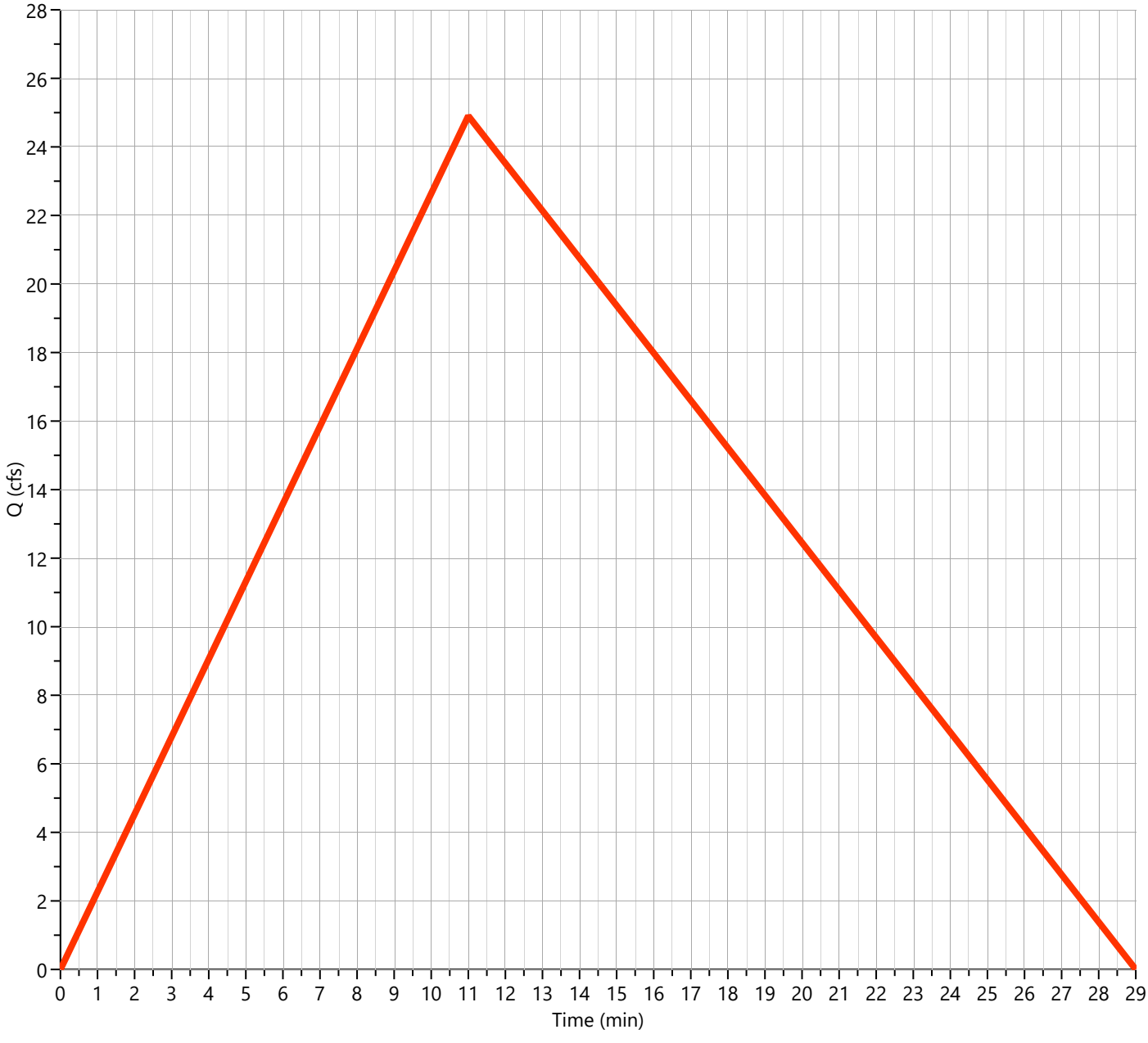
Hydrograph Type	= Rational	Peak Flow	= 44.15 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 53,043 cuft
Drainage Area	= 14.74 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.76 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "C"

Hyd. No. 3

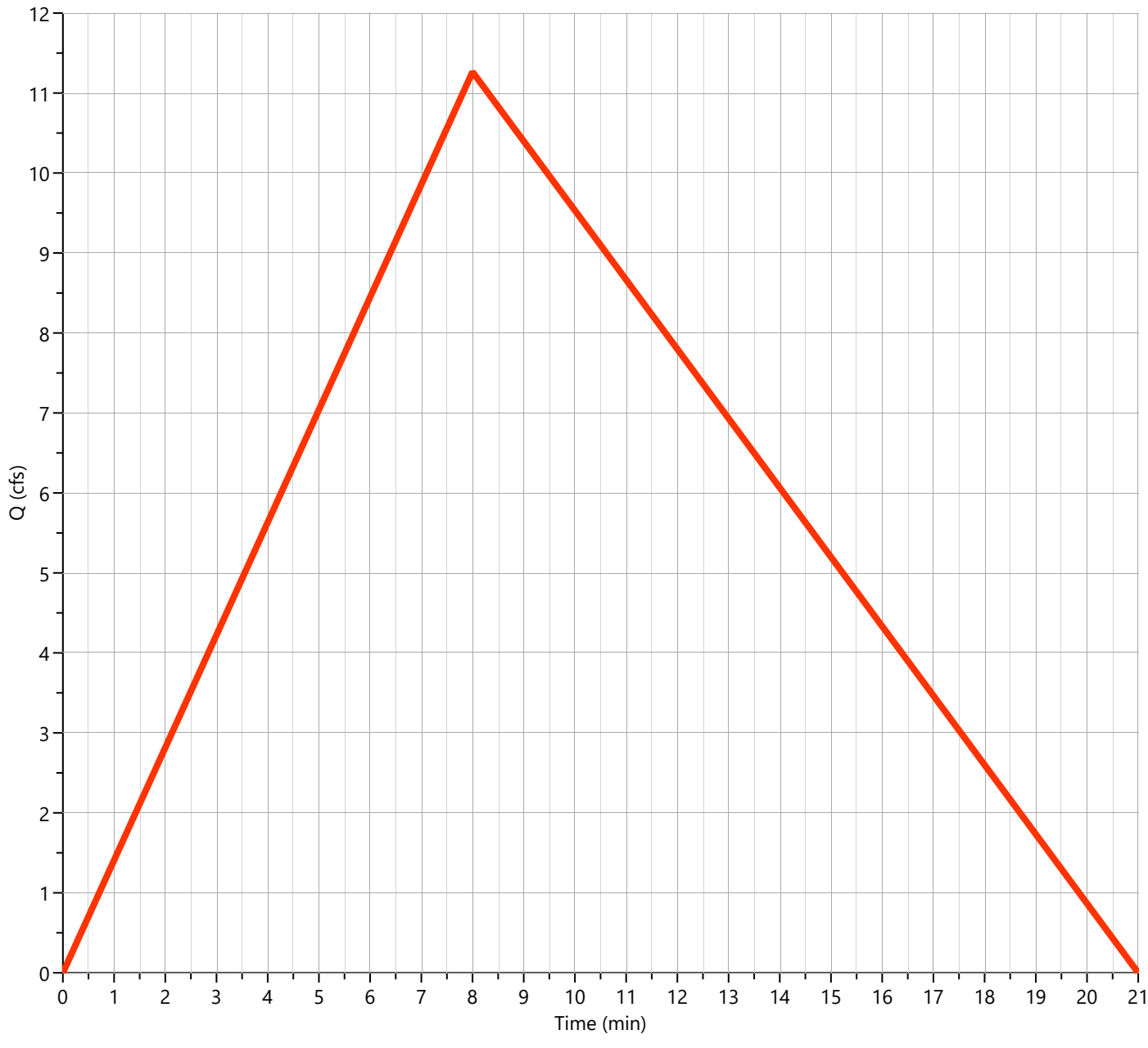
Hydrograph Type	= Rational	Peak Flow	= 24.90 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 21,943 cuft
Drainage Area	= 6.84 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.62 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "D"

Hyd. No. 4

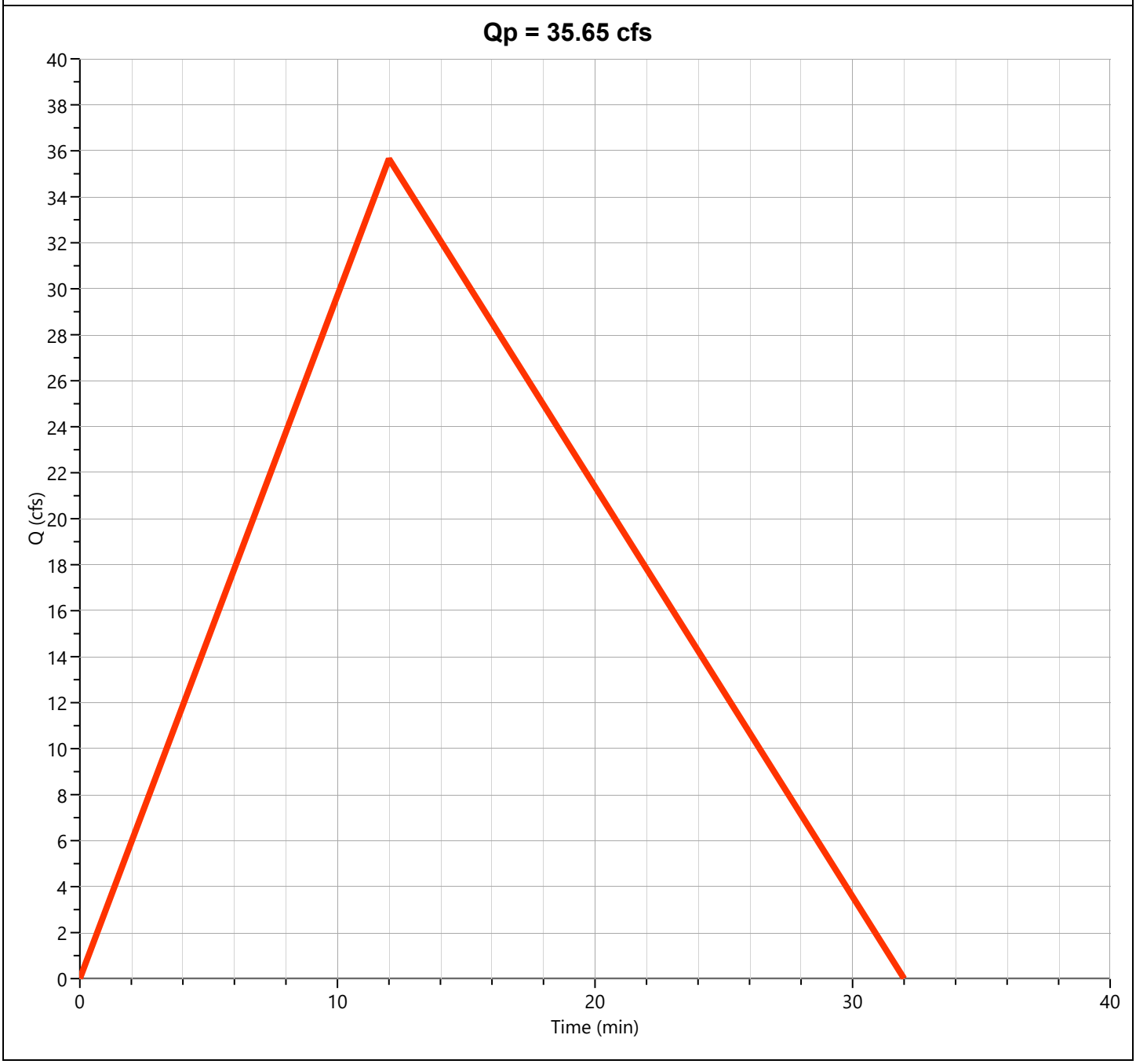
Hydrograph Type	= Rational	Peak Flow	= 11.26 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 7,218 cuft
Drainage Area	= 2.95 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.64 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-1"

Hyd. No. 5

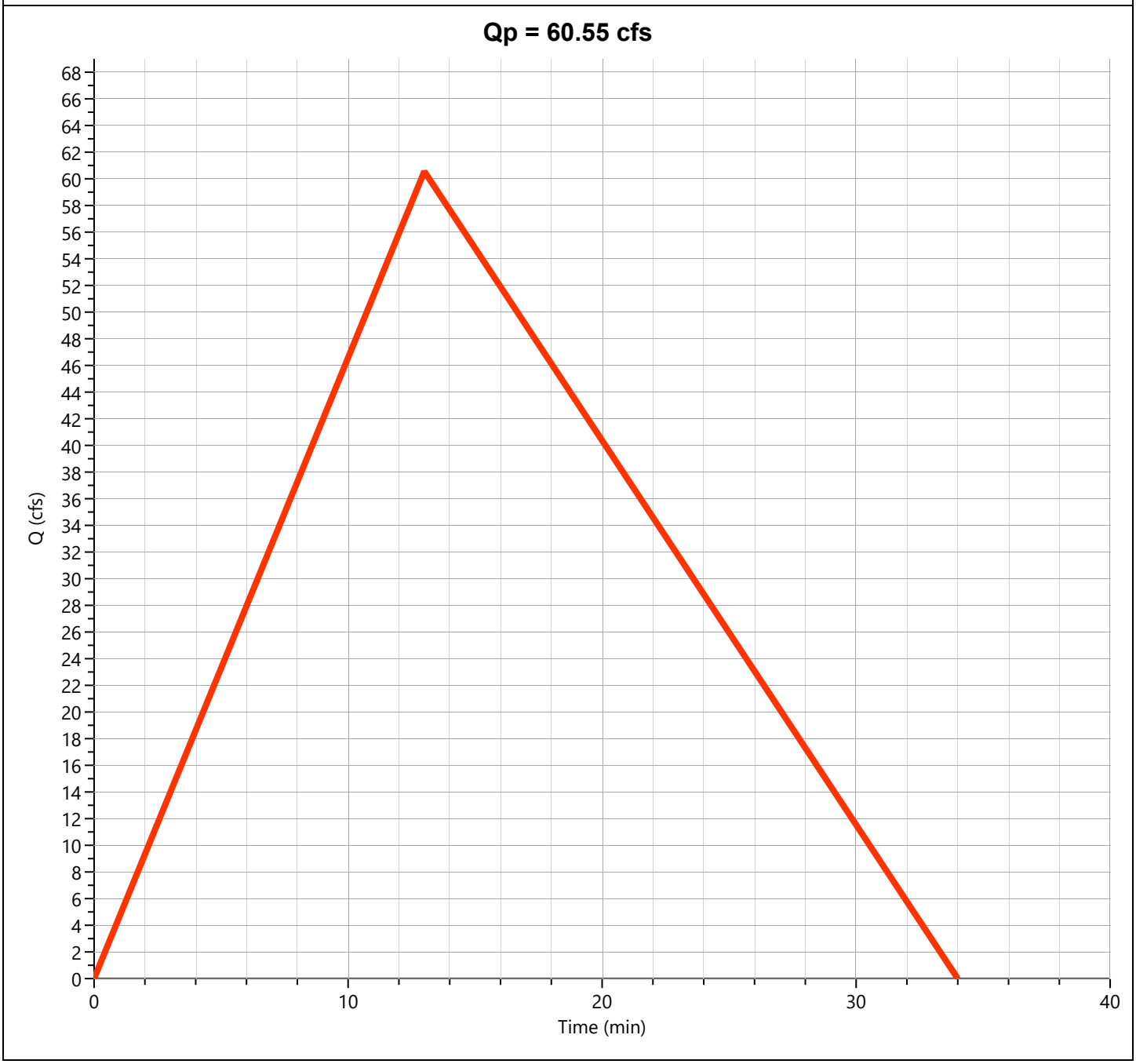
Hydrograph Type	= Rational	Peak Flow	= 35.65 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.20 hrs
Time Interval	= 1 min	Runoff Volume	= 34,268 cuft
Drainage Area	= 11.2 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 12.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.37 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-2"

