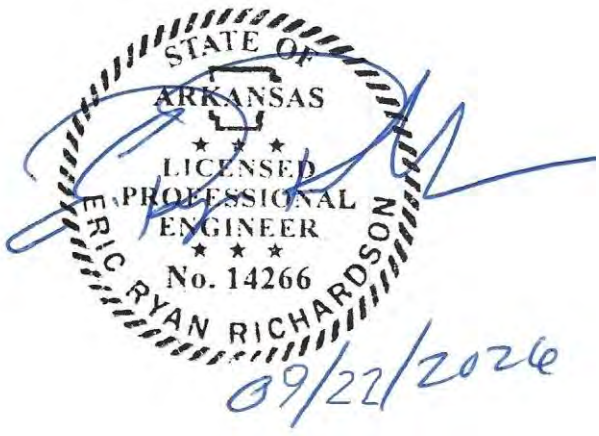
# Drainage Report

## For

## Zyair Estates Subdivision

## Bryant, Saline County, Arkansas




**September 22, 2026**

**Prepared by:**

**RICHARDSON ENGINEERING, PLLC**

**325 W. South St.**
**Benton, AR 72015**
**501-315-7225**

## TABLE OF CONTENTS

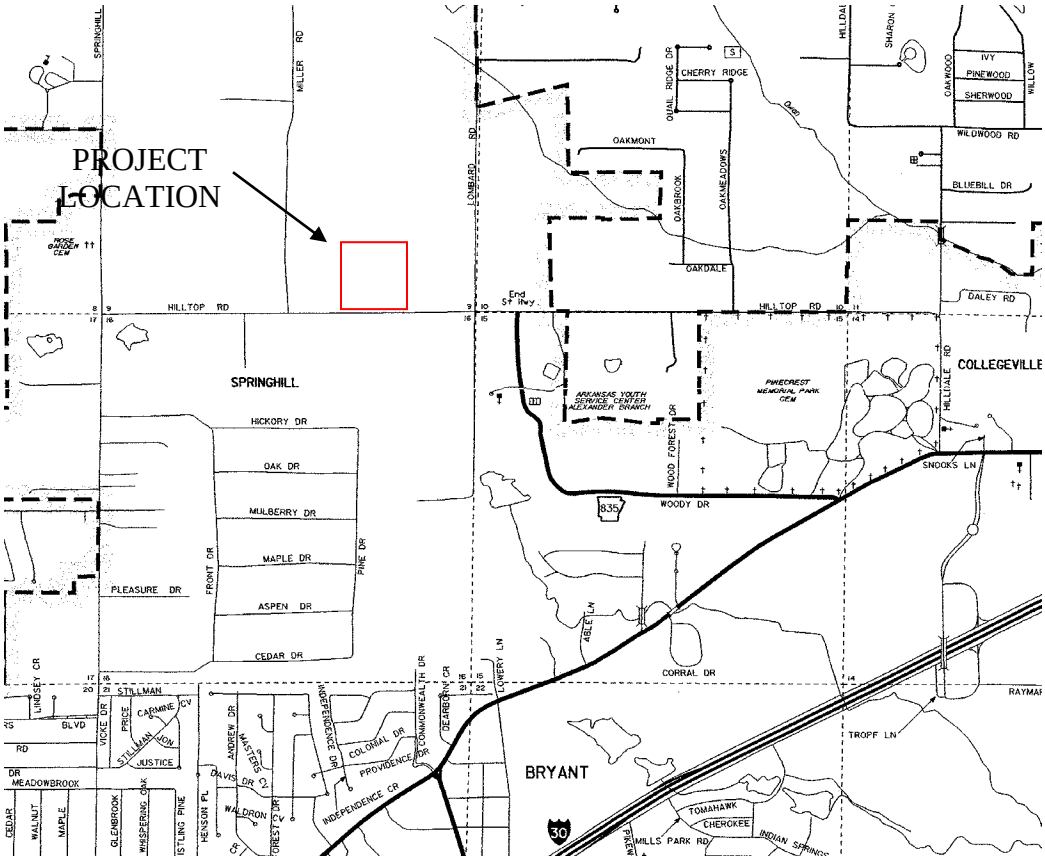

| Title | Page Number |
|---|---|
| Project Owner Information | 3 |
| Project Location and Description | 3 |
| Site Drainage | 4 |
| *Pre-Development* | 4 |
| *Post-Development* | 4 |
| Runoff Summary's | 5 |
| *Pre-Development Drainage Basin Information* | 5 |
| *Overall Site Post- Development Drainage Basin Information* | 6 |
| *Basin A* | 7 |
| *Basin B* | 7 |
| *Basin C* | 8 |
| *Basin D* | 8 |
| *Basin E1* | 9 |
| *Basin E2* | 9 |
| *Basin F* | 10 |
| Recommendations/Summary | 10 |
| Appendices: | 11 |
| *Runoff Coefficient Calculation* | 12 |
| *Time of Concentration Calculation* | 13 |
| *NRCS Soil Report* | 14 |
| *NOAA Atlas 14 Data* | 15 |
| *Site Drainage Basin Maps* | 16 |
| *SSA Design Layout* | 17 |
| *Storm System Design (SSA)* | 18 |
| *2 Year Design Storm* | 19 |
| *10 Year Design Storm* | 20 |
| *25 Year Design Storm* | 21 |
| *50 Year Design Storm* | 22 |
| *100 Year Design Storm* | 23 |
| *Detention pond Outlet Schematics* | 24 |
| *Detention Pond Storage Estimate* | 25 |
| *Pre and Post Development Hydrographs (Hydrology Studio)* | 26 |

**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 (½ AC or larger) C = 0-65

→ 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

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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 |

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Benton, AR 72015
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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) |

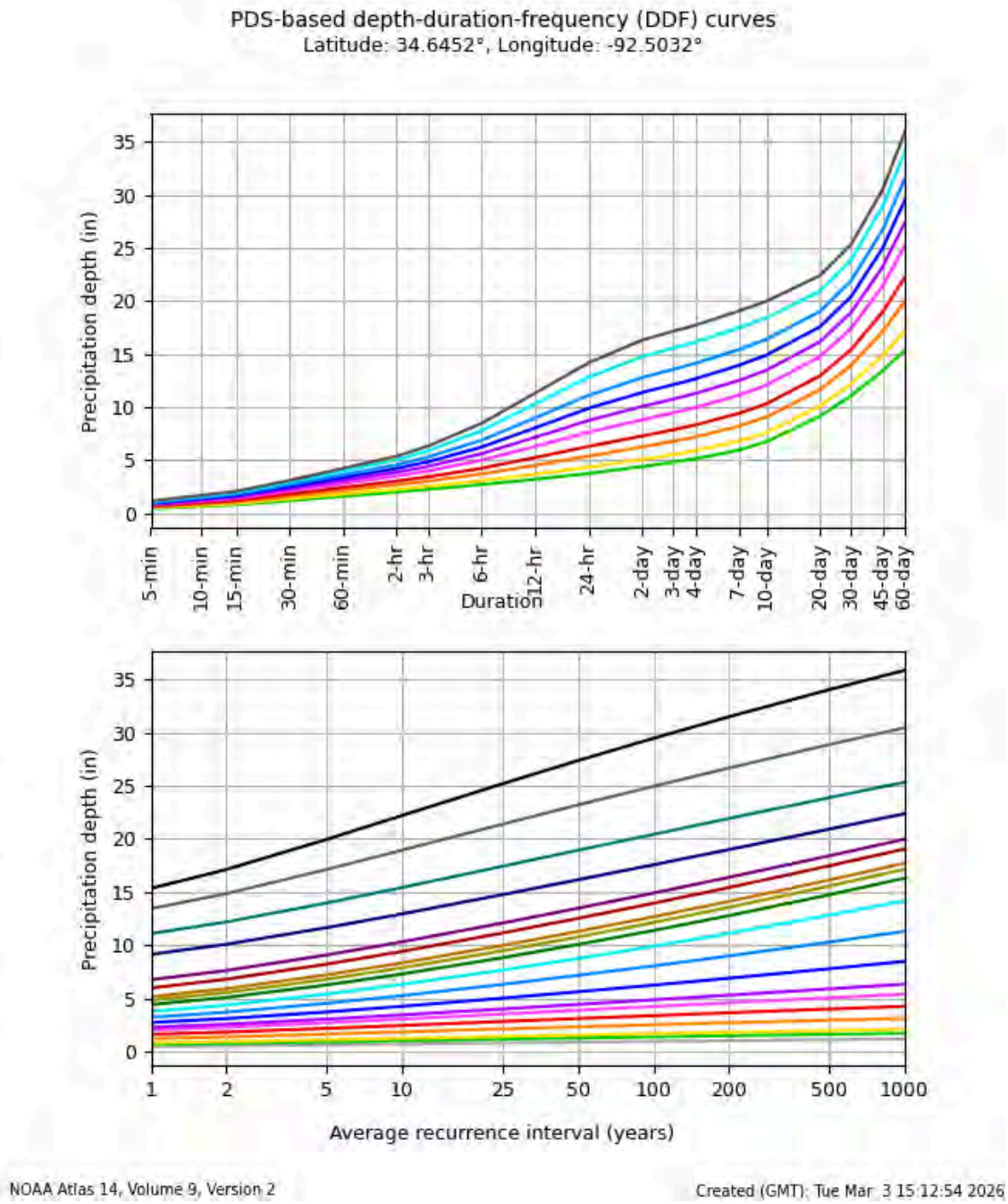
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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.

Back to Top

## PF graphical



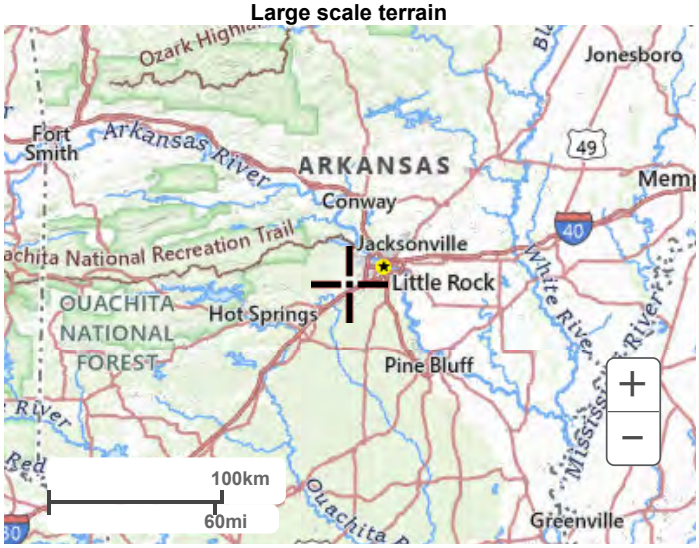

Back to Top

## Maps & aerials

**Small scale terrain**




**Large scale terrain**




**Large scale map**




**Large scale aerial**




Back to Top

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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) |

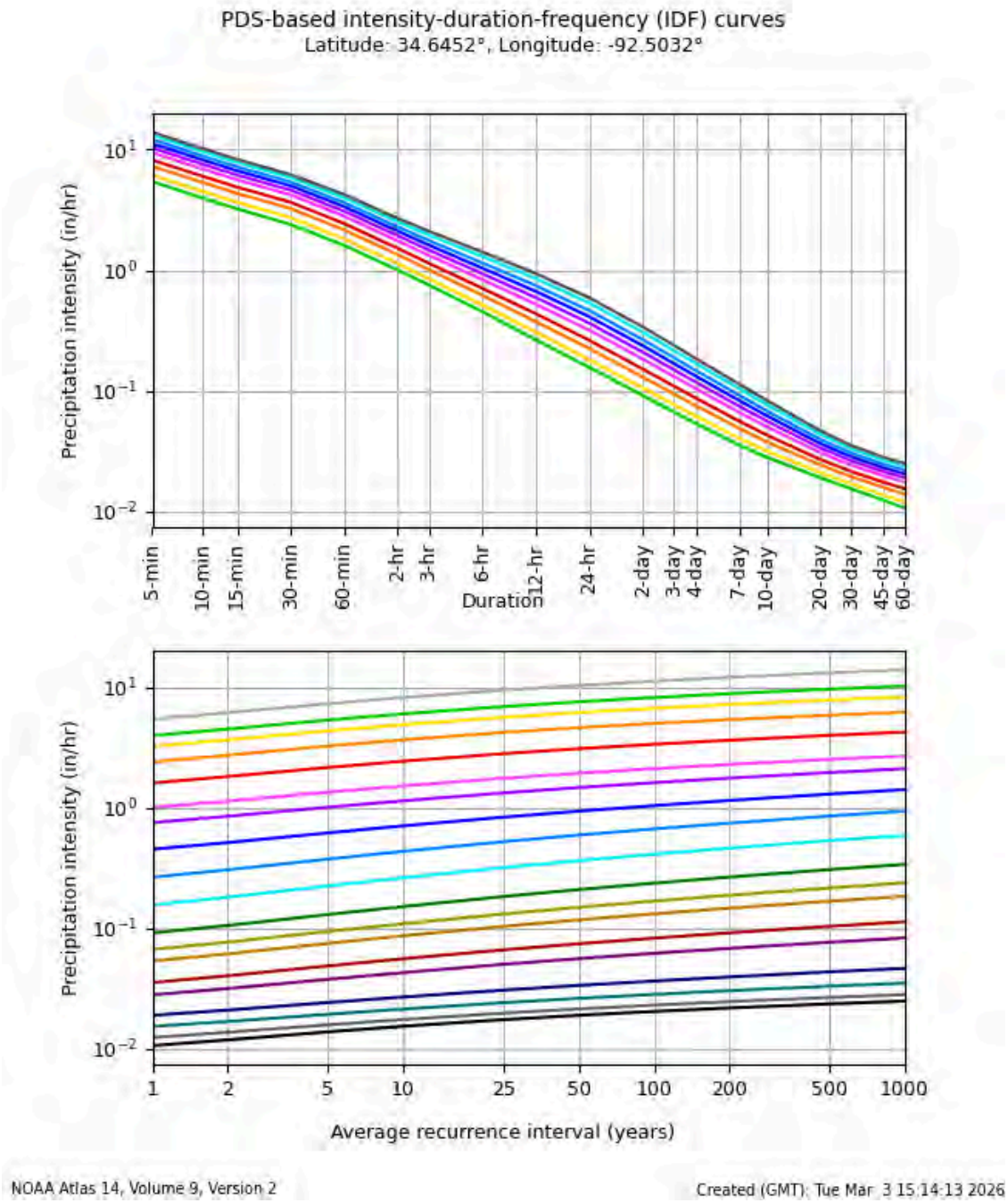
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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.

Back to Top

## PF graphical



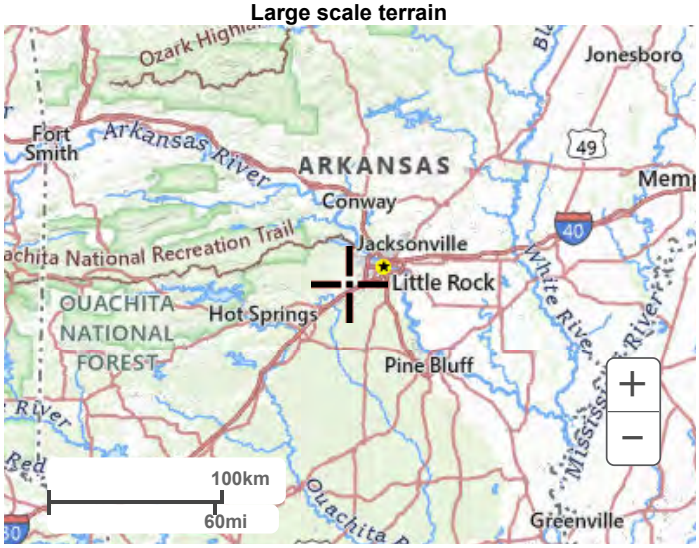

Back to Top

## Maps & aerials

**Small scale terrain**




**Large scale terrain**




**Large scale map**




**Large scale aerial**




Back to Top

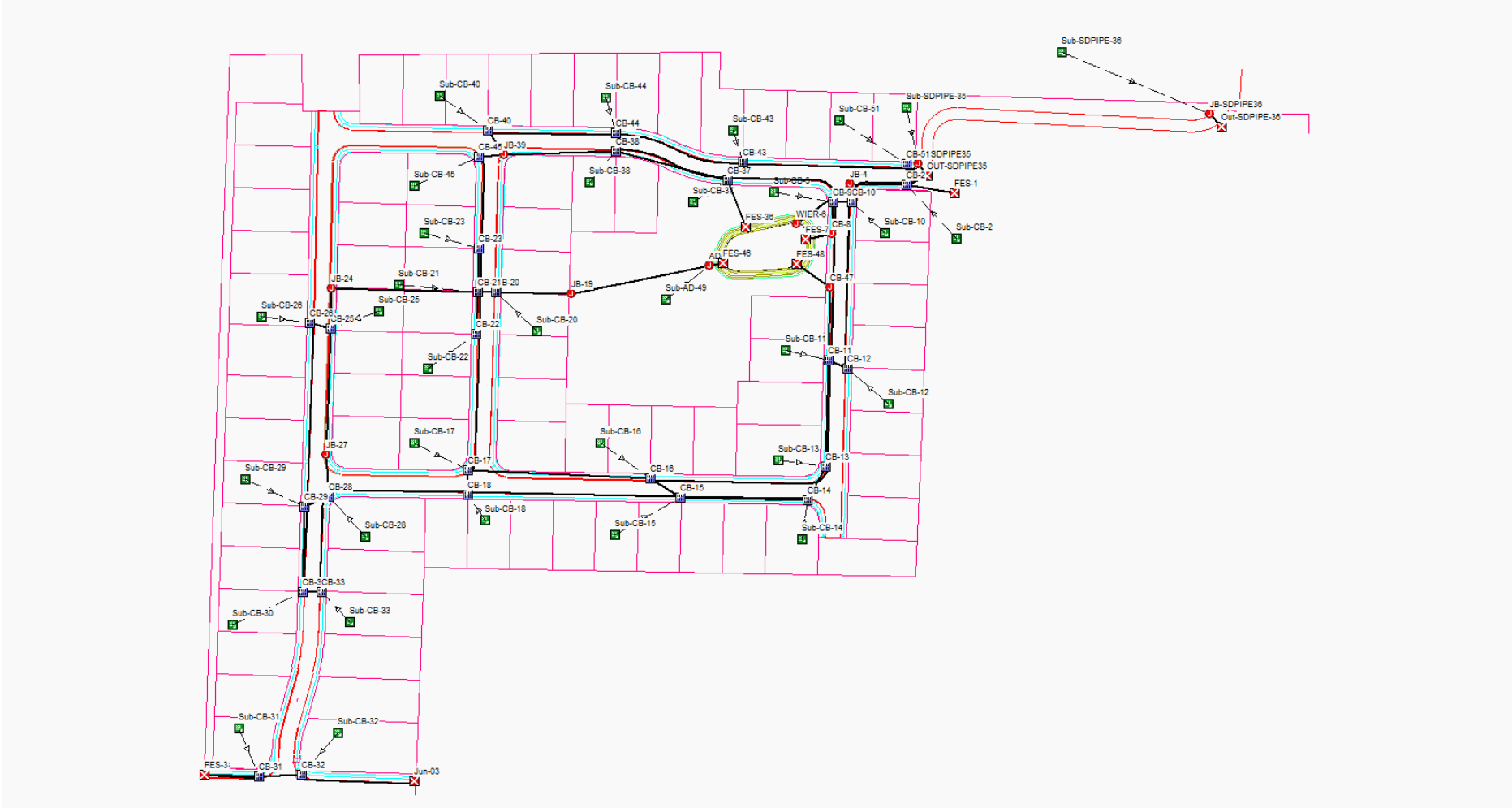
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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

# 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 De |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | (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 ($ft^2$) | 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 (cfs) | Time of Peak Flow Occurrence (days hh:mm) | Design Flow Capacity (cfs) | Peak Flow/ Design Flow Ratio | Peak Flow Velocity (ft/sec) | Travel Time (min) | Peak Flow Depth (ft) | Peak Flow Depth/ Total Depth Ratio | Total Time Surcharged (min) | Froud Numb |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 De |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | (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 ($ft^2$) | 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 De |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | (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 ($ft^2$) | 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 De |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | (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 | 6.1 |
| 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 | 5.1 |
| 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 ($ft^2$) | 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 (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 | 2.32 | 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 ($ft^2$) | 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

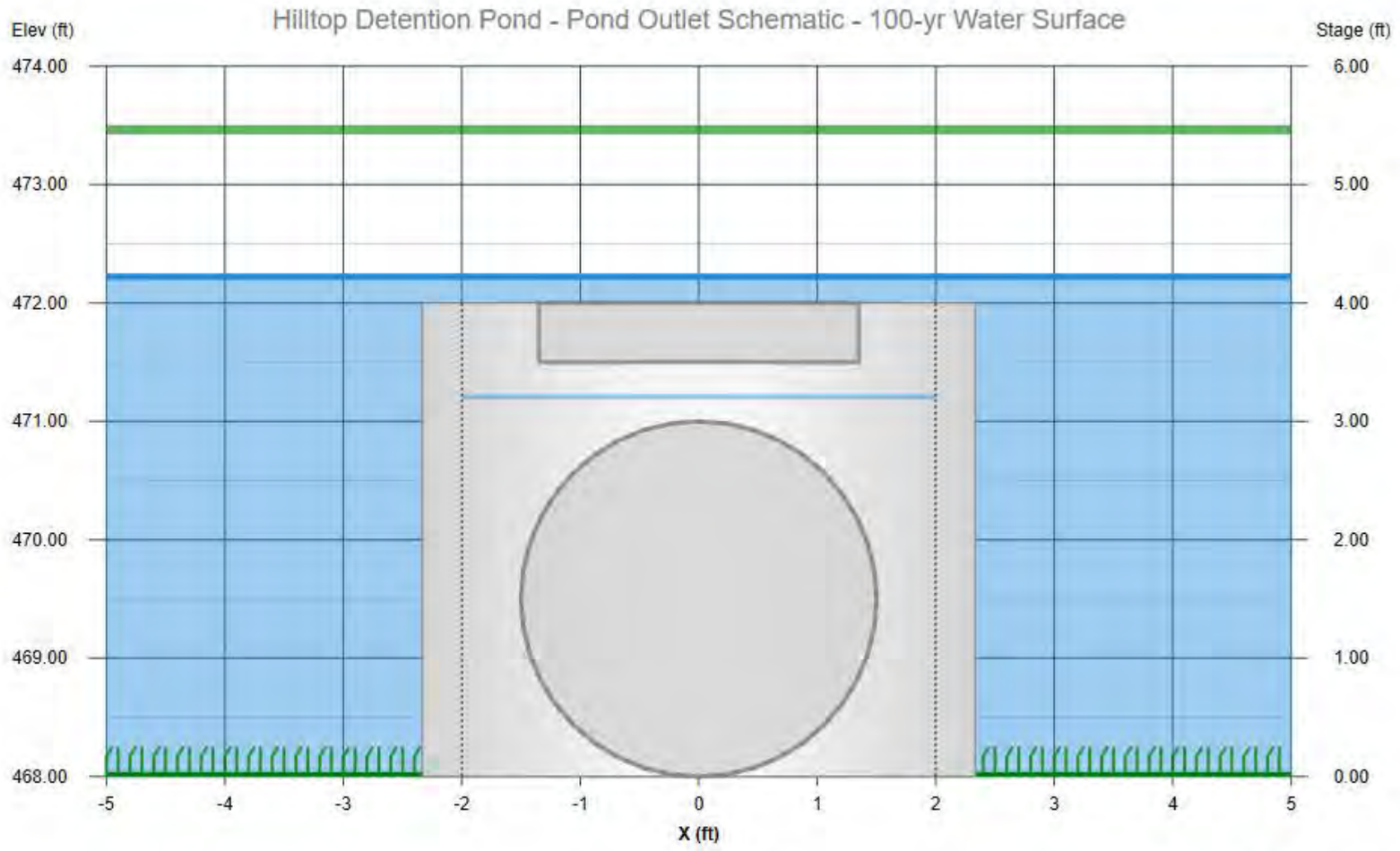
| Culvert | Riser | Orifice | Weir |
|---|---|---|---|
| Exfiltration | User | Perf Riser | Tailwater |

| 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"

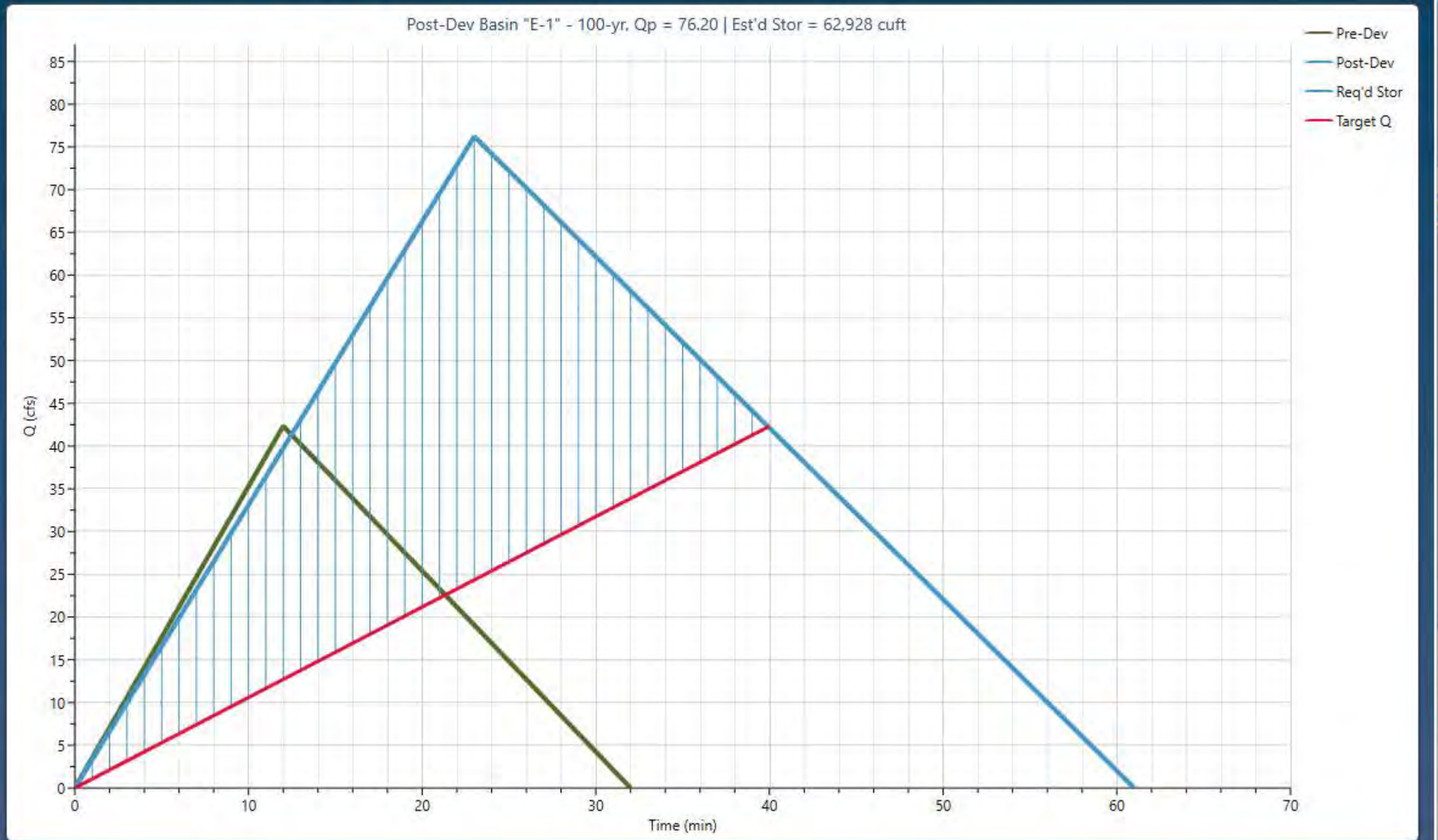
Pre-dev Hyd = 5 - Rational - Pre-Dev Basin "E-1"

| 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 >

# Pre and Post Development Hydrographs (Hydrology Studio)

# Table of Contents



**Basin Model Schematic** ..... 1

**Hydrograph by Return Period** ..... 2

**2 - Year**

**Hydrograph Summary** ..... 3

**Hydrograph Reports**

Hydrograph No. 1, Rational, Pre-Dev Basin "A" ..... 4

Tc by TR55 Worksheet ..... 5

Hydrograph No. 2, Rational, Pre-Dev Basin "B" ..... 6

Tc by TR55 Worksheet ..... 7

Hydrograph No. 3, Rational, Pre-Dev Basin "C" ..... 8

Tc by TR55 Worksheet ..... 9

Hydrograph No. 4, Rational, Pre-Dev Basin "D" ..... 10

Tc by TR55 Worksheet ..... 11

Hydrograph No. 5, Rational, Pre-Dev Basin "E-1" ..... 12

Tc by TR55 Worksheet ..... 13

Hydrograph No. 6, Rational, Pre-Dev Basin "E-2" ..... 14

Tc by TR55 Worksheet ..... 15

Hydrograph No. 7, Junction, Total Pre Basin "E" ..... 16

Hydrograph No. 8, Rational, Pre-Dev Basin "F" ..... 17

Tc by TR55 Worksheet ..... 18

Hydrograph No. 9, Rational, Post-Dev Basin A ..... 19

Tc by TR55 Worksheet ..... 20

Hydrograph No. 10, Rational, Post-Dev Basin B ..... 21

Tc by TR55 Worksheet ..... 22

Hydrograph No. 11, Rational, Post-Dev Basin "C" ..... 23

Tc by TR55 Worksheet ..... 24

Hydrograph No. 12, Rational, Post-Dev Basin "D" ..... 25

Tc by TR55 Worksheet ..... 26

Hydrograph No. 13, Rational, Post-Dev Basin "E-1" ..... 27

Hydrograph No. 14, Pond Route, Detention Basin ..... 28

Detention Pond Reports - Hilltop Detention Pond ..... 29

Hydrograph No. 15, Rational, Post-Dev Basin "E-2" ..... 33

Tc by TR55 Worksheet ..... 34

Hydrograph No. 16, Junction, Total Post-Dev "E" ..... 35

Hydrograph No. 17, Rational, Post-Dev Basin "F" ..... 36

Tc by TR55 Worksheet ..... 37

# Contents continued...


Design Storm Report - IDF Based - Synthetic, 6-hr ..... 38

**10 - Year**

**Hydrograph Summary** ..... **39**

**Hydrograph Reports**

Hydrograph No. 1, Rational, Pre-Dev Basin "A" ..... 40

Hydrograph No. 2, Rational, Pre-Dev Basin "B" ..... 41

Hydrograph No. 3, Rational, Pre-Dev Basin "C" ..... 42

Hydrograph No. 4, Rational, Pre-Dev Basin "D" ..... 43

Hydrograph No. 5, Rational, Pre-Dev Basin "E-1" ..... 44

Hydrograph No. 6, Rational, Pre-Dev Basin "E-2" ..... 45

Hydrograph No. 7, Junction, Total Pre Basin "E" ..... 46

Hydrograph No. 8, Rational, Pre-Dev Basin "F" ..... 47

Hydrograph No. 9, Rational, Post-Dev Basin A ..... 48

Hydrograph No. 10, Rational, Post-Dev Basin B ..... 49

Hydrograph No. 11, Rational, Post-Dev Basin "C" ..... 50

Hydrograph No. 12, Rational, Post-Dev Basin "D" ..... 51

Hydrograph No. 13, Rational, Post-Dev Basin "E-1" ..... 52

Hydrograph No. 14, Pond Route, Detention Basin ..... 53

Hydrograph No. 15, Rational, Post-Dev Basin "E-2" ..... 54

Hydrograph No. 16, Junction, Total Post-Dev "E" ..... 55

Hydrograph No. 17, Rational, Post-Dev Basin "F" ..... 56

Design Storm Report - IDF Based - Synthetic, 6-hr ..... 57

**25 - Year**

**Hydrograph Summary** ..... **58**

**Hydrograph Reports**

Hydrograph No. 1, Rational, Pre-Dev Basin "A" ..... 59

Hydrograph No. 2, Rational, Pre-Dev Basin "B" ..... 60

Hydrograph No. 3, Rational, Pre-Dev Basin "C" ..... 61

Hydrograph No. 4, Rational, Pre-Dev Basin "D" ..... 62

Hydrograph No. 5, Rational, Pre-Dev Basin "E-1" ..... 63

Hydrograph No. 6, Rational, Pre-Dev Basin "E-2" ..... 64

Hydrograph No. 7, Junction, Total Pre Basin "E" ..... 65

Hydrograph No. 8, Rational, Pre-Dev Basin "F" ..... 66

Hydrograph No. 9, Rational, Post-Dev Basin A ..... 67

Hydrograph No. 10, Rational, Post-Dev Basin B ..... 68

Hydrograph No. 11, Rational, Post-Dev Basin "C" ..... 69

# Contents continued...


Hydrograph No. 12, Rational, Post-Dev Basin "D" ..... 70
Hydrograph No. 13, Rational, Post-Dev Basin "E-1" ..... 71
Hydrograph No. 14, Pond Route, Detention Basin ..... 72
Hydrograph No. 15, Rational, Post-Dev Basin "E-2" ..... 73
Hydrograph No. 16, Junction, Total Post-Dev "E" ..... 74
Hydrograph No. 17, Rational, Post-Dev Basin "F" ..... 75
Design Storm Report - IDF Based - Synthetic, 6-hr ..... 76

**50 - Year**

**Hydrograph Summary** ..... **77**

**Hydrograph Reports**

Hydrograph No. 1, Rational, Pre-Dev Basin "A" ..... 78
Hydrograph No. 2, Rational, Pre-Dev Basin "B" ..... 79
Hydrograph No. 3, Rational, Pre-Dev Basin "C" ..... 80
Hydrograph No. 4, Rational, Pre-Dev Basin "D" ..... 81
Hydrograph No. 5, Rational, Pre-Dev Basin "E-1" ..... 82
Hydrograph No. 6, Rational, Pre-Dev Basin "E-2" ..... 83
Hydrograph No. 7, Junction, Total Pre Basin "E" ..... 84
Hydrograph No. 8, Rational, Pre-Dev Basin "F" ..... 85
Hydrograph No. 9, Rational, Post-Dev Basin A ..... 86
Hydrograph No. 10, Rational, Post-Dev Basin B ..... 87
Hydrograph No. 11, Rational, Post-Dev Basin "C" ..... 88
Hydrograph No. 12, Rational, Post-Dev Basin "D" ..... 89
Hydrograph No. 13, Rational, Post-Dev Basin "E-1" ..... 90
Hydrograph No. 14, Pond Route, Detention Basin ..... 91
Hydrograph No. 15, Rational, Post-Dev Basin "E-2" ..... 92
Hydrograph No. 16, Junction, Total Post-Dev "E" ..... 93
Hydrograph No. 17, Rational, Post-Dev Basin "F" ..... 94
Design Storm Report - IDF Based - Synthetic, 6-hr ..... 95

**100 - Year**

**Hydrograph Summary** ..... **96**

**Hydrograph Reports**

Hydrograph No. 1, Rational, Pre-Dev Basin "A" ..... 97
Hydrograph No. 2, Rational, Pre-Dev Basin "B" ..... 98
Hydrograph No. 3, Rational, Pre-Dev Basin "C" ..... 99
Hydrograph No. 4, Rational, Pre-Dev Basin "D" ..... 100
Hydrograph No. 5, Rational, Pre-Dev Basin "E-1" ..... 101

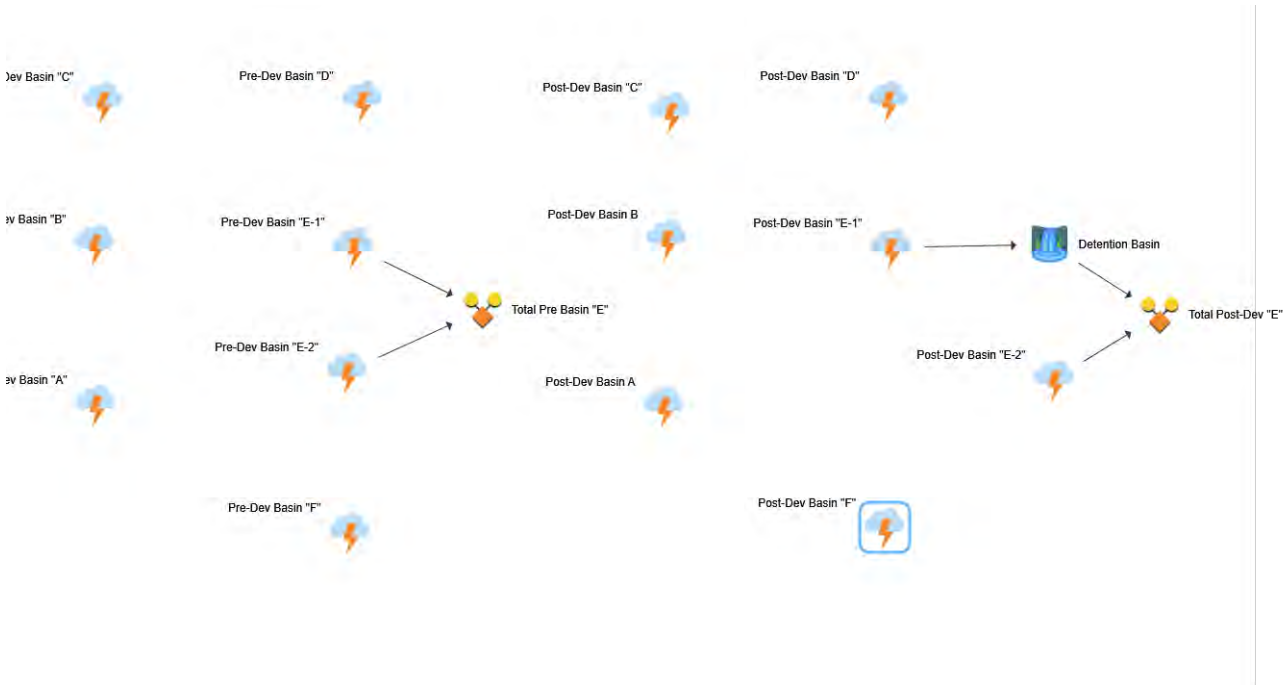
# Contents continued...