Hyd. No. 6

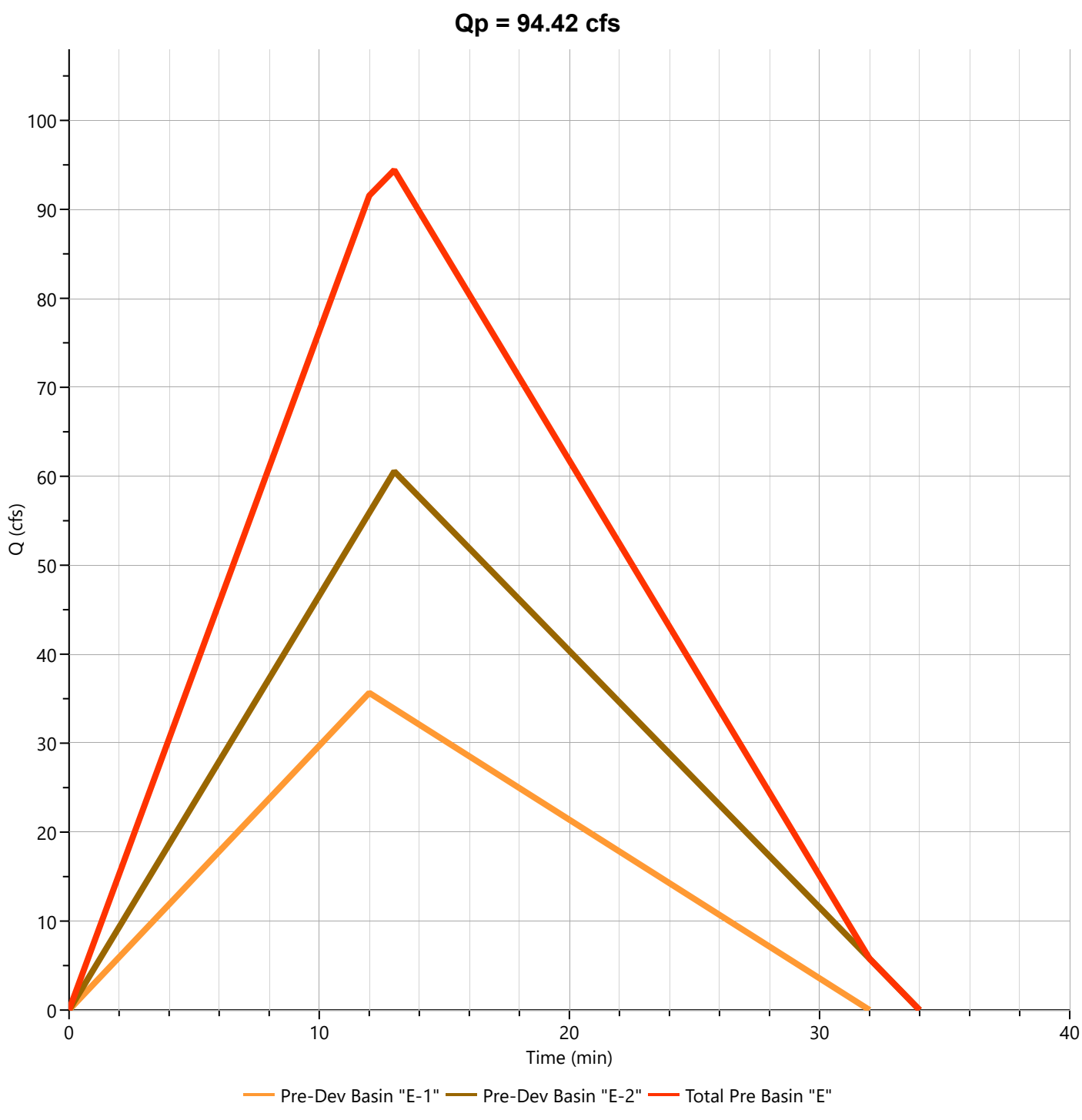
Hydrograph Type	= Rational	Peak Flow	= 60.55 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 63,053 cuft
Drainage Area	= 18.96 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.14 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Pre Basin "E"

Hyd. No. 7

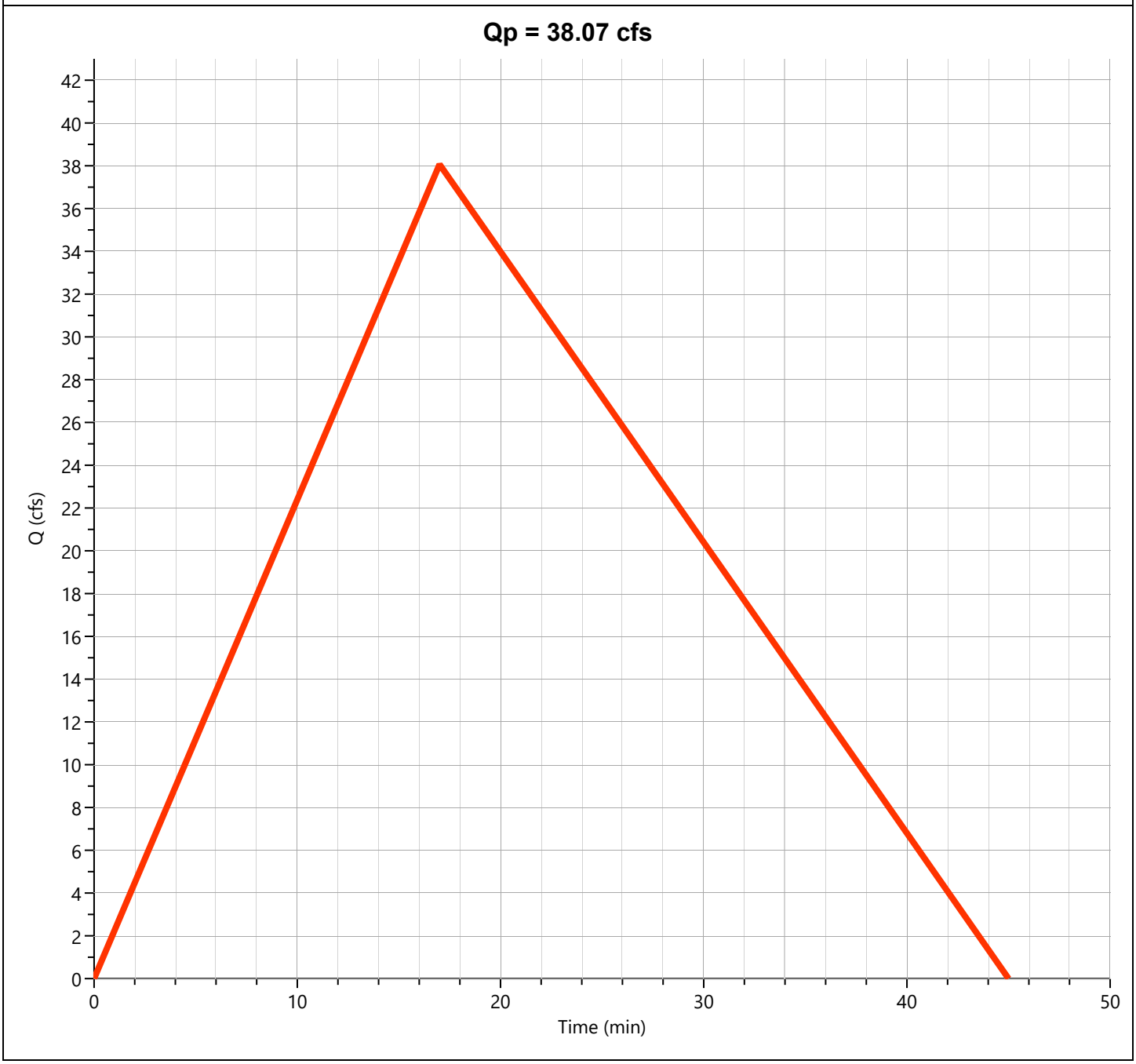
Hydrograph Type	= Junction	Peak Flow	= 94.42 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 95,989 cuft
Inflow Hydrographs	= 5, 6	Total Contrib. Area	= 30.16 ac



Pre-Dev Basin "F"

Hyd. No. 8

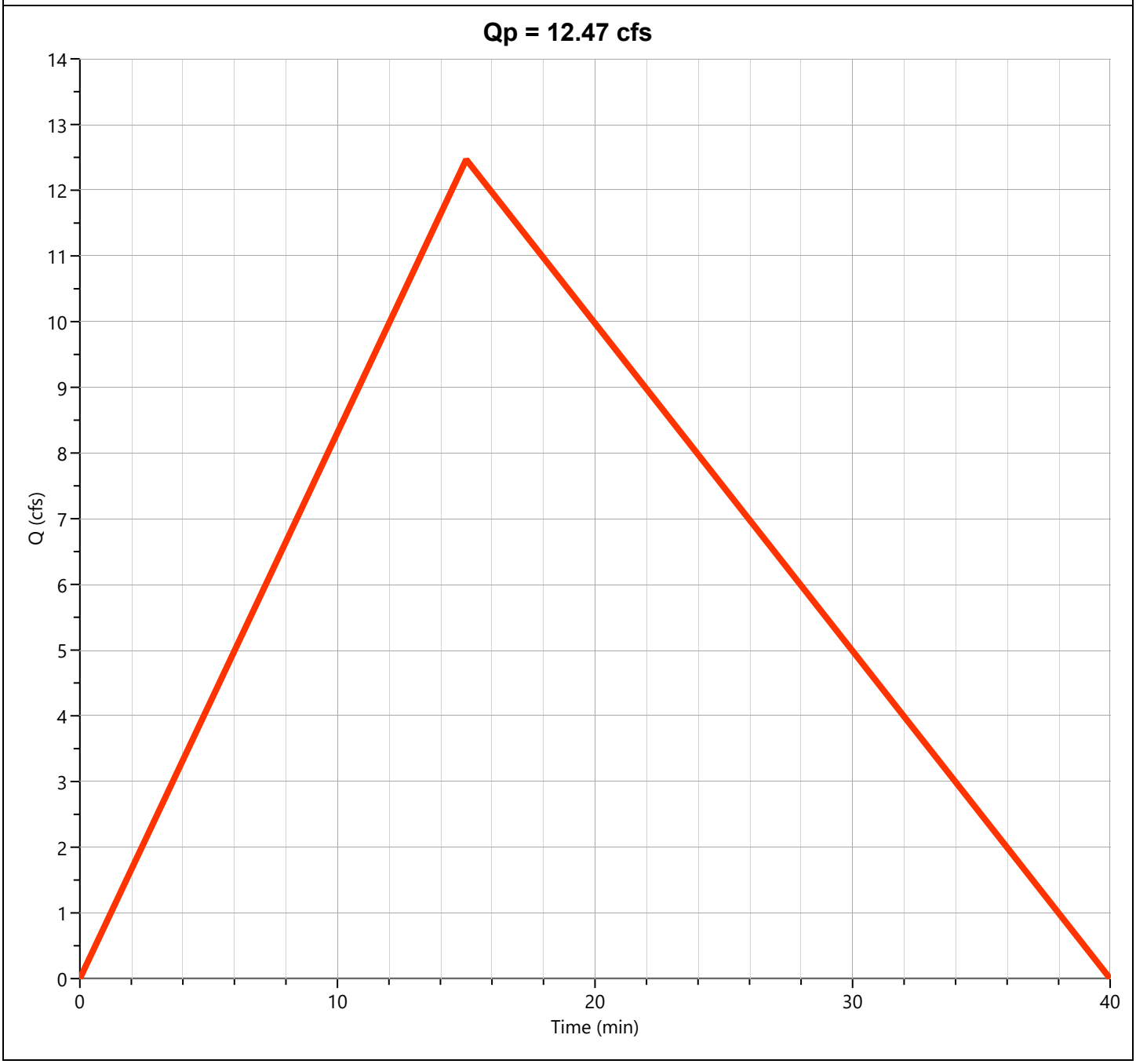
Hydrograph Type	= Rational	Peak Flow	= 38.07 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 51,833 cuft
Drainage Area	= 13.19 ac	Runoff Coeff.	= 0.53
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.45 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin A

Hyd. No. 9

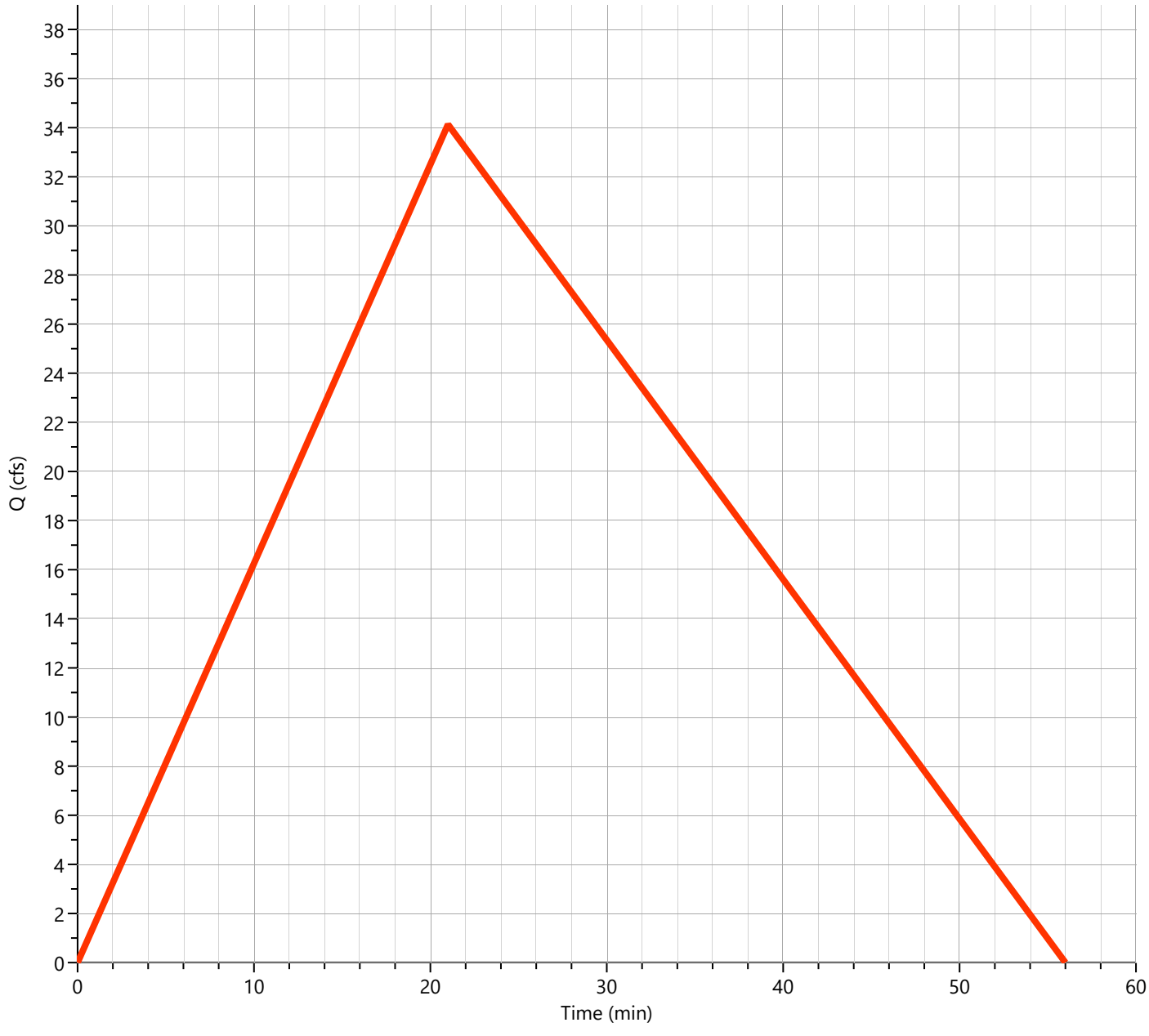
Hydrograph Type	= Rational	Peak Flow	= 12.47 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 14,979 cuft
Drainage Area	= 3.33 ac	Runoff Coeff.	= 0.65
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.76 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin B

Hyd. No. 10

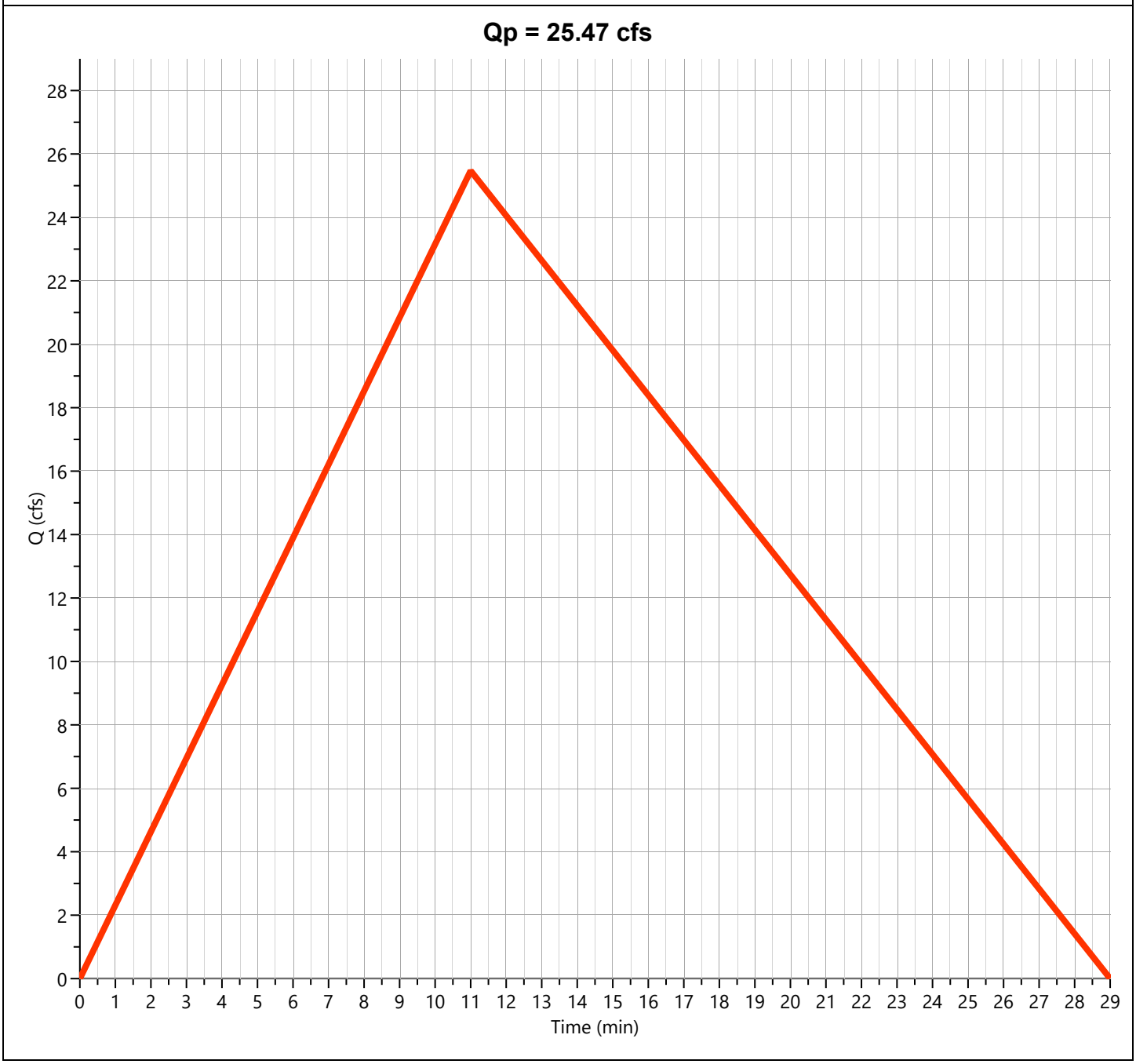
Hydrograph Type	= Rational	Peak Flow	= 34.13 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.35 hrs
Time Interval	= 1 min	Runoff Volume	= 57,410 cuft
Drainage Area	= 12.53 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 21.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.95 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "C"

Hyd. No. 11

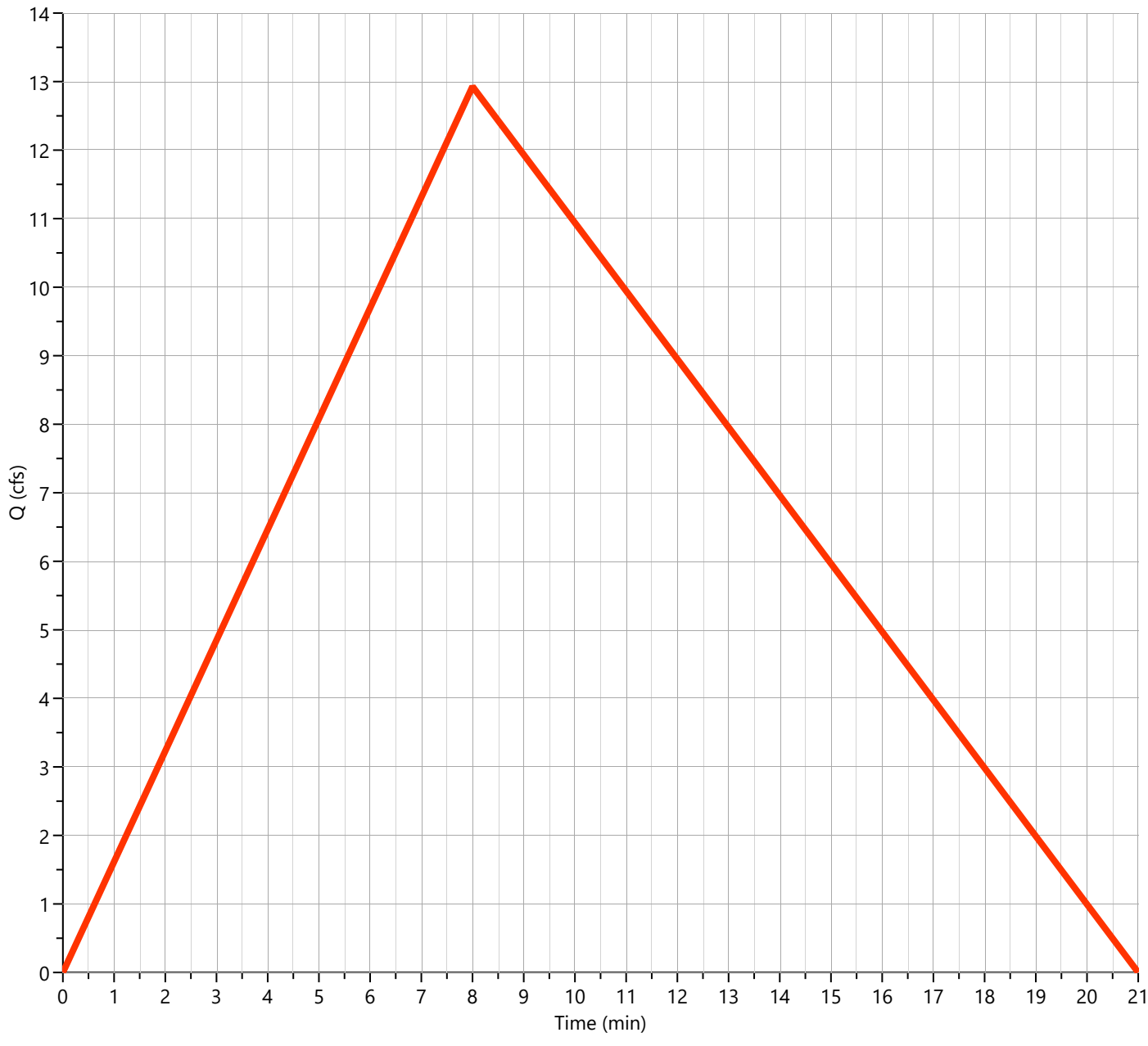
Hydrograph Type	= Rational	Peak Flow	= 25.47 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 22,441 cuft
Drainage Area	= 6.75 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.62 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "D"

Hyd. No. 12

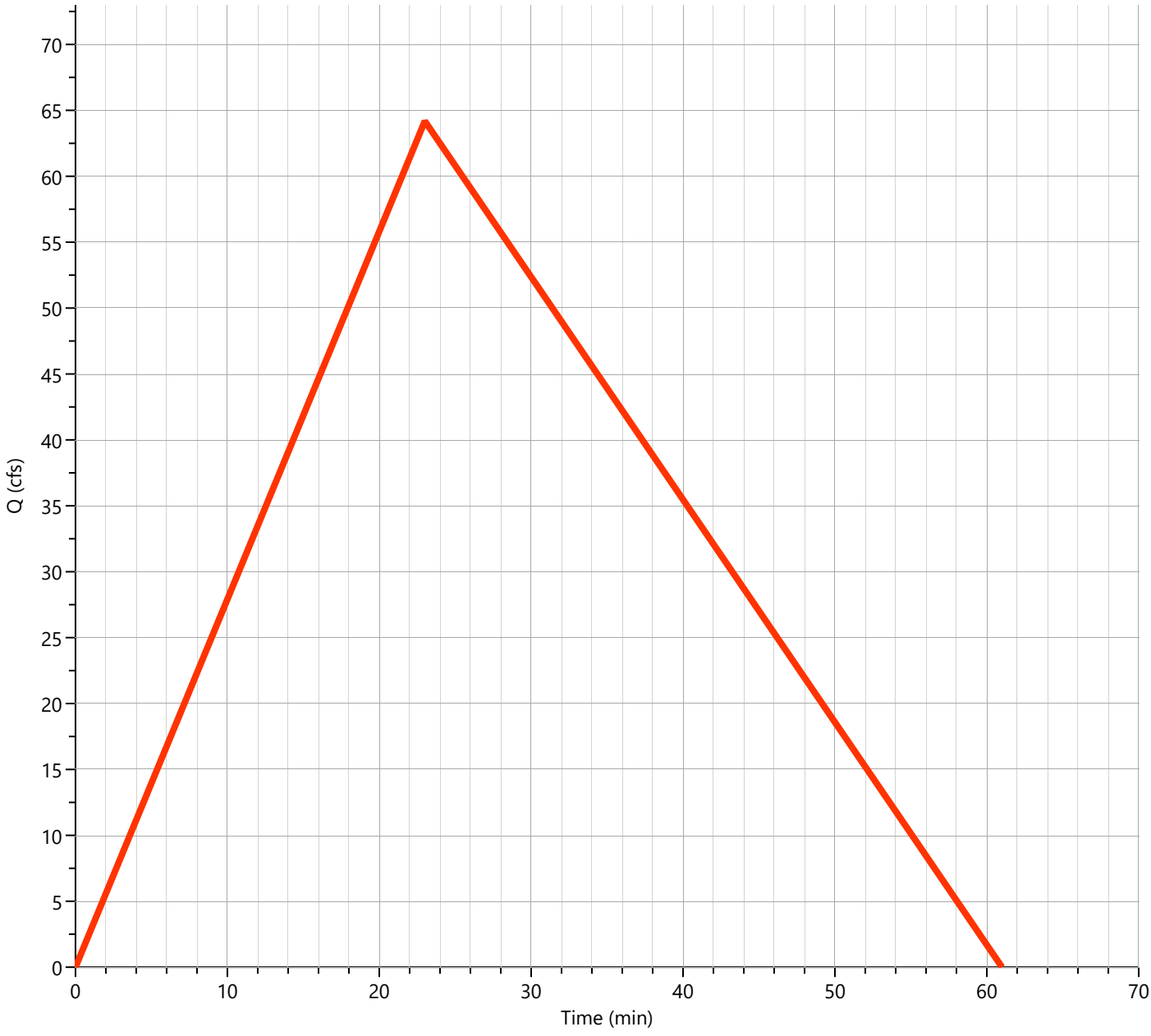
Hydrograph Type	= Rational	Peak Flow	= 12.93 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 8,284 cuft
Drainage Area	= 2.97 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.64 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "E-1"

Hyd. No. 13

Hydrograph Type	= Rational	Peak Flow	= 64.18 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.38 hrs
Time Interval	= 1 min	Runoff Volume	= 118,247 cuft
Drainage Area	= 18.0 ac	Runoff Coeff.	= 0.75
Tc Method	= User	Time of Conc. (Tc)	= 23.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 4.75 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



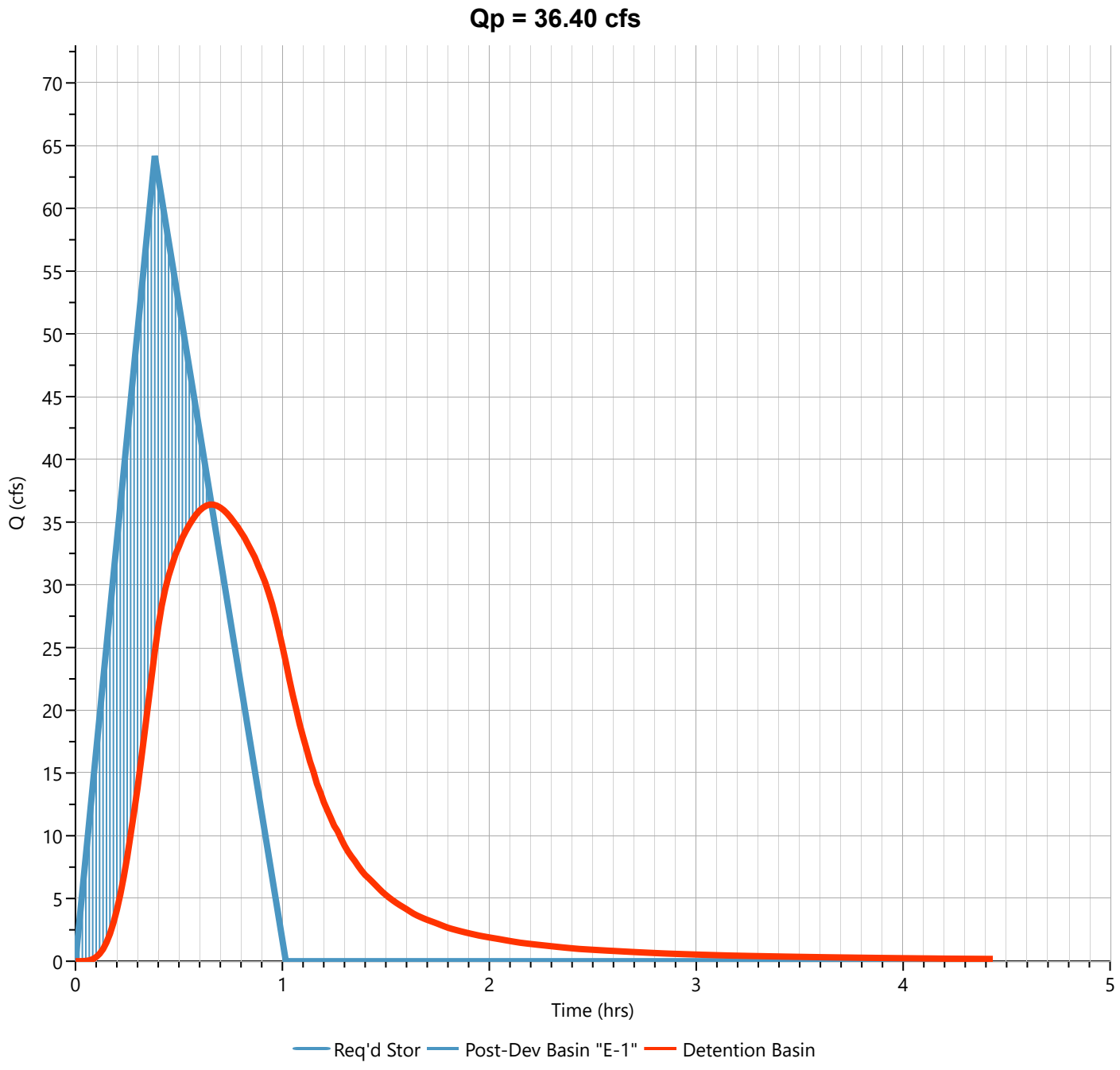
Detention Basin

Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 36.40 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.65 hrs
Time Interval	= 1 min	Hydrograph Volume	= 117,413 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 471.72 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 51,948 cuft