Hydrograph No. 6, Rational, Pre-Dev Basin "E-2" ..... 102
Hydrograph No. 7, Junction, Total Pre Basin "E" ..... 103
Hydrograph No. 8, Rational, Pre-Dev Basin "F" ..... 104
Hydrograph No. 9, Rational, Post-Dev Basin A ..... 105
Hydrograph No. 10, Rational, Post-Dev Basin B ..... 106
Hydrograph No. 11, Rational, Post-Dev Basin "C" ..... 107
Hydrograph No. 12, Rational, Post-Dev Basin "D" ..... 108
Hydrograph No. 13, Rational, Post-Dev Basin "E-1" ..... 109
Hydrograph No. 14, Pond Route, Detention Basin ..... 110
Hydrograph No. 15, Rational, Post-Dev Basin "E-2" ..... 111
Hydrograph No. 16, Junction, Total Post-Dev "E" ..... 112
Hydrograph No. 17, Rational, Post-Dev Basin "F" ..... 113
Design Storm Report - IDF Based - Synthetic, 6-hr ..... 114

# 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

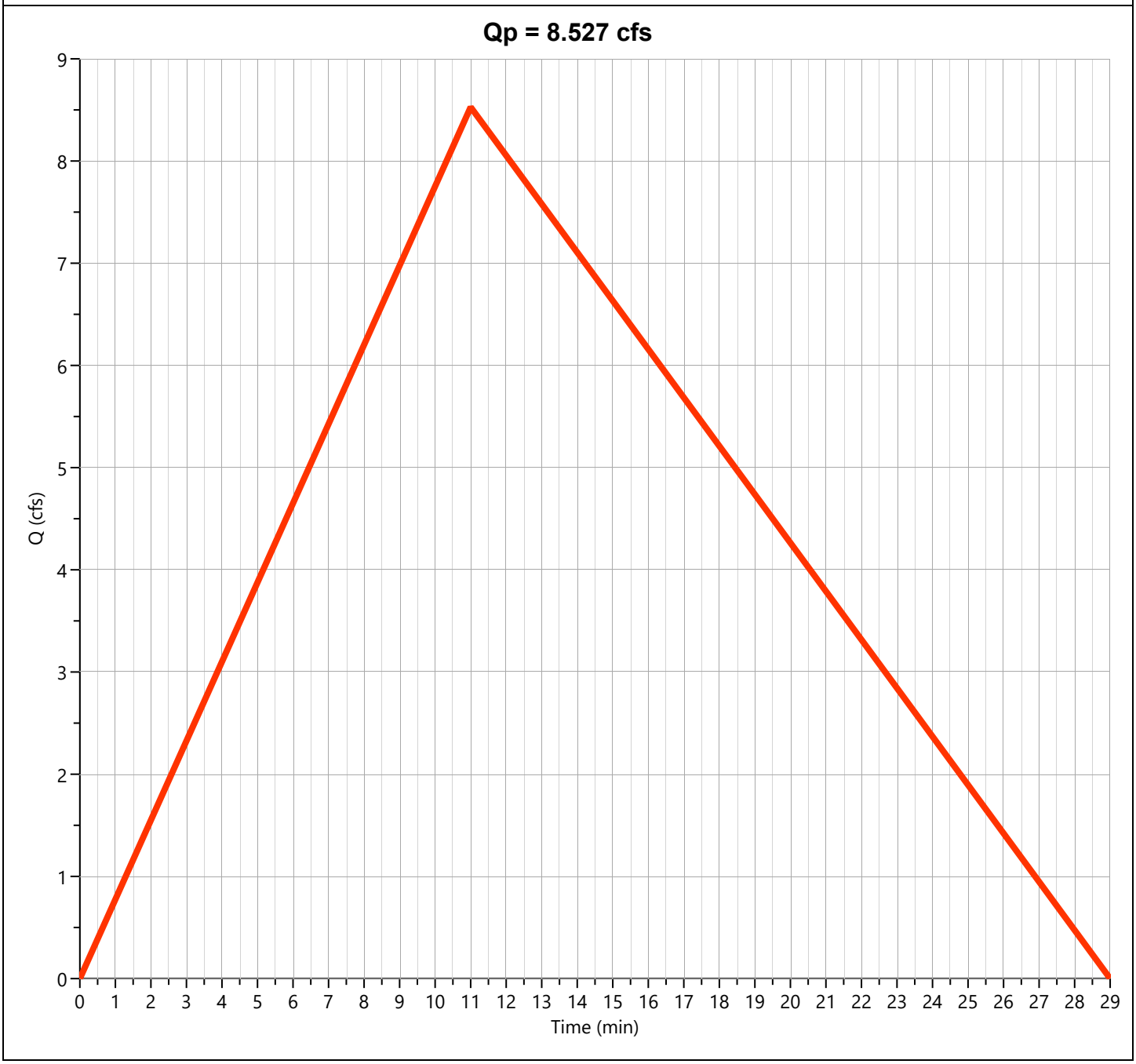
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

| 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

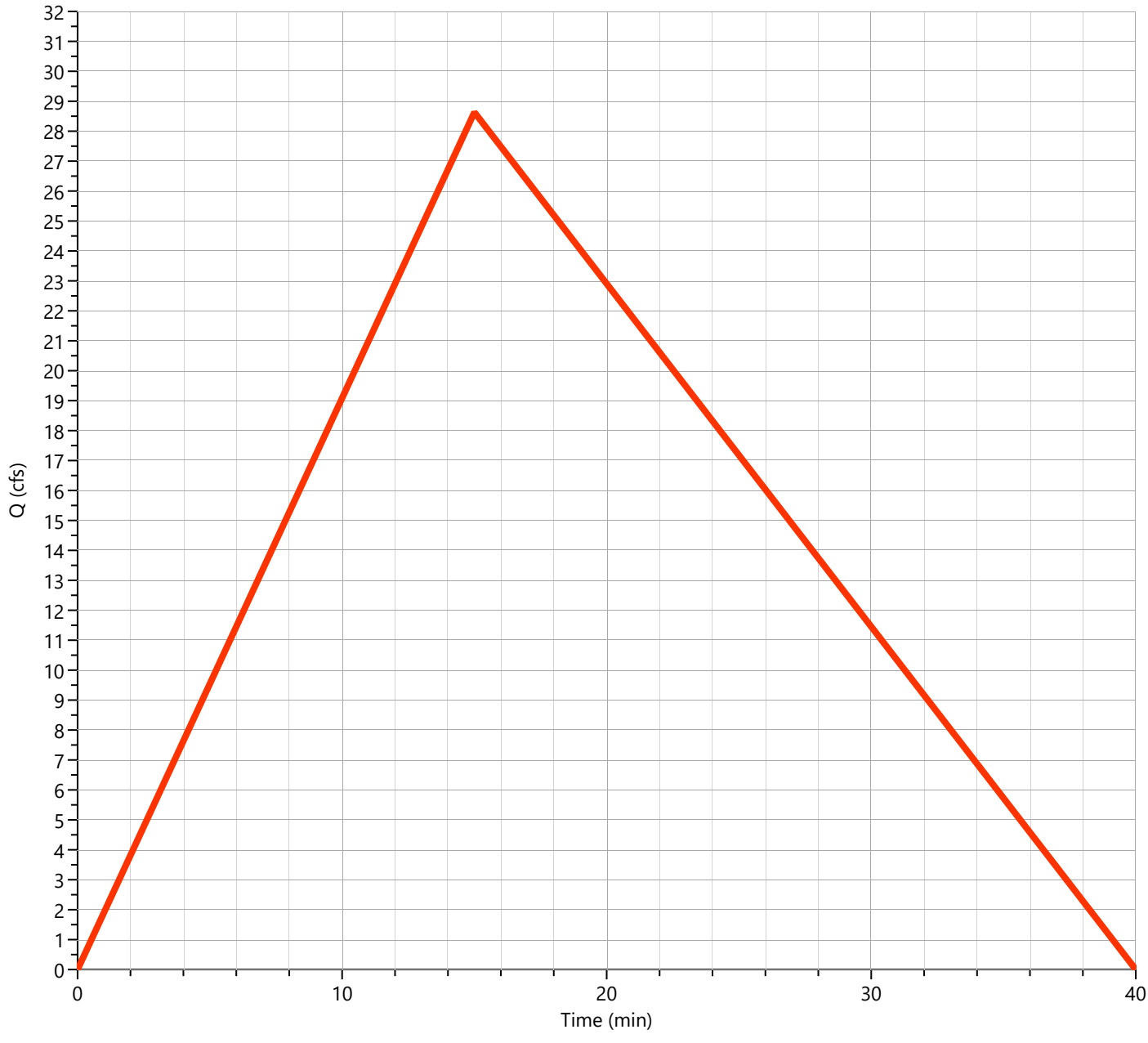
**Hyd. No. 1**

| 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

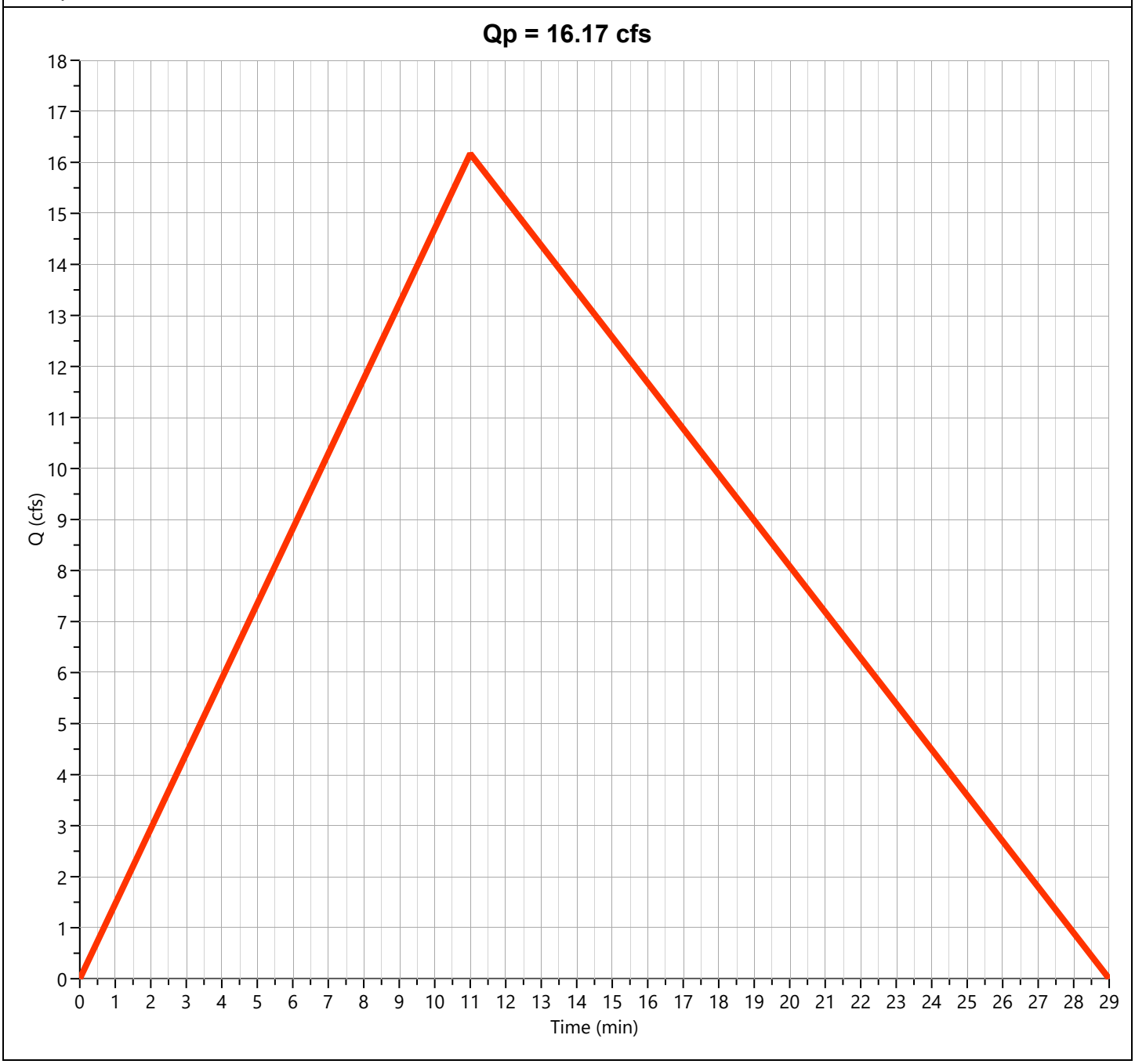
## Hyd. No. 2

| 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

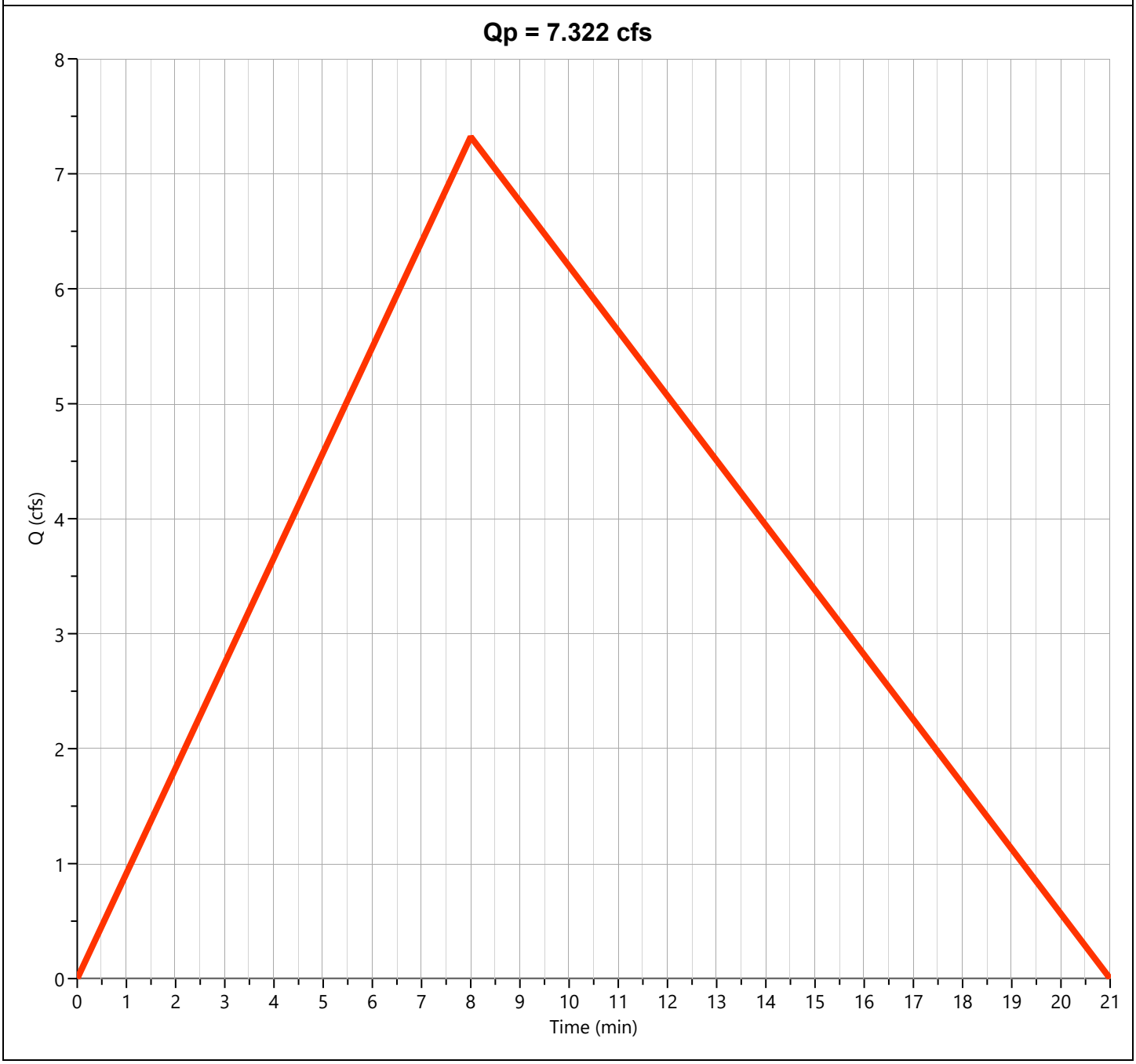
## Hyd. No. 3

| 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



Hydrology Studio v 3.0.0.44

09-25-2026

## Pre-Dev Basin "D"
## Rational

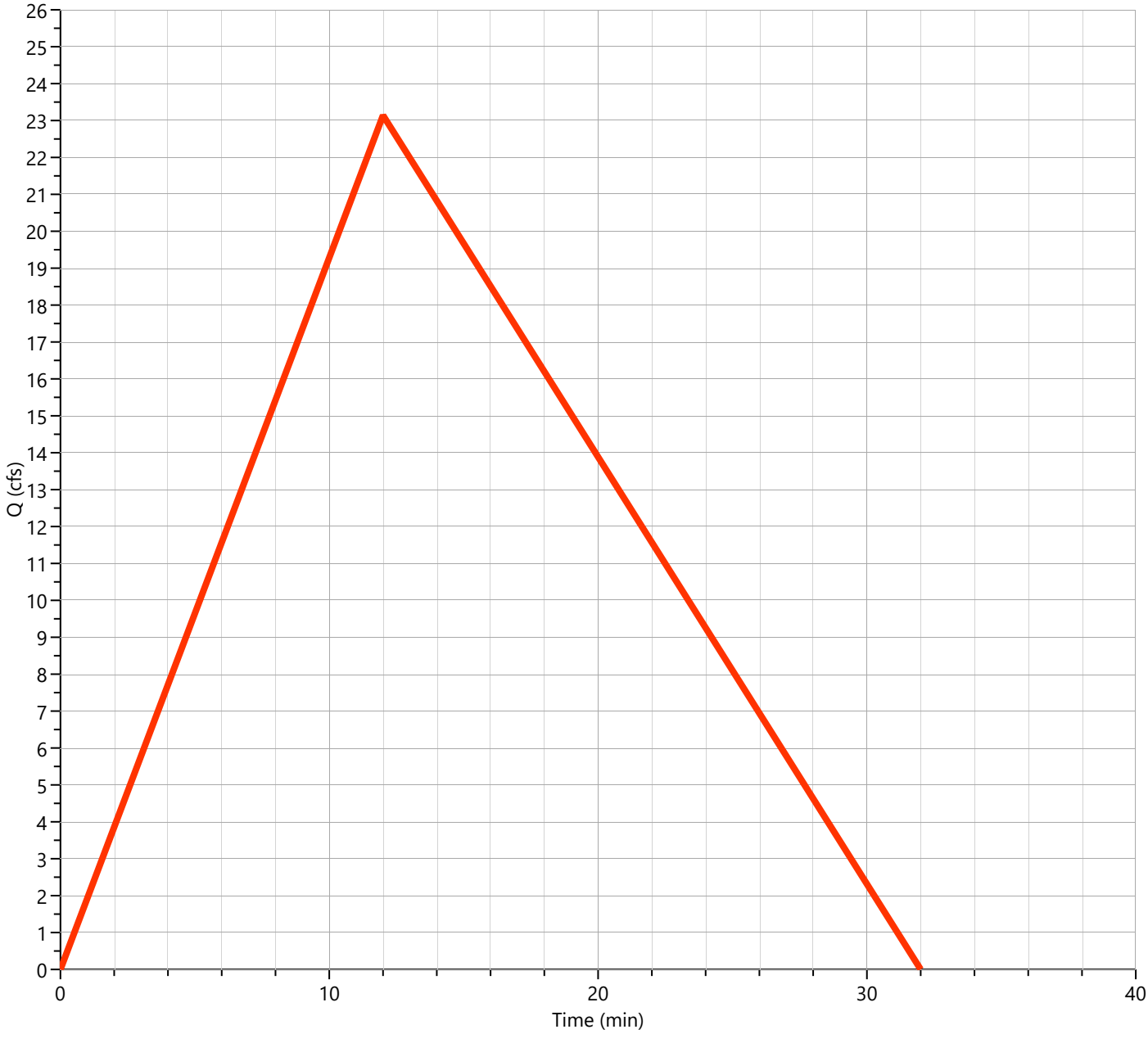
**Hyd. No. 4**

| 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 |



## Pre-Dev Basin "E-1"
## Rational

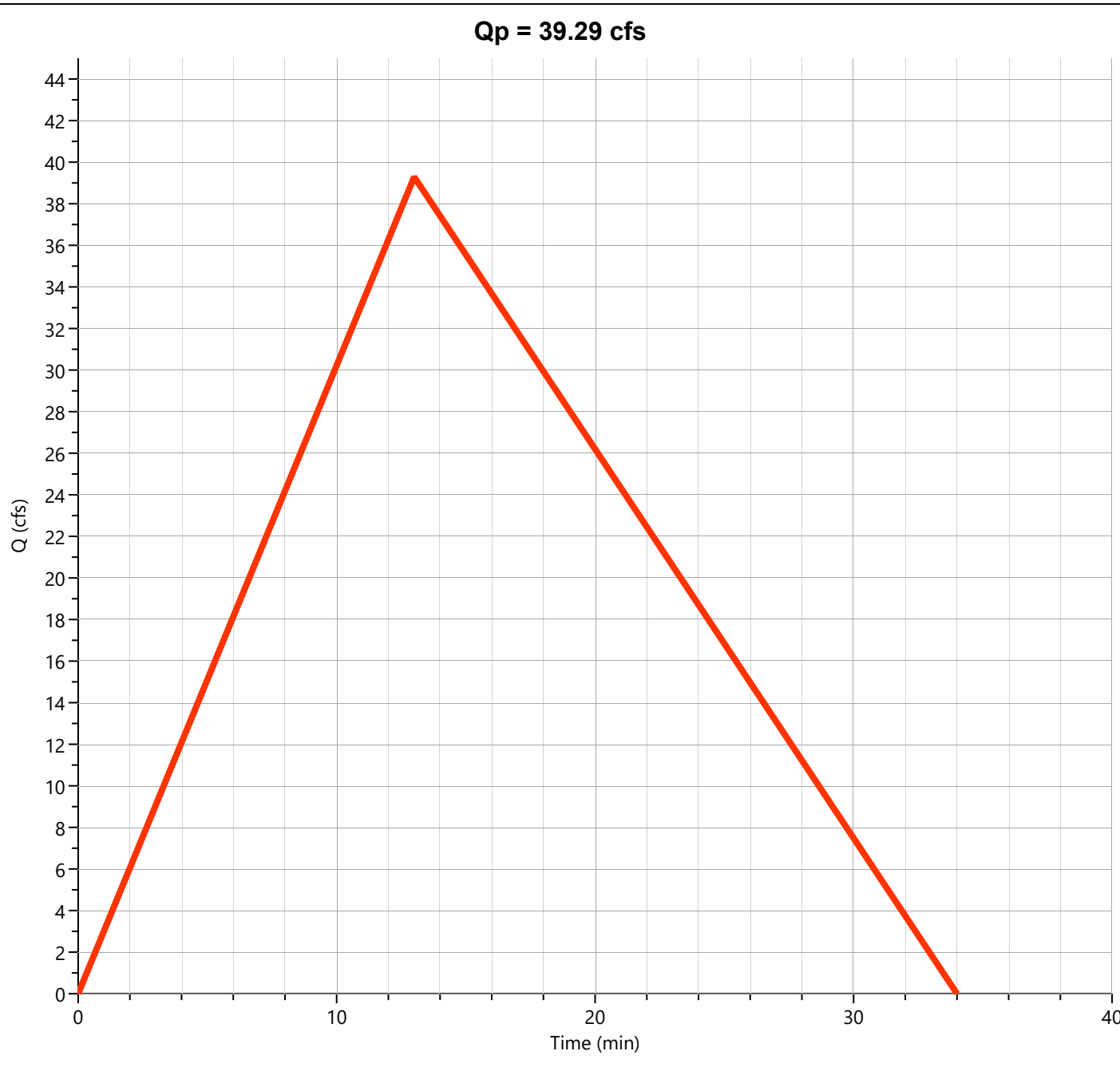
## Hyd. No. 5

| 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

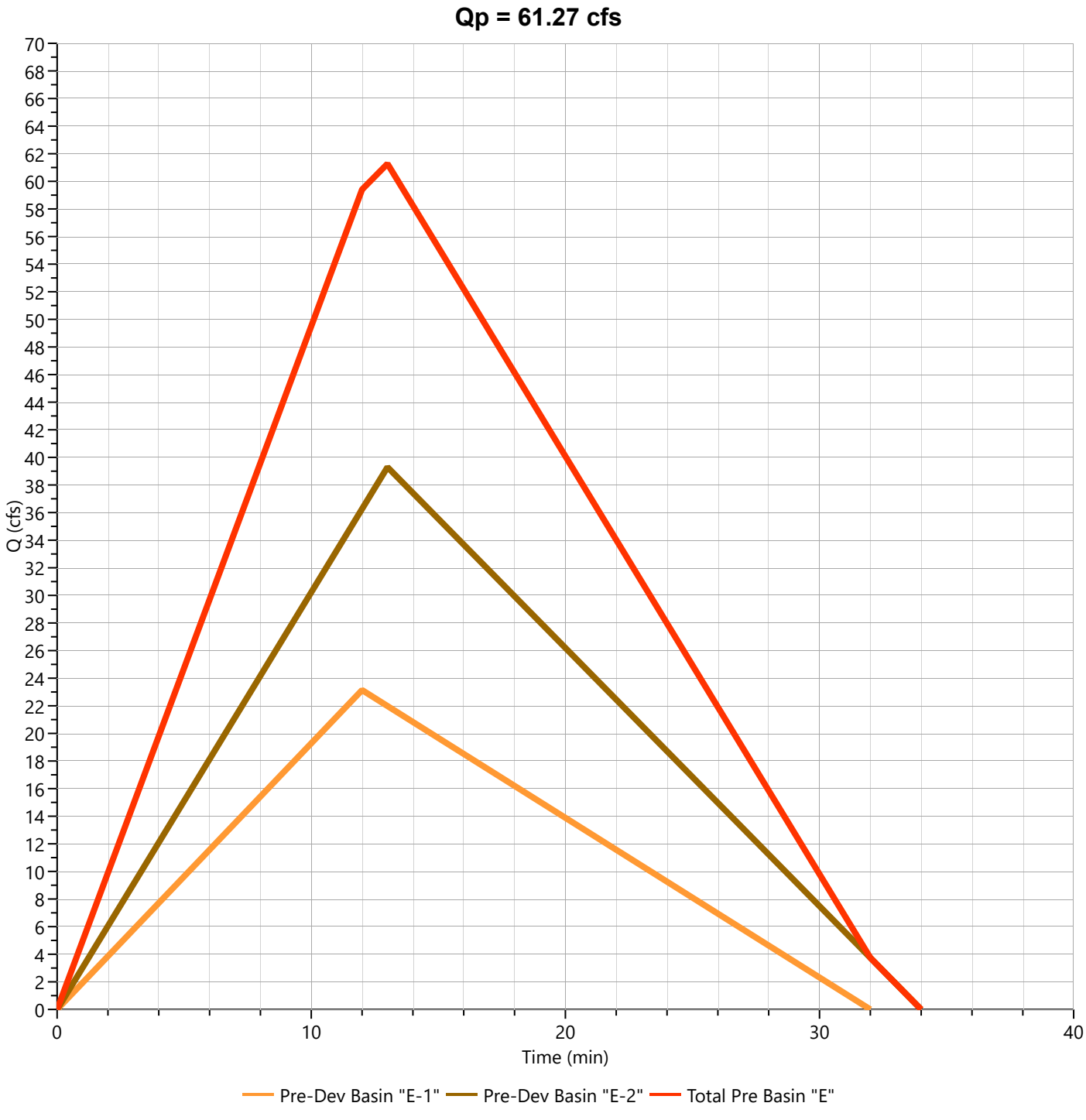
## Hyd. No. 6

| 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

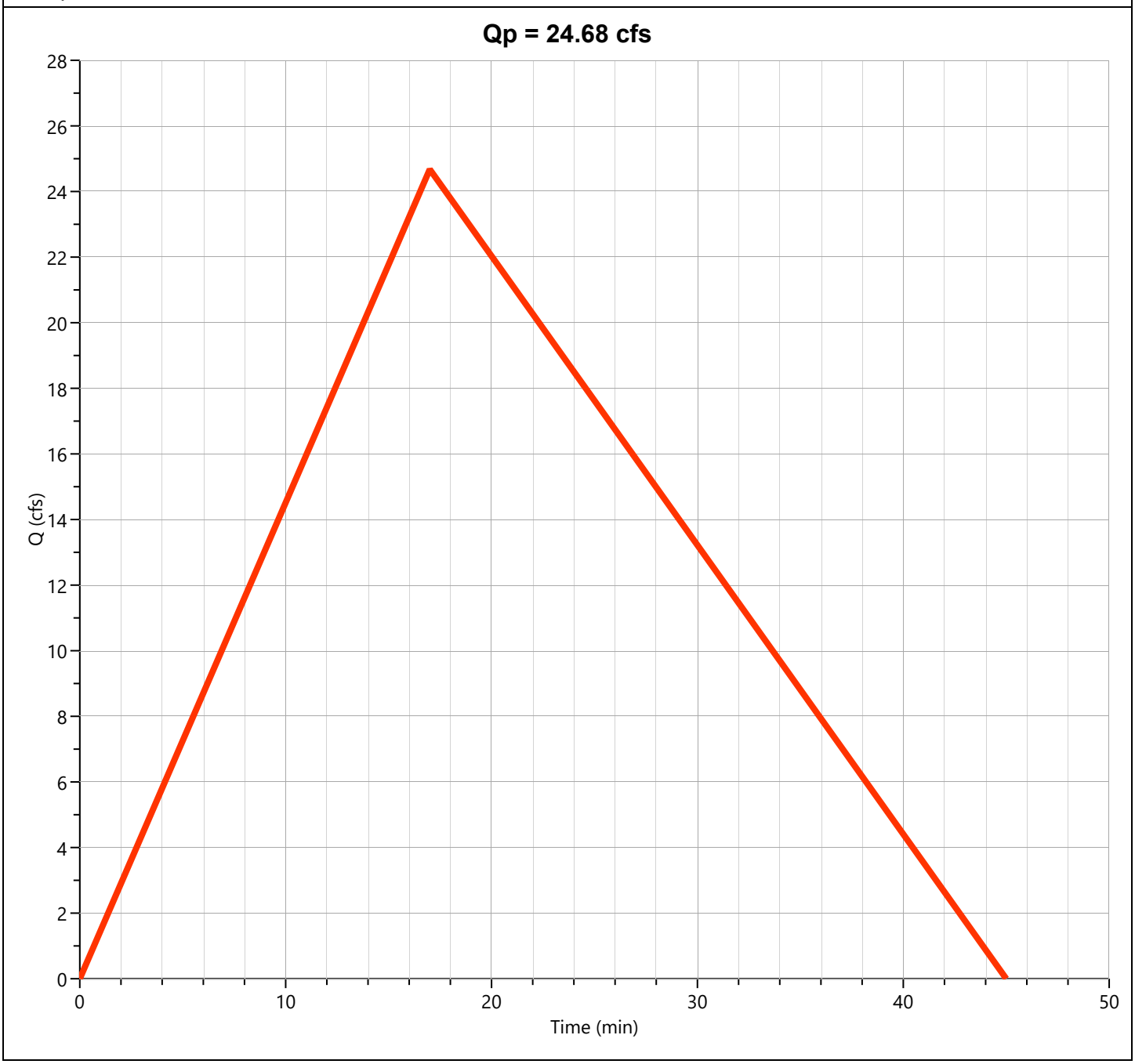
| | | | |
|---|---|---|---|
| Hydrograph Type | = Junction | Peak Flow | = 61.27 cfs |
| Storm Frequency | = 2-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 62,291 cuft |
| Inflow Hydrographs | = 5, 6 | Total Contrib. Area | = 30.16 ac |