Pond Routing by Storage Indication Method

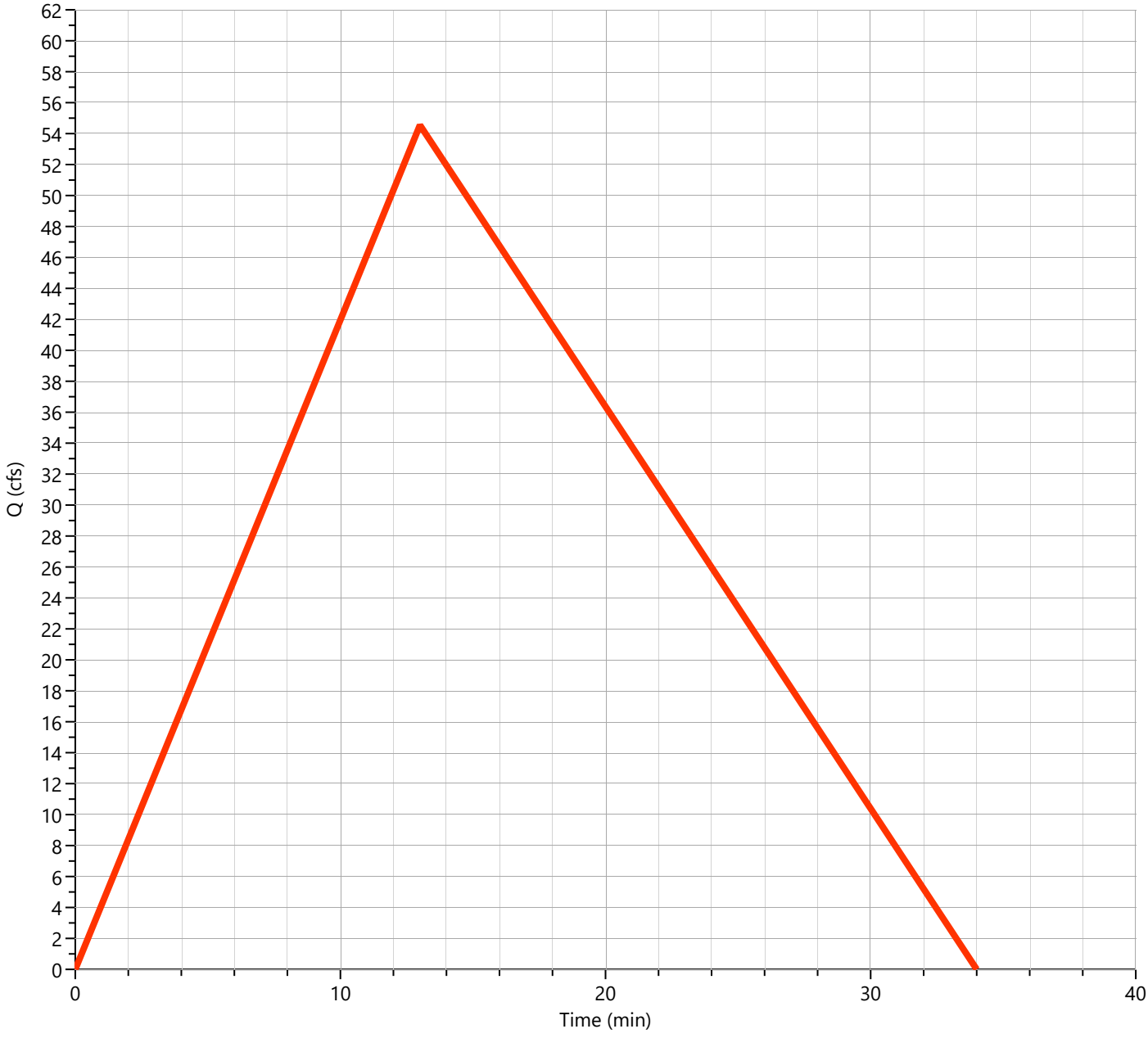
Center of mass detention time = 24 min



Post-Dev Basin "E-2"

Hyd. No. 15

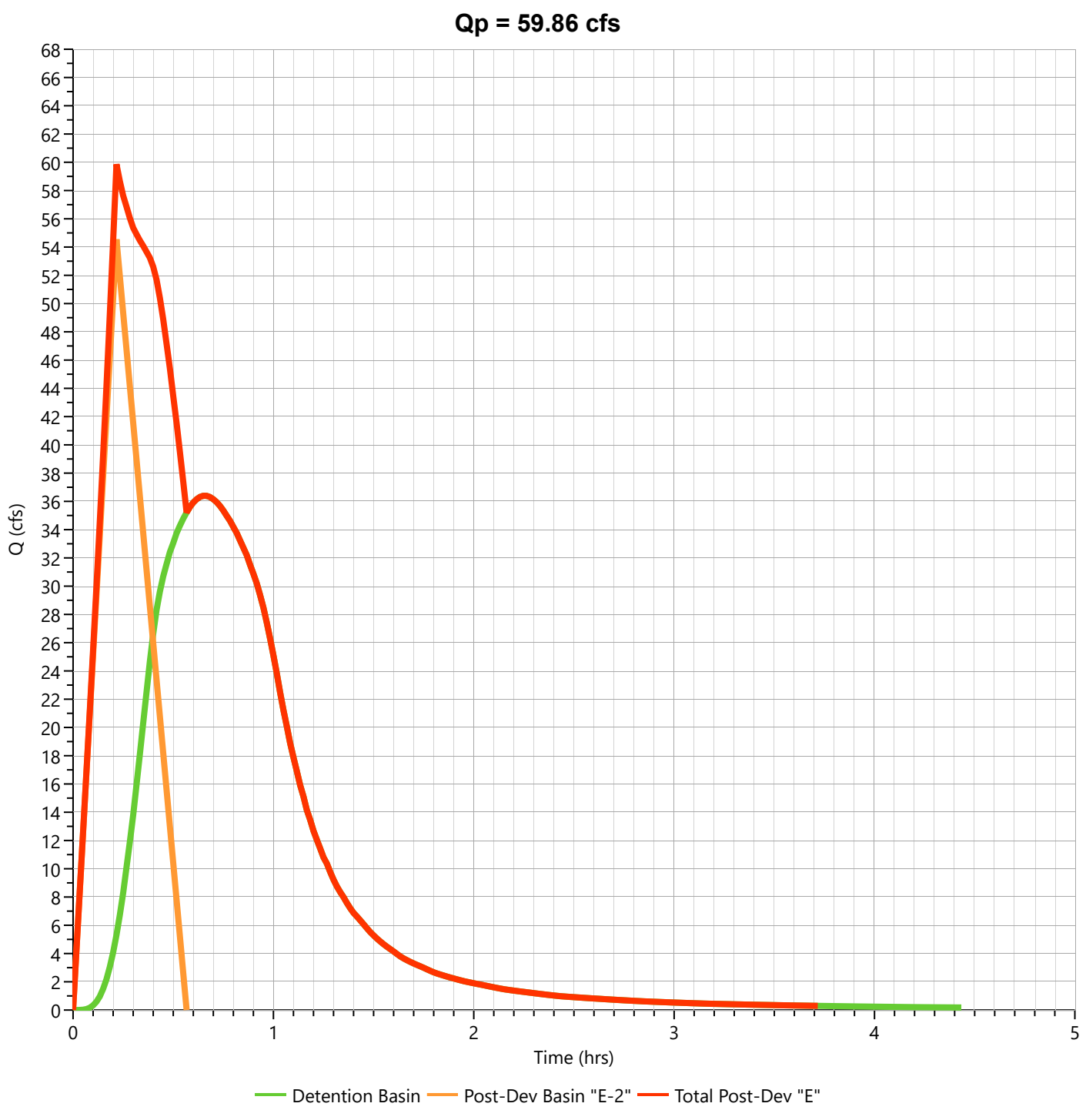
Hydrograph Type	= Rational	Peak Flow	= 54.55 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 56,801 cuft
Drainage Area	= 15.86 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.14 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Post-Dev "E"

Hyd. No. 16

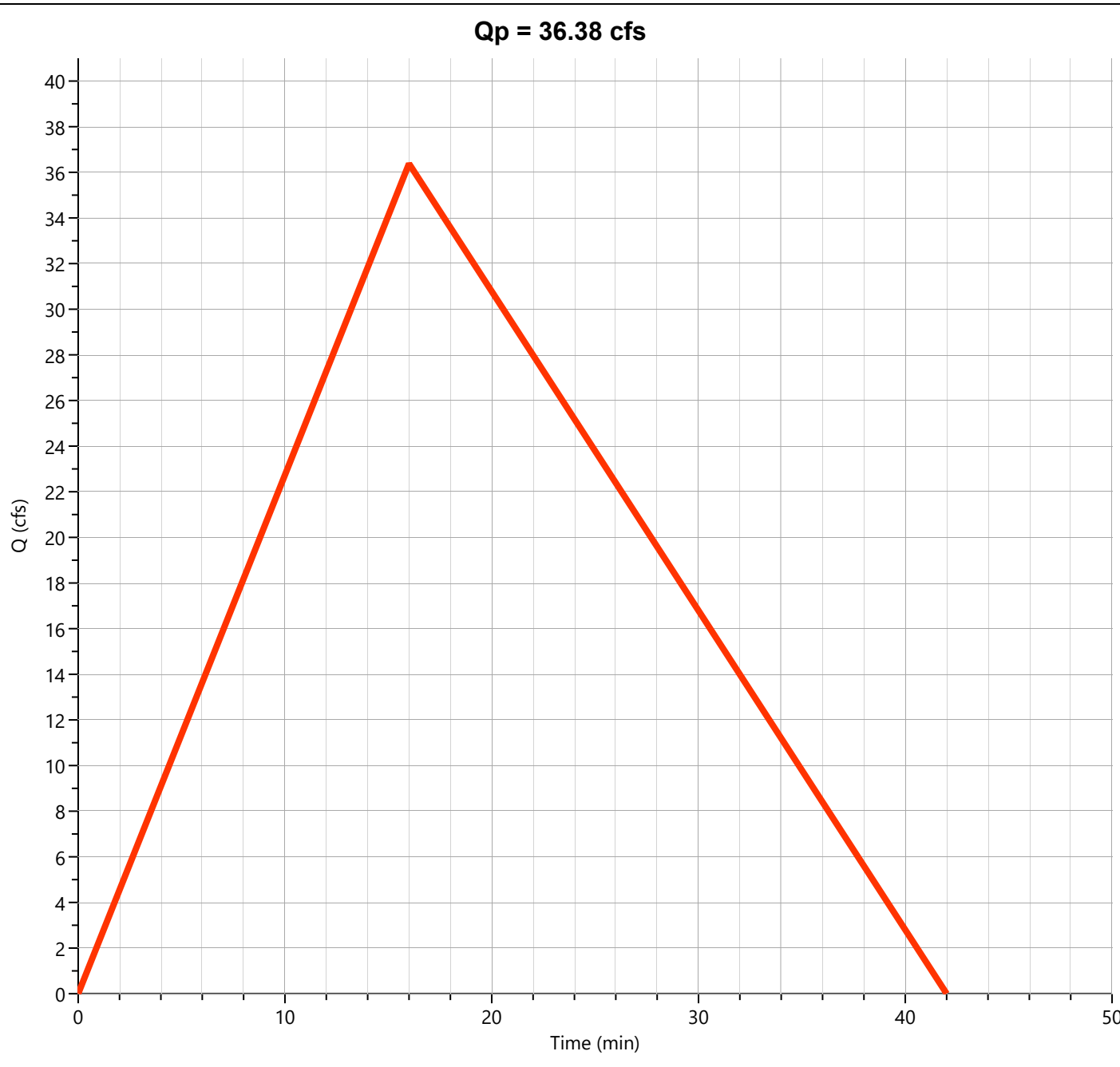
Hydrograph Type	= Junction	Peak Flow	= 59.86 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 173,052 cuft
Inflow Hydrographs	= 15	Total Contrib. Area	= 15.86 ac



Post-Dev Basin "F"

Hyd. No. 17

Hydrograph Type	= Rational	Peak Flow	= 36.38 cfs
Storm Frequency	= 25-yr	Time to Peak	= 0.27 hrs
Time Interval	= 1 min	Runoff Volume	= 46,623 cuft
Drainage Area	= 11.61 ac	Runoff Coeff.	= 0.56
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 16.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.60 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Design Storm Report

Custom Storm filename:

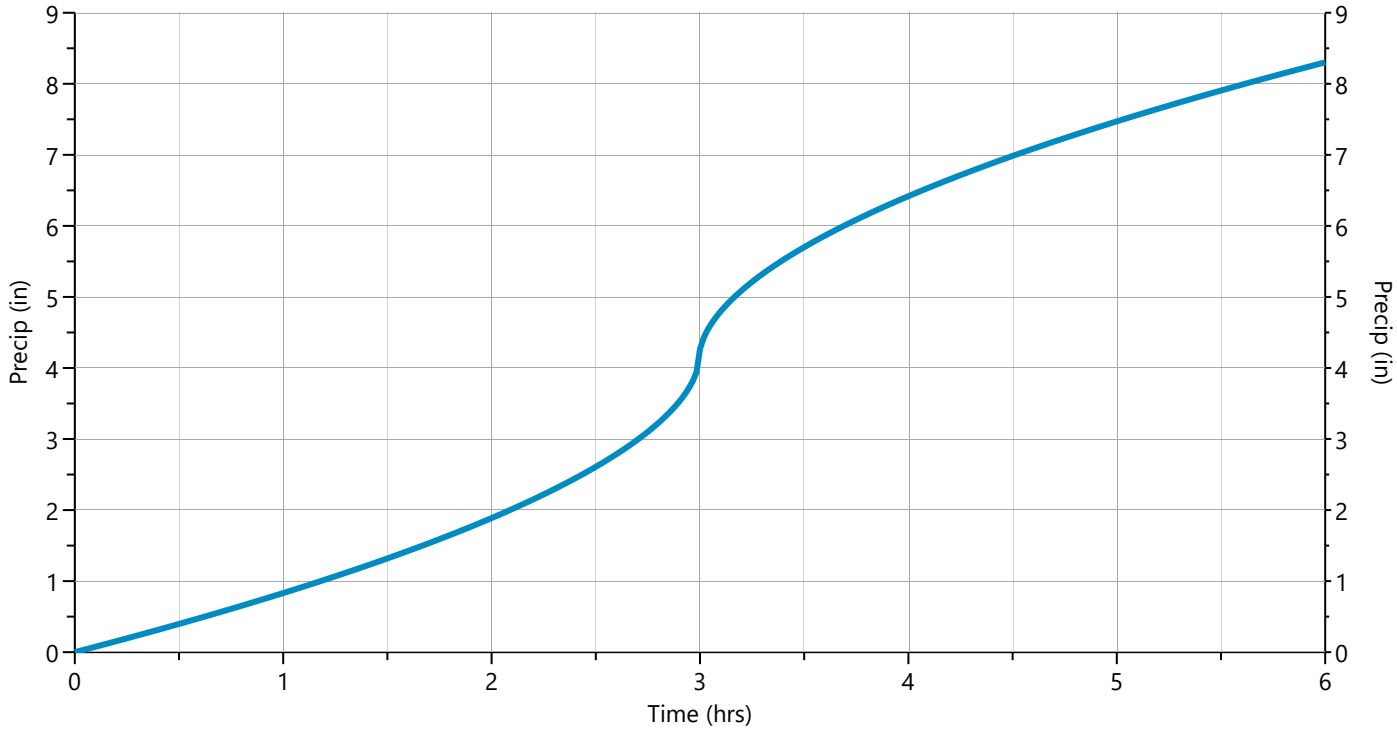
Hydrology Studio v 3.0.0.44

09-25-2026

Storm Distribution: IDF Based - Synthetic, 6-hr

Storm Duration	Total Rainfall Volume (in)								
	1-yr	2-yr	3-yr	5-yr	10-yr	✔ 25-yr	50-yr	100-yr	
6 hrs	0	5.32	0	6.37	7.21	8.30	9.12	9.85	

Incremental Rainfall Distribution, 25-yr									
Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)	Time (hrs)	Precip (in)
2.50	0.028301	2.68	0.034665	2.87	0.050706	3.05	0.083084	3.23	0.040316
2.52	0.028731	2.70	0.035505	2.88	0.053735	3.07	0.072259	3.25	0.039066
2.53	0.029183	2.72	0.036415	2.90	0.057438	3.08	0.064975	3.27	0.037932
2.55	0.029659	2.73	0.037404	2.92	0.062117	3.10	0.059630	3.28	0.036899
2.57	0.030161	2.75	0.038486	2.93	0.068305	3.12	0.055487	3.30	0.035951
2.58	0.030691	2.77	0.039675	2.95	0.077064	3.13	0.052150	3.32	0.035077
2.60	0.031253	2.78	0.040992	2.97	0.090954	3.15	0.049384	3.33	0.034269
2.62	0.031849	2.80	0.042462	2.98	0.118769	3.17	0.047043	3.35	0.033518
2.63	0.032484	2.82	0.044116	**3.00**	**0.323614**	3.18	0.045025	3.37	0.032817
2.65	0.033161	2.83	0.045998	3.02	0.150593	3.20	0.043263	3.38	0.032161
2.67	0.033886	2.85	0.048168	3.03	0.101903	3.22	0.041706	3.40	0.031547



Hydrograph 50-yr Summary

Hydrology Studio v 3.0.0.44

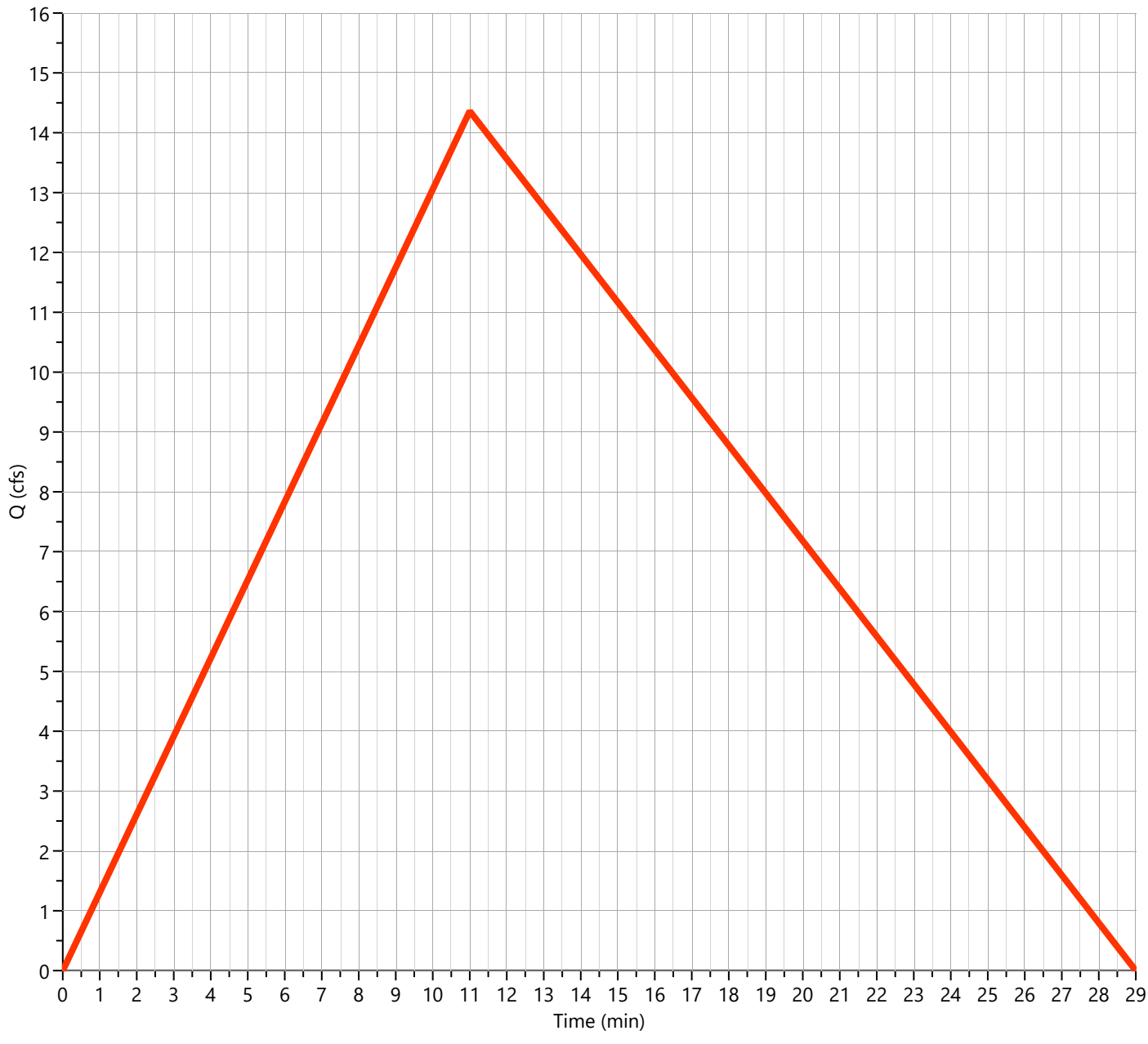
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	Rational	Pre-Dev Basin "A"	14.36	0.18	12,653	----		
2	Rational	Pre-Dev Basin "B"	48.29	0.25	58,019	----		
3	Rational	Pre-Dev Basin "C"	27.23	0.18	23,992	----		
4	Rational	Pre-Dev Basin "D"	12.31	0.13	7,889	----		
5	Rational	Pre-Dev Basin "E-1"	38.98	0.20	37,472	----		
6	Rational	Pre-Dev Basin "E-2"	66.22	0.22	68,955	----		
7	Junction	Total Pre Basin "E"	103.3	0.22	104,970	5, 6		
8	Rational	Pre-Dev Basin "F"	41.64	0.28	56,705	----		
9	Rational	Post-Dev Basin A	13.64	0.25	16,384	----		
10	Rational	Post-Dev Basin B	37.35	0.35	62,823	----		
11	Rational	Post-Dev Basin "C"	27.85	0.18	24,537	----		
12	Rational	Post-Dev Basin "D"	14.13	0.13	9,054	----		
13	Rational	Post-Dev Basin "E-1"	70.24	0.38	129,411	----		
14	Pond Route	Detention Basin	39.98	0.65	128,502	13	472.00	56,670
15	Rational	Post-Dev Basin "E-2"	59.65	0.22	62,118	----		
16	Junction	Total Post-Dev "E"	65.87	0.22	189,350	14, 15		
17	Rational	Post-Dev Basin "F"	39.79	0.27	51,000	----		

Pre-Dev Basin "A"

Hyd. No. 1

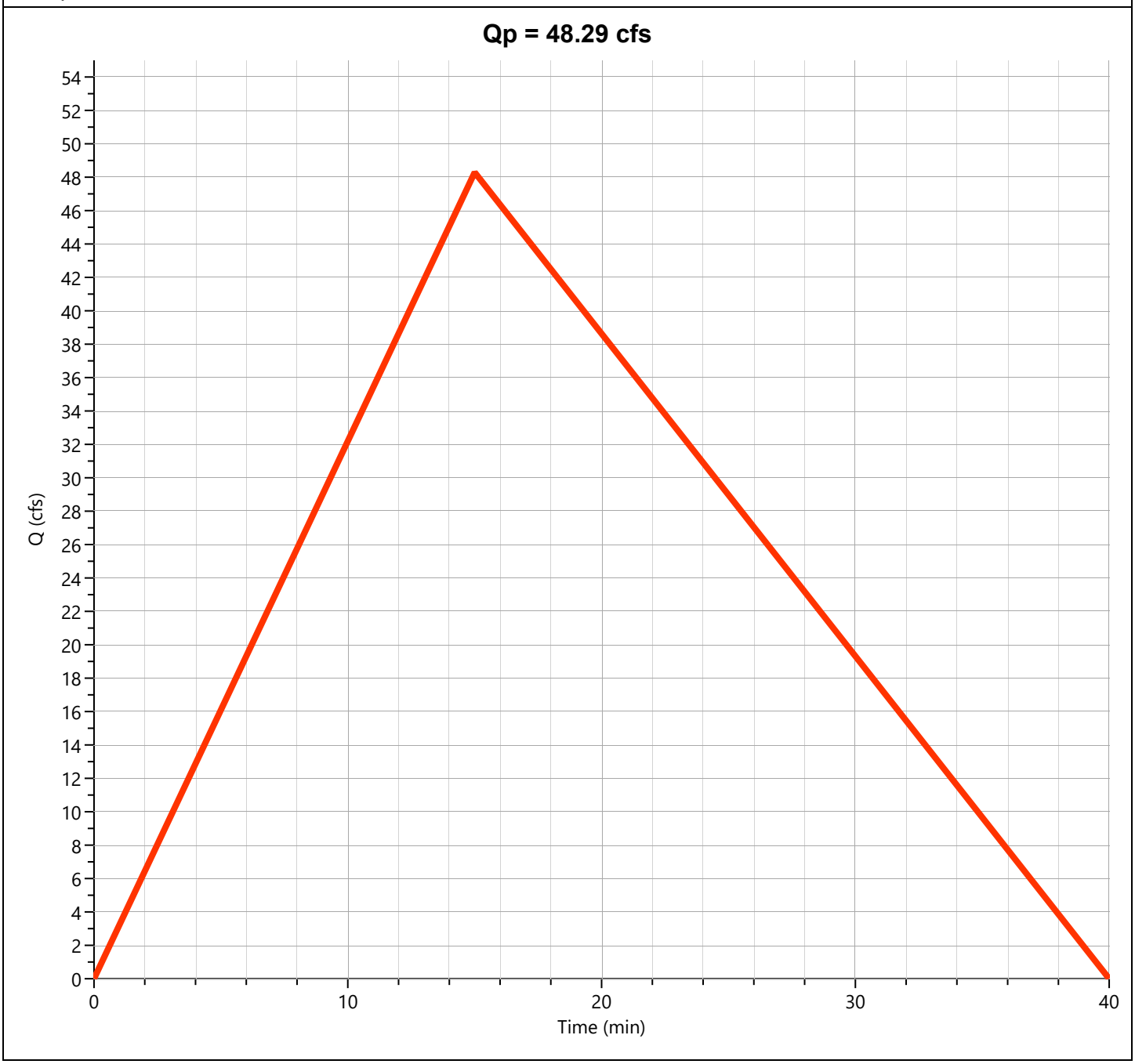
Hydrograph Type	= Rational	Peak Flow	= 14.36 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 12,653 cuft
Drainage Area	= 3.2 ac	Runoff Coeff.	= 0.62
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.24 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "B"

Hyd. No. 2

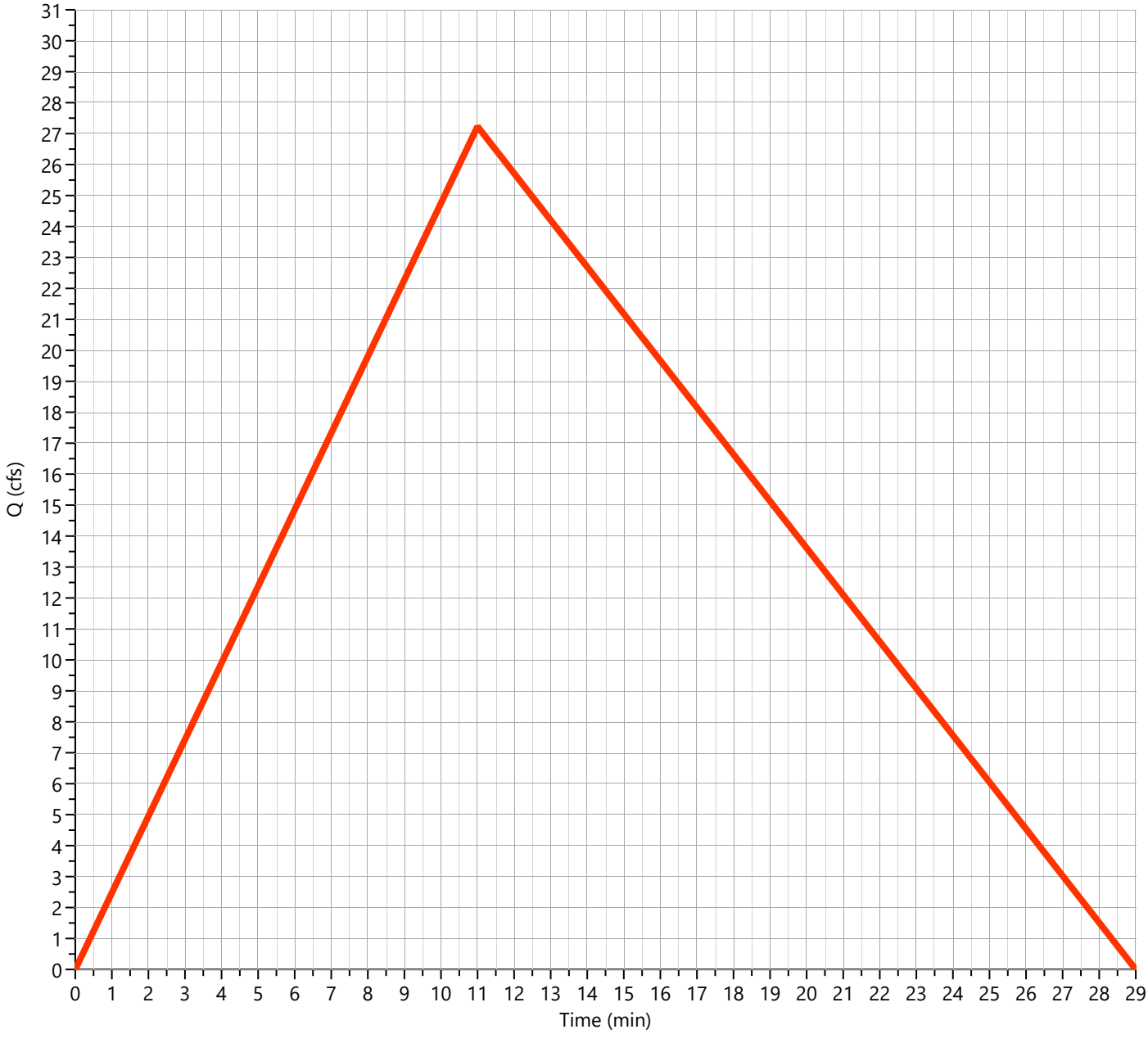
Hydrograph Type	= Rational	Peak Flow	= 48.29 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 58,019 cuft
Drainage Area	= 14.74 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "C"