## 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

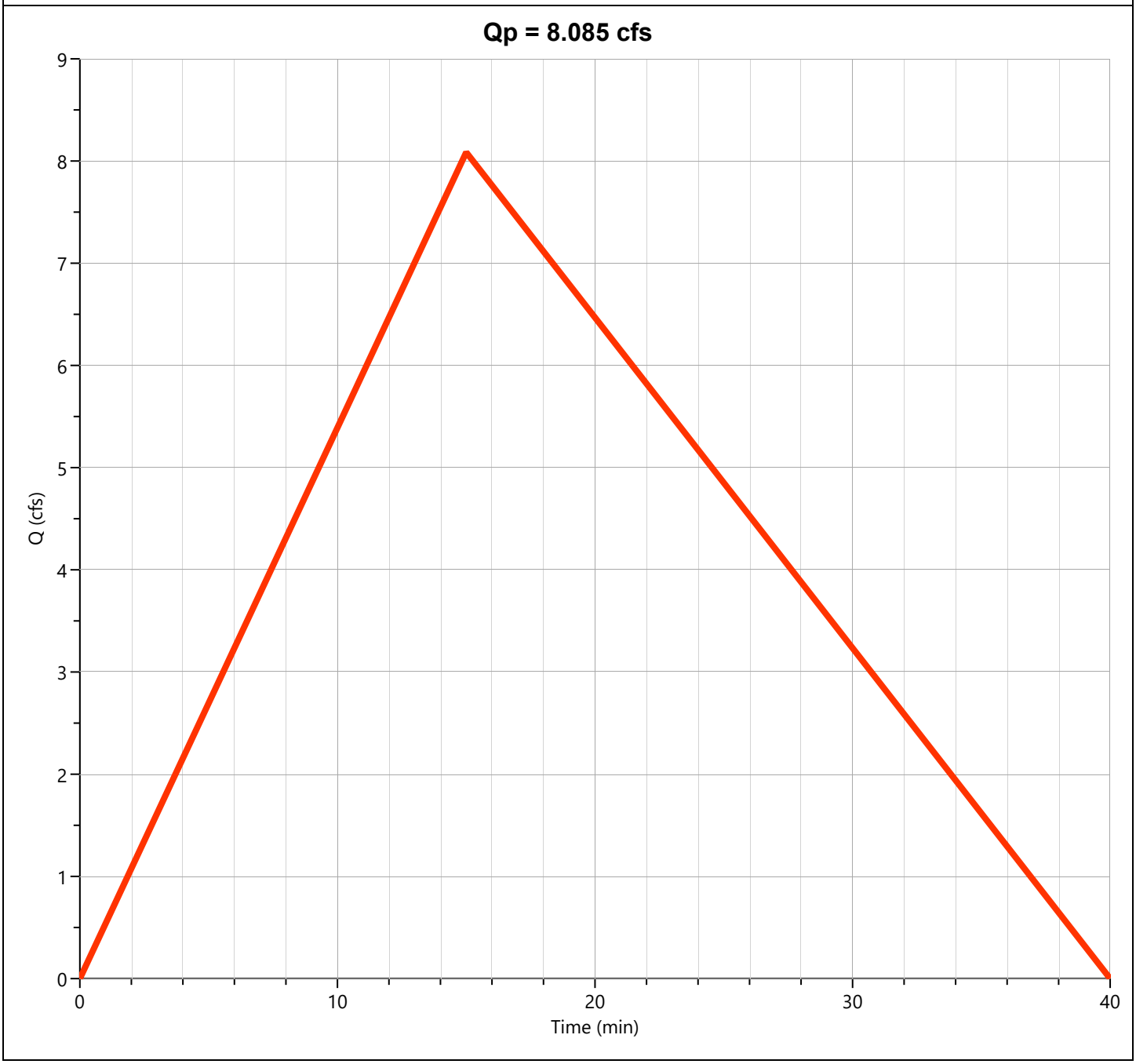
## Hyd. No. 8

| 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 |



# 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

## Post-Dev Basin A
## Rational

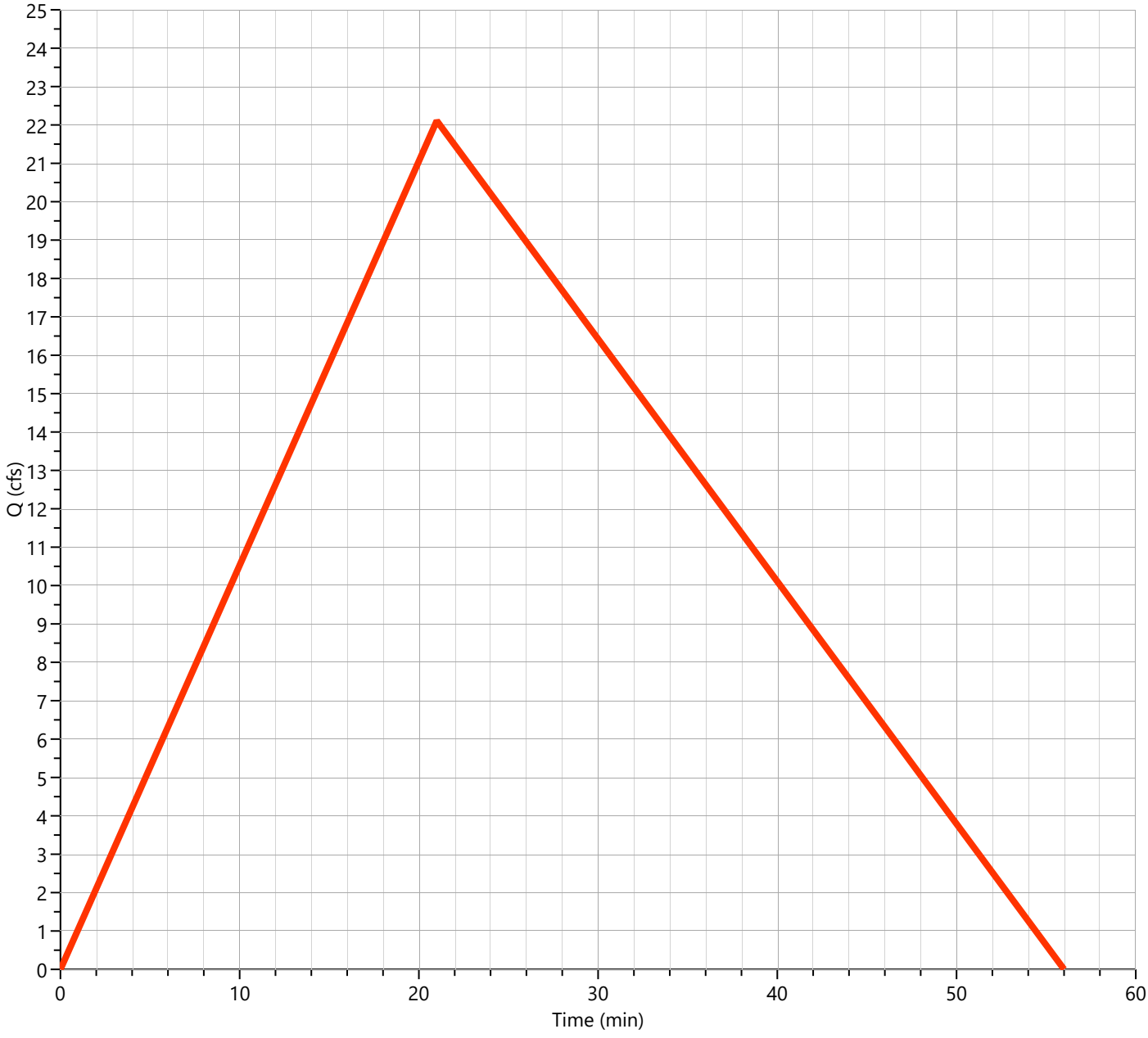
**Hyd. No. 9**

| 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

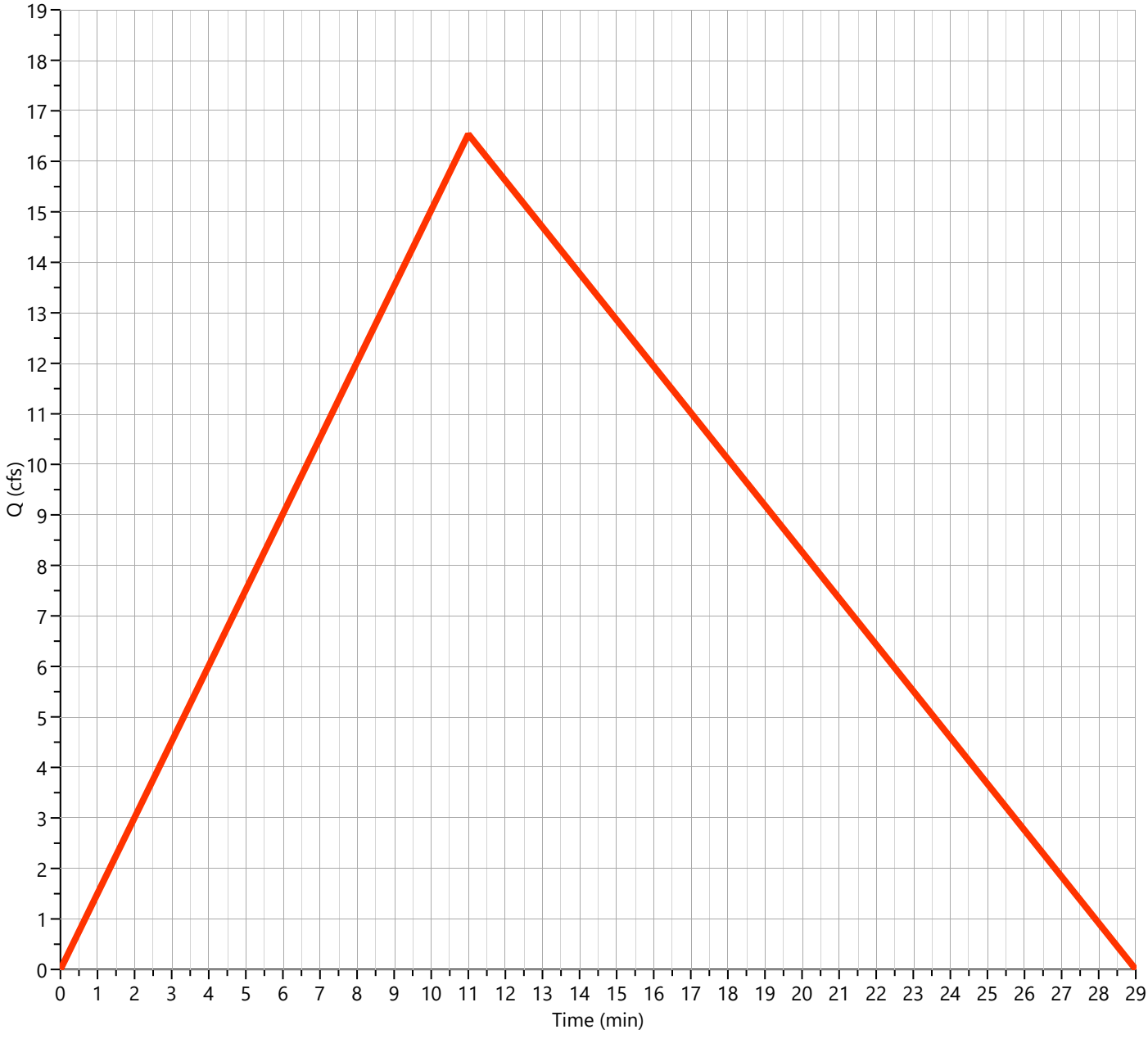
## Hyd. No. 10

| 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

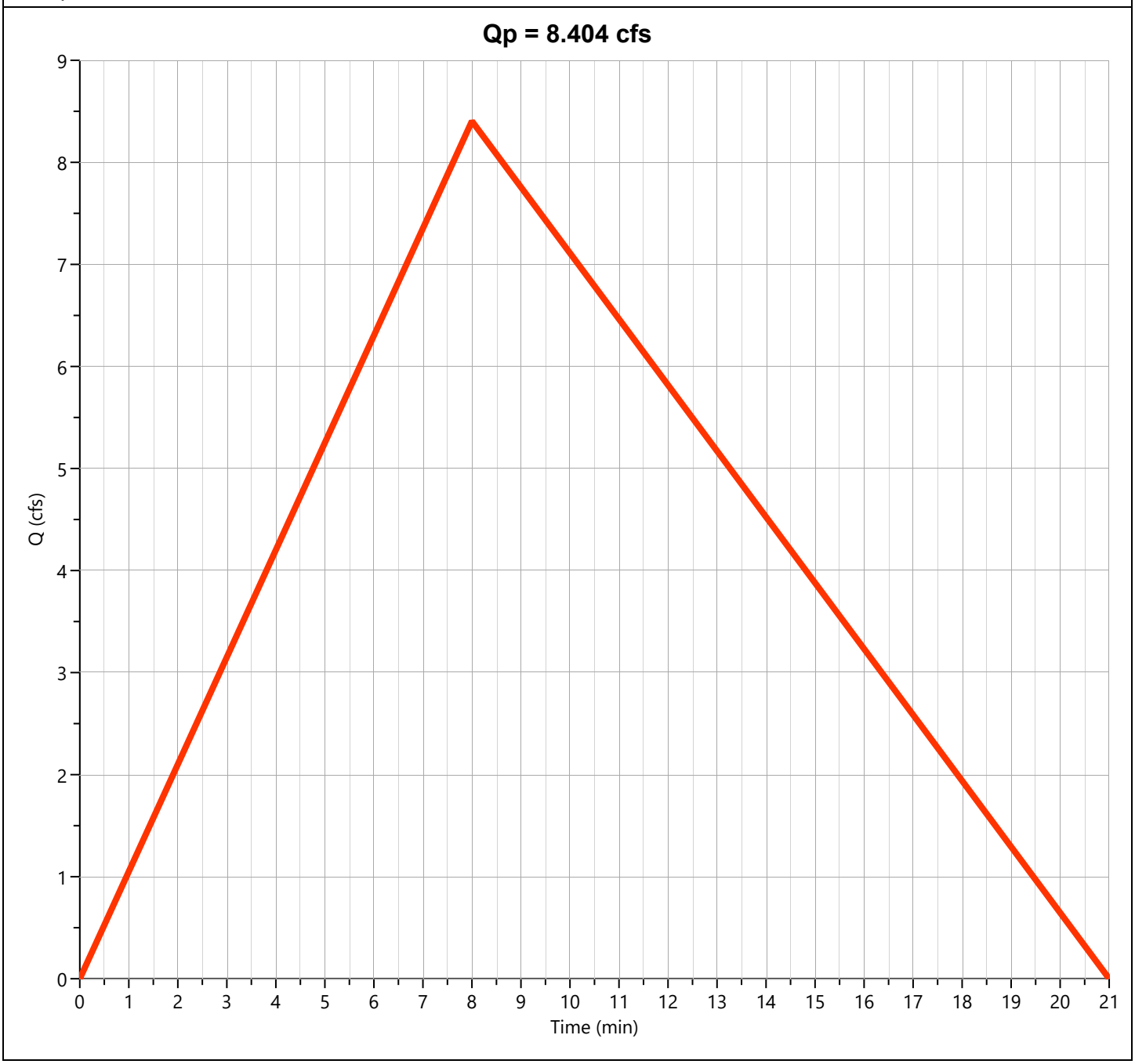
## Hyd. No. 11

| 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

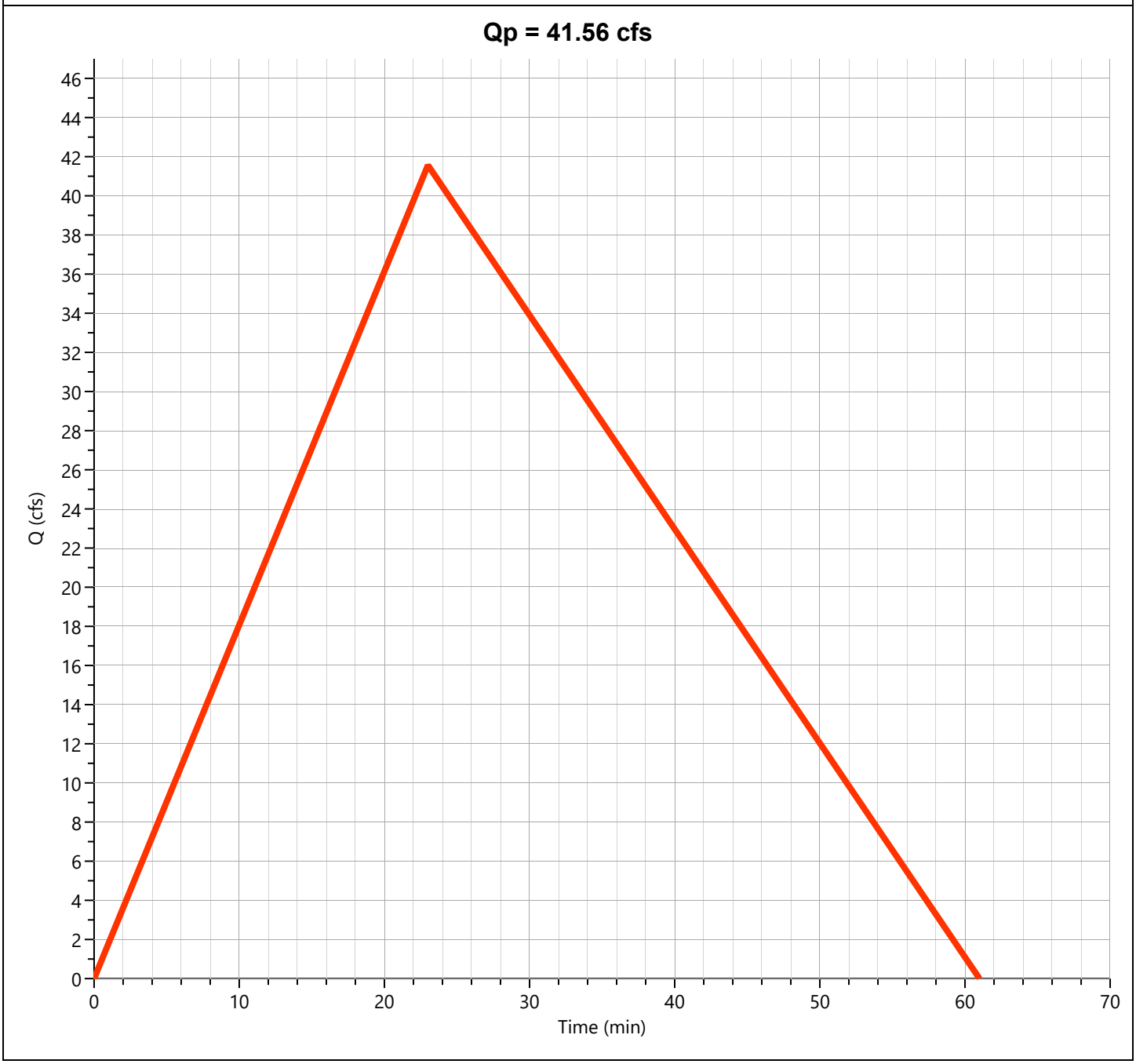
## Hyd. No. 12

| 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 |



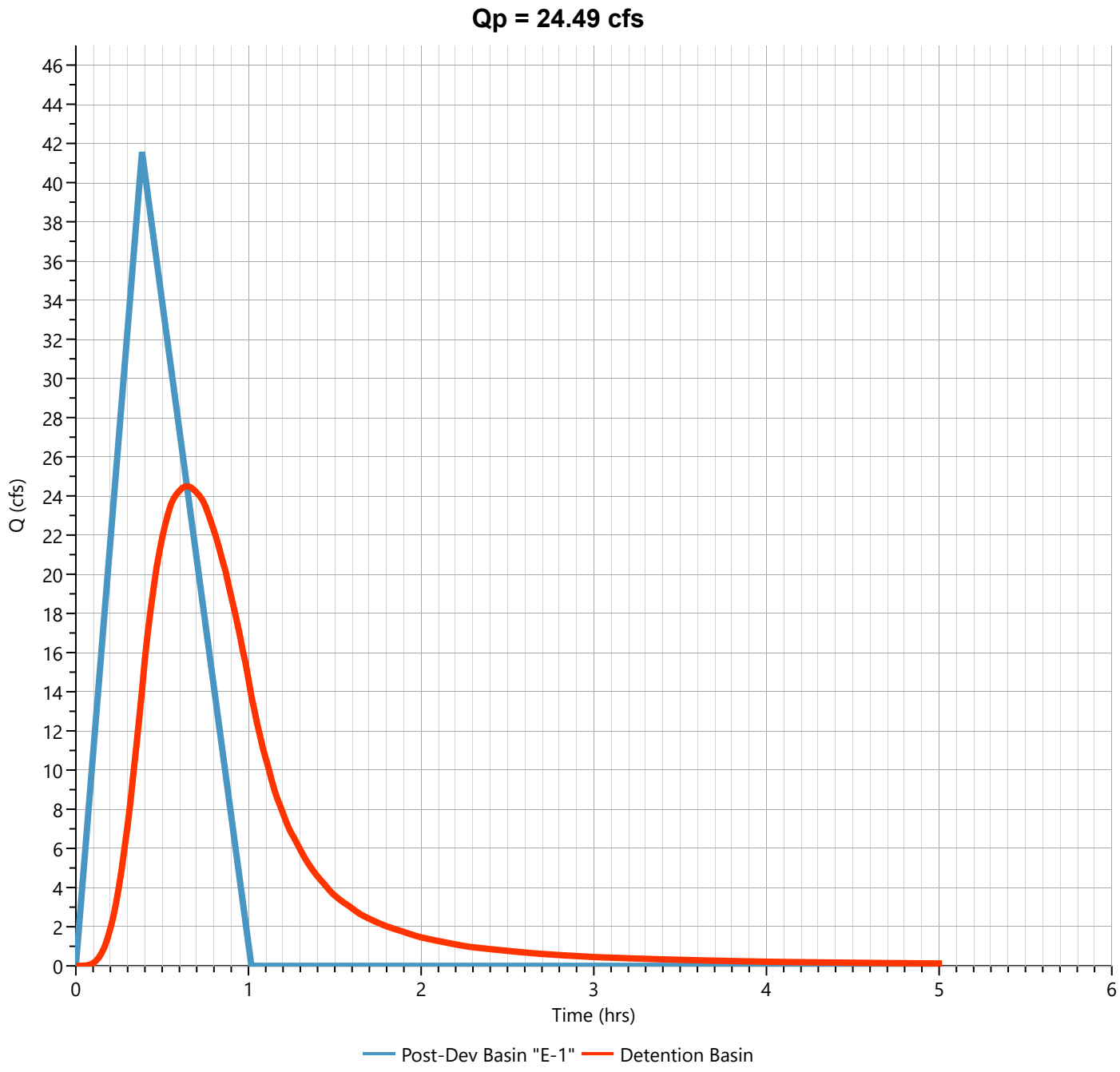
## Detention Basin

## 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*



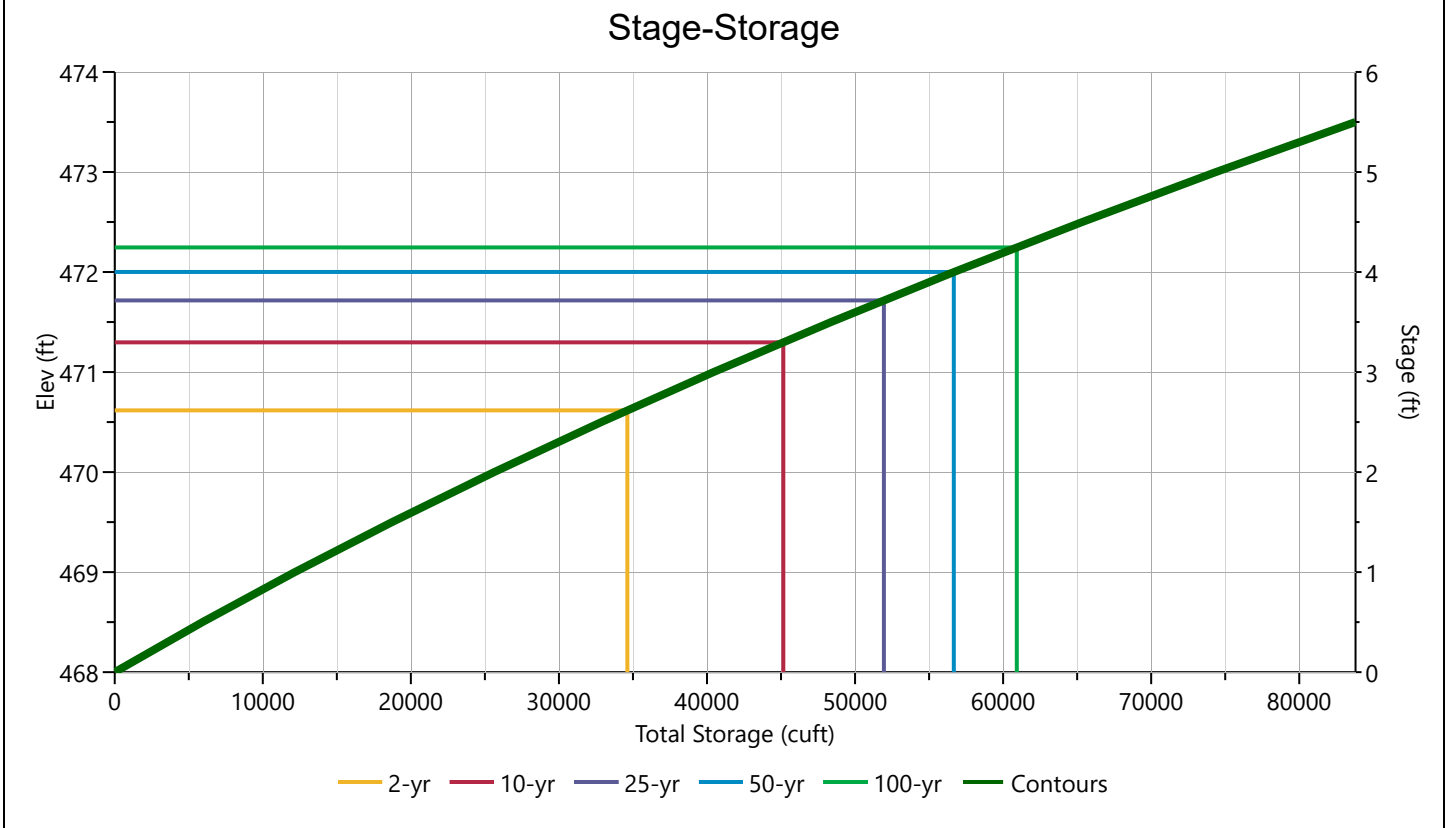
## Hilltop Detention Pond

## 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 |

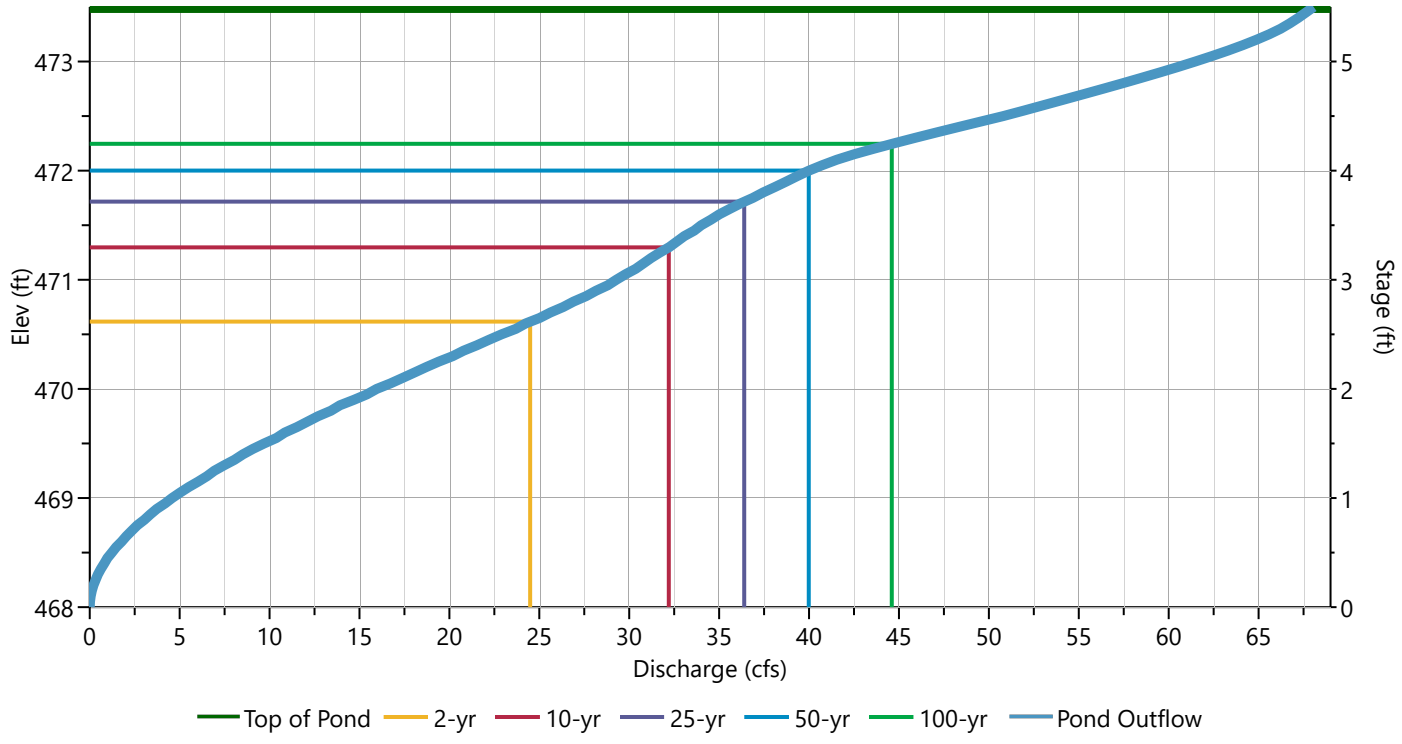


## Hilltop Detention Pond

## 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

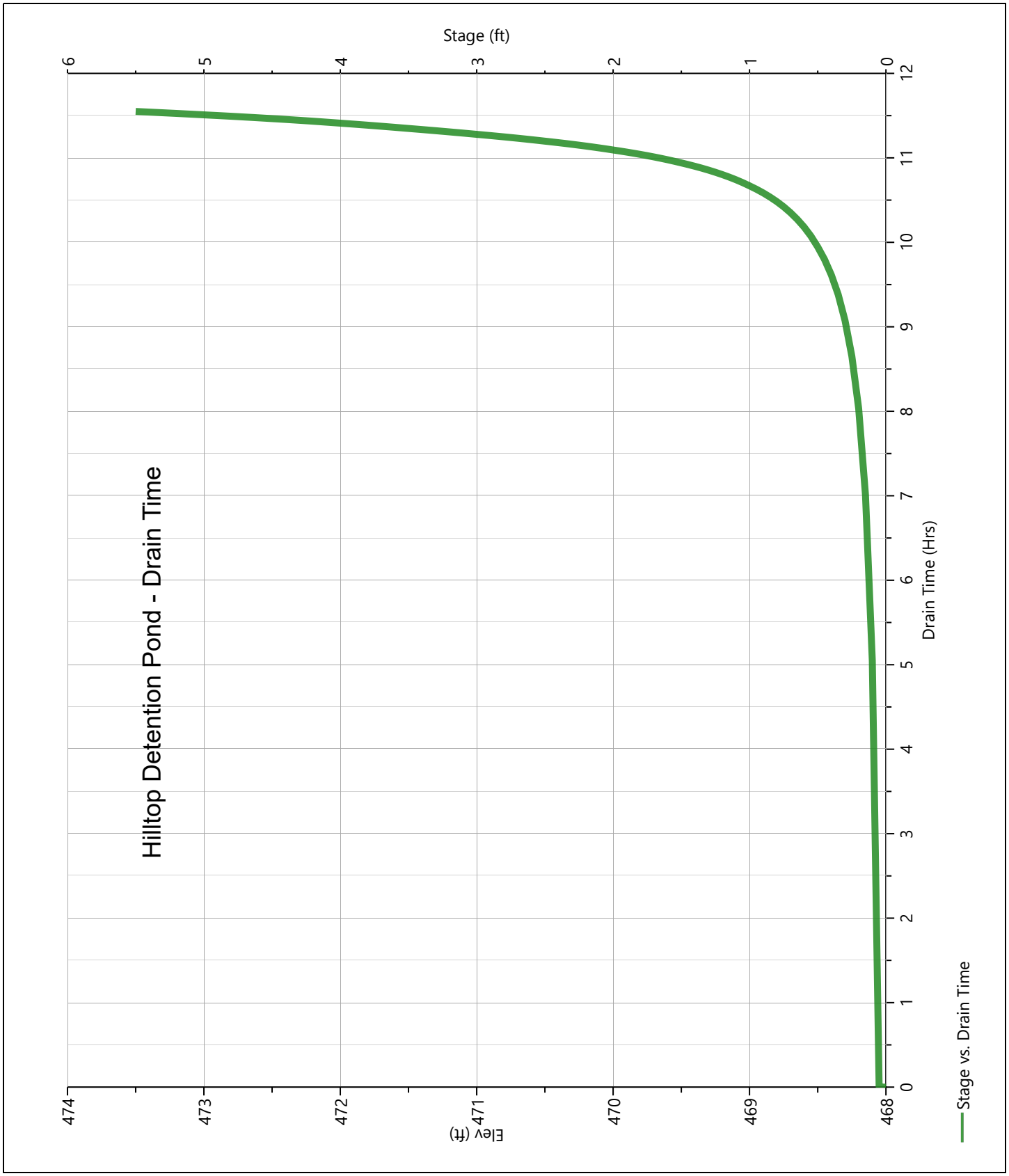
## Stage-Storage-Discharge Summary

| 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

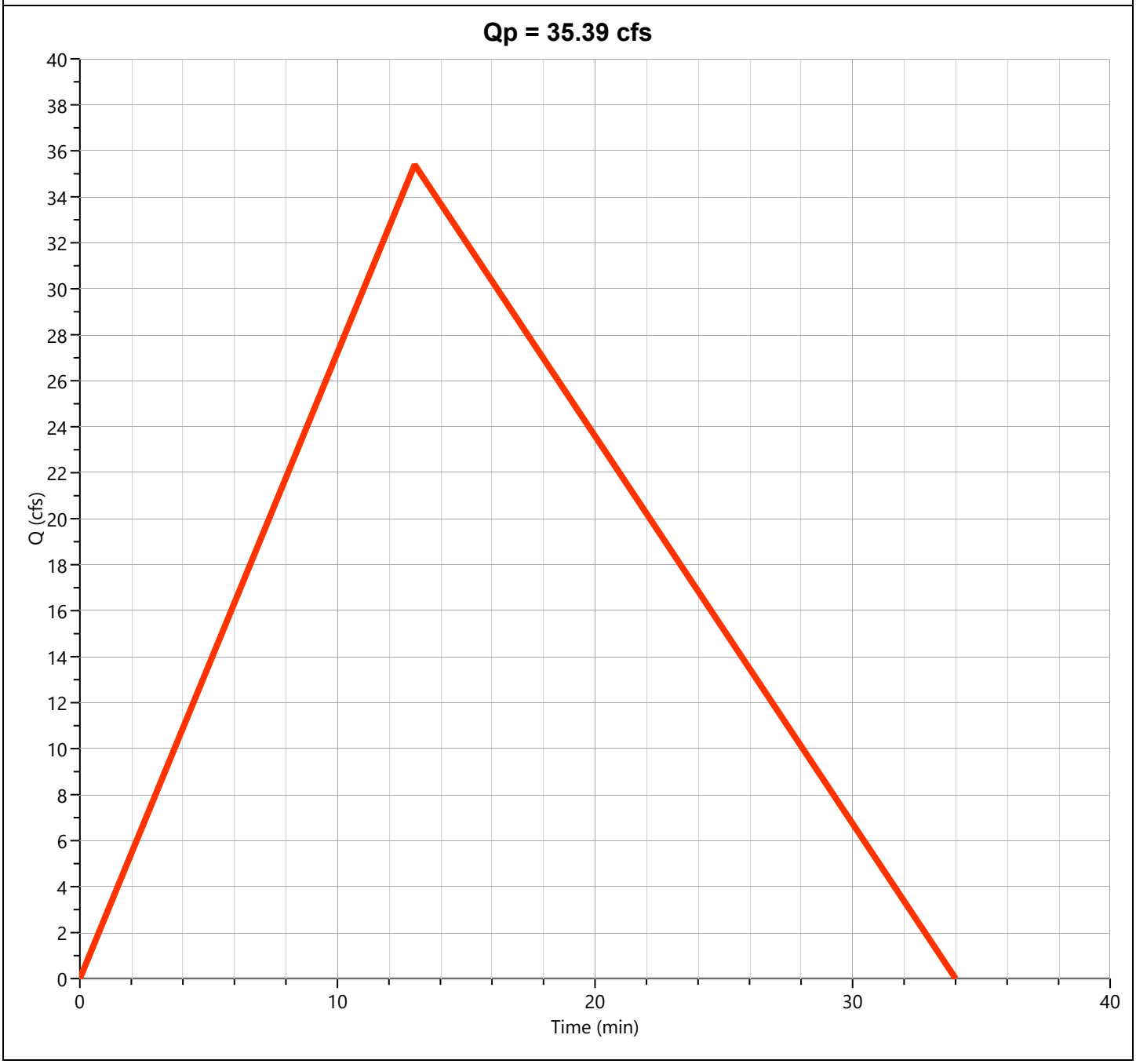
## Pond Drawdown



## 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

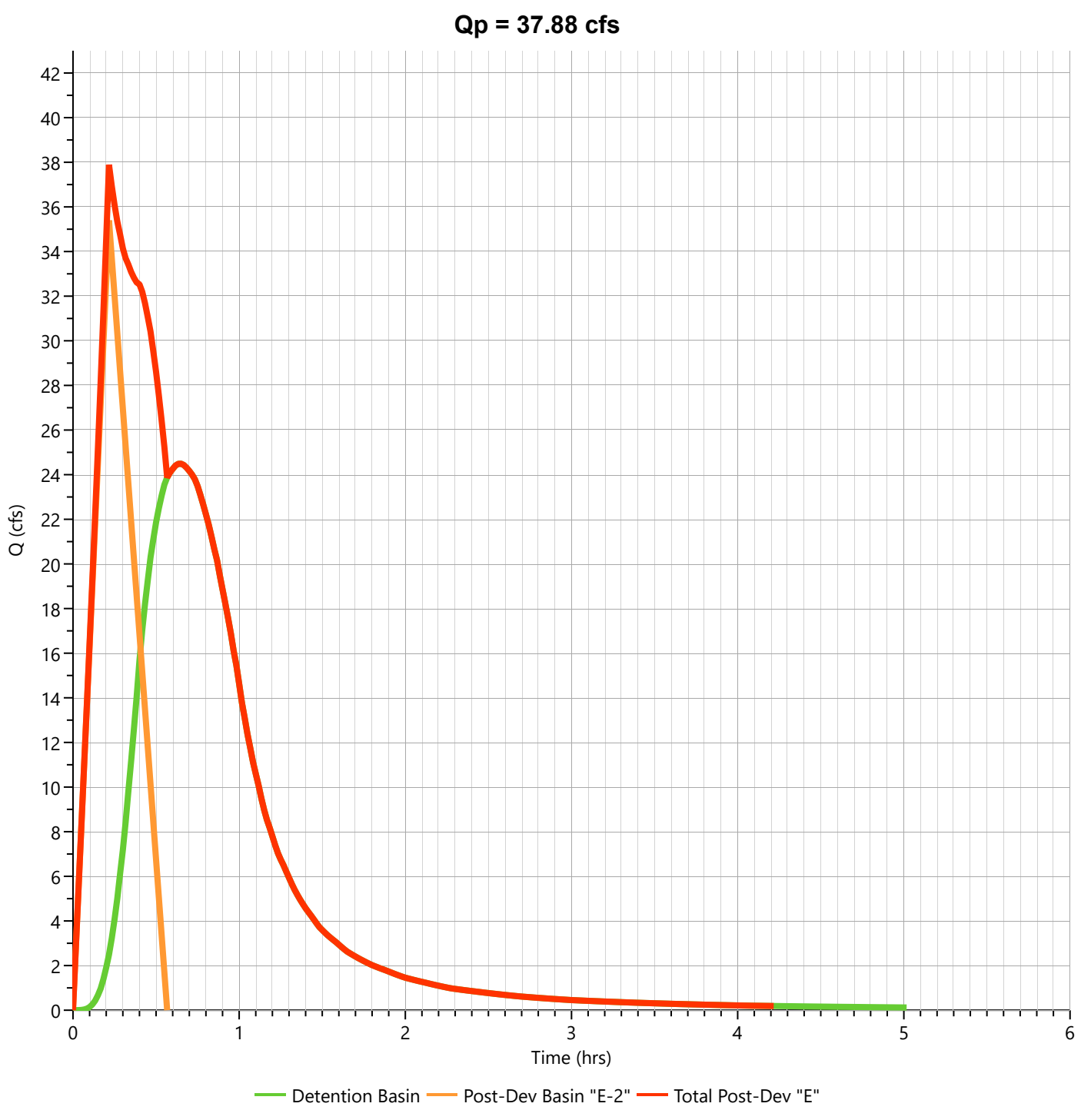
## Hyd. No. 15

| 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

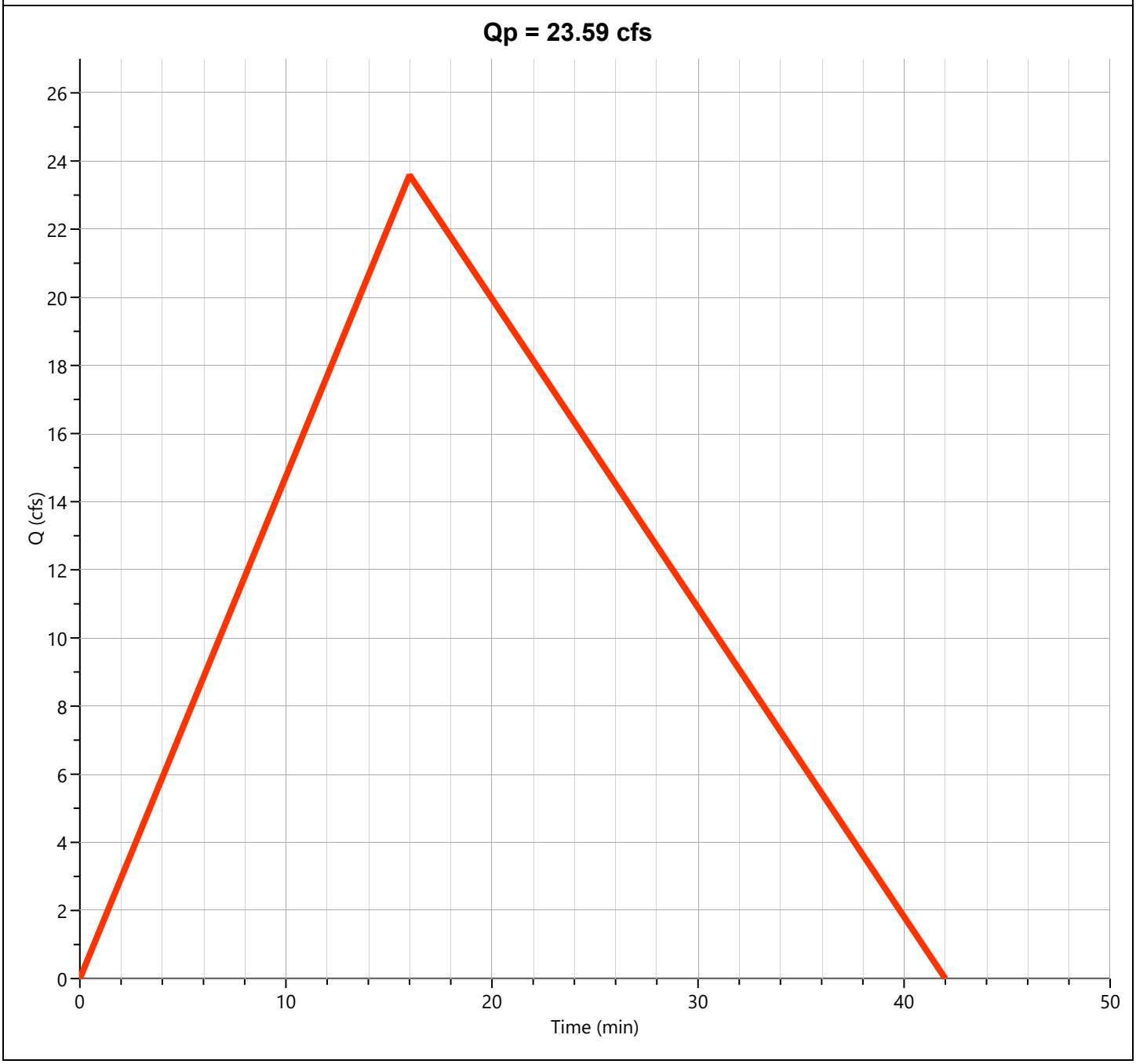
| | | | |
|---|---|---|---|
| Hydrograph Type | = Junction | Peak Flow | = 37.88 cfs |
| Storm Frequency | = 2-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 112,117 cuft |
| Inflow Hydrographs | = 15 | Total Contrib. Area | = 15.86 ac |



## 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:

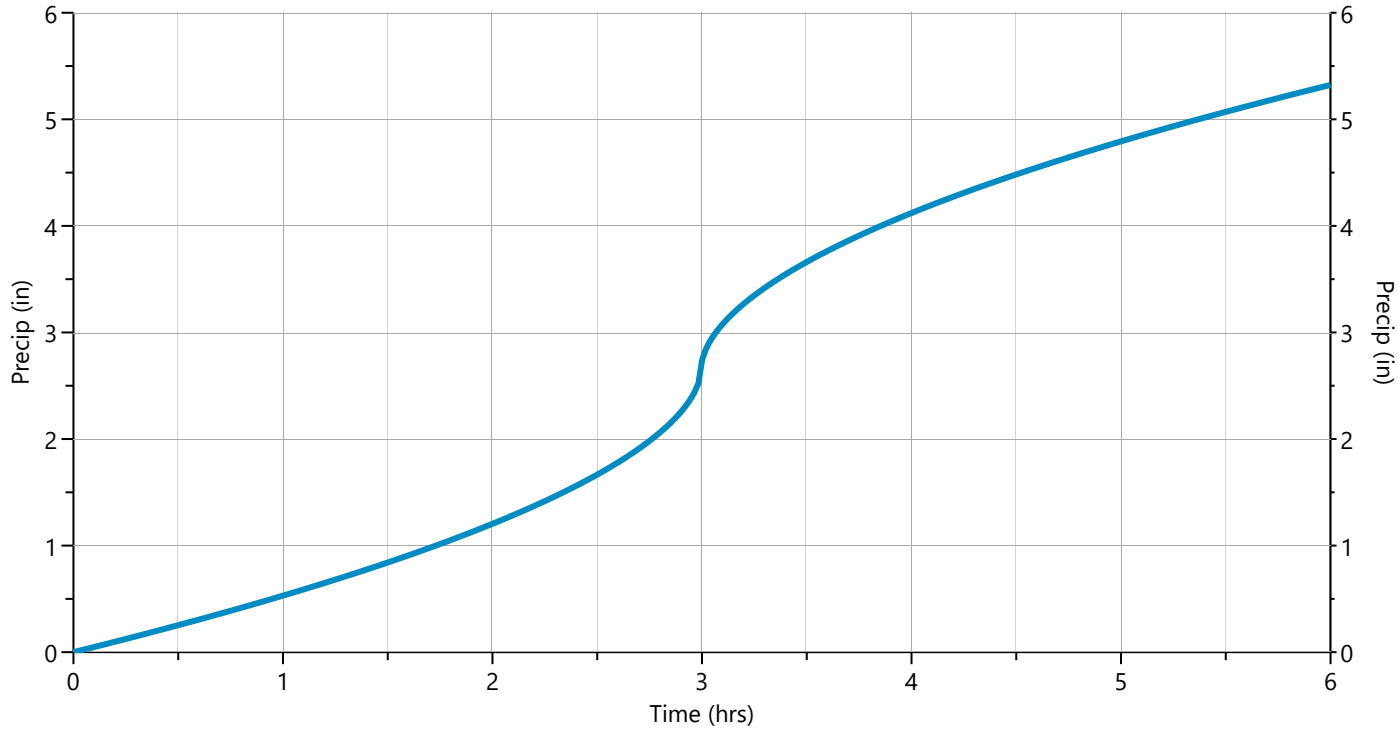
Hydrology Studio v 3.0.0.44

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

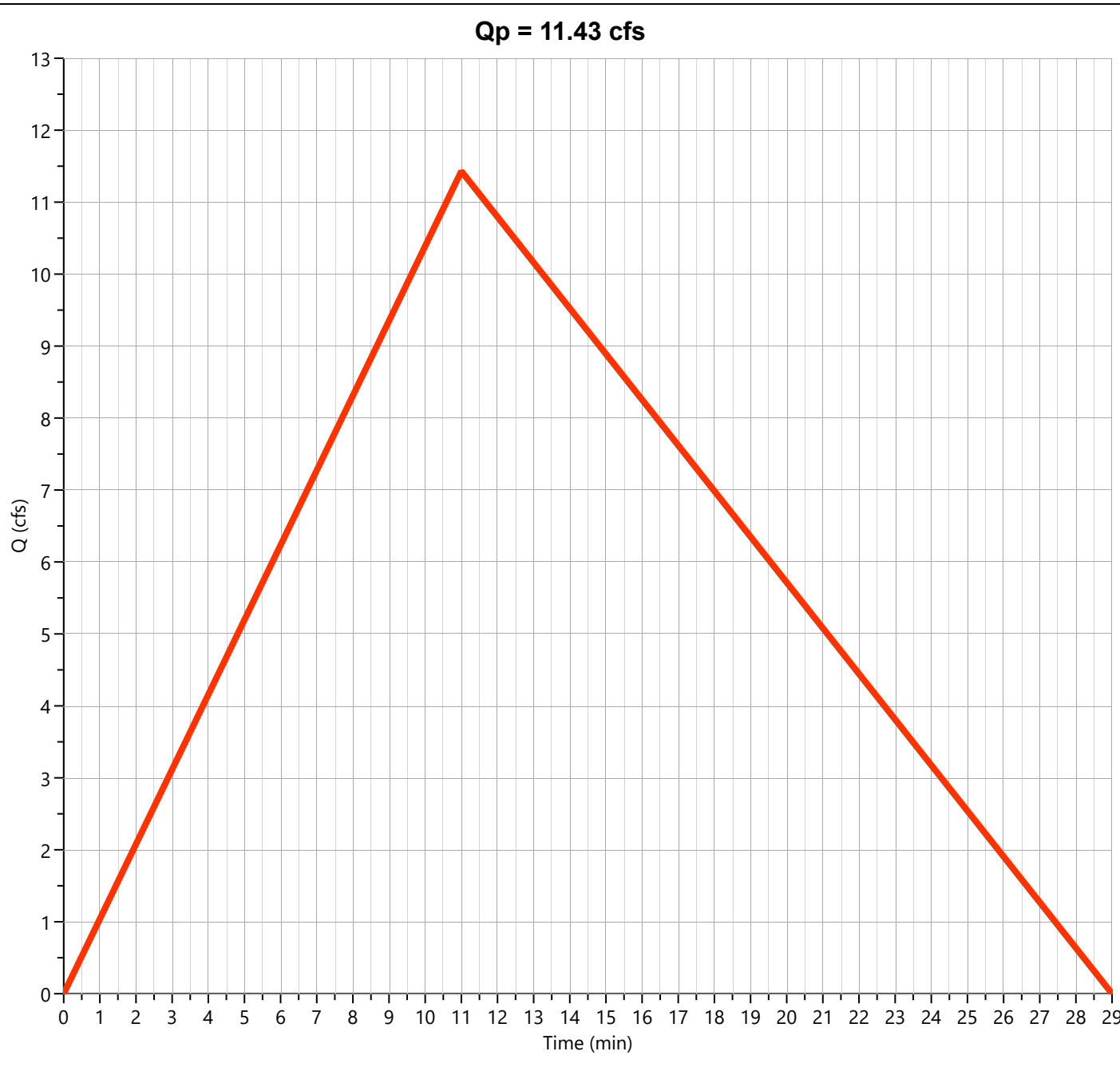
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

| 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

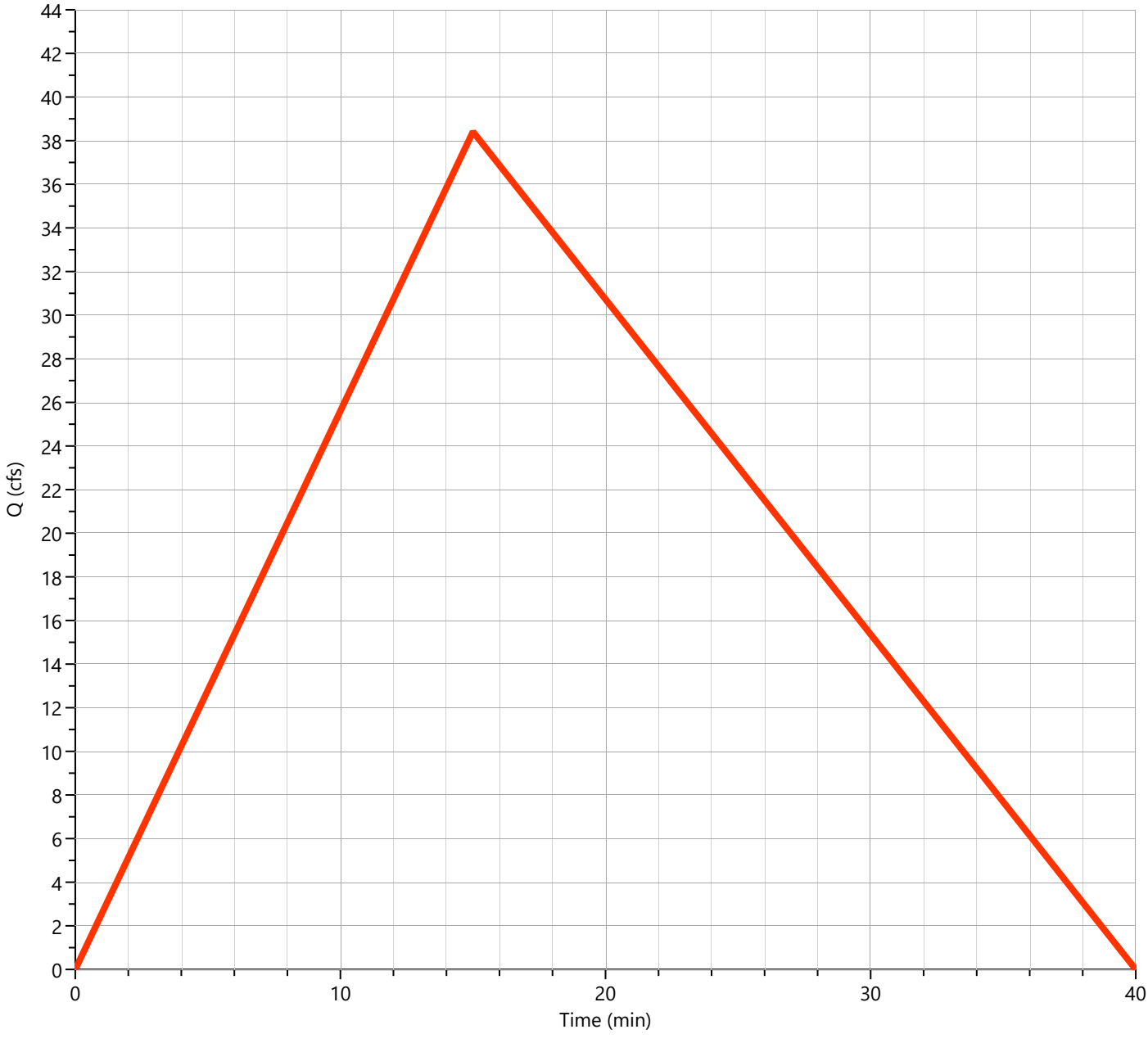
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 11.43 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 10,070 cuft |
| Drainage Area | = 3.2 ac | Runoff Coeff. | = 0.62 |
| Tc Method | = TR55 (See Worksheet) | Time 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

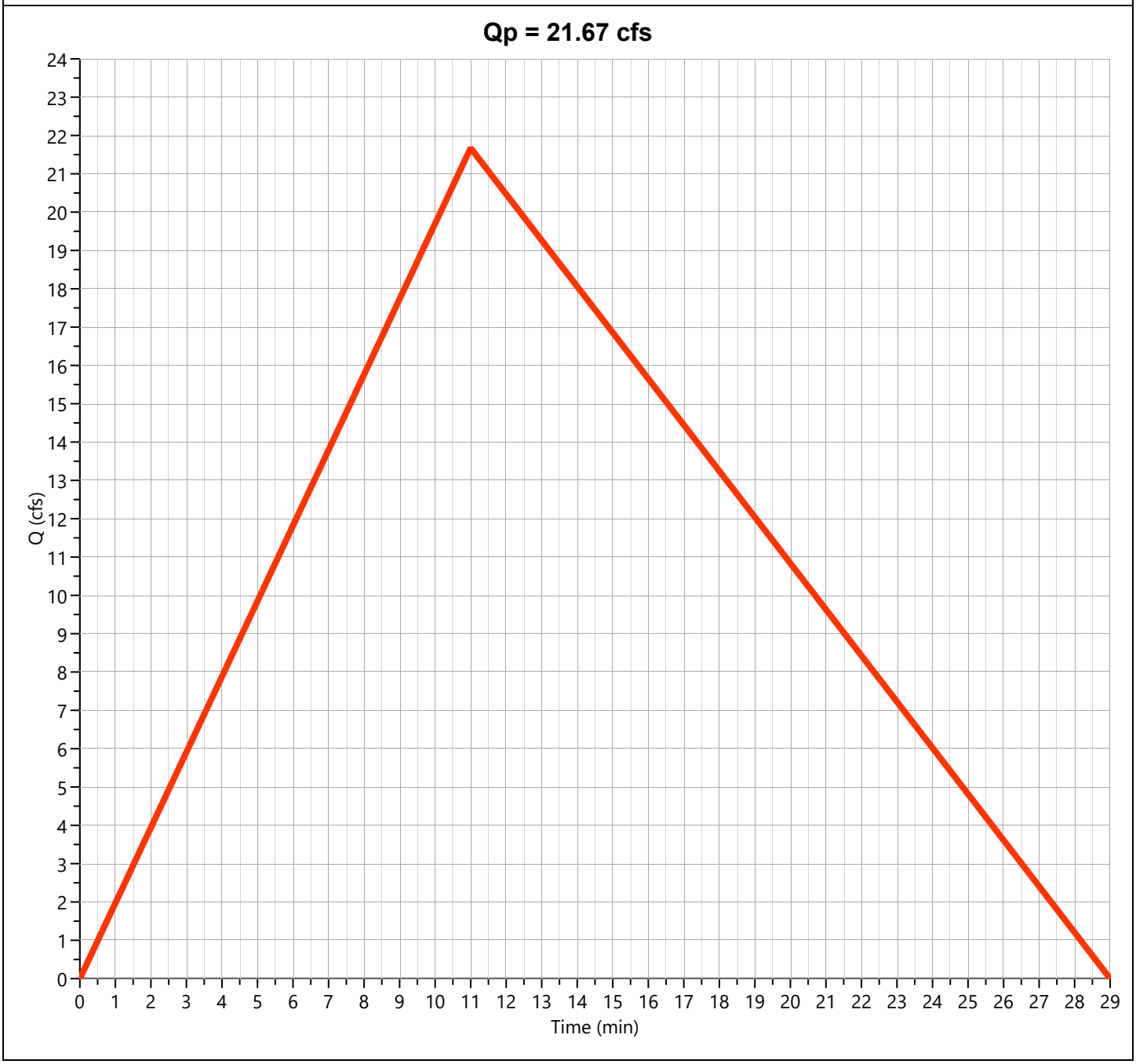
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 38.41 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.25 hrs |
| Time Interval | = 1 min | Runoff Volume | = 46,149 cuft |
| Drainage Area | = 14.74 ac | Runoff Coeff. | = 0.52 |
| Tc Method | = TR55 (See Worksheet) | Time 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

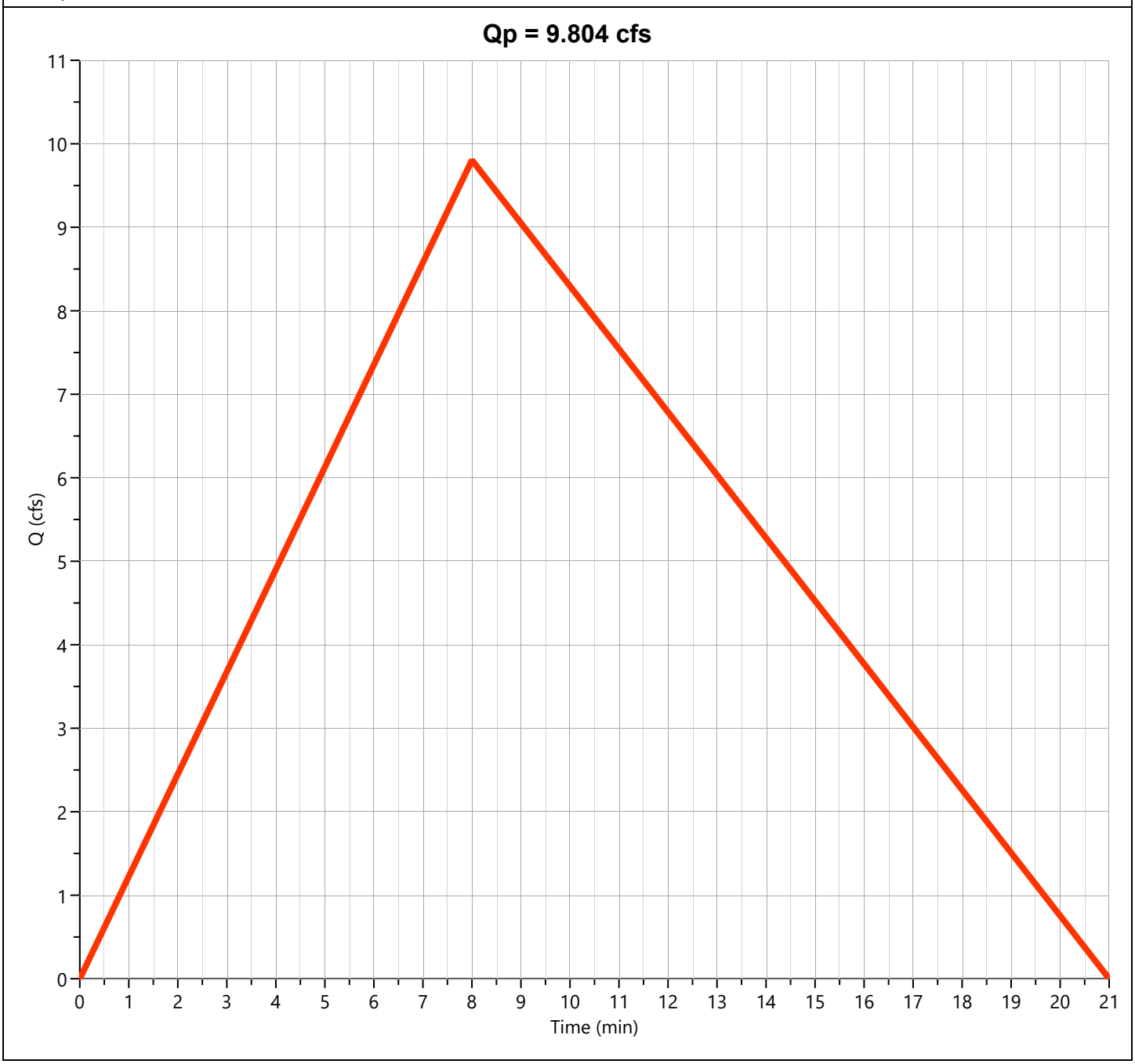
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 21.67 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 19,095 cuft |
| Drainage Area | = 6.84 ac | Runoff Coeff. | = 0.55 |
| Tc Method | = TR55 (See Worksheet) | Time 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

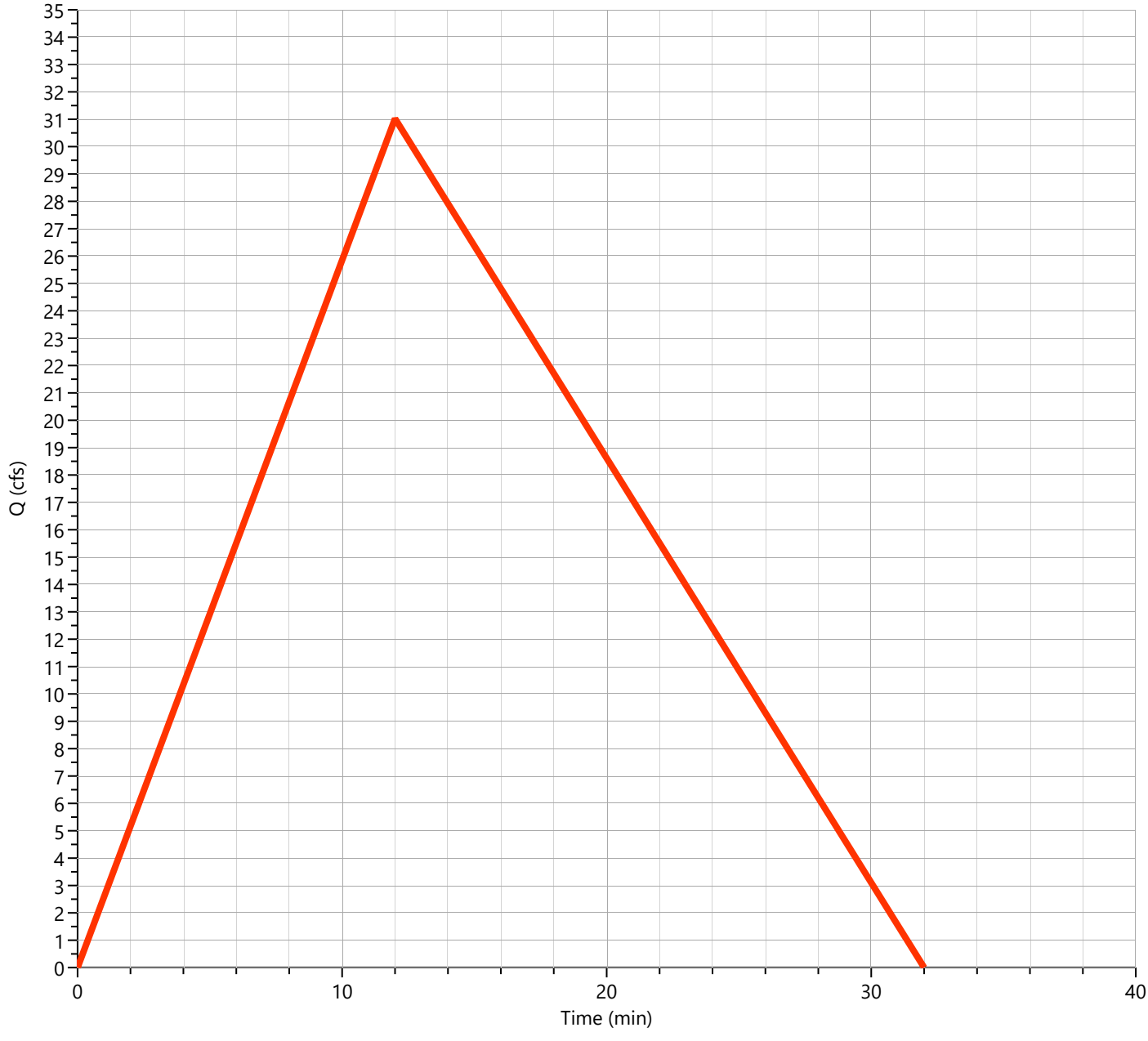
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 9.804 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.13 hrs |
| Time Interval | = 1 min | Runoff Volume | = 6,283 cuft |
| Drainage Area | = 2.95 ac | Runoff Coeff. | = 0.50 |
| Tc Method | = TR55 (See Worksheet) | Time 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

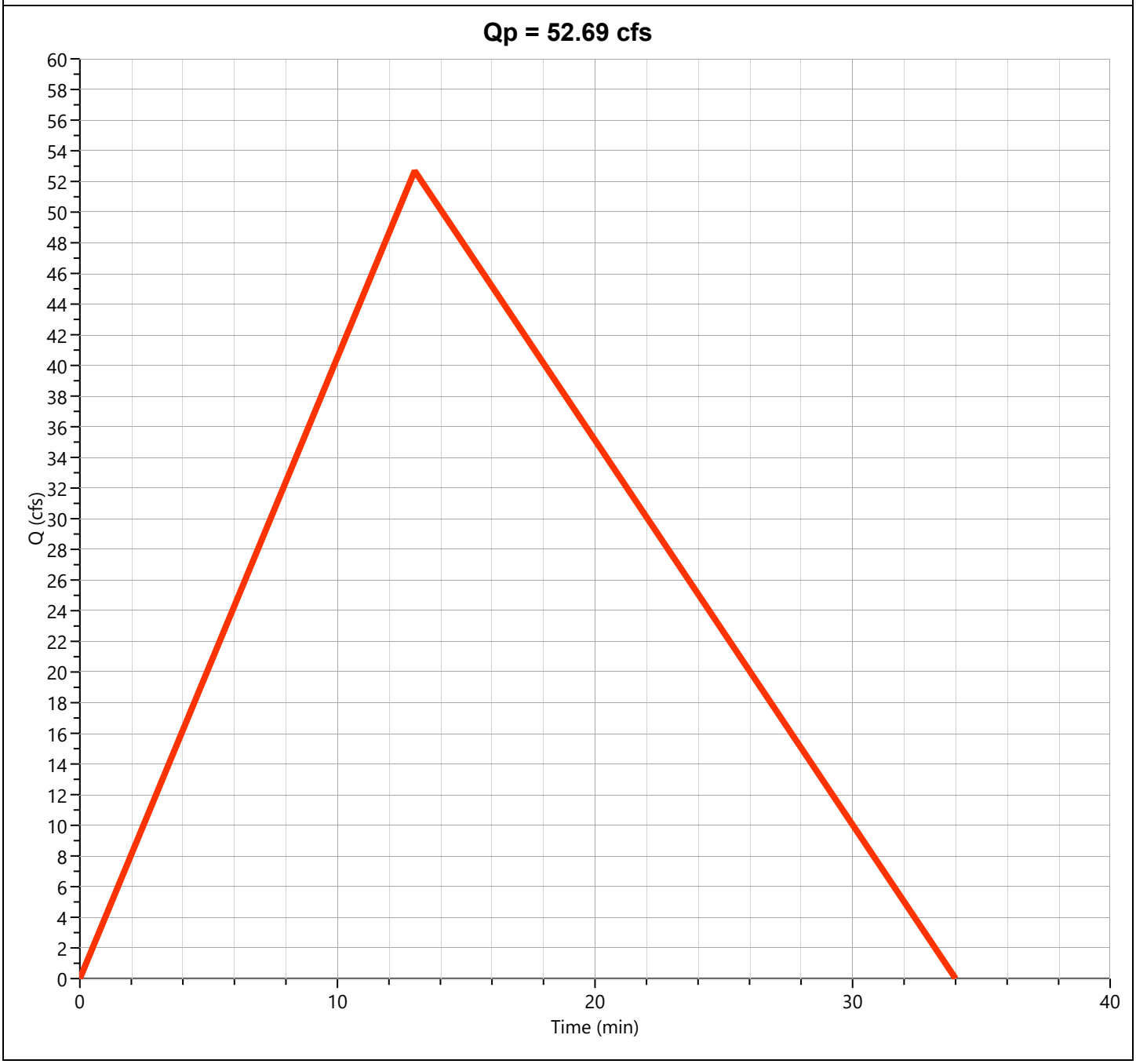
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 31.02 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.20 hrs |
| Time Interval | = 1 min | Runoff Volume | = 29,819 cuft |
| Drainage Area | = 11.2 ac | Runoff Coeff. | = 0.50 |
| Tc Method | = TR55 (See Worksheet) | Time 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

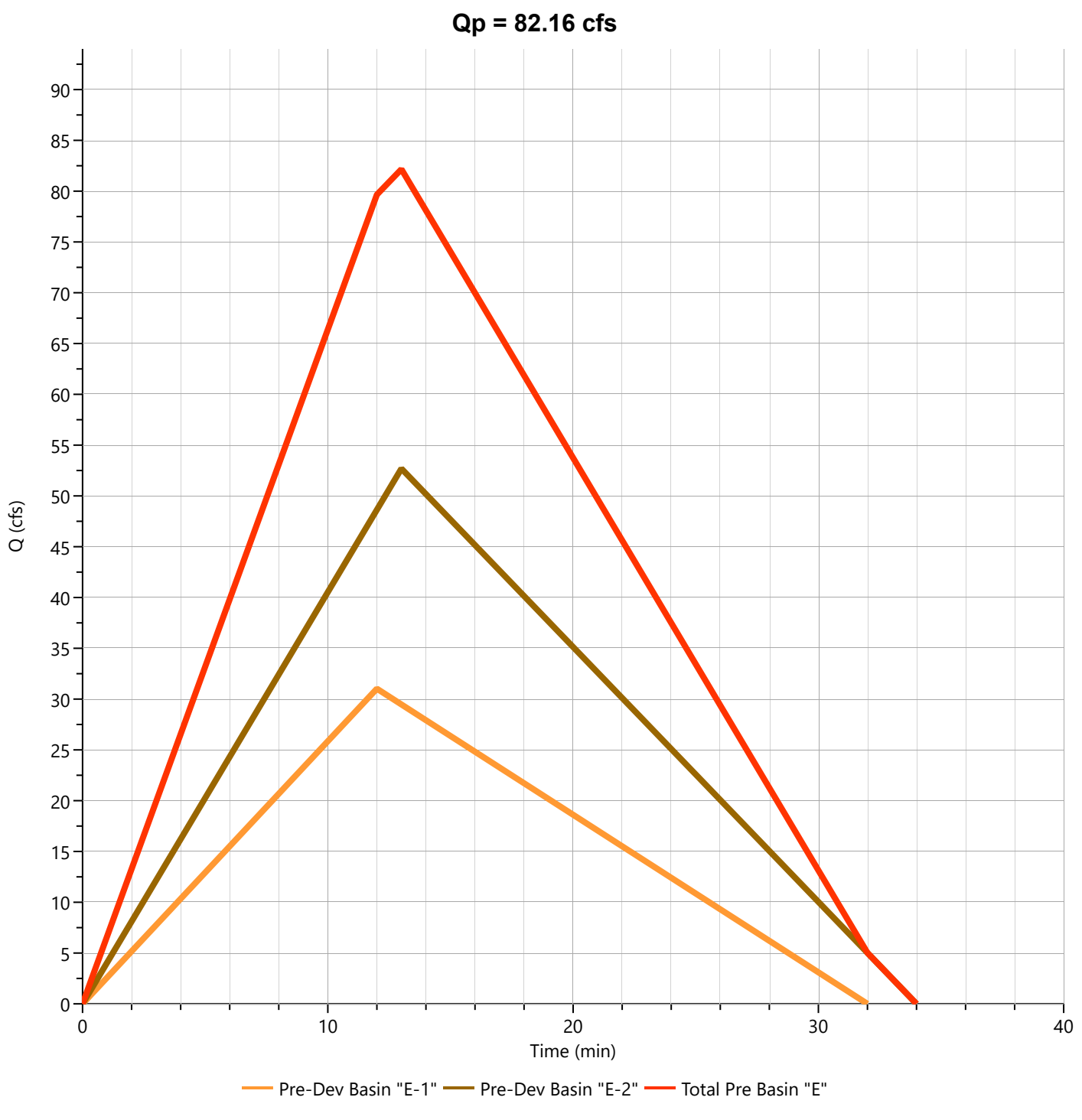
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 52.69 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Runoff Volume | = 54,864 cuft |
| Drainage Area | = 18.96 ac | Runoff Coeff. | = 0.52 |
| Tc Method | = TR55 (See Worksheet) | Time 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

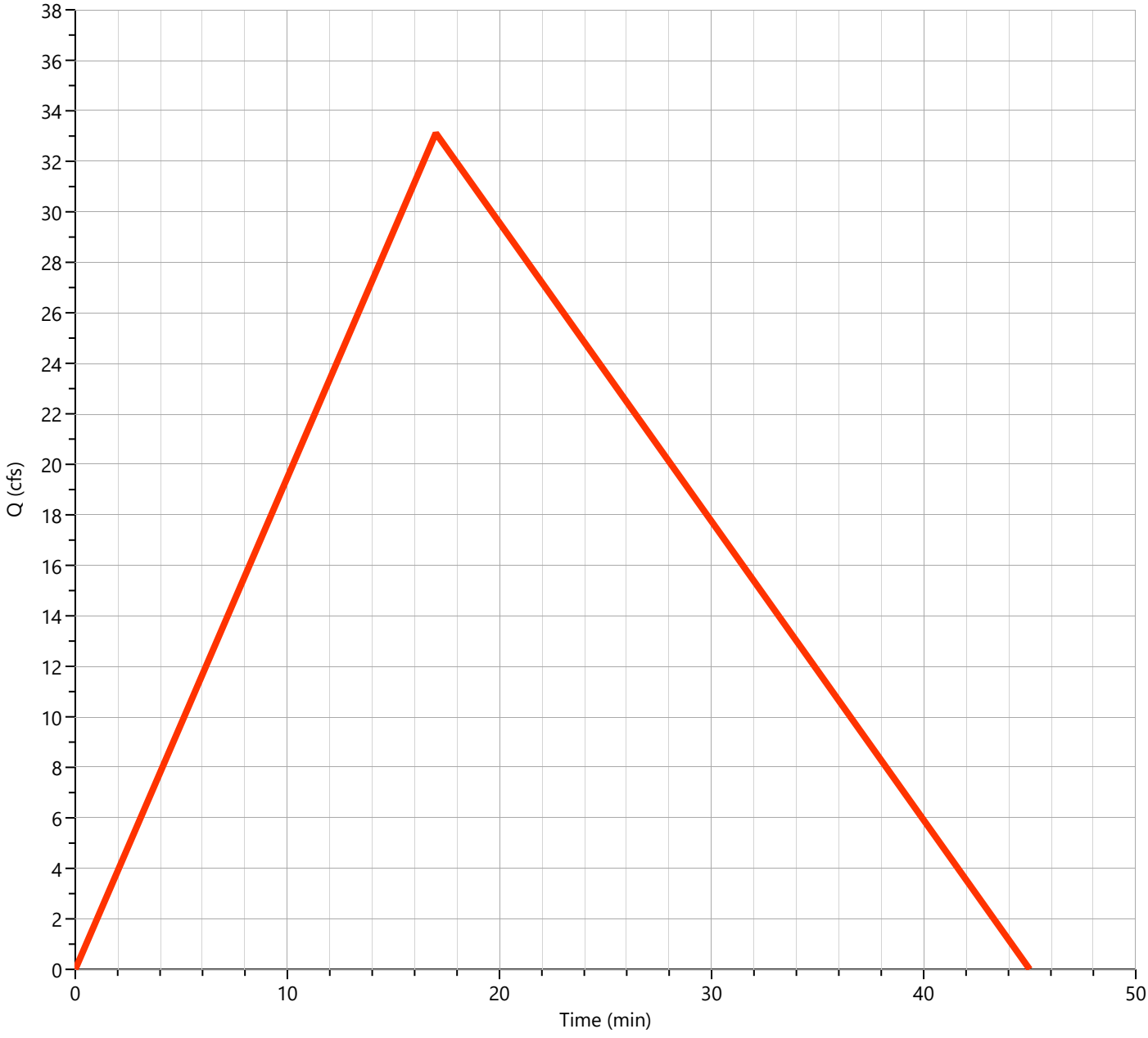
| | | | |
|---|---|---|---|
| Hydrograph Type | = Junction | Peak Flow | = 82.16 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 83,523 cuft |
| Inflow Hydrographs | = 5, 6 | Total Contrib. Area | = 30.16 ac |



## Pre-Dev Basin "F"

## Hyd. No. 8

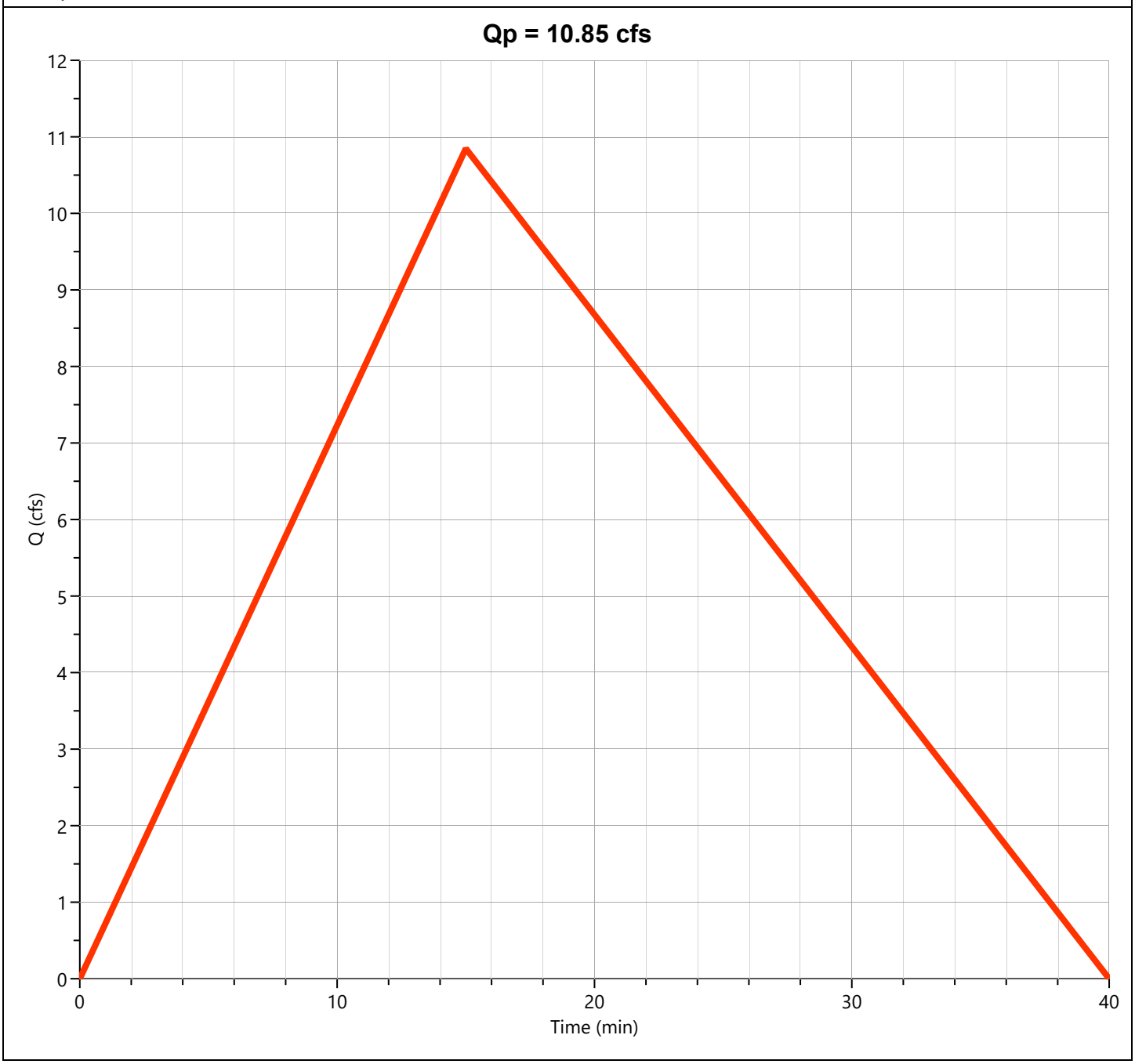
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 33.12 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.28 hrs |
| Time Interval | = 1 min | Runoff Volume | = 45,094 cuft |
| Drainage Area | = 13.19 ac | Runoff Coeff. | = 0.53 |
| Tc Method | = TR55 (See Worksheet) | Time 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

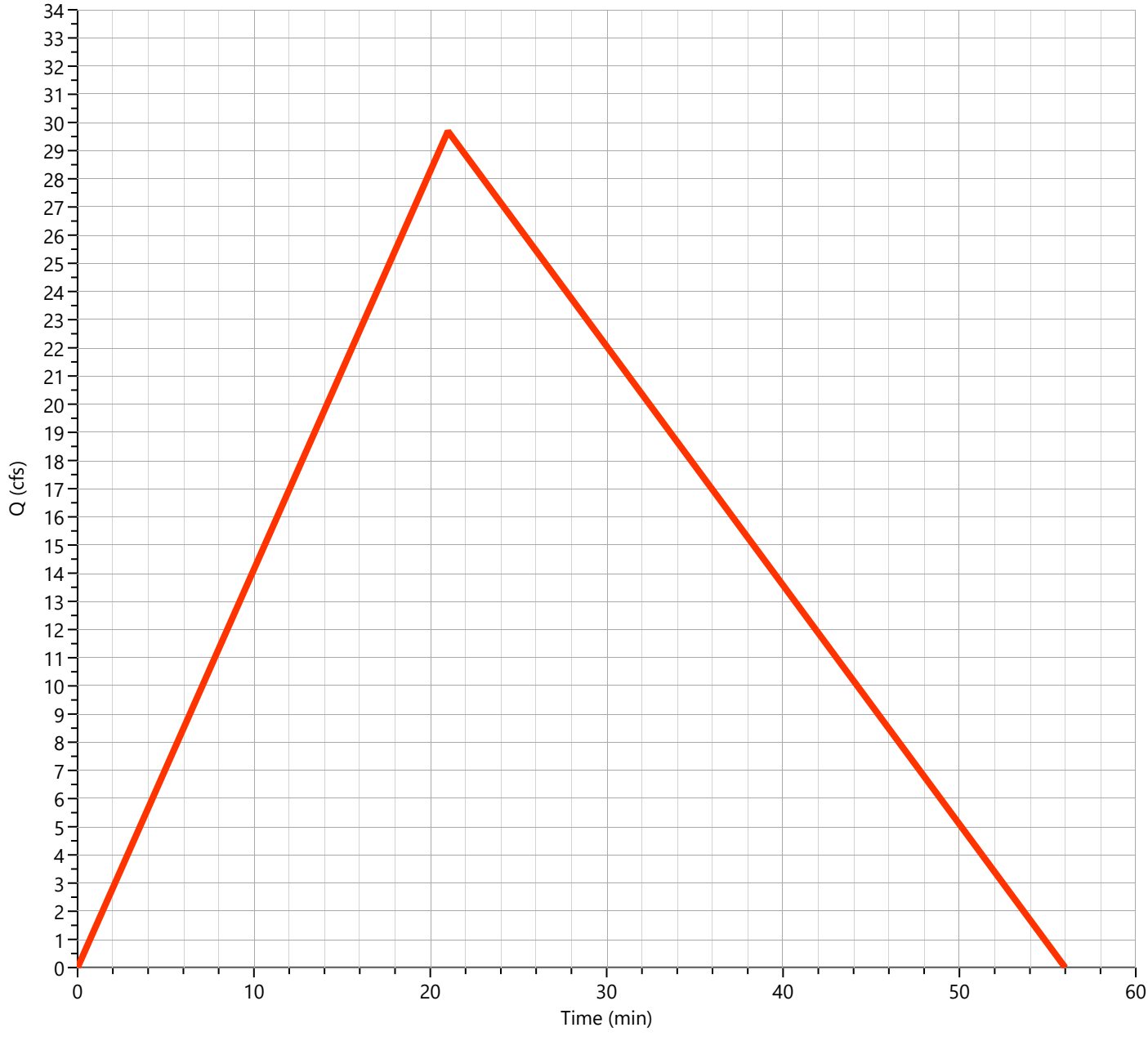
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 10.85 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.25 hrs |
| Time Interval | = 1 min | Runoff Volume | = 13,032 cuft |
| Drainage Area | = 3.33 ac | Runoff Coeff. | = 0.65 |
| Tc Method | = TR55 (See Worksheet) | Time 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