Hyd. No. 3

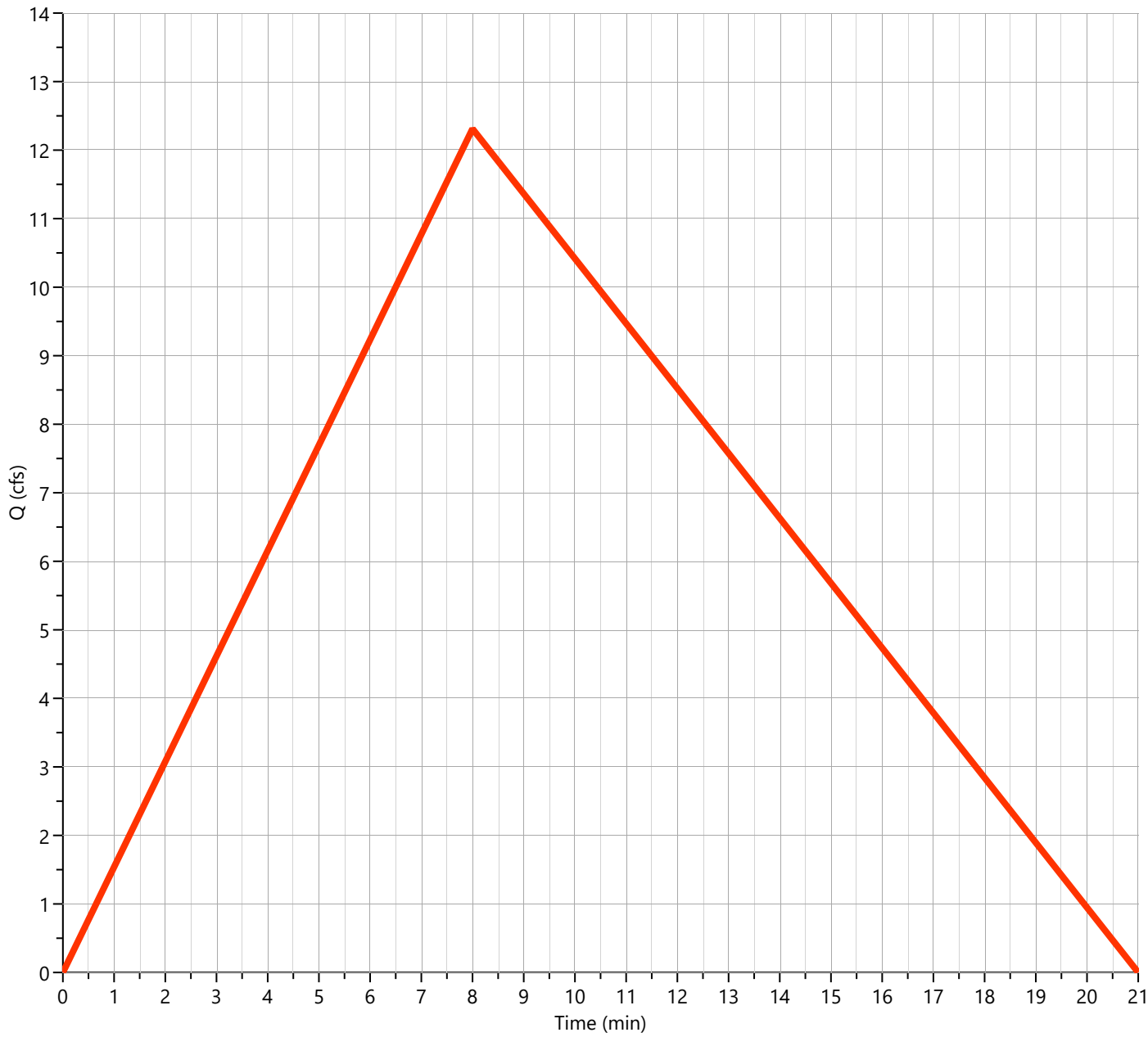
Hydrograph Type	= Rational	Peak Flow	= 27.23 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 23,992 cuft
Drainage Area	= 6.84 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.24 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "D"

Hyd. No. 4

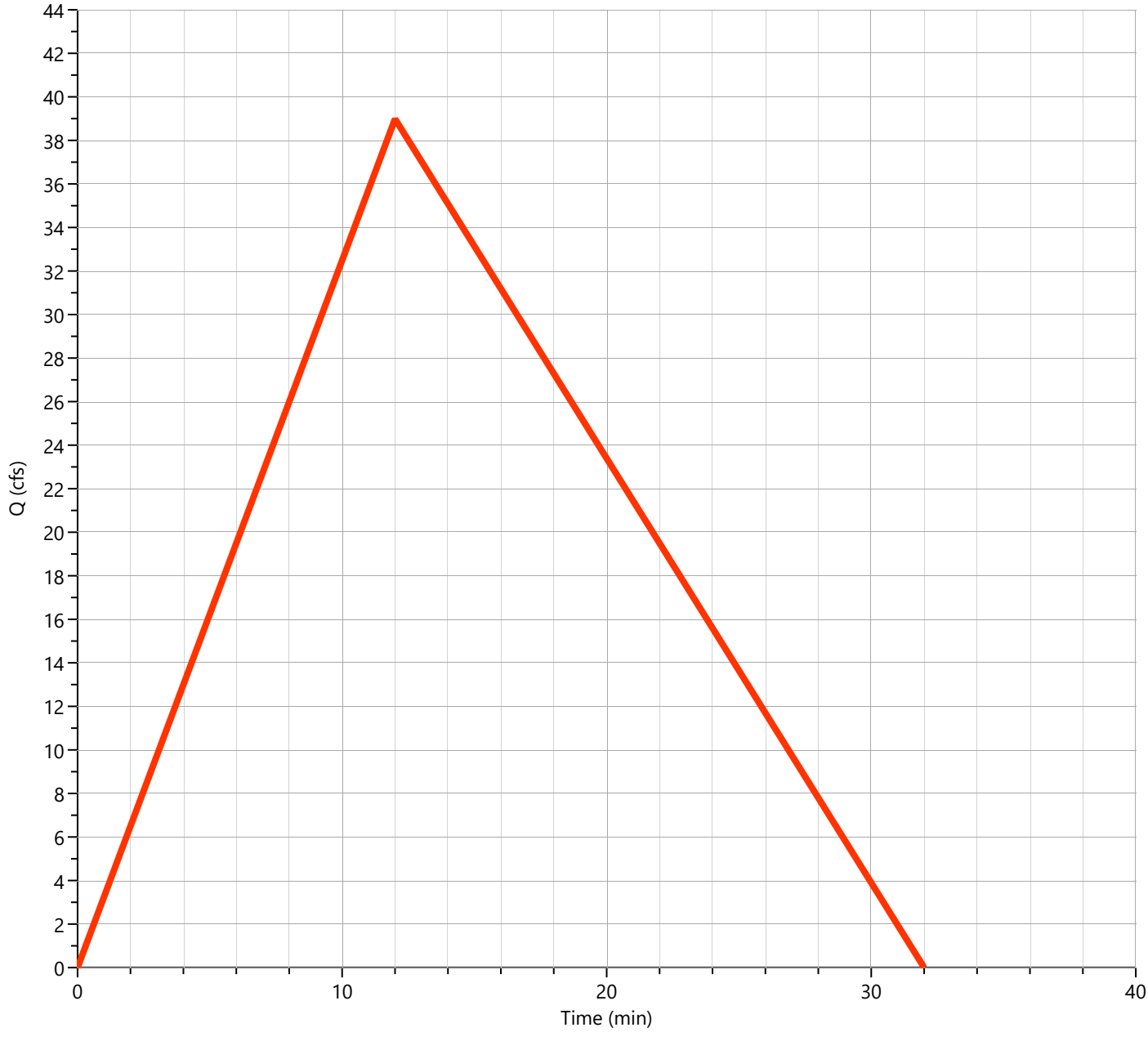
Hydrograph Type	= Rational	Peak Flow	= 12.31 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 7,889 cuft
Drainage Area	= 2.95 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 8.35 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-1"

Hyd. No. 5

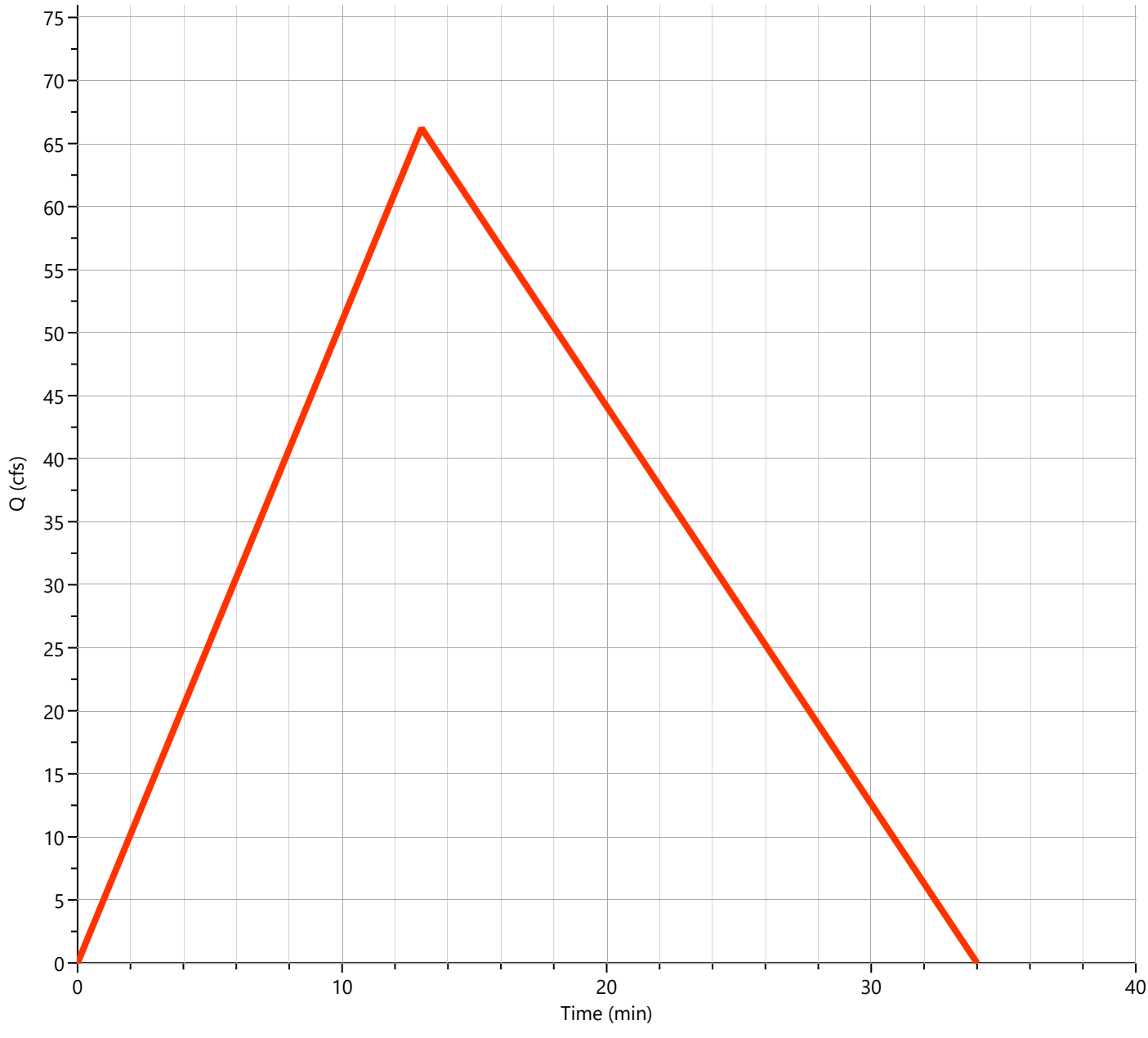
Hydrograph Type	= Rational	Peak Flow	= 38.98 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.20 hrs
Time Interval	= 1 min	Runoff Volume	= 37,472 cuft
Drainage Area	= 11.2 ac	Runoff Coeff.	= 0.50
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 12.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.96 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Pre-Dev Basin "E-2"

Hyd. No. 6

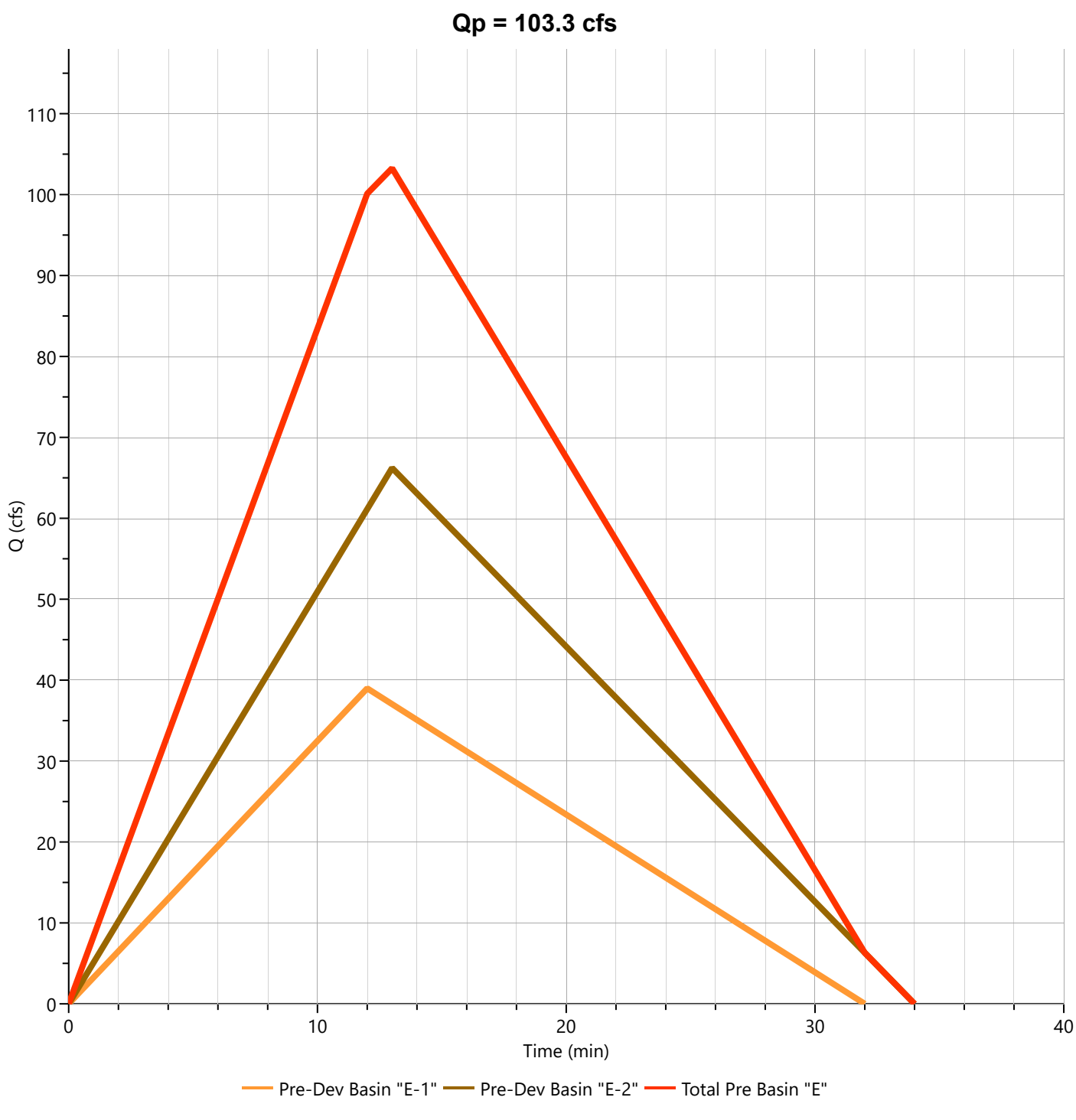
Hydrograph Type	= Rational	Peak Flow	= 66.22 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Runoff Volume	= 68,955 cuft
Drainage Area	= 18.96 ac	Runoff Coeff.	= 0.52
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 13.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.72 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Total Pre Basin "E"

Hyd. No. 7

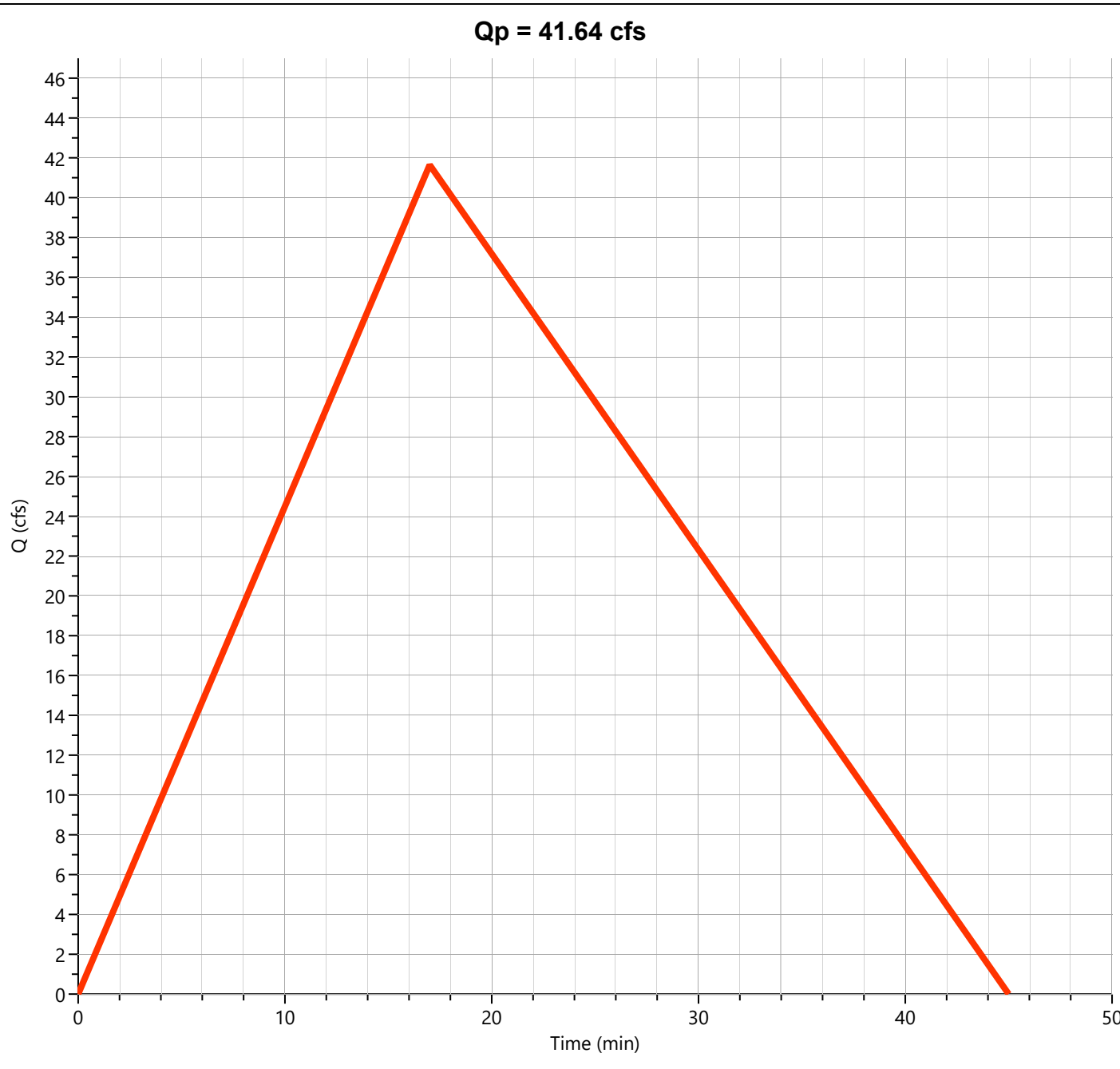
Hydrograph Type	= Junction	Peak Flow	= 103.3 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.22 hrs
Time Interval	= 1 min	Hydrograph Volume	= 104,970 cuft
Inflow Hydrographs	= 5, 6	Total Contrib. Area	= 30.16 ac



Pre-Dev Basin "F"

Hyd. No. 8

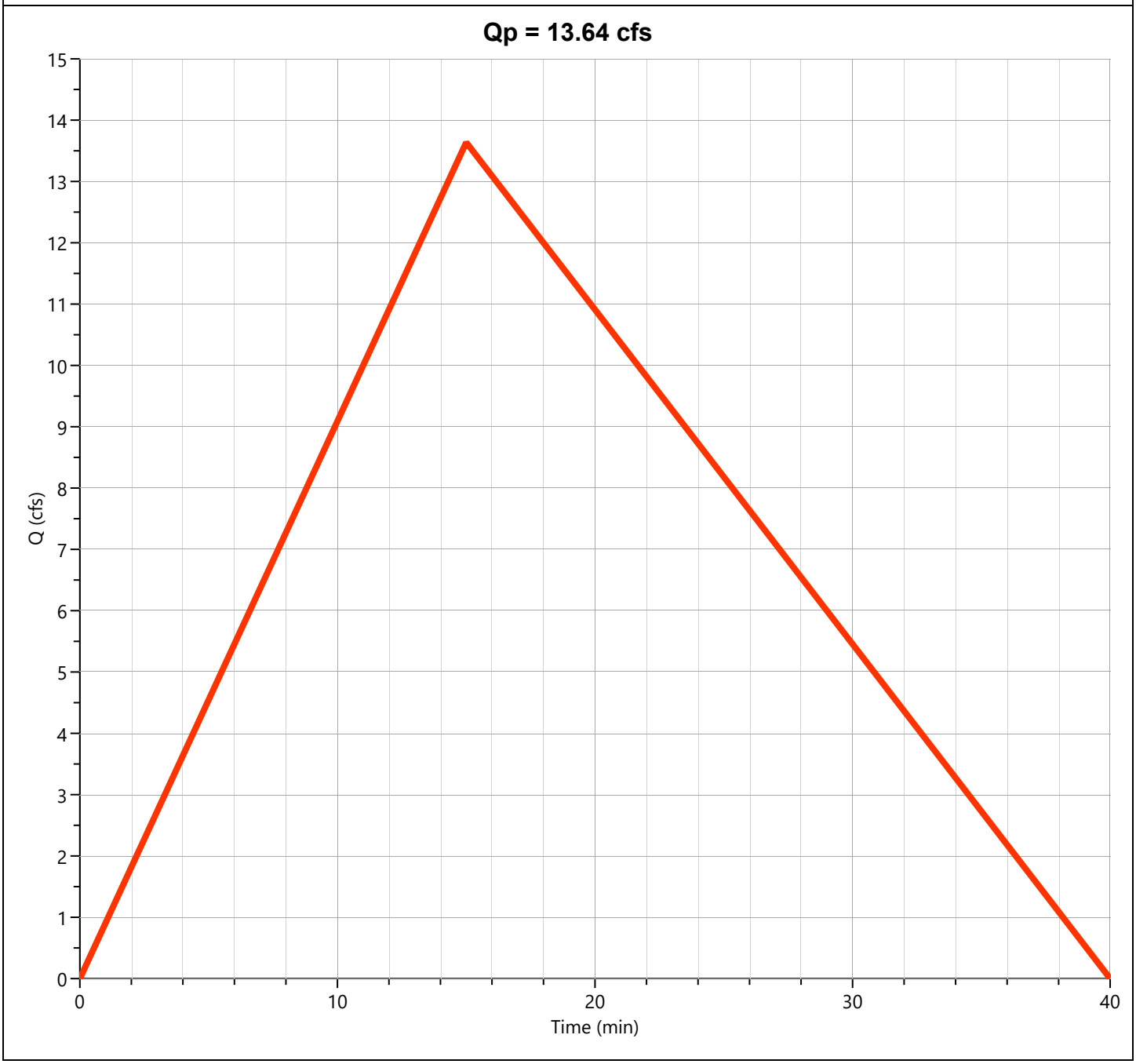
Hydrograph Type	= Rational	Peak Flow	= 41.64 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.28 hrs
Time Interval	= 1 min	Runoff Volume	= 56,705 cuft
Drainage Area	= 13.19 ac	Runoff Coeff.	= 0.53
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 17.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.96 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin A

Hyd. No. 9

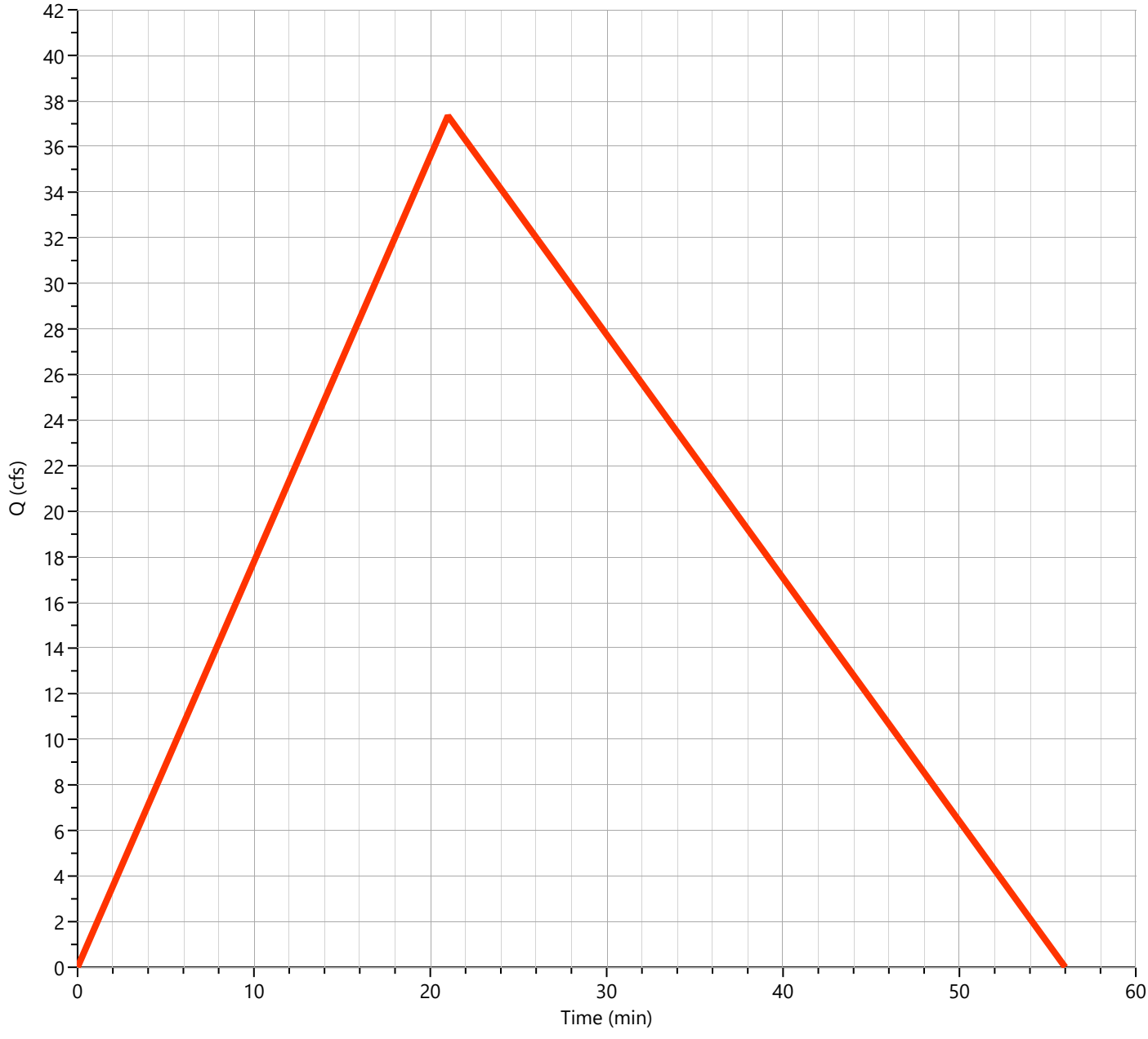
Hydrograph Type	= Rational	Peak Flow	= 13.64 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.25 hrs
Time Interval	= 1 min	Runoff Volume	= 16,384 cuft
Drainage Area	= 3.33 ac	Runoff Coeff.	= 0.65
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 15.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 6.30 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin B