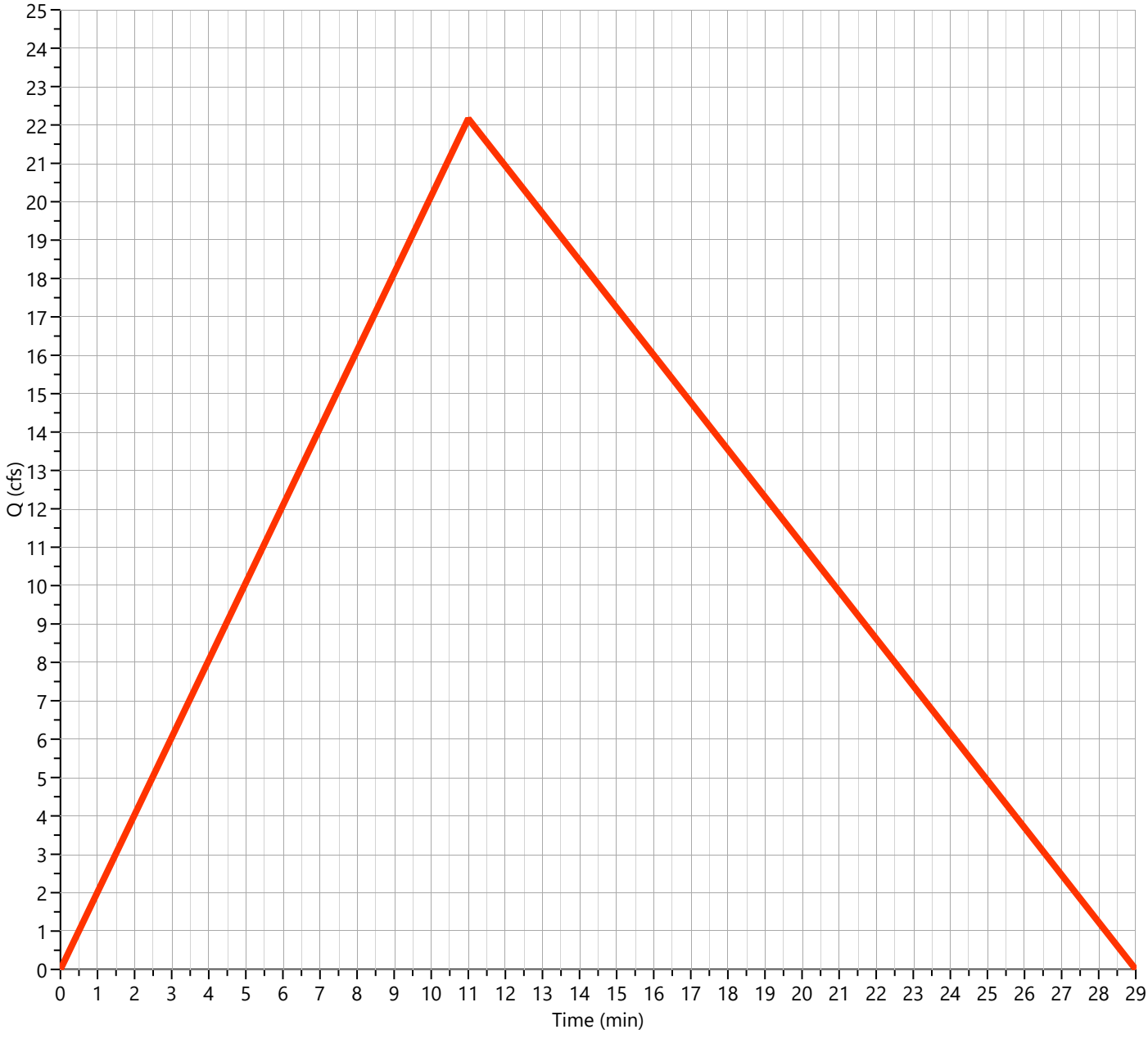
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 29.69 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.35 hrs |
| Time Interval | = 1 min | Runoff Volume | = 49,939 cuft |
| Drainage Area | = 12.53 ac | Runoff Coeff. | = 0.55 |
| Tc Method | = TR55 (See Worksheet) | Time 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

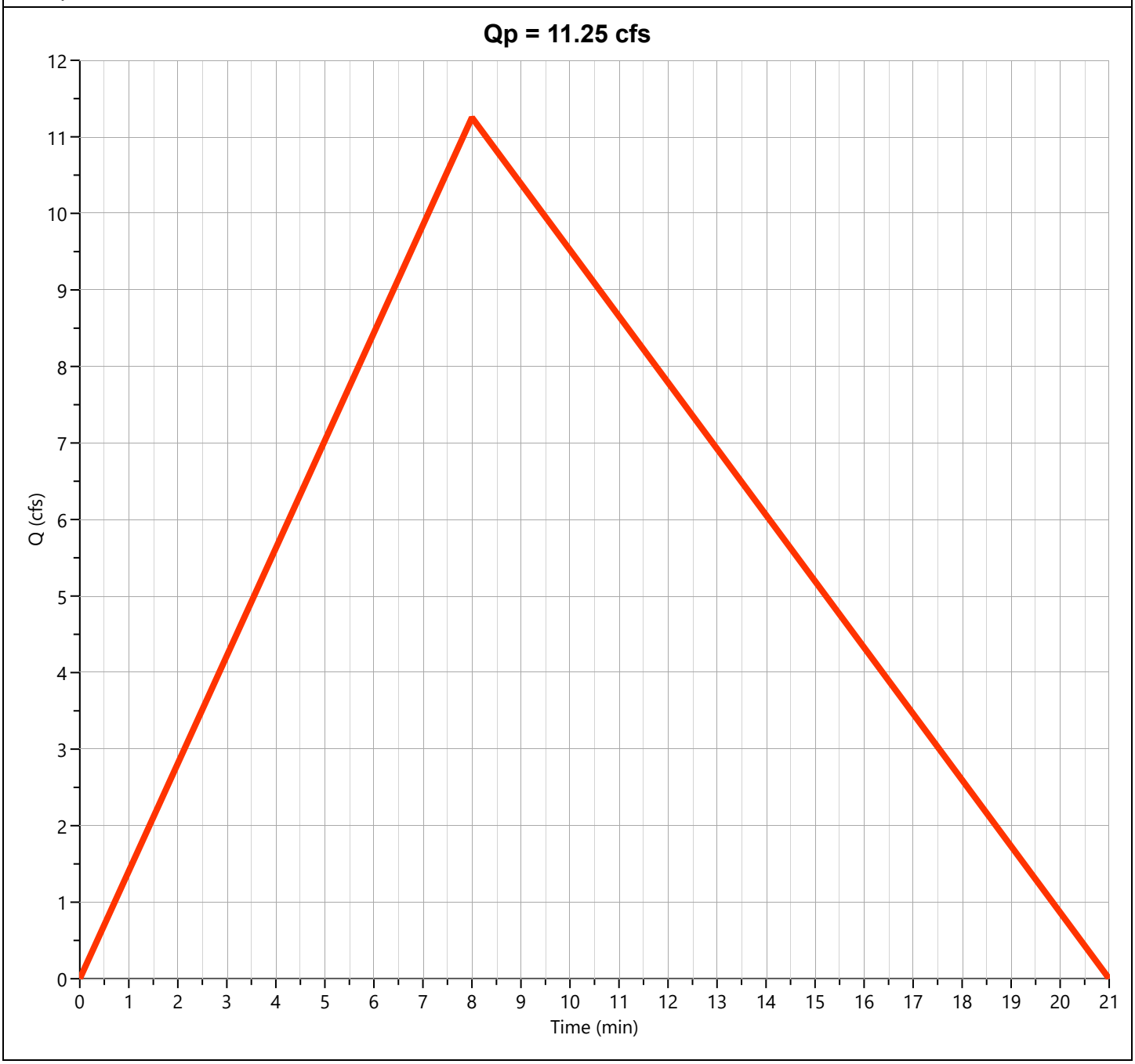
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 22.16 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 19,529 cuft |
| Drainage Area | = 6.75 ac | Runoff Coeff. | = 0.57 |
| Tc Method | = TR55 (See Worksheet) | Time 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

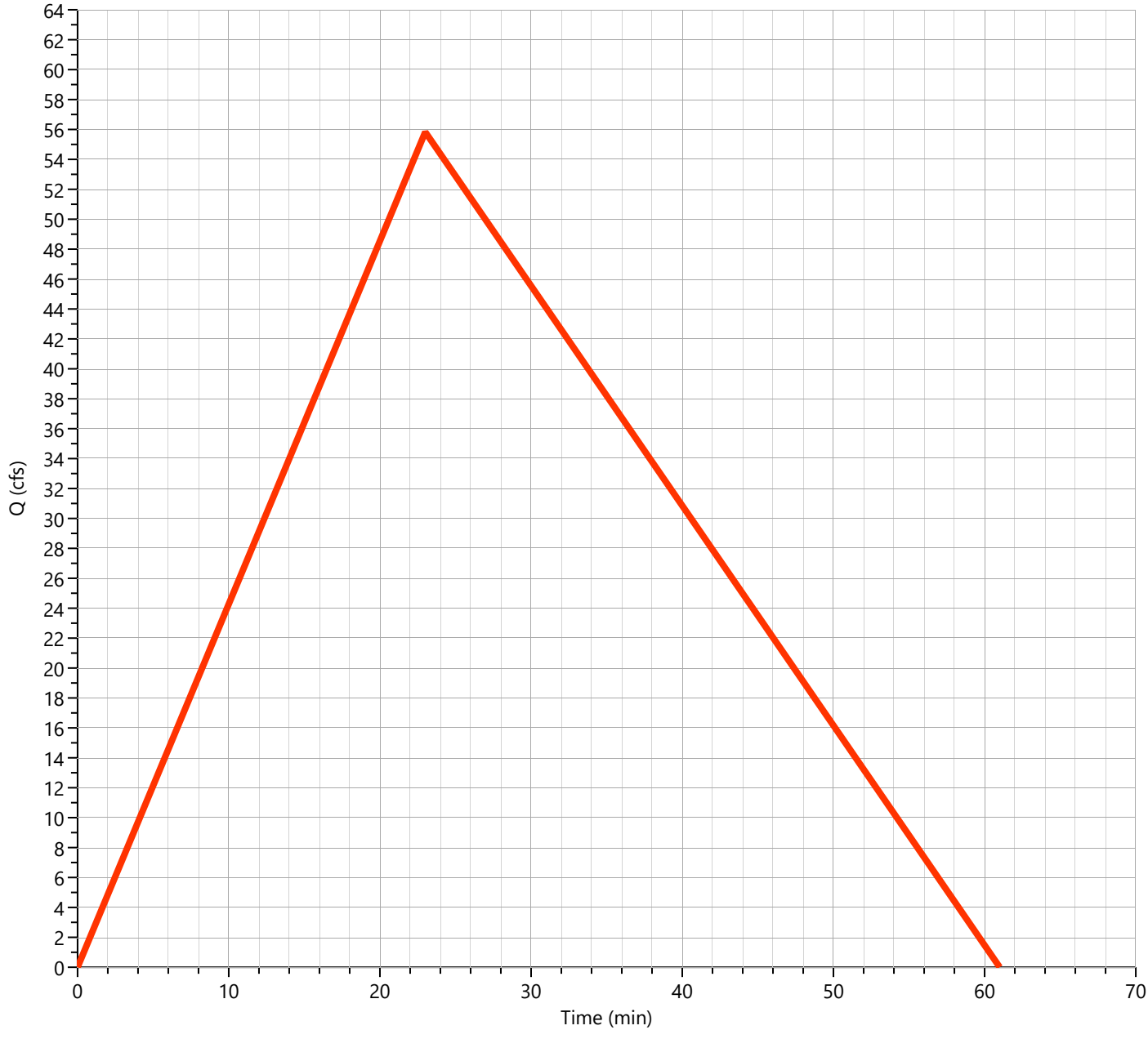
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 11.25 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.13 hrs |
| Time Interval | = 1 min | Runoff Volume | = 7,211 cuft |
| Drainage Area | = 2.97 ac | Runoff Coeff. | = 0.57 |
| Tc Method | = TR55 (See Worksheet) | Time 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 |



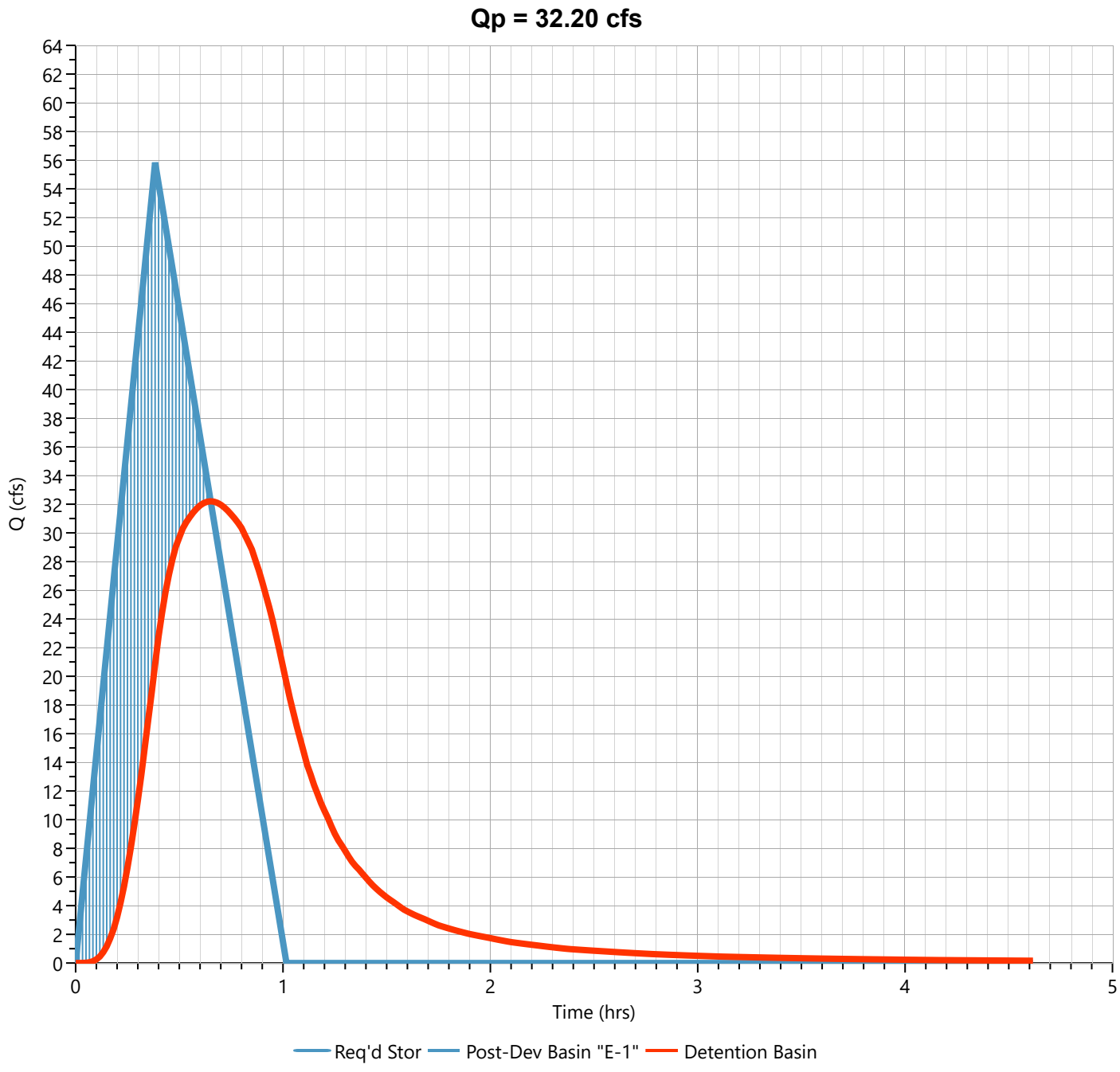
## Detention Basin

## 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*

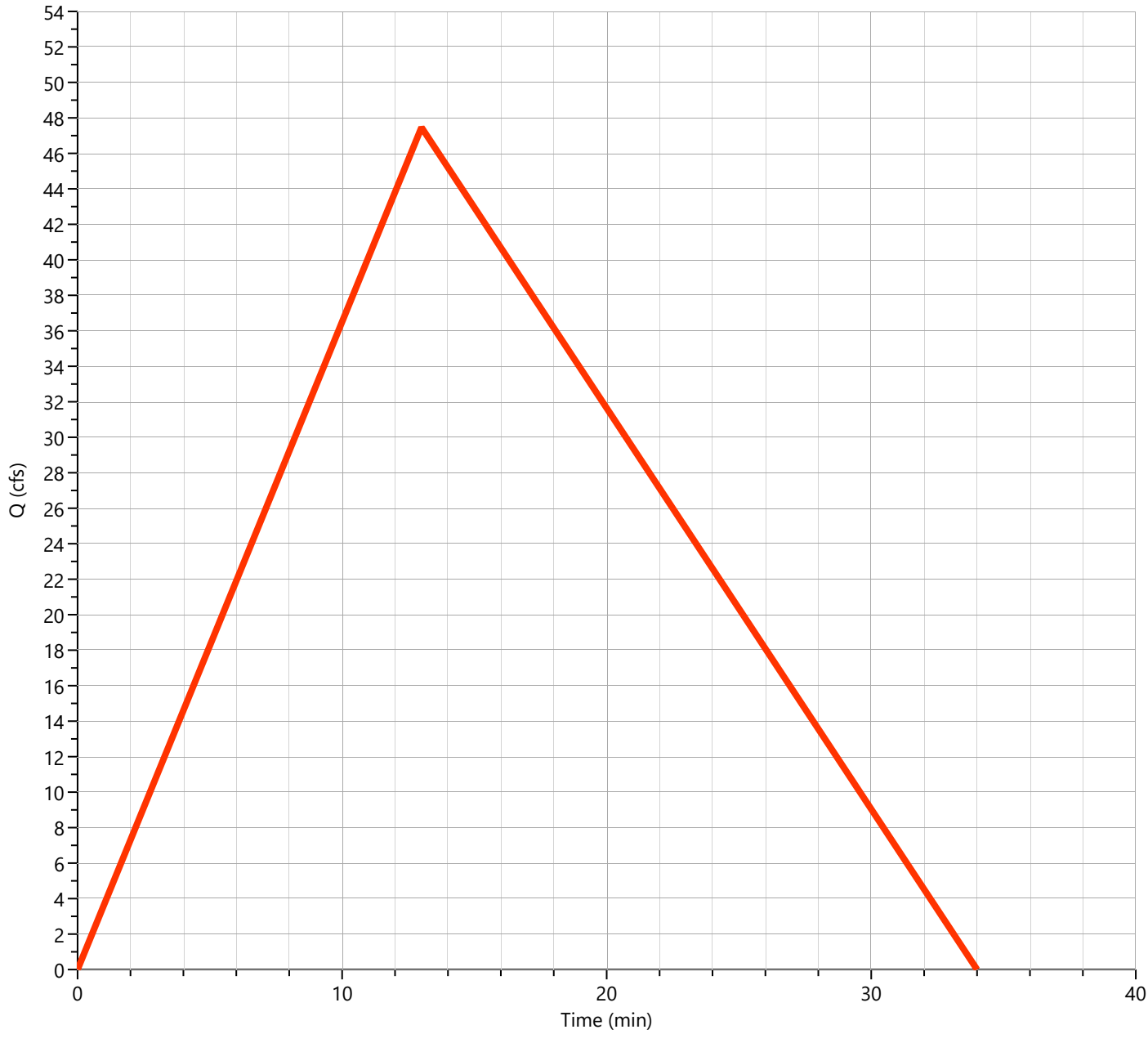
*Center of mass detention time = 25 min*



## Post-Dev Basin "E-2"

## Hyd. No. 15

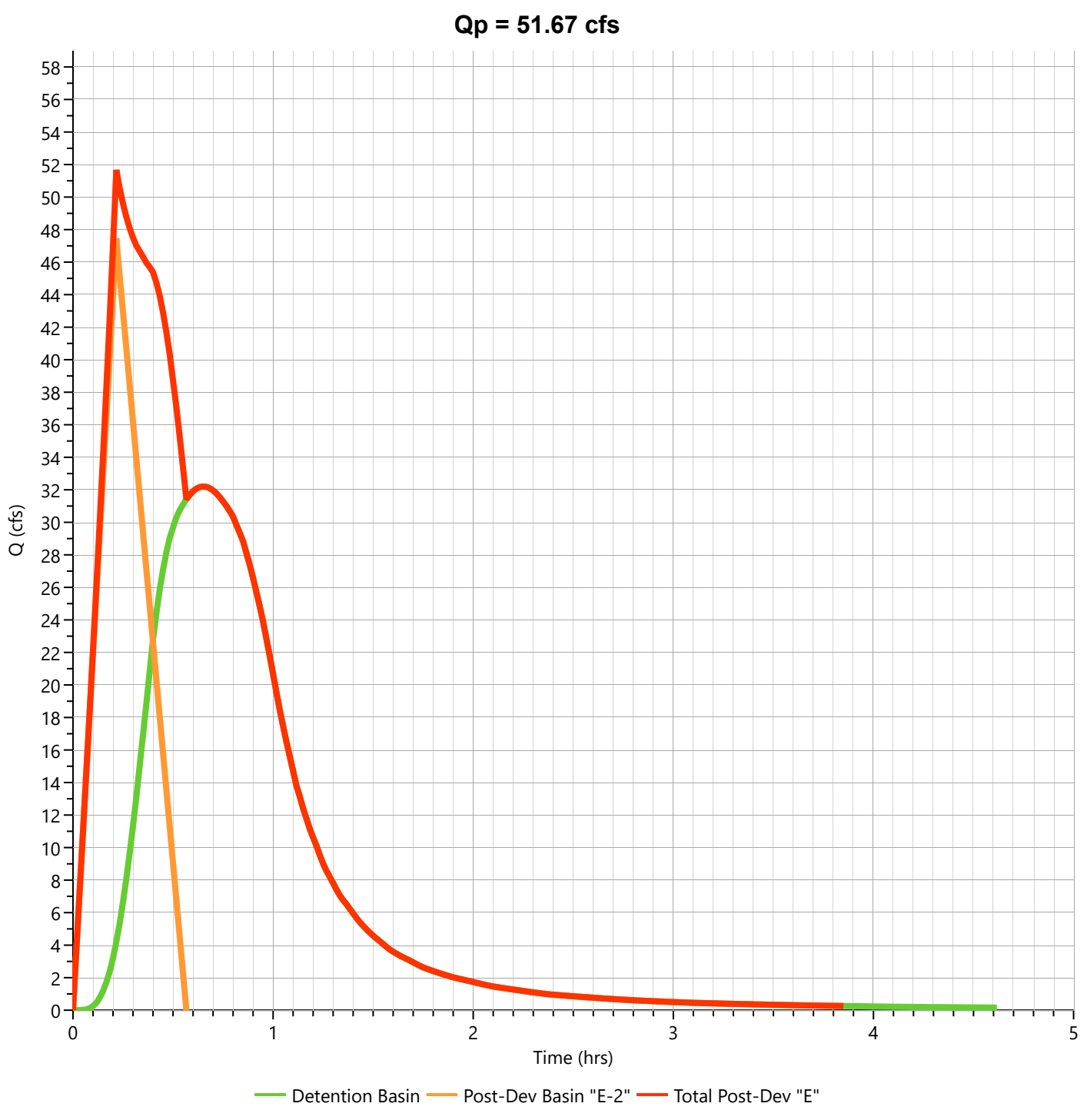
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 47.46 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Runoff Volume | = 49,424 cuft |
| Drainage Area | = 15.86 ac | Runoff Coeff. | = 0.56 |
| Tc Method | = TR55 (See Worksheet) | Time 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

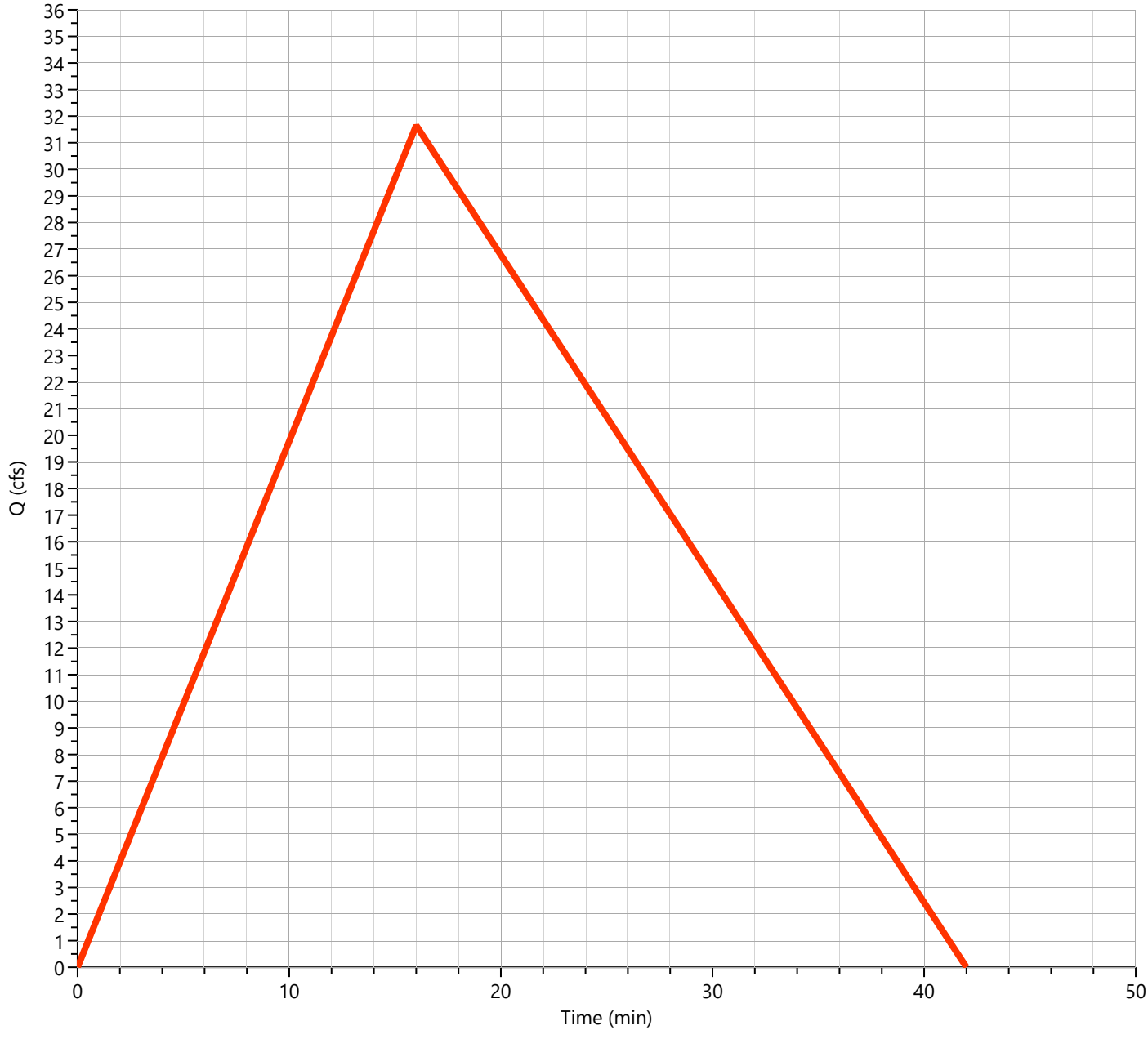
| | | | |
|---|---|---|---|
| Hydrograph Type | = Junction | Peak Flow | = 51.67 cfs |
| Storm Frequency | = 10-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 150,534 cuft |
| Inflow Hydrographs | = 15 | Total Contrib. Area | = 15.86 ac |



## 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:

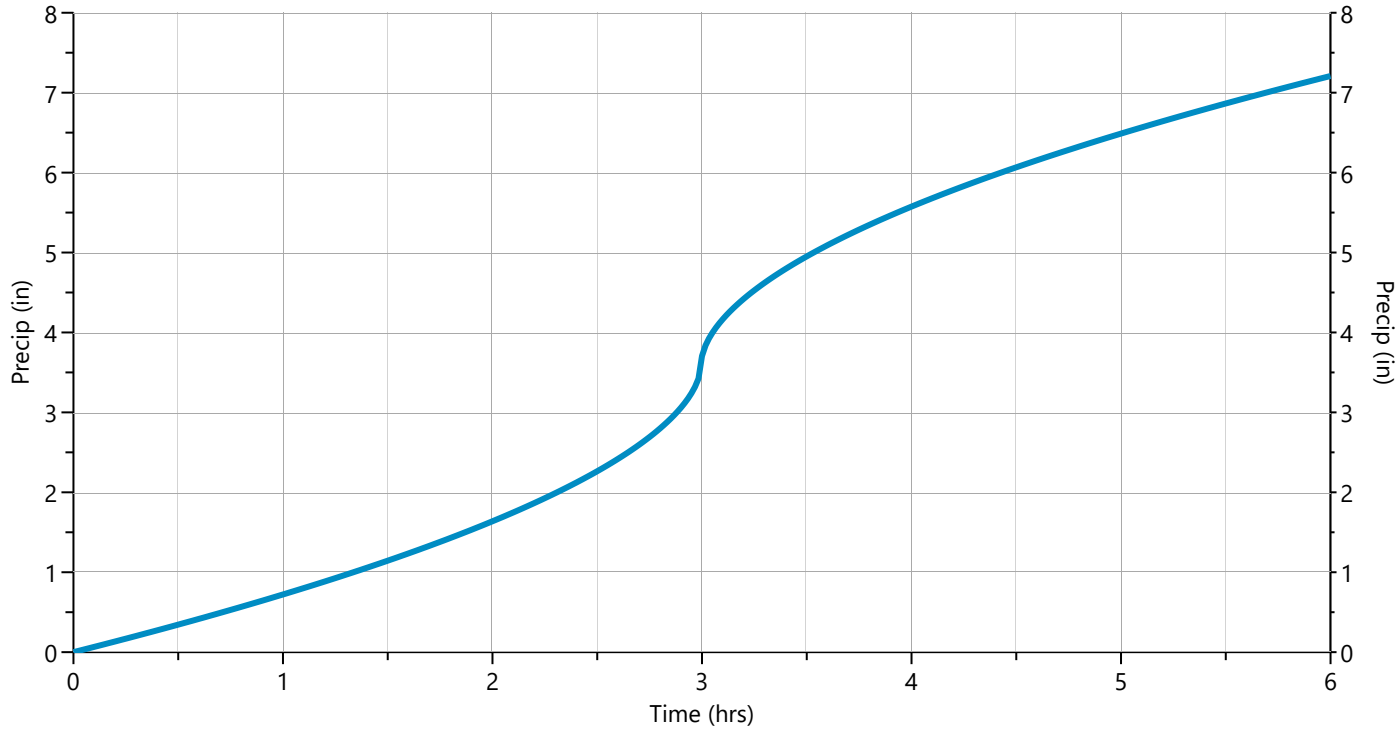
Hydrology Studio v 3.0.0.44

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

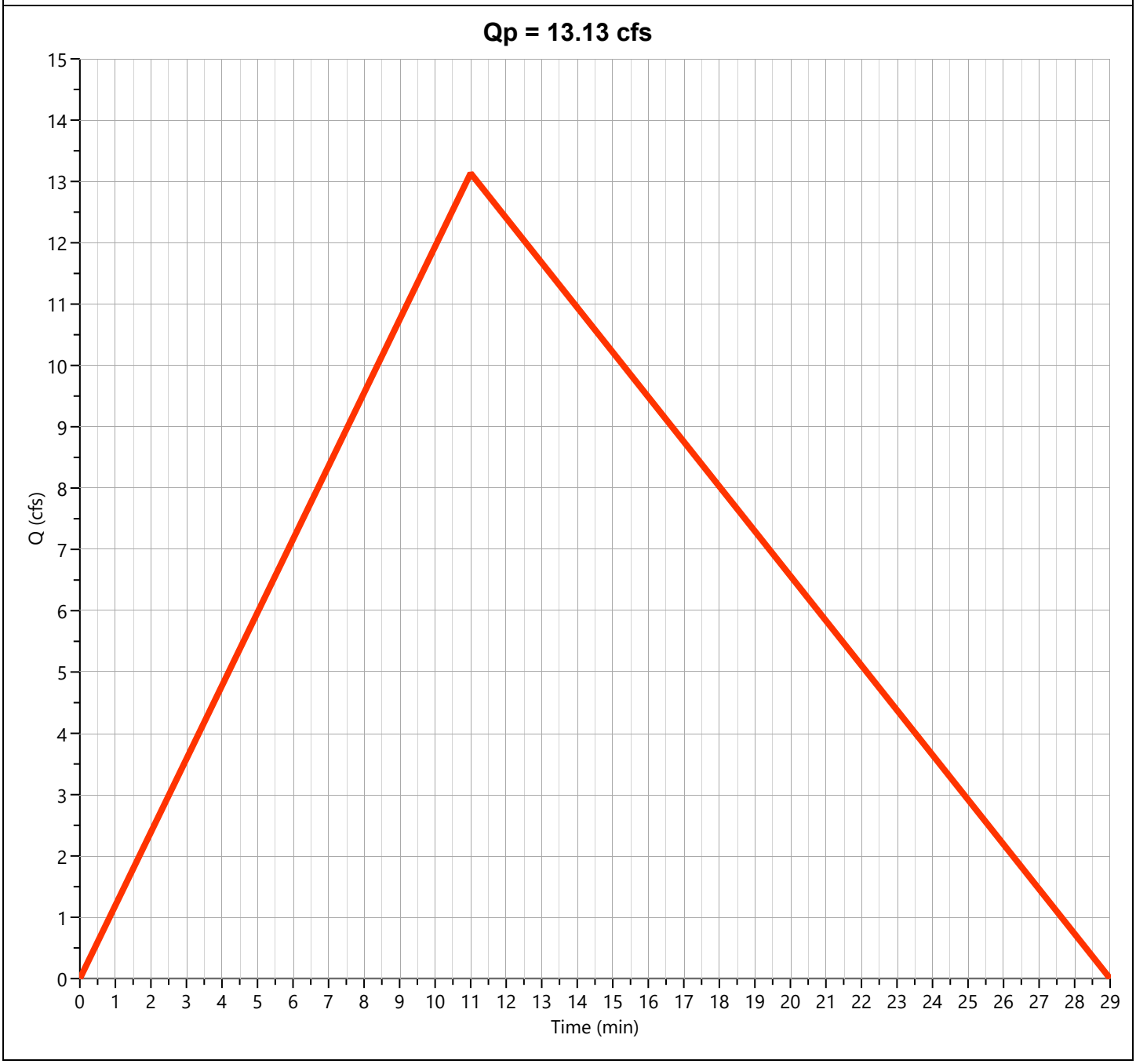
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

| 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

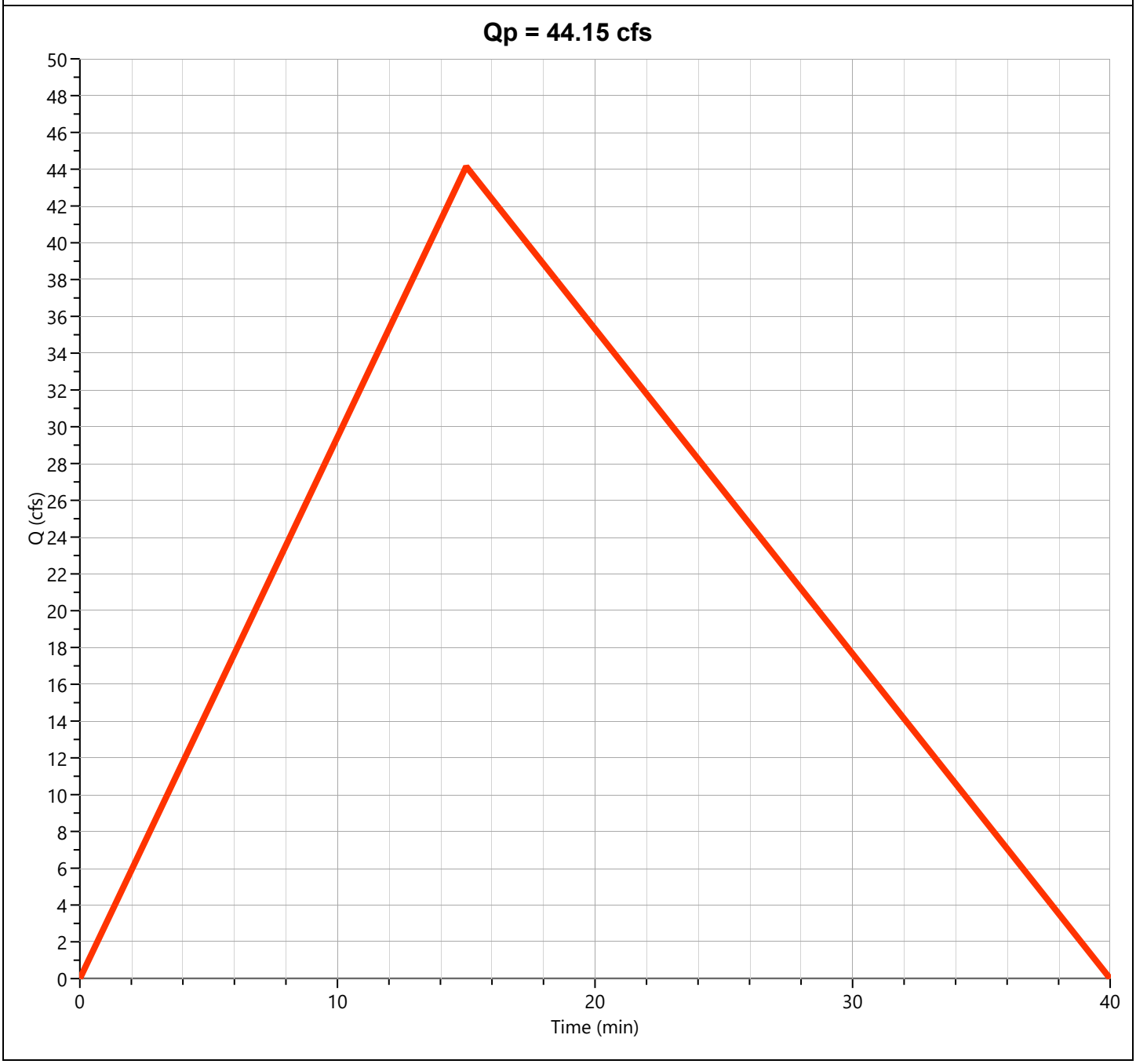
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 13.13 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 11,572 cuft |
| Drainage Area | = 3.2 ac | Runoff Coeff. | = 0.62 |
| Tc Method | = TR55 (See Worksheet) | Time 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

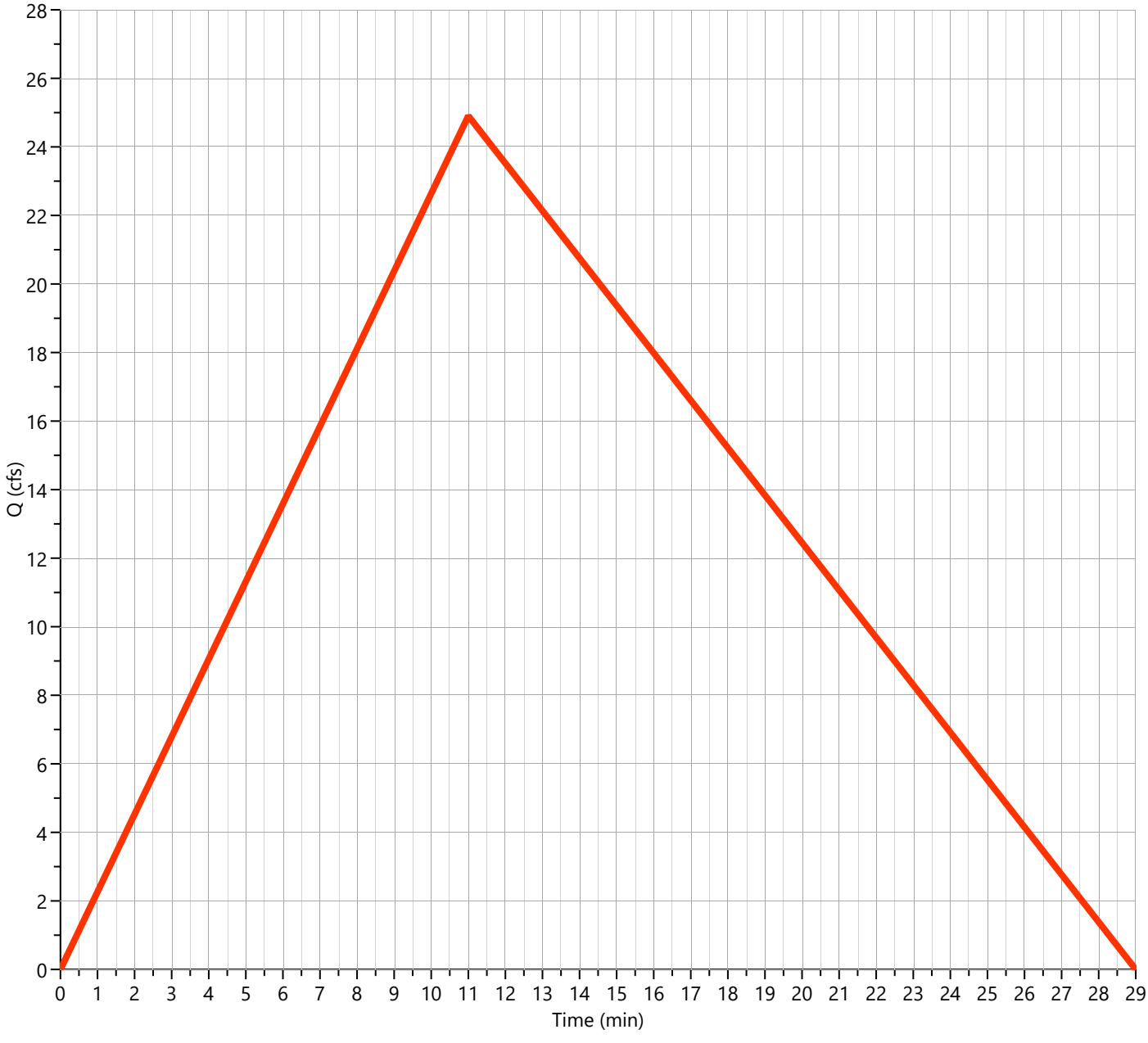
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 44.15 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.25 hrs |
| Time Interval | = 1 min | Runoff Volume | = 53,043 cuft |
| Drainage Area | = 14.74 ac | Runoff Coeff. | = 0.52 |
| Tc Method | = TR55 (See Worksheet) | Time 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

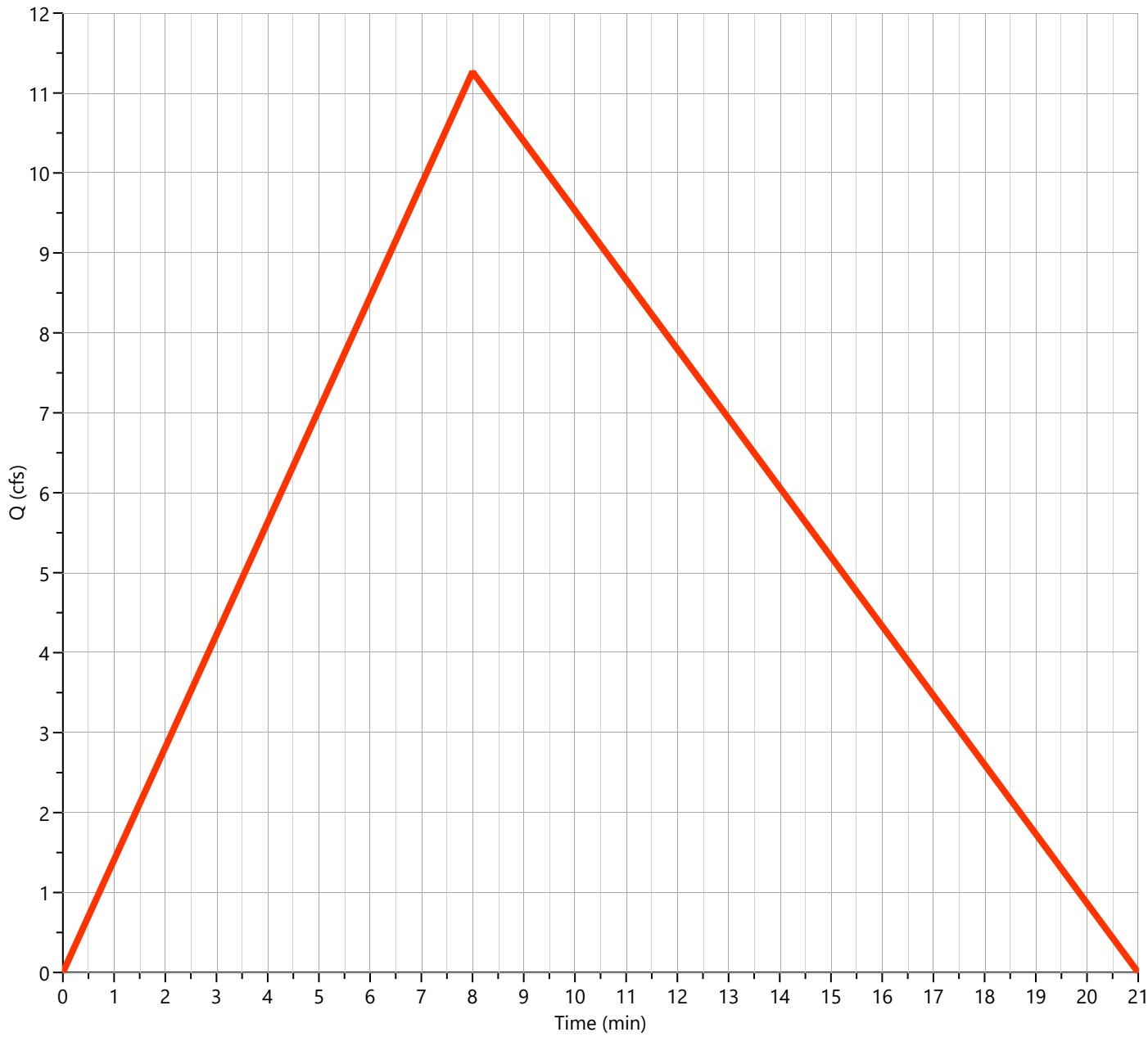
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 24.90 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 21,943 cuft |
| Drainage Area | = 6.84 ac | Runoff Coeff. | = 0.55 |
| Tc Method | = TR55 (See Worksheet) | Time 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

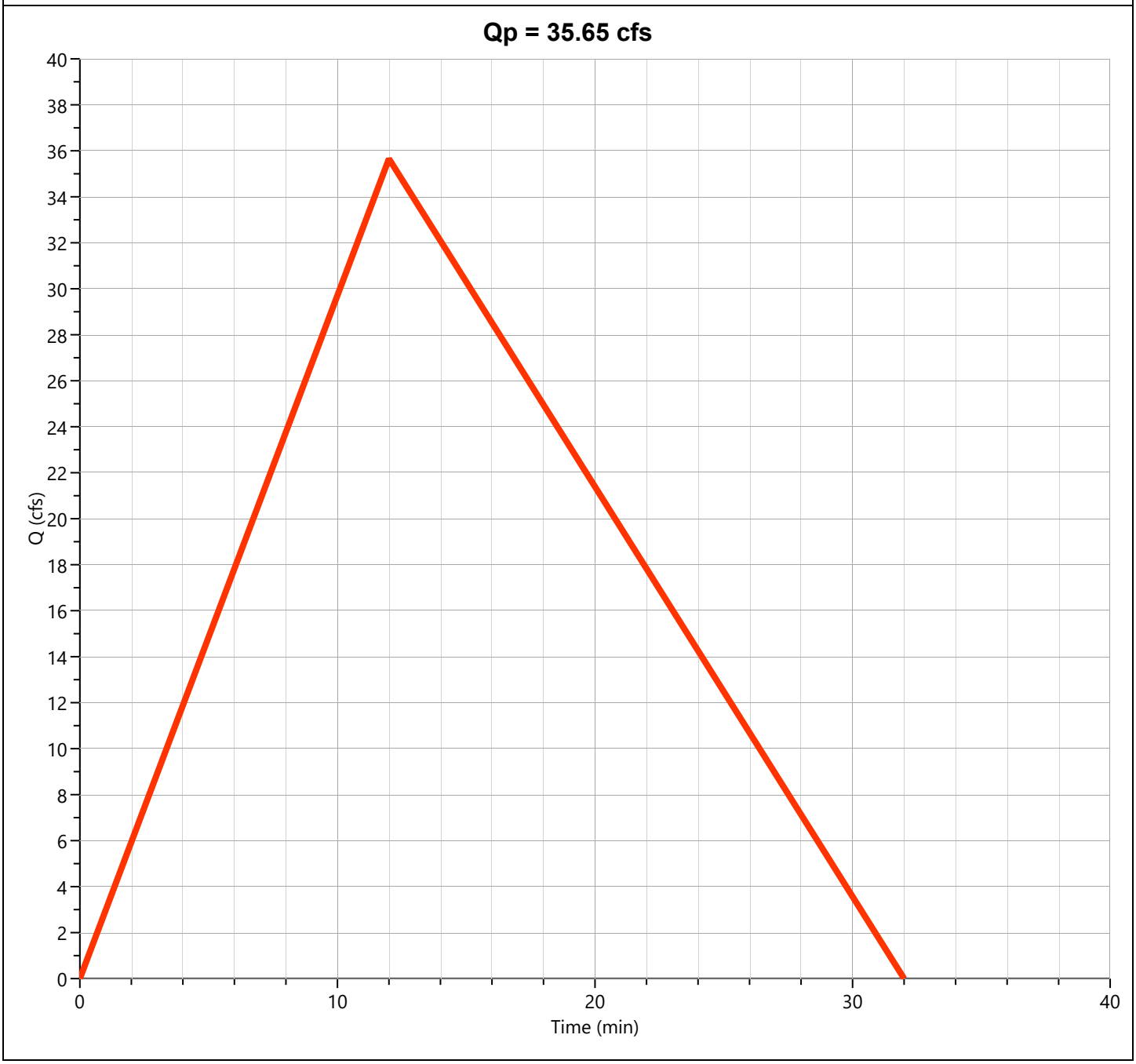
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 11.26 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.13 hrs |
| Time Interval | = 1 min | Runoff Volume | = 7,218 cuft |
| Drainage Area | = 2.95 ac | Runoff Coeff. | = 0.50 |
| Tc Method | = TR55 (See Worksheet) | Time 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

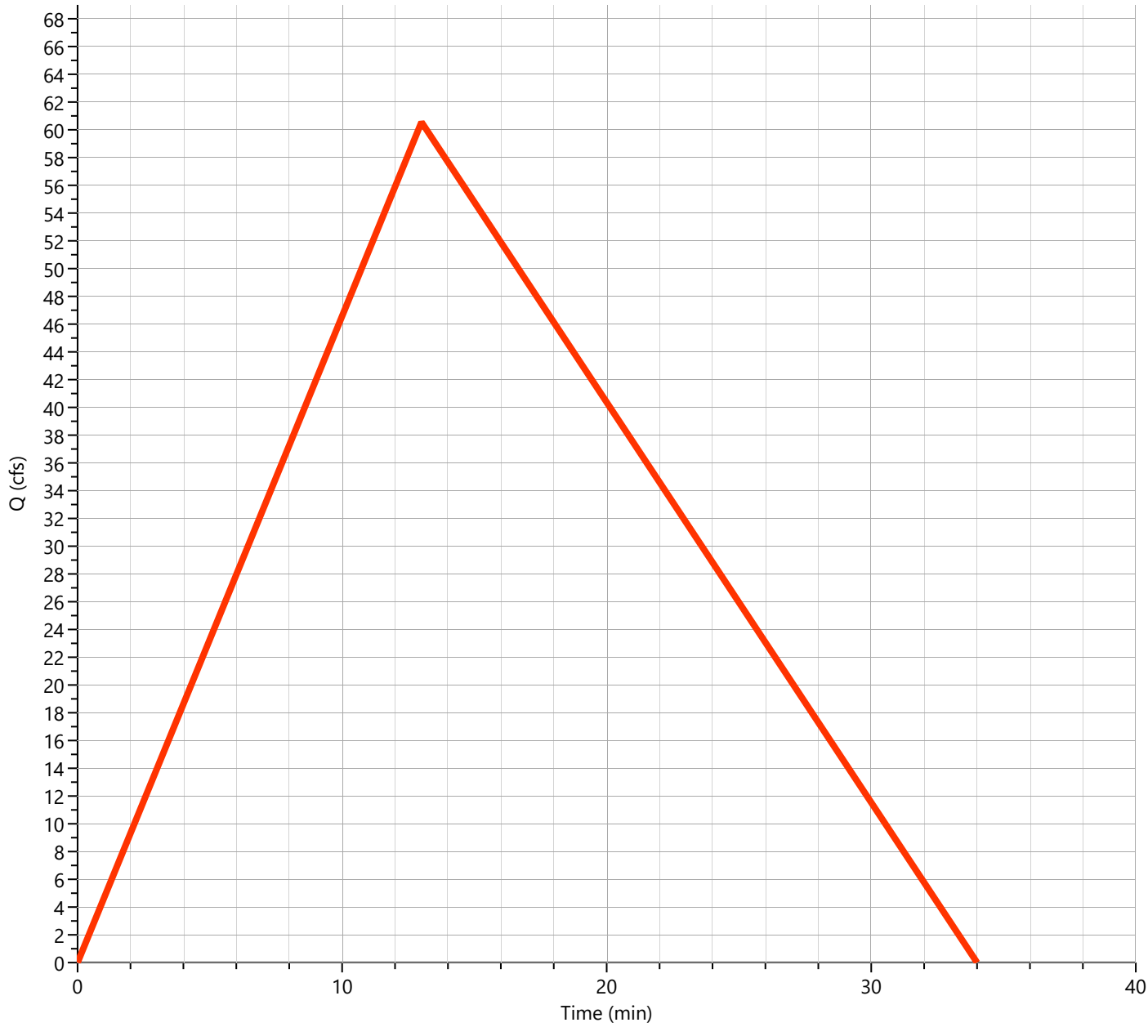
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 35.65 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.20 hrs |
| Time Interval | = 1 min | Runoff Volume | = 34,268 cuft |
| Drainage Area | = 11.2 ac | Runoff Coeff. | = 0.50 |
| Tc Method | = TR55 (See Worksheet) | Time 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

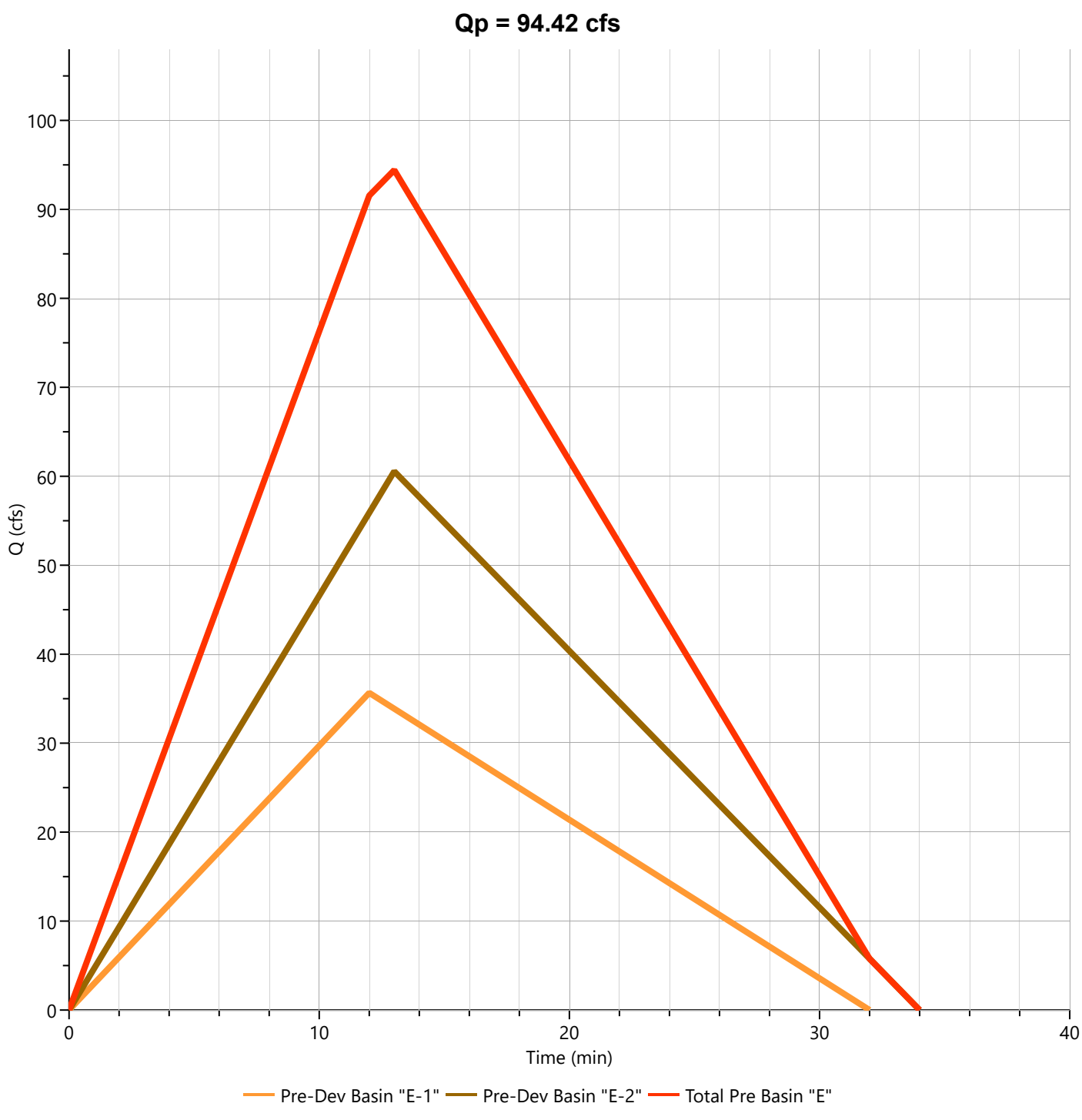
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 60.55 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Runoff Volume | = 63,053 cuft |
| Drainage Area | = 18.96 ac | Runoff Coeff. | = 0.52 |
| Tc Method | = TR55 (See Worksheet) | Time 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

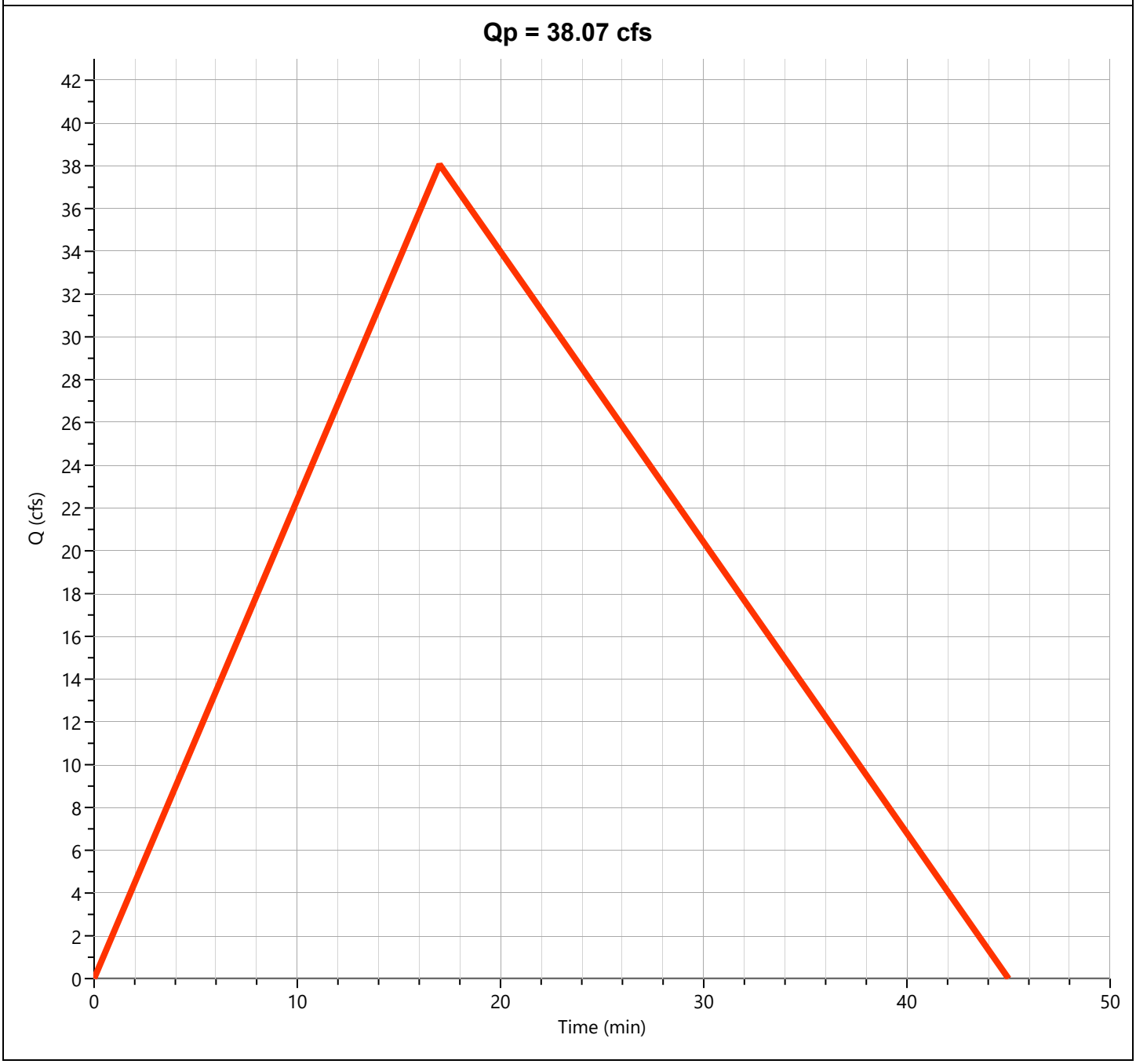
| | | | |
|---|---|---|---|
| Hydrograph Type | = Junction | Peak Flow | = 94.42 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 95,989 cuft |
| Inflow Hydrographs | = 5, 6 | Total Contrib. Area | = 30.16 ac |



## Pre-Dev Basin "F"

## Hyd. No. 8

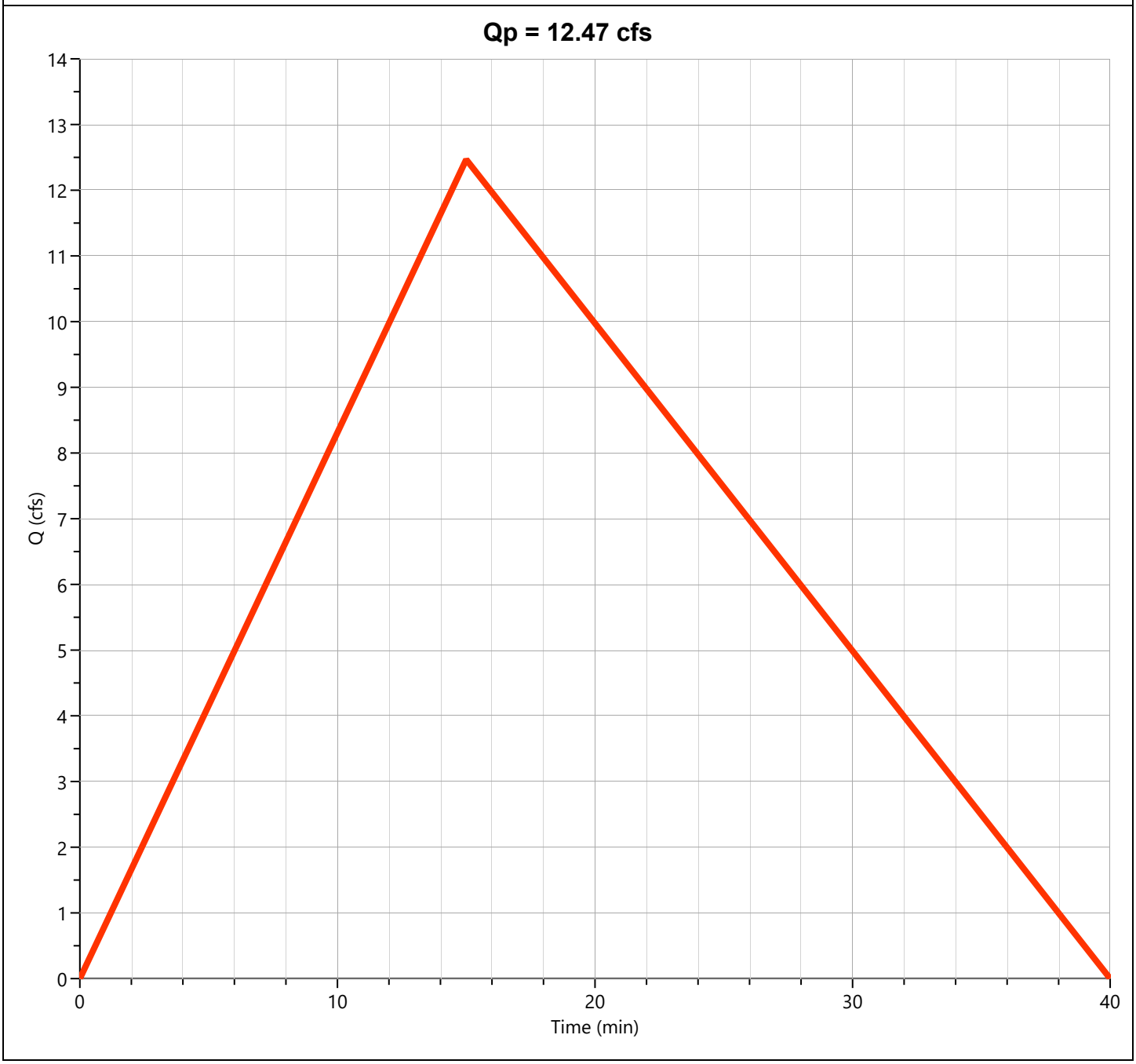
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 38.07 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.28 hrs |
| Time Interval | = 1 min | Runoff Volume | = 51,833 cuft |
| Drainage Area | = 13.19 ac | Runoff Coeff. | = 0.53 |
| Tc Method | = TR55 (See Worksheet) | Time 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

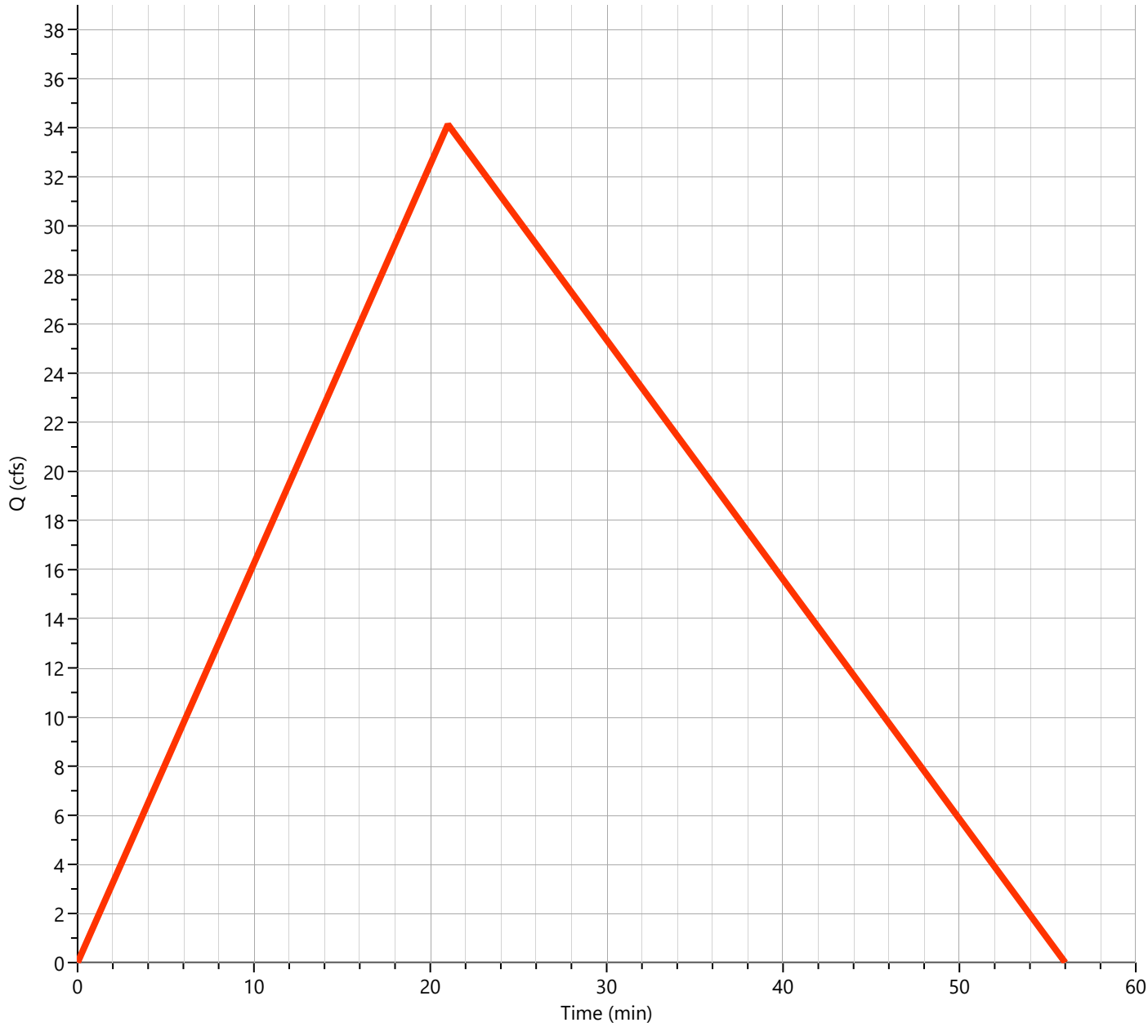
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 12.47 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.25 hrs |
| Time Interval | = 1 min | Runoff Volume | = 14,979 cuft |
| Drainage Area | = 3.33 ac | Runoff Coeff. | = 0.65 |
| Tc Method | = TR55 (See Worksheet) | Time 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

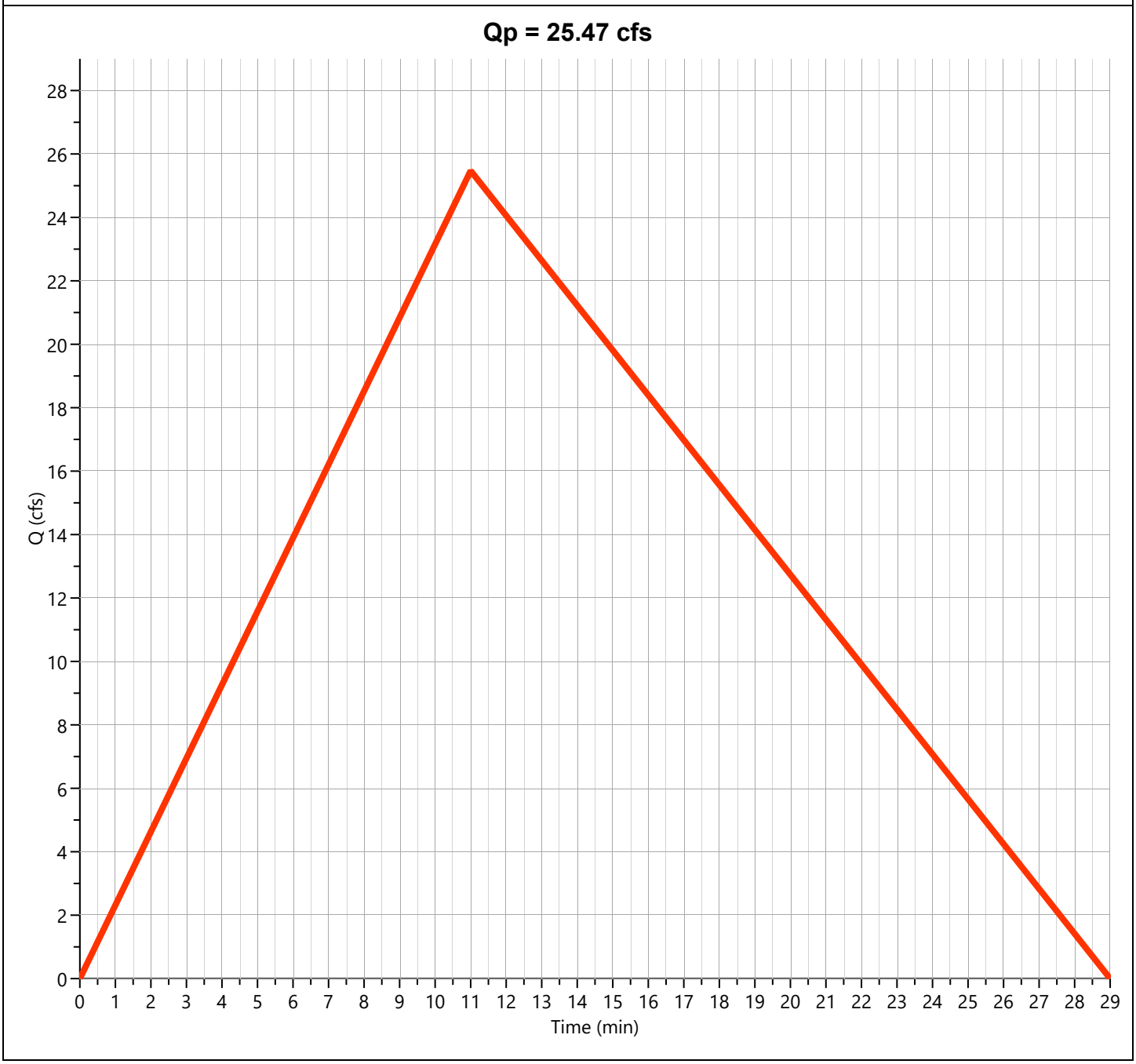
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 34.13 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.35 hrs |
| Time Interval | = 1 min | Runoff Volume | = 57,410 cuft |
| Drainage Area | = 12.53 ac | Runoff Coeff. | = 0.55 |
| Tc Method | = TR55 (See Worksheet) | Time 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

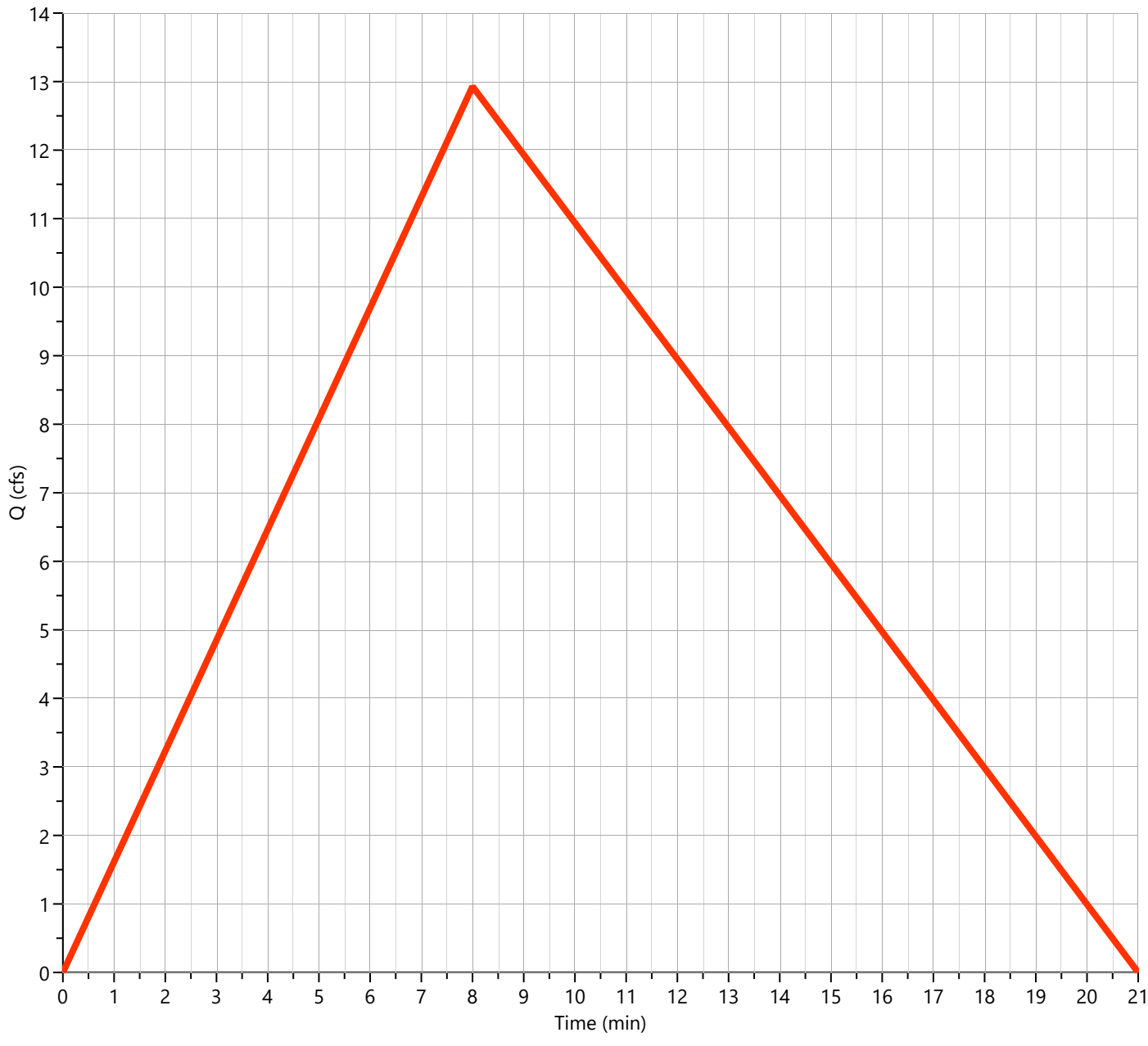
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 25.47 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 22,441 cuft |
| Drainage Area | = 6.75 ac | Runoff Coeff. | = 0.57 |
| Tc Method | = TR55 (See Worksheet) | Time 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