Hyd. No. 10

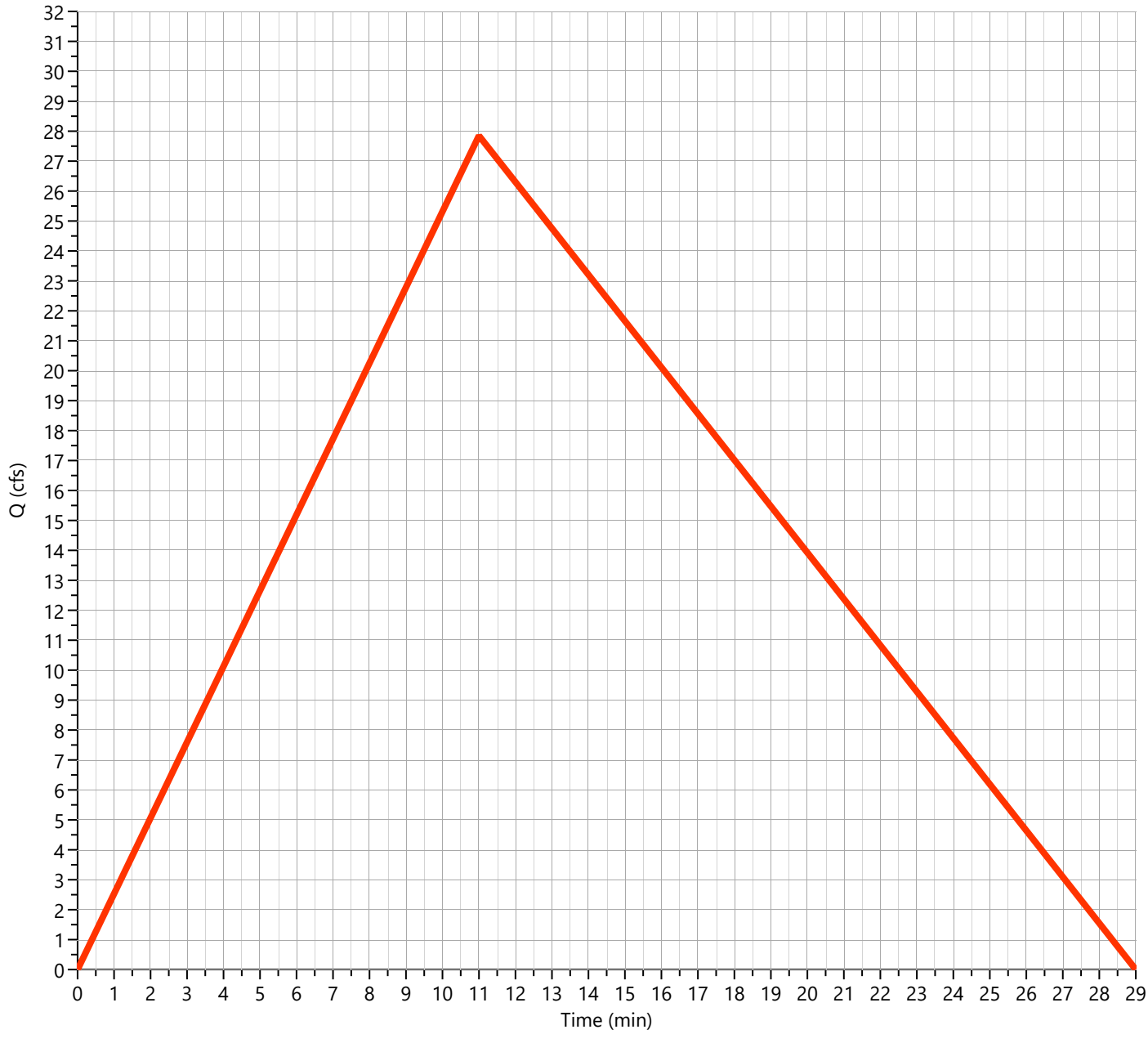
Hydrograph Type	= Rational	Peak Flow	= 37.35 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.35 hrs
Time Interval	= 1 min	Runoff Volume	= 62,823 cuft
Drainage Area	= 12.53 ac	Runoff Coeff.	= 0.55
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 21.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.42 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "C"

Hyd. No. 11

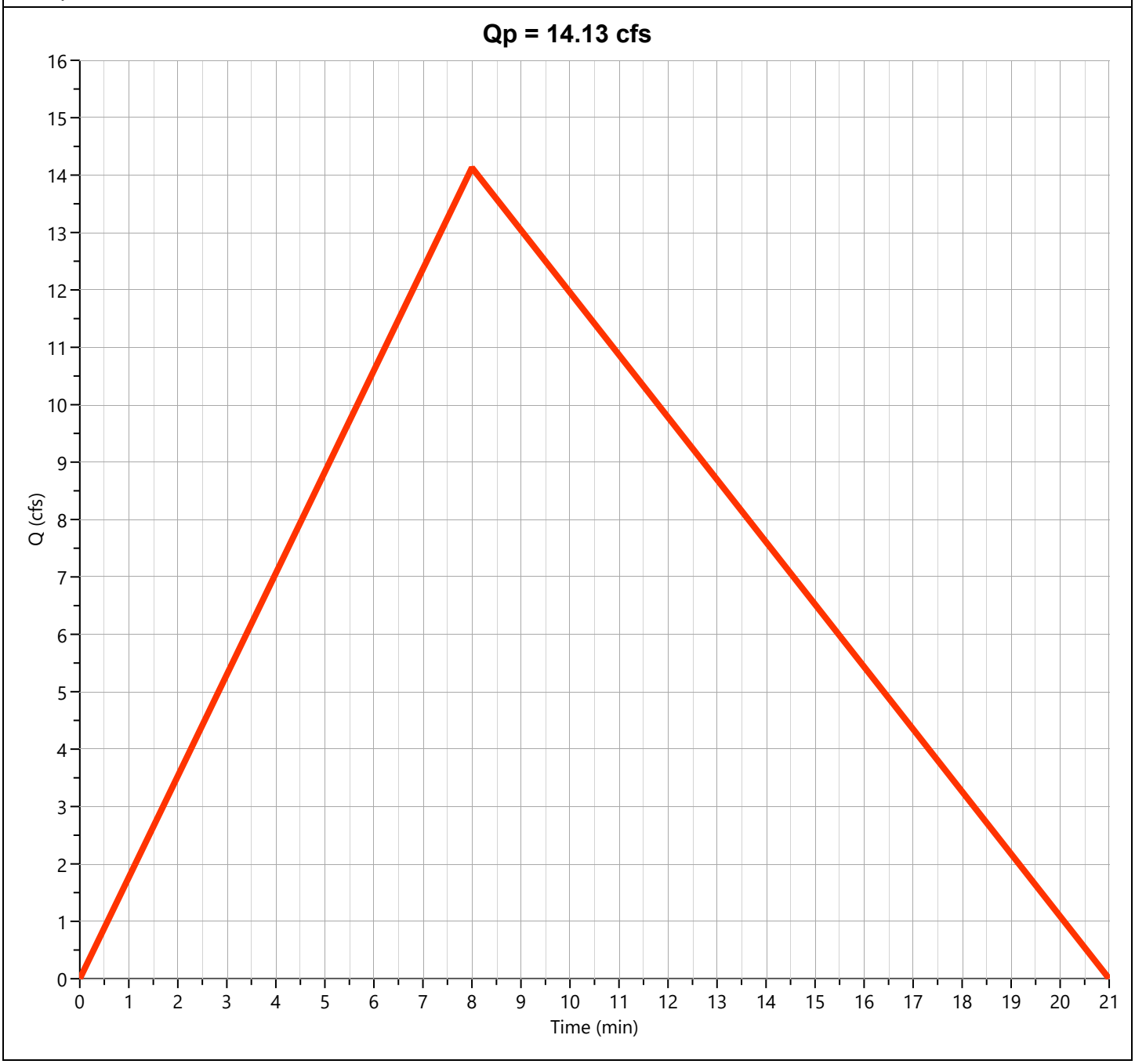
Hydrograph Type	= Rational	Peak Flow	= 27.85 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.18 hrs
Time Interval	= 1 min	Runoff Volume	= 24,537 cuft
Drainage Area	= 6.75 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 11.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 7.24 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "D"

Hyd. No. 12

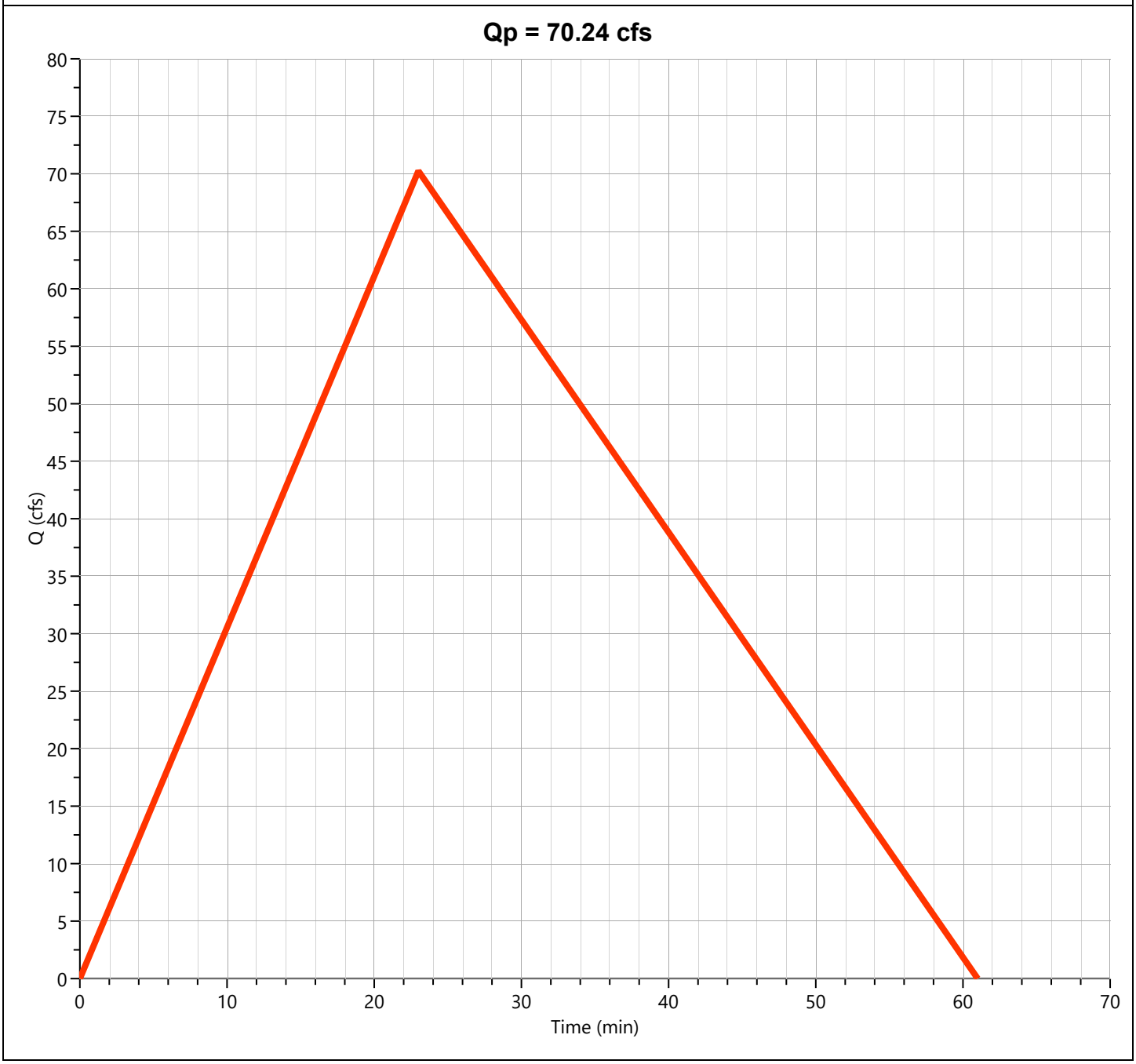
Hydrograph Type	= Rational	Peak Flow	= 14.13 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.13 hrs
Time Interval	= 1 min	Runoff Volume	= 9,054 cuft
Drainage Area	= 2.97 ac	Runoff Coeff.	= 0.57
Tc Method	= TR55 (See Worksheet)	Time of Conc. (Tc)	= 8.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 8.35 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Post-Dev Basin "E-1"

Hyd. No. 13

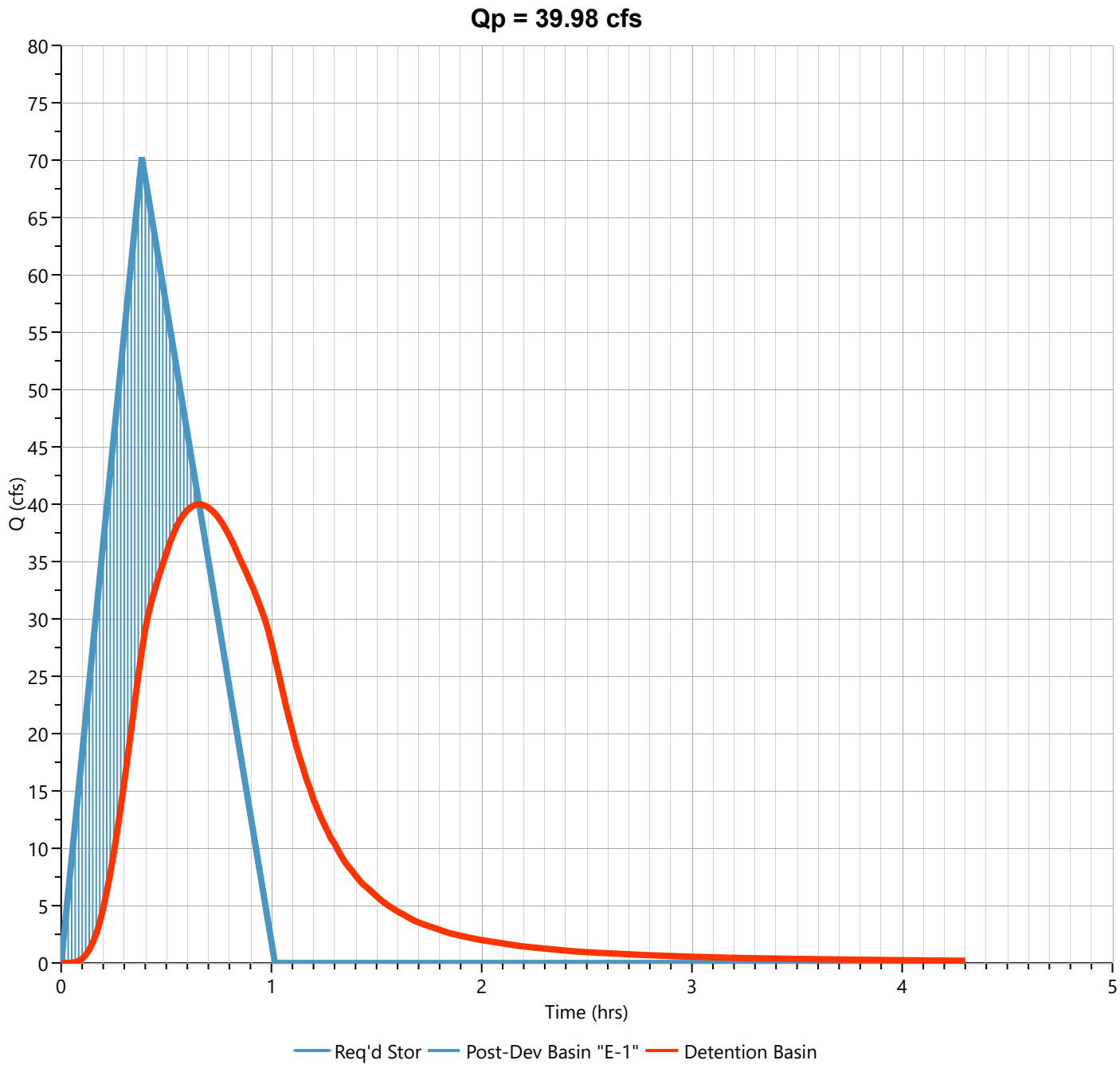
Hydrograph Type	= Rational	Peak Flow	= 70.24 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.38 hrs
Time Interval	= 1 min	Runoff Volume	= 129,411 cuft
Drainage Area	= 18.0 ac	Runoff Coeff.	= 0.75
Tc Method	= User	Time of Conc. (Tc)	= 23.0 min
IDF Curve	= City of Bryant IDF Curve.idf	Intensity	= 5.20 in/hr
Freq. Corr. Factor	= 1.00	Asc/Rec Limb Factors	= 1/1.67



Detention Basin

Hyd. No. 14

Hydrograph Type	= Pond Route	Peak Flow	= 39.98 cfs
Storm Frequency	= 50-yr	Time to Peak	= 0.65 hrs
Time Interval	= 1 min	Hydrograph Volume	= 128,502 cuft
Inflow Hydrograph	= 13 - Post-Dev Basin "E-1"	Max. Elevation	= 472.00 ft
Pond Name	= Hilltop Detention Pond	Max. Storage	= 56,670 cuft

Pond Routing by Storage Indication Method

Center of mass detention time = 24 min