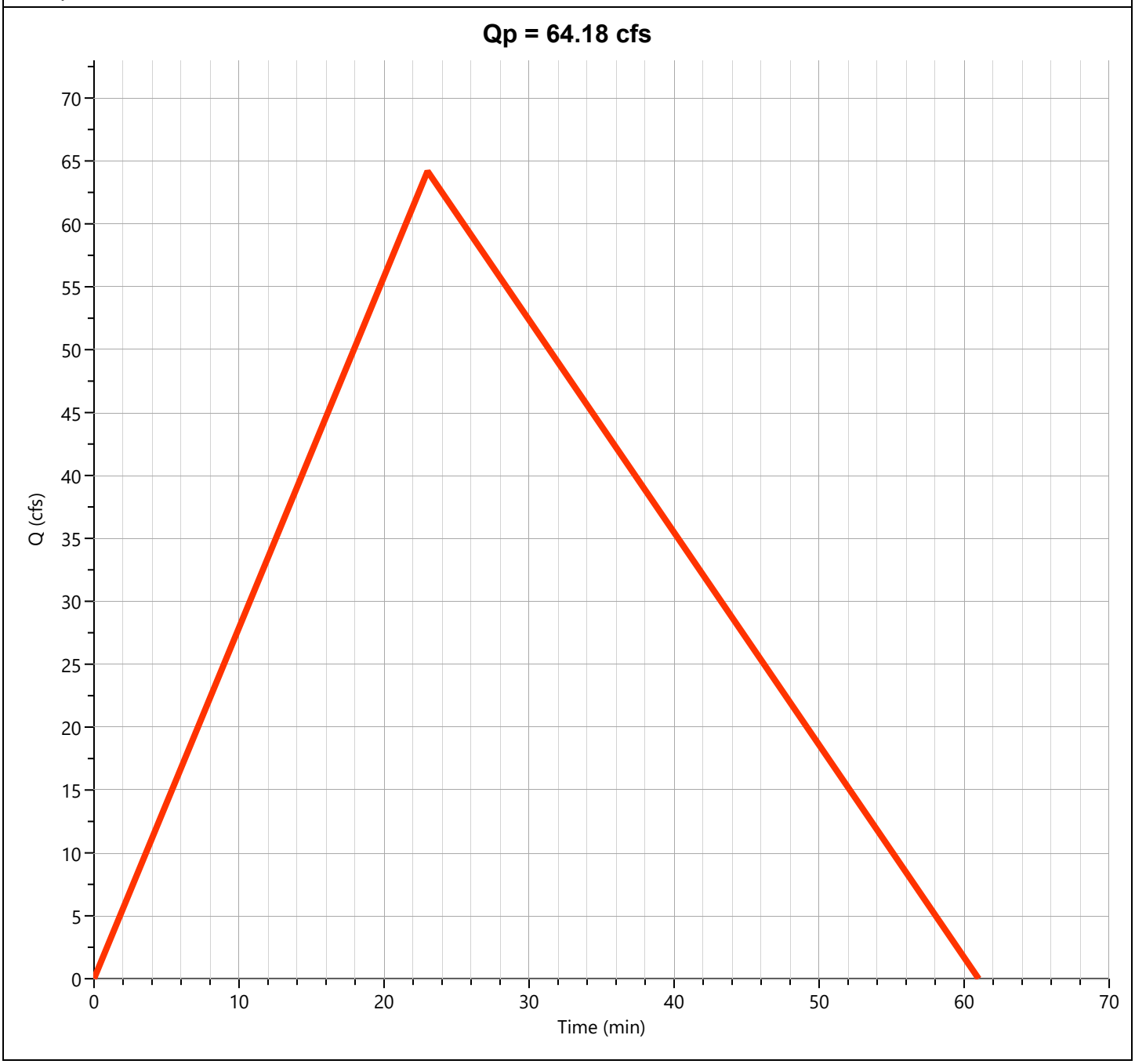
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 12.93 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.13 hrs |
| Time Interval | = 1 min | Runoff Volume | = 8,284 cuft |
| Drainage Area | = 2.97 ac | Runoff Coeff. | = 0.57 |
| Tc Method | = TR55 (See Worksheet) | Time 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 |



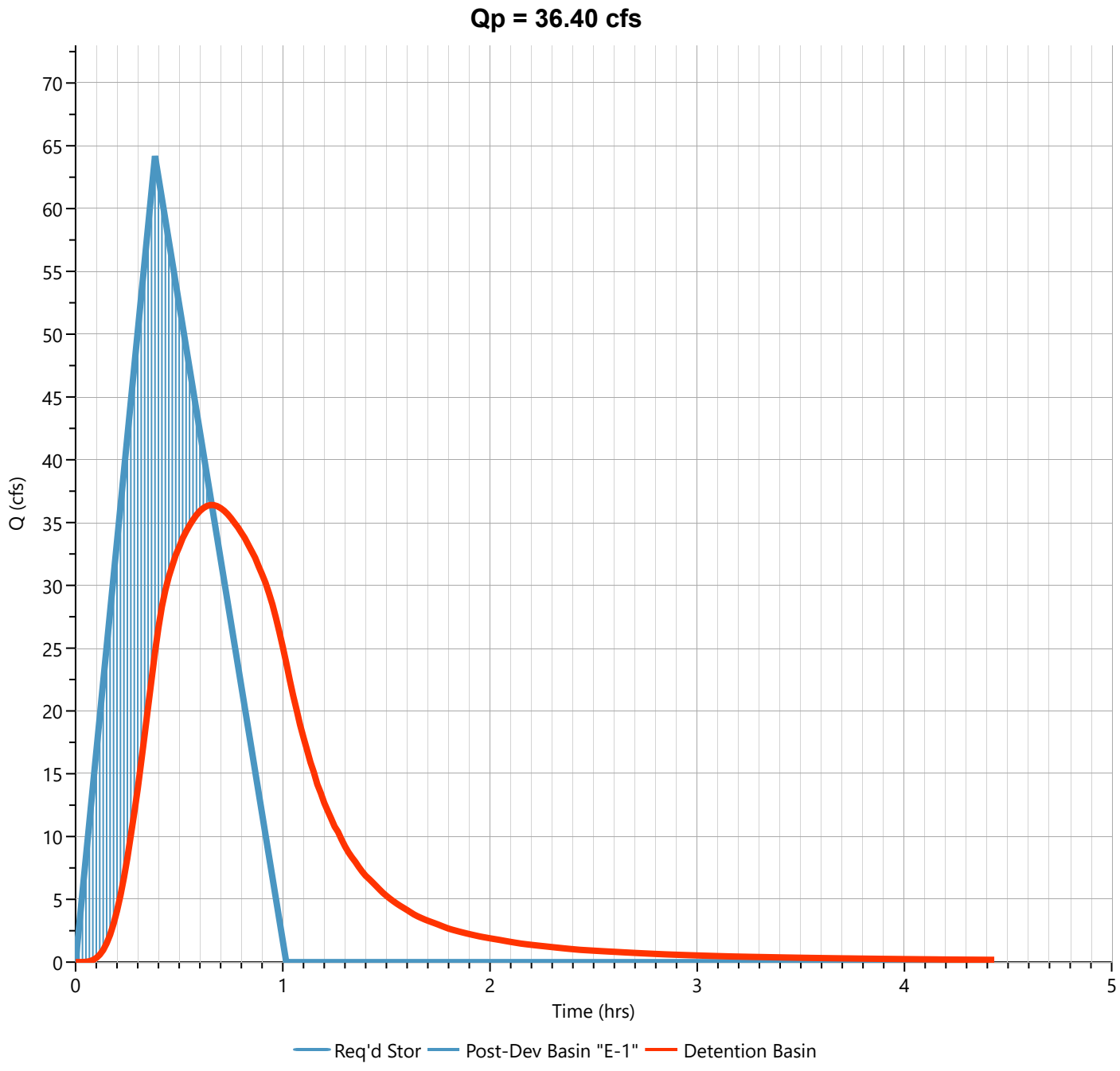
## Detention Basin

## 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*

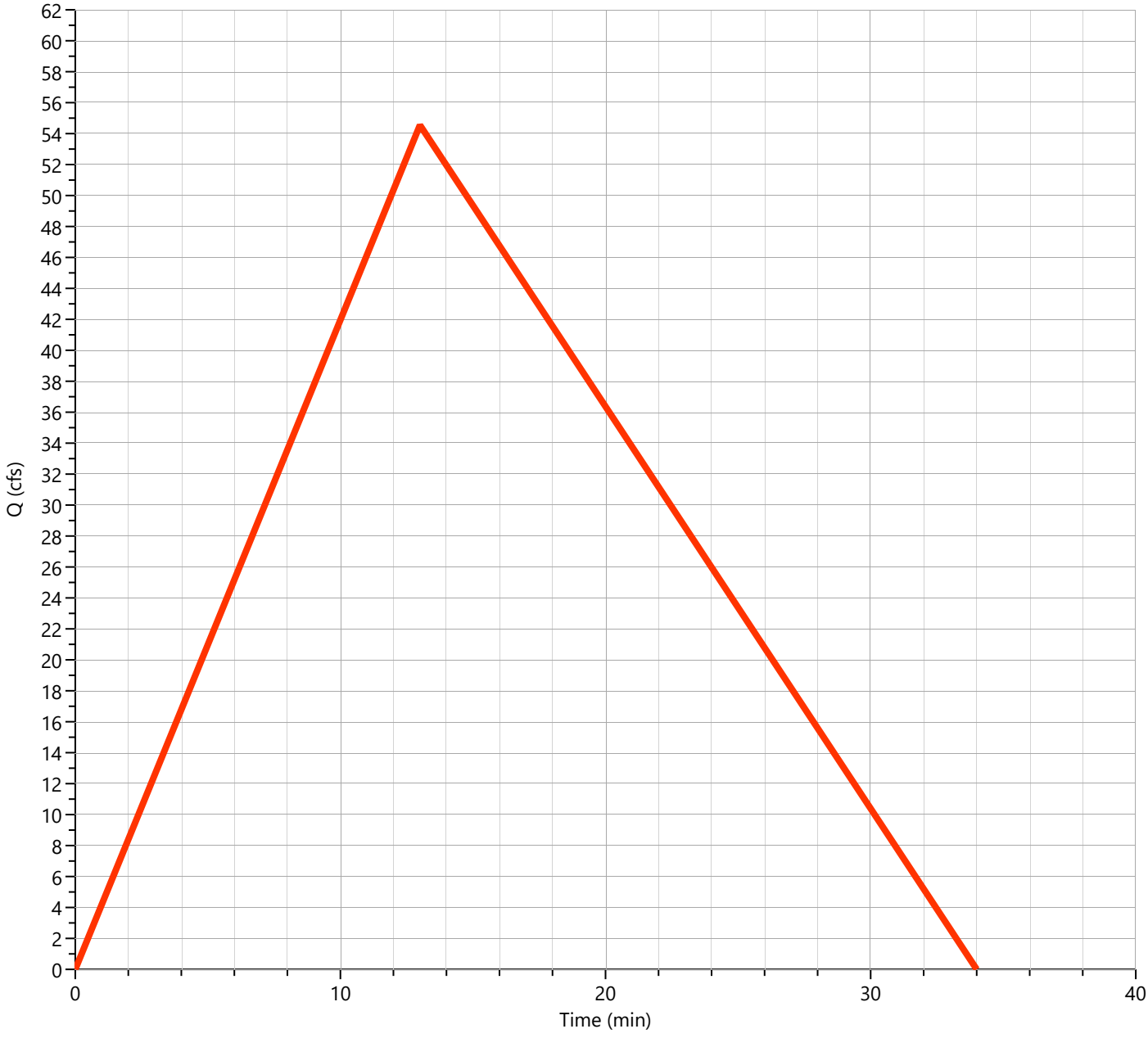
*Center of mass detention time = 24 min*



## Post-Dev Basin "E-2"

## Hyd. No. 15

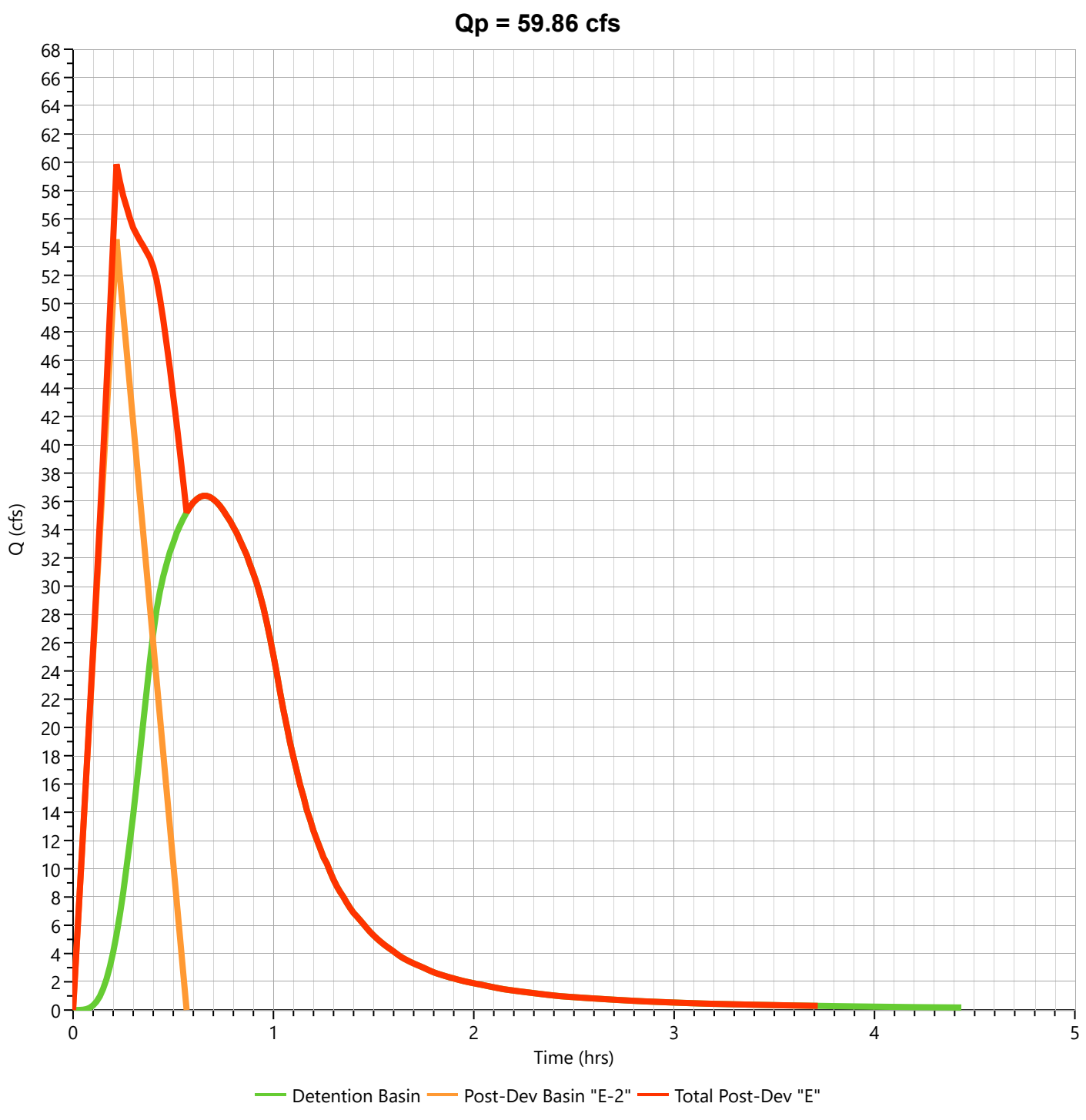
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 54.55 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Runoff Volume | = 56,801 cuft |
| Drainage Area | = 15.86 ac | Runoff Coeff. | = 0.56 |
| Tc Method | = TR55 (See Worksheet) | Time 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

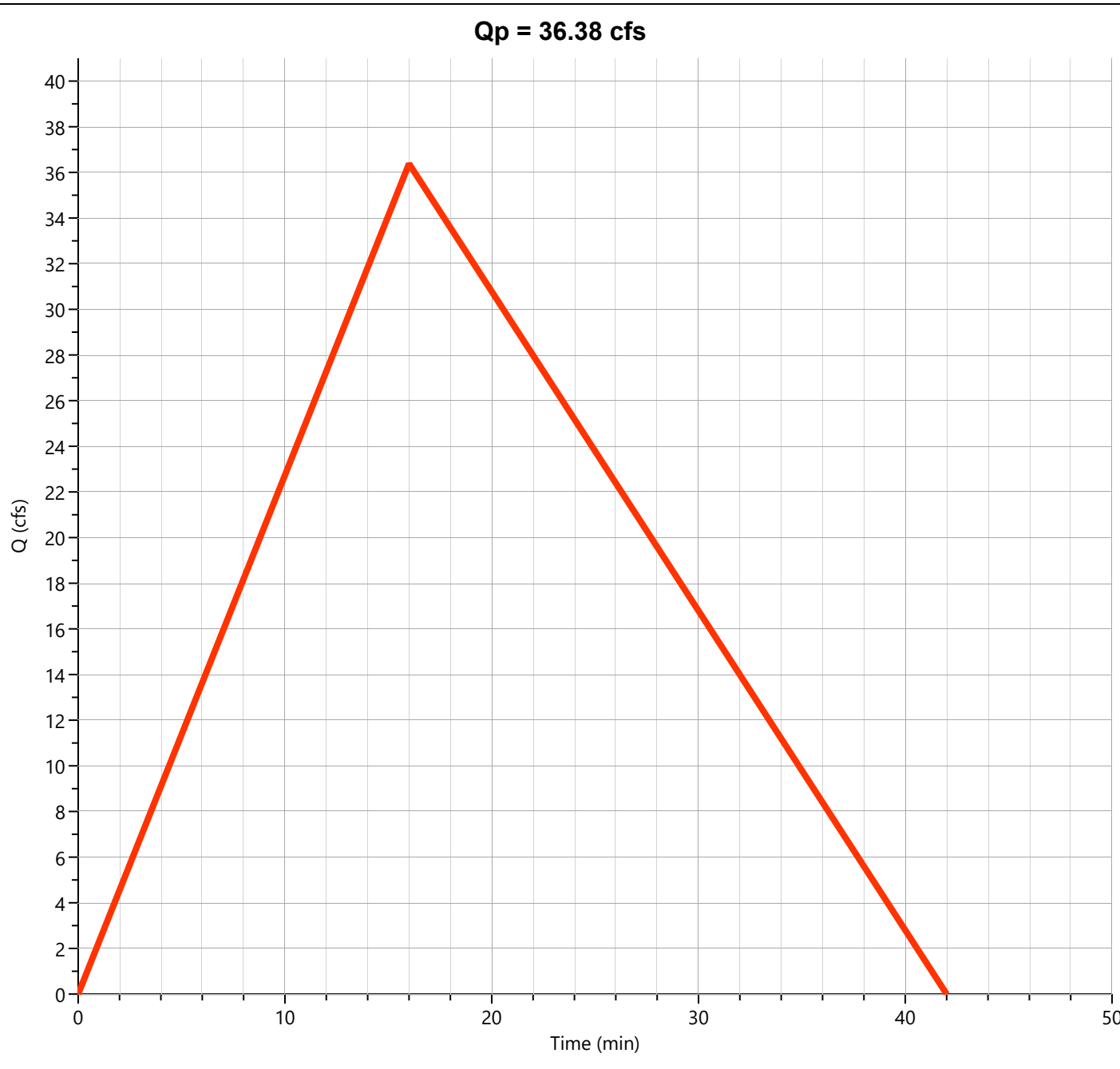
| | | | |
|---|---|---|---|
| Hydrograph Type | = Junction | Peak Flow | = 59.86 cfs |
| Storm Frequency | = 25-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 173,052 cuft |
| Inflow Hydrographs | = 15 | Total Contrib. Area | = 15.86 ac |



## 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:

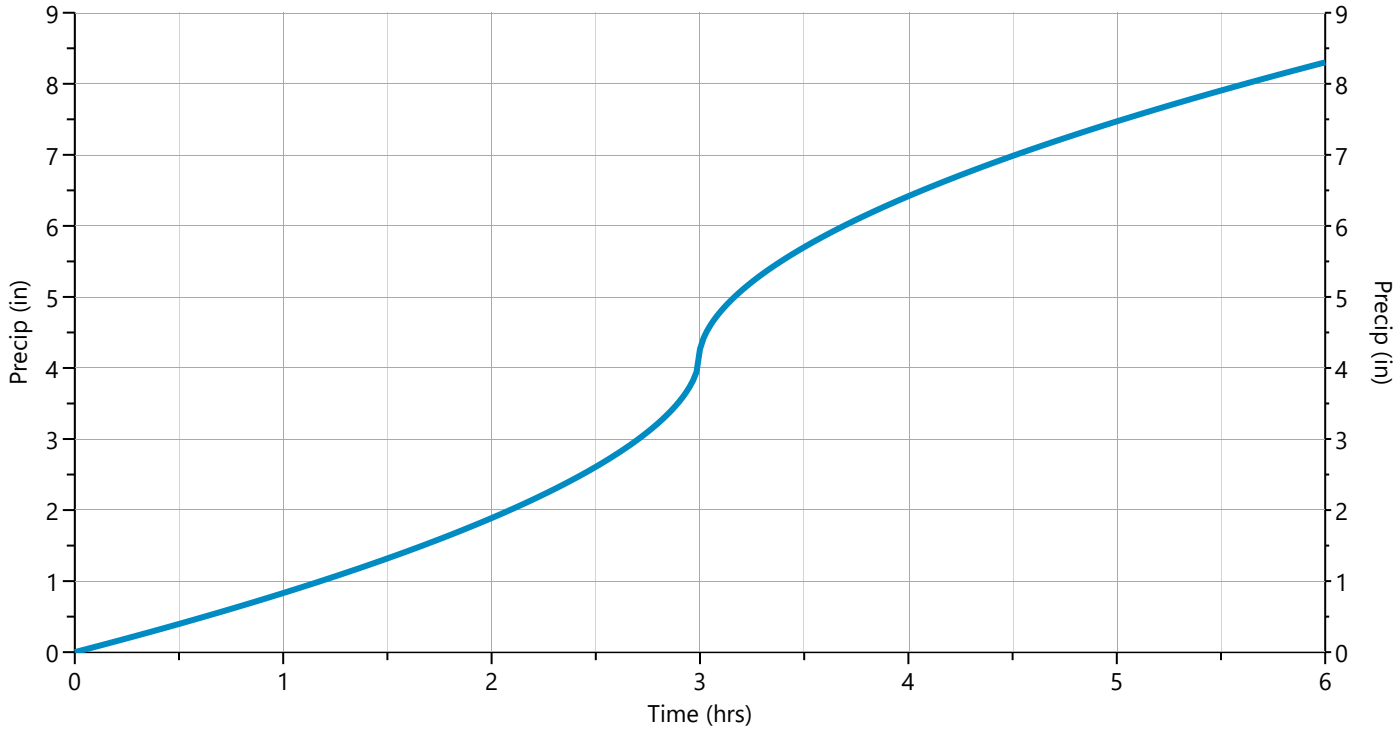
Hydrology Studio v 3.0.0.44

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

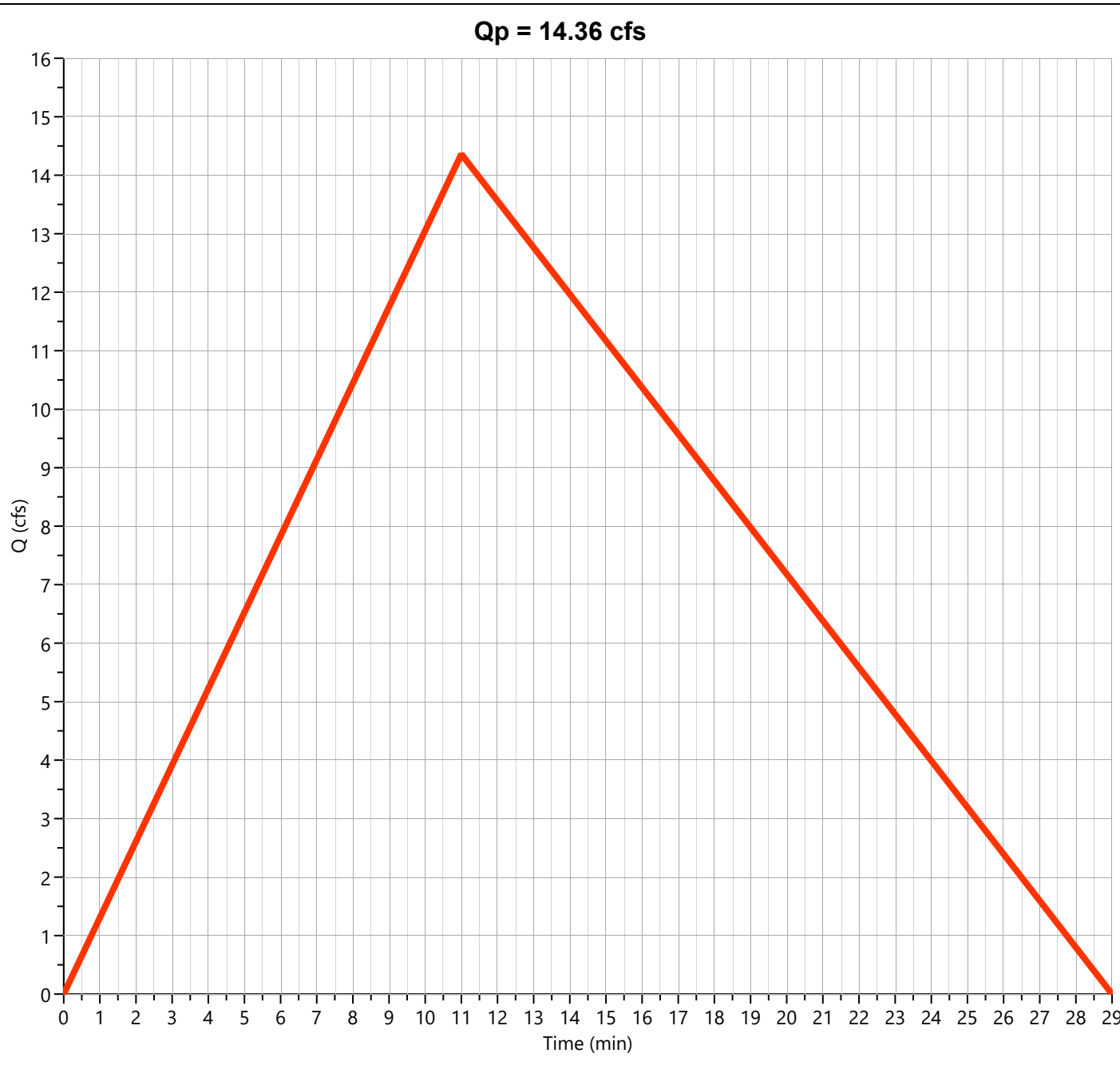
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

| 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

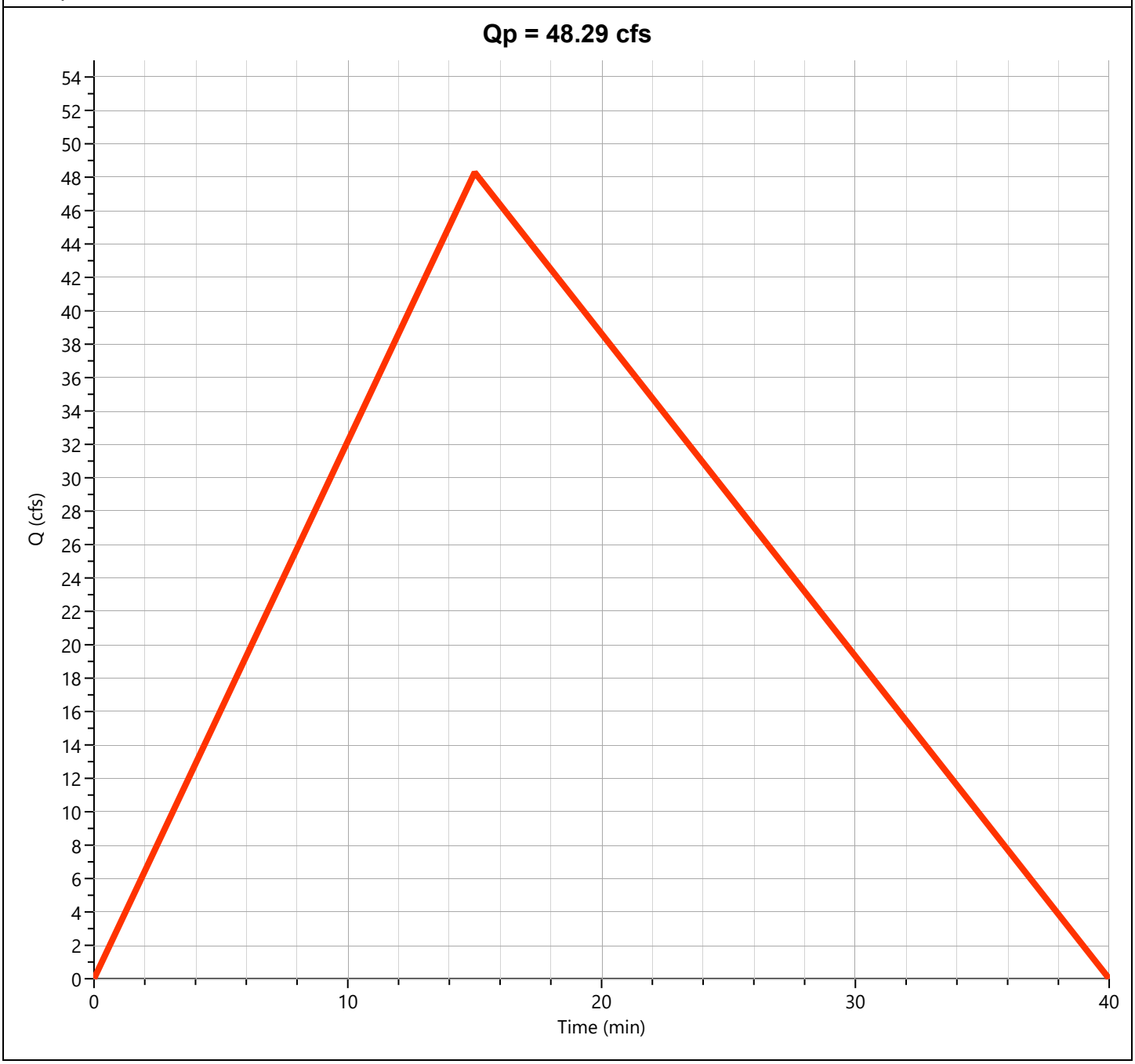
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 14.36 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 12,653 cuft |
| Drainage Area | = 3.2 ac | Runoff Coeff. | = 0.62 |
| Tc Method | = TR55 (See Worksheet) | Time 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

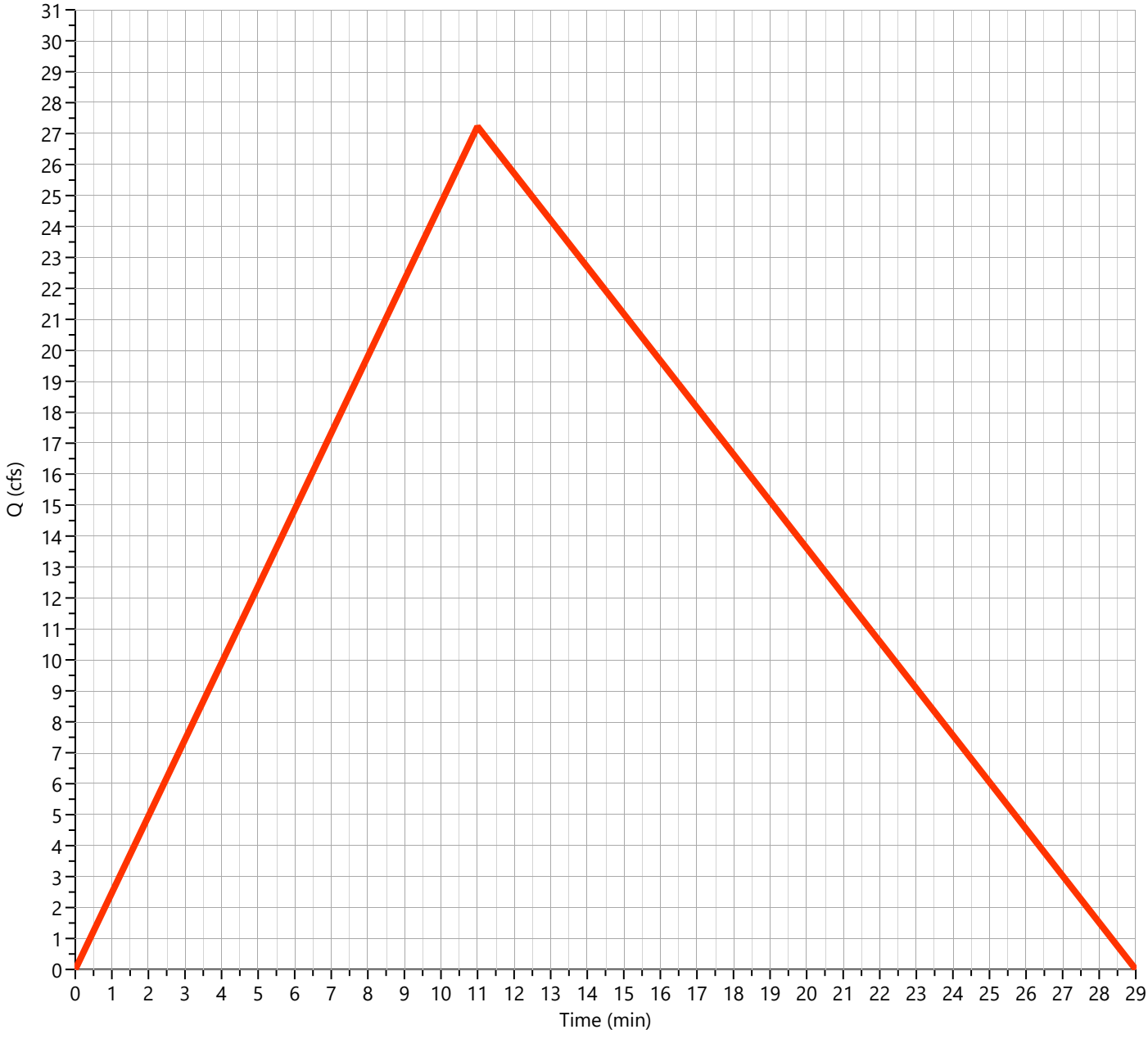
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 48.29 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.25 hrs |
| Time Interval | = 1 min | Runoff Volume | = 58,019 cuft |
| Drainage Area | = 14.74 ac | Runoff Coeff. | = 0.52 |
| Tc Method | = TR55 (See Worksheet) | Time 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

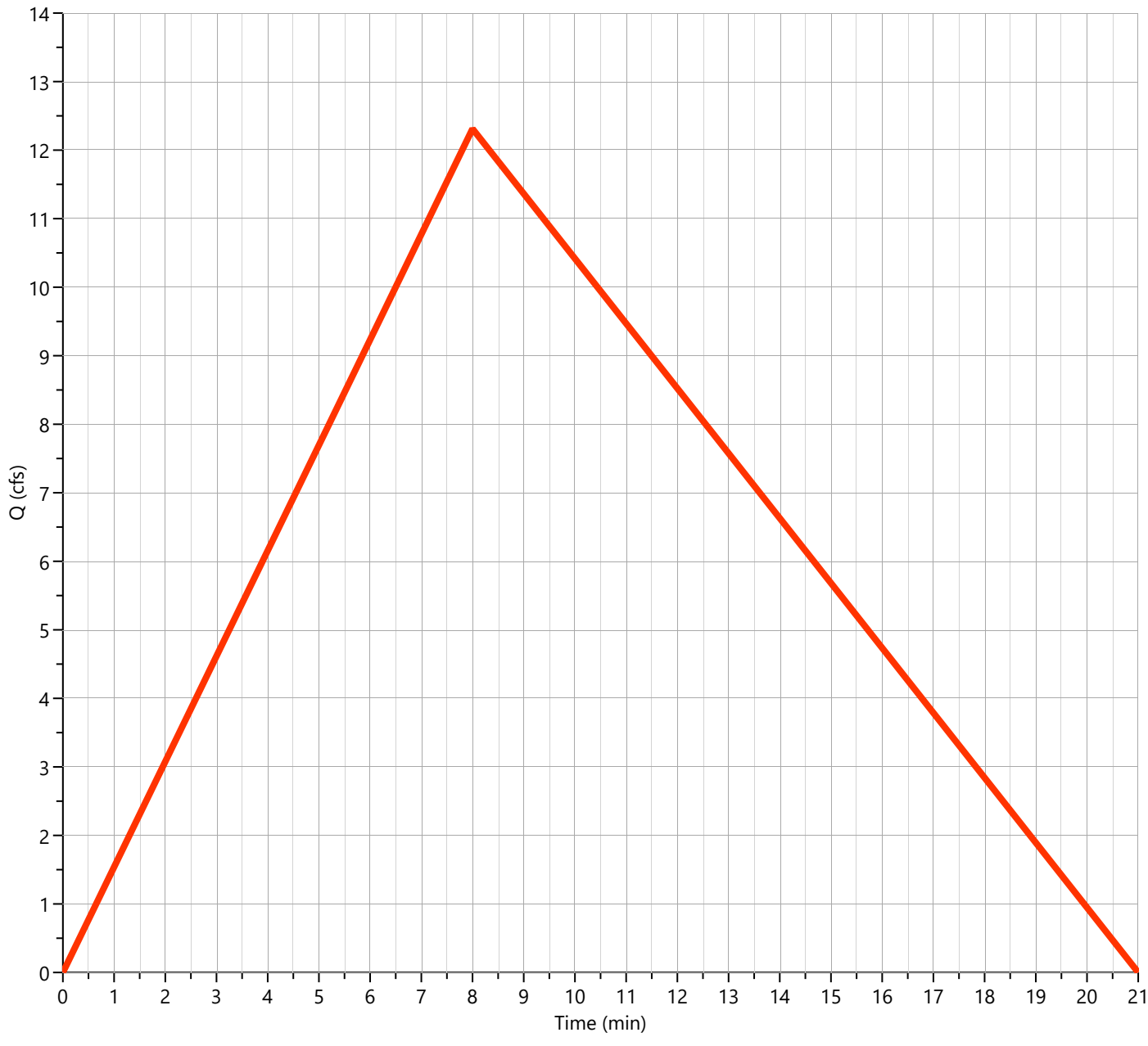
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 27.23 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 23,992 cuft |
| Drainage Area | = 6.84 ac | Runoff Coeff. | = 0.55 |
| Tc Method | = TR55 (See Worksheet) | Time 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

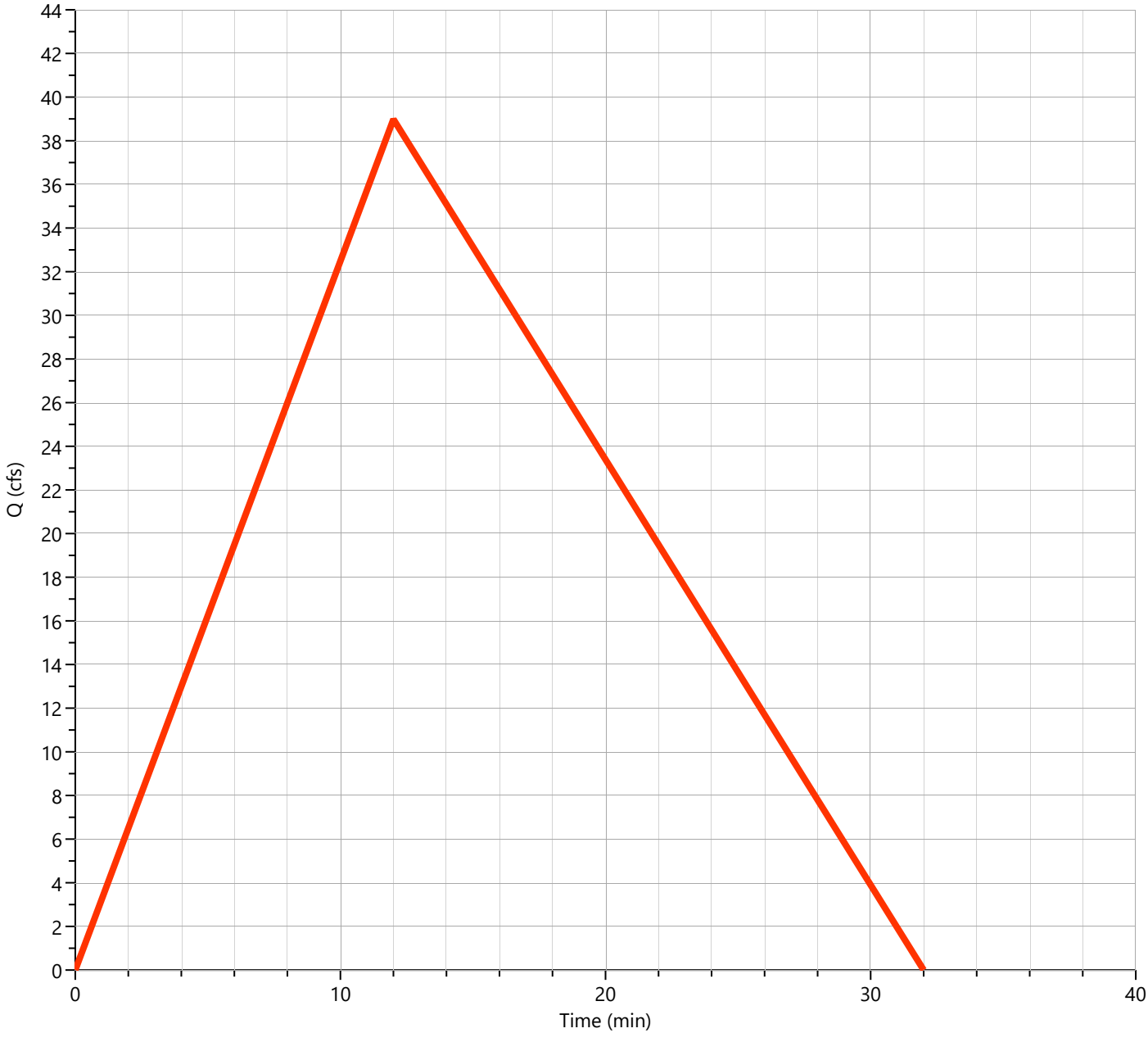
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 12.31 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.13 hrs |
| Time Interval | = 1 min | Runoff Volume | = 7,889 cuft |
| Drainage Area | = 2.95 ac | Runoff Coeff. | = 0.50 |
| Tc Method | = TR55 (See Worksheet) | Time 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

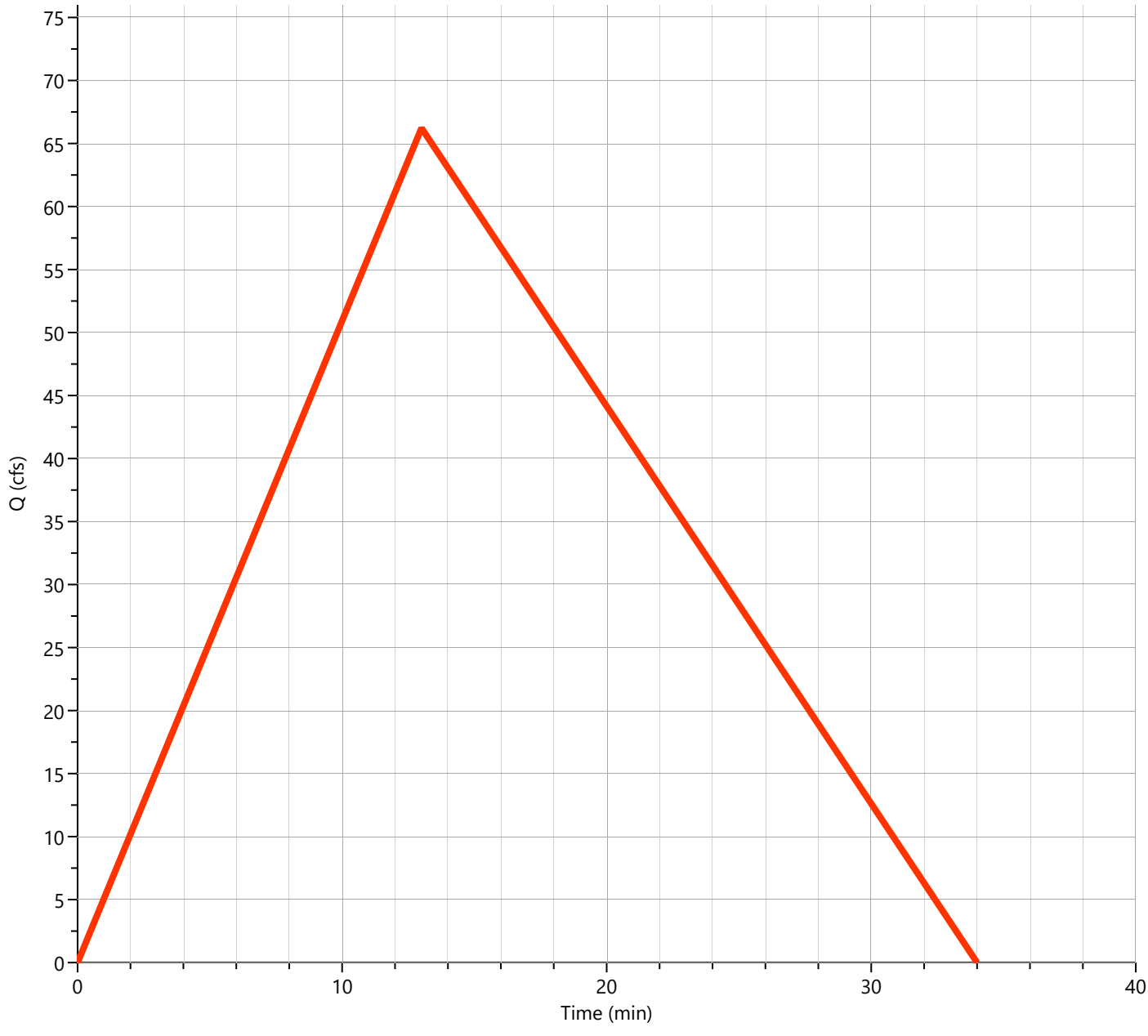
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 38.98 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.20 hrs |
| Time Interval | = 1 min | Runoff Volume | = 37,472 cuft |
| Drainage Area | = 11.2 ac | Runoff Coeff. | = 0.50 |
| Tc Method | = TR55 (See Worksheet) | Time 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

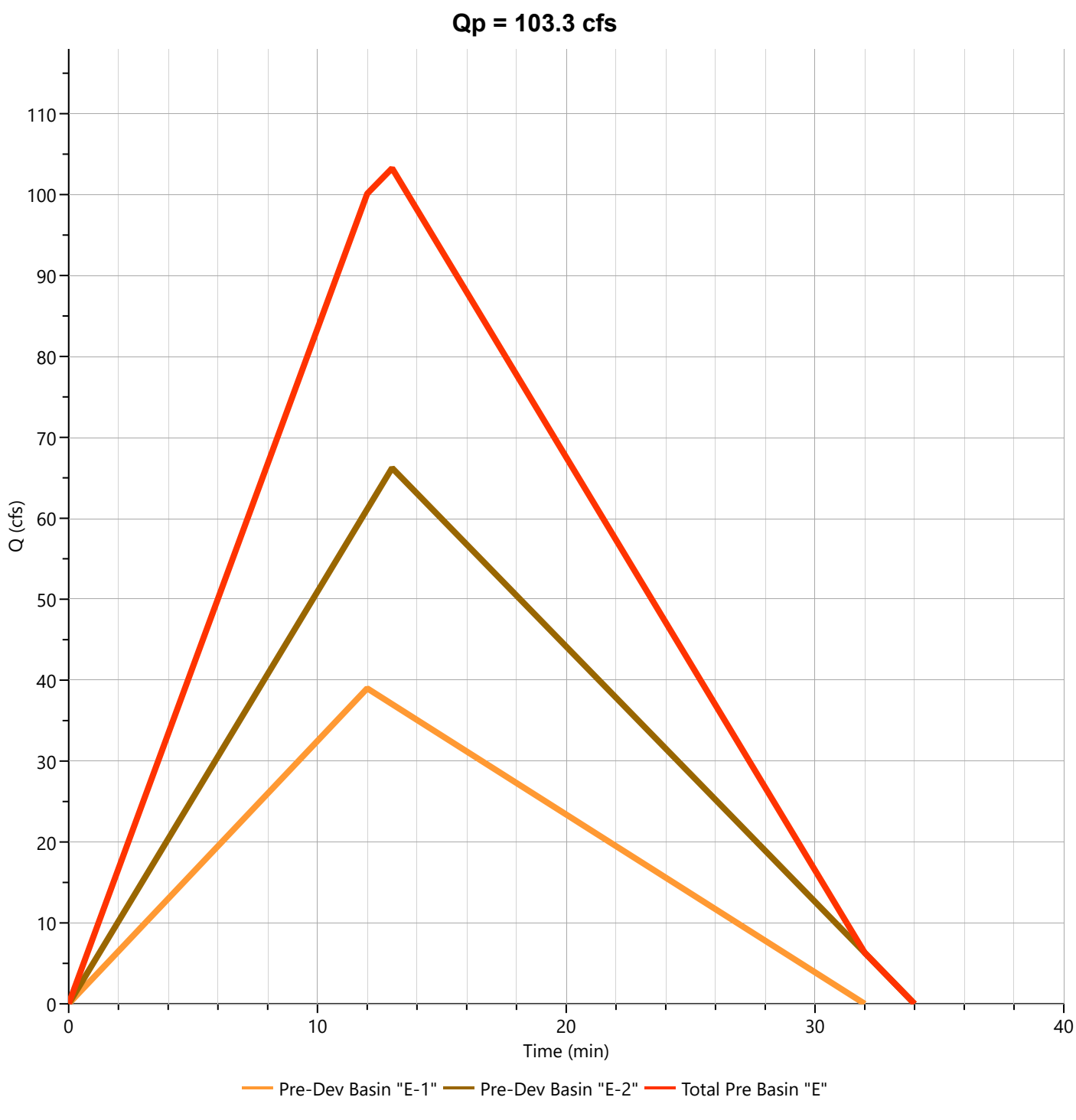
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 66.22 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Runoff Volume | = 68,955 cuft |
| Drainage Area | = 18.96 ac | Runoff Coeff. | = 0.52 |
| Tc Method | = TR55 (See Worksheet) | Time 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

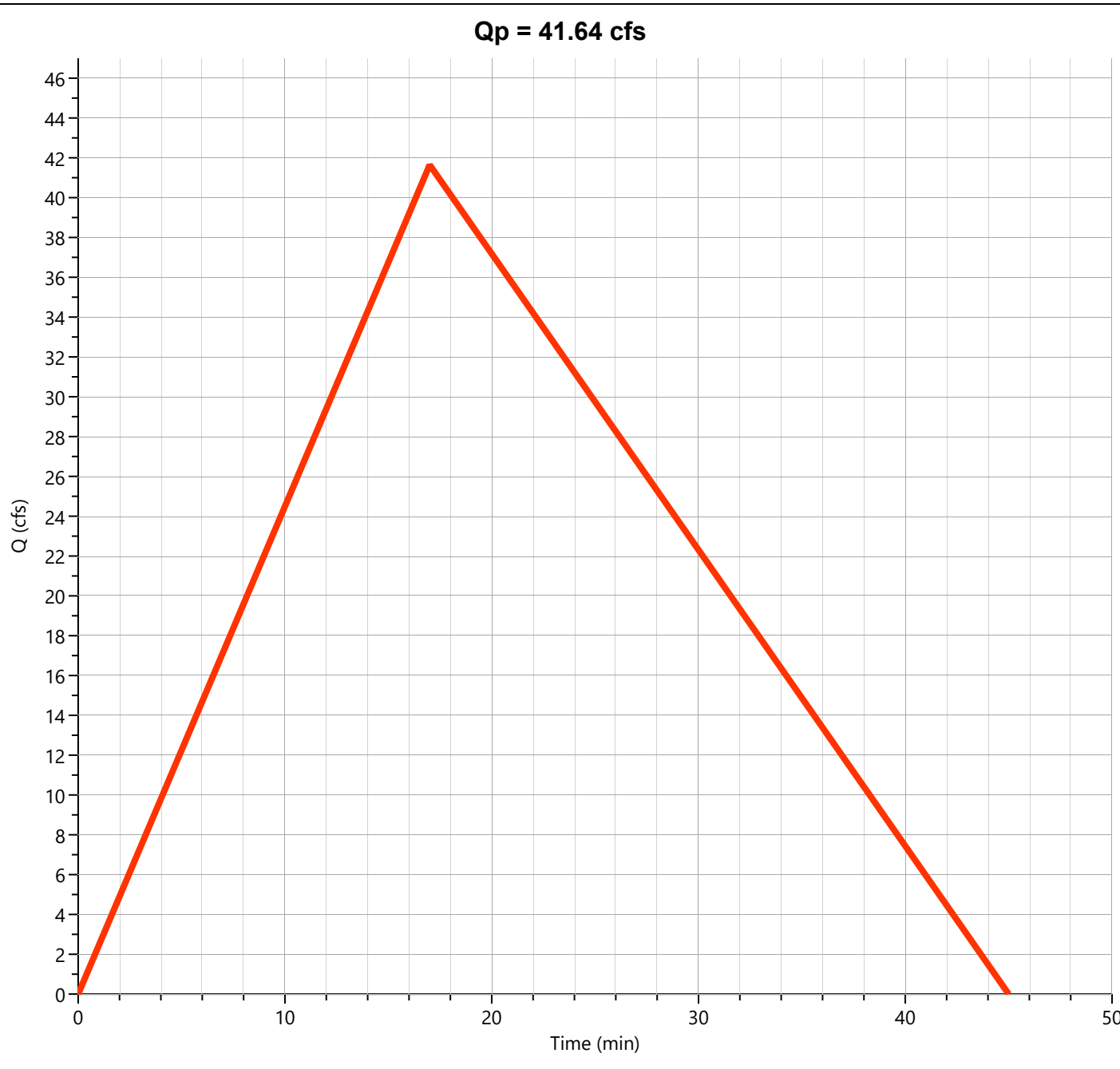
| | | | |
|---|---|---|---|
| Hydrograph Type | = Junction | Peak Flow | = 103.3 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 104,970 cuft |
| Inflow Hydrographs | = 5, 6 | Total Contrib. Area | = 30.16 ac |



## Pre-Dev Basin "F"

## Hyd. No. 8

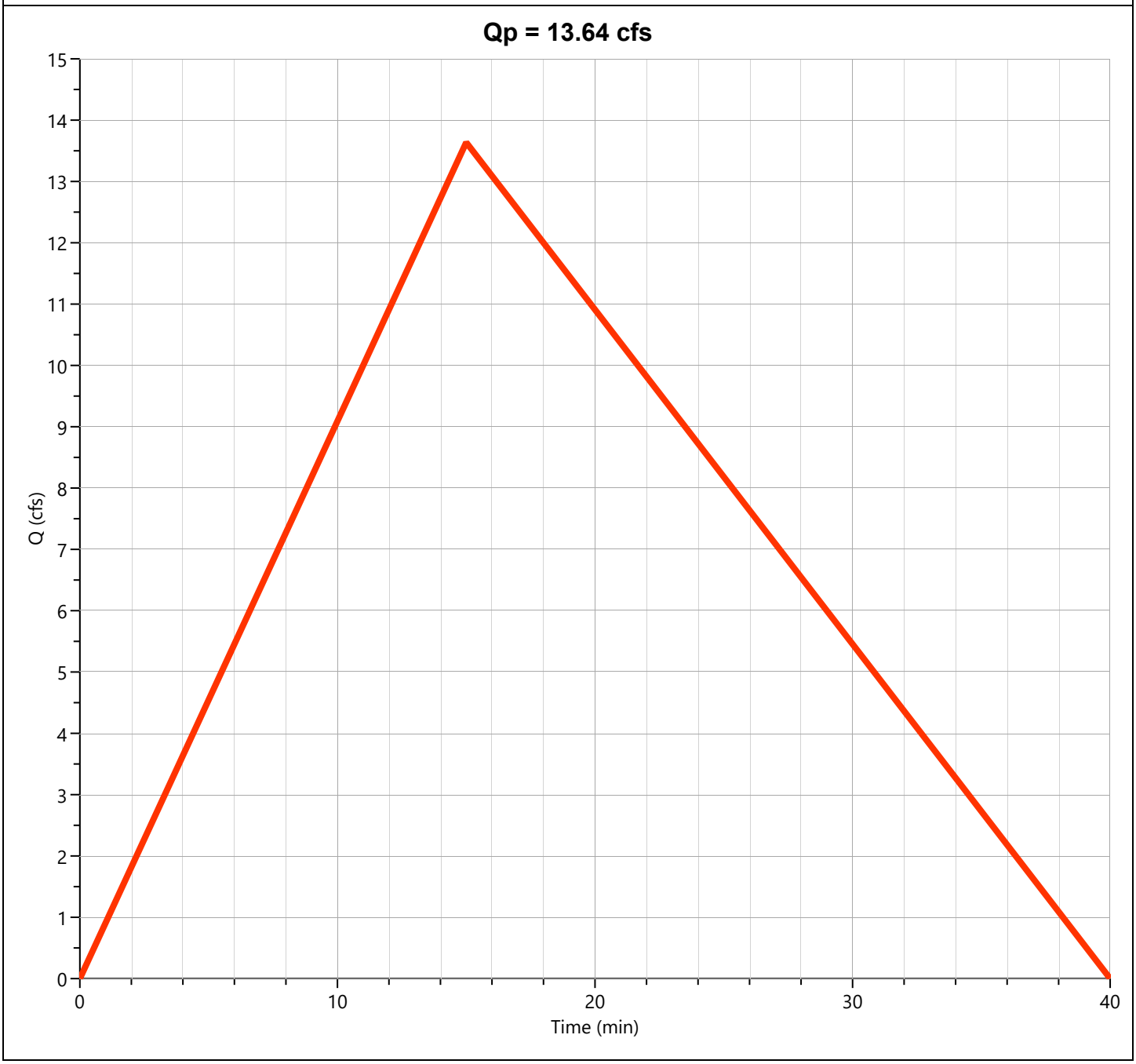
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 41.64 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.28 hrs |
| Time Interval | = 1 min | Runoff Volume | = 56,705 cuft |
| Drainage Area | = 13.19 ac | Runoff Coeff. | = 0.53 |
| Tc Method | = TR55 (See Worksheet) | Time 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

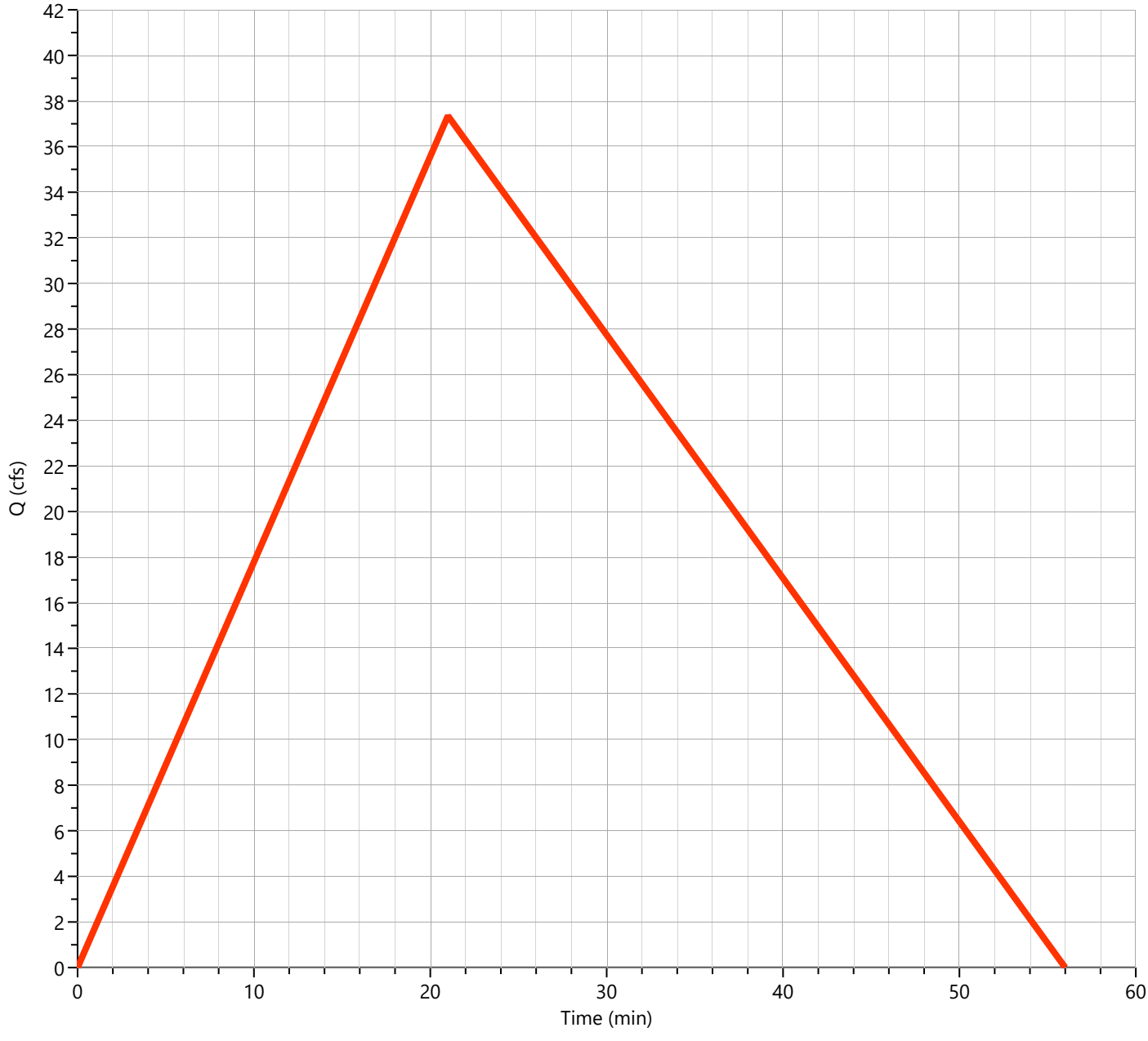
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 13.64 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.25 hrs |
| Time Interval | = 1 min | Runoff Volume | = 16,384 cuft |
| Drainage Area | = 3.33 ac | Runoff Coeff. | = 0.65 |
| Tc Method | = TR55 (See Worksheet) | Time 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

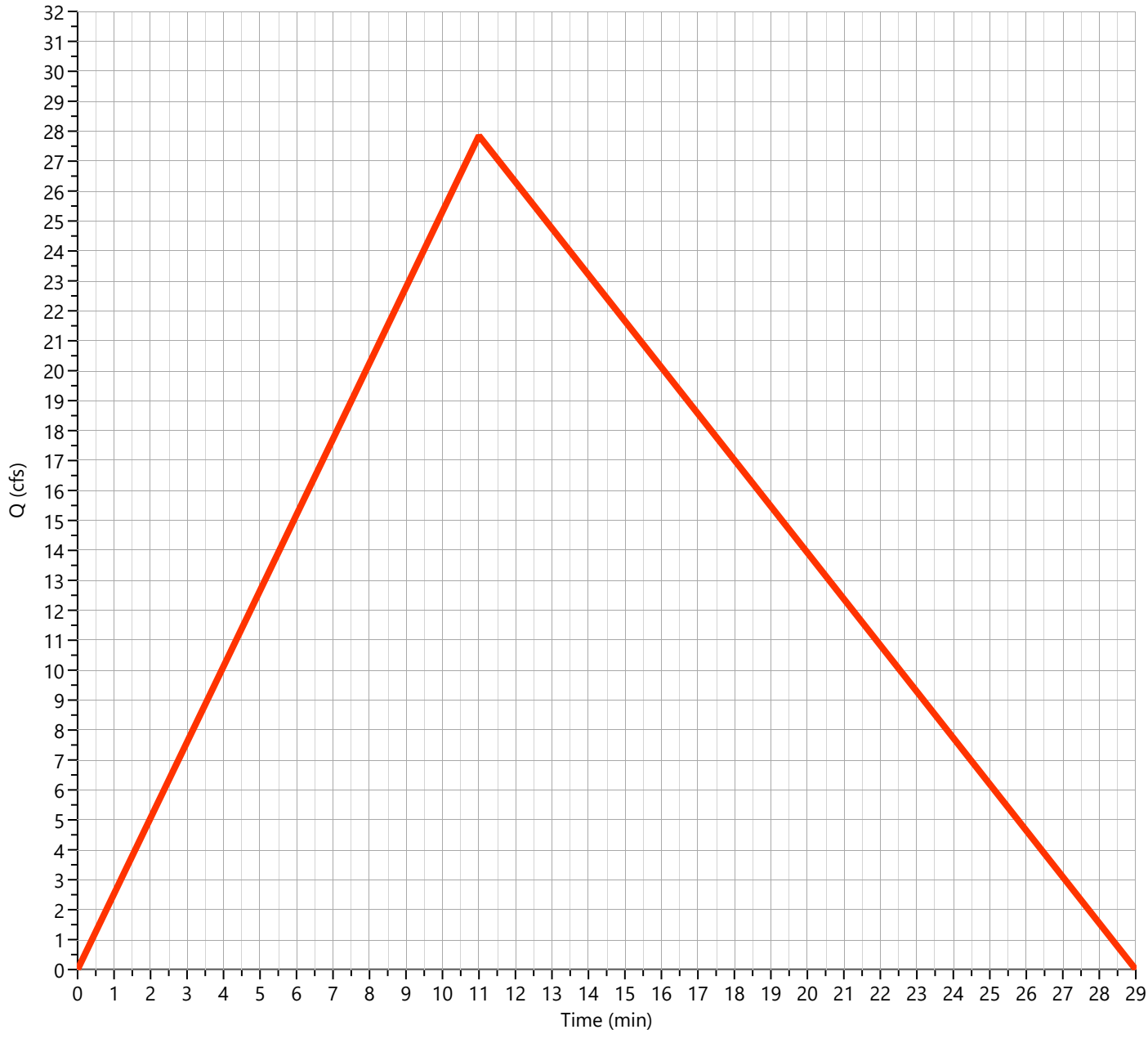
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 37.35 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.35 hrs |
| Time Interval | = 1 min | Runoff Volume | = 62,823 cuft |
| Drainage Area | = 12.53 ac | Runoff Coeff. | = 0.55 |
| Tc Method | = TR55 (See Worksheet) | Time 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

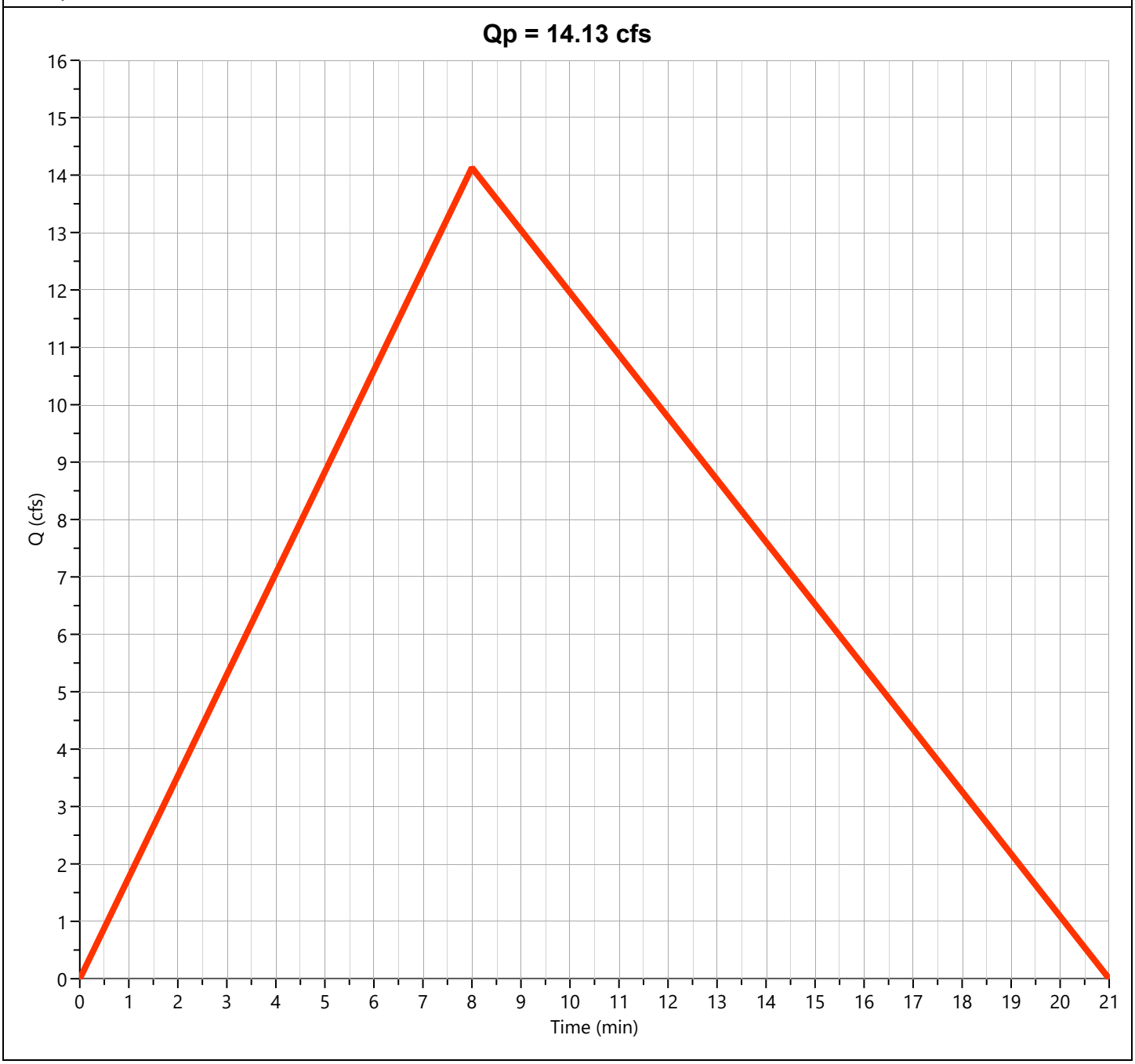
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 27.85 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 24,537 cuft |
| Drainage Area | = 6.75 ac | Runoff Coeff. | = 0.57 |
| Tc Method | = TR55 (See Worksheet) | Time 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

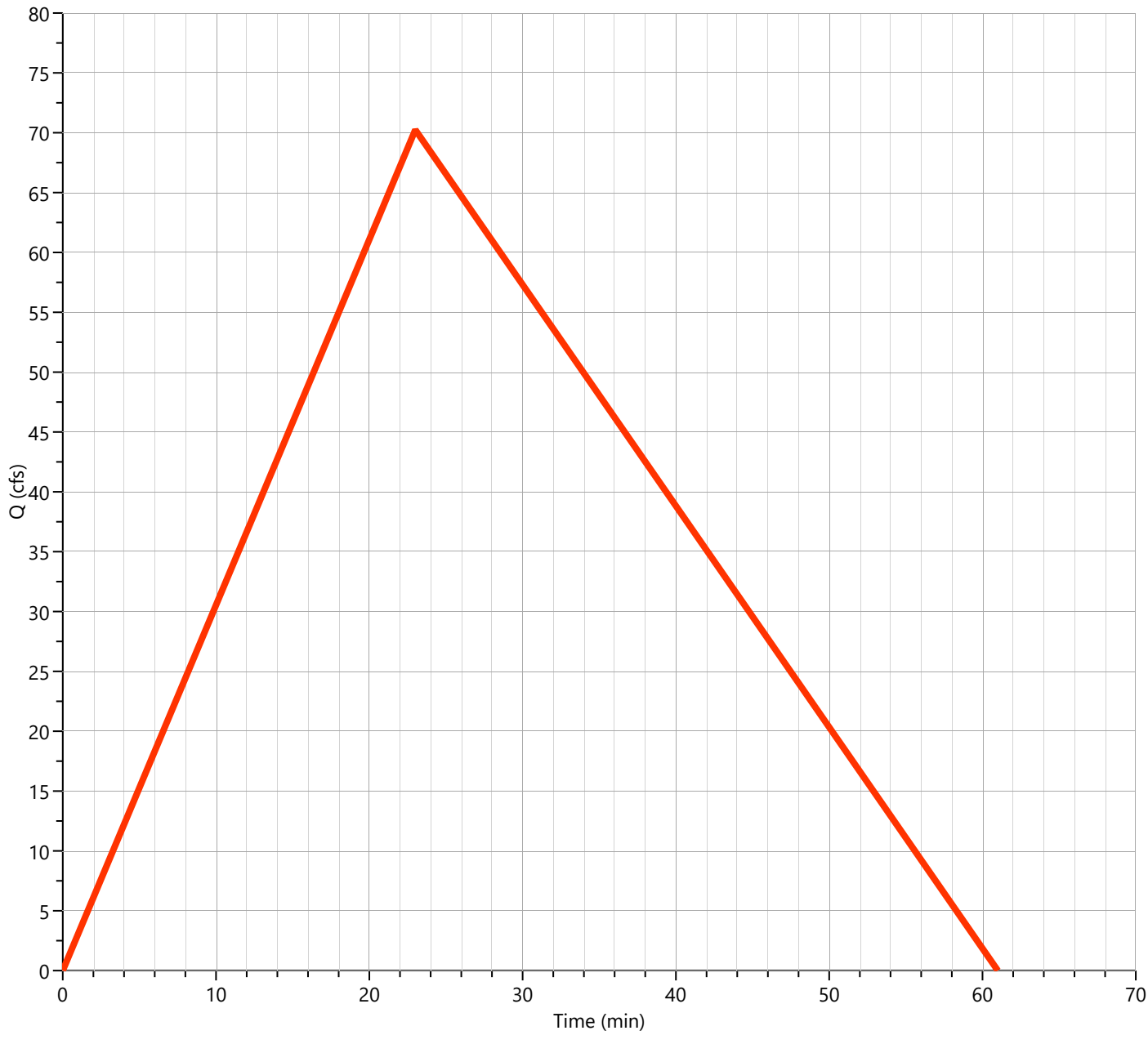
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 14.13 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.13 hrs |
| Time Interval | = 1 min | Runoff Volume | = 9,054 cuft |
| Drainage Area | = 2.97 ac | Runoff Coeff. | = 0.57 |
| Tc Method | = TR55 (See Worksheet) | Time 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 |



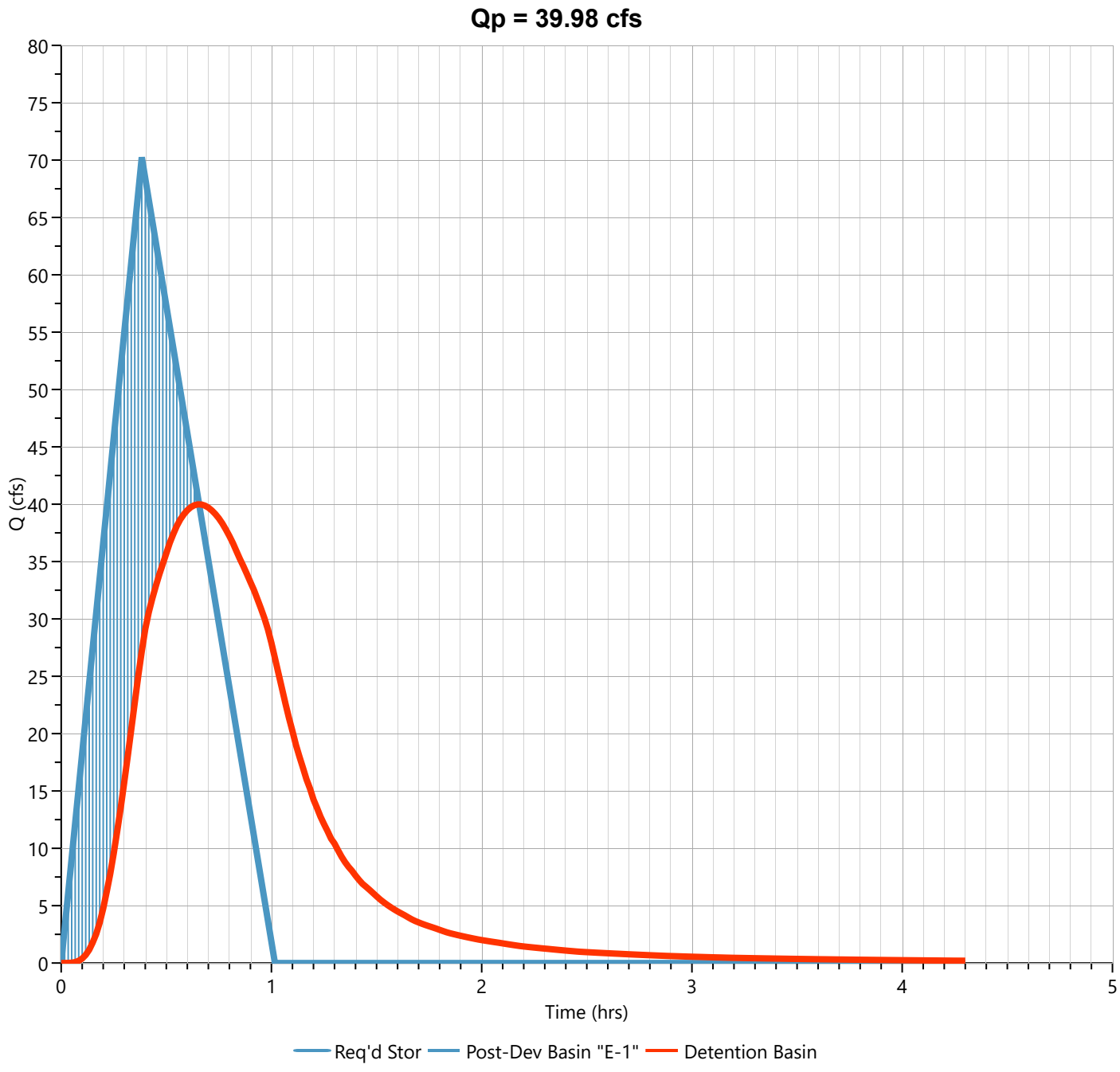
## Detention Basin

## 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*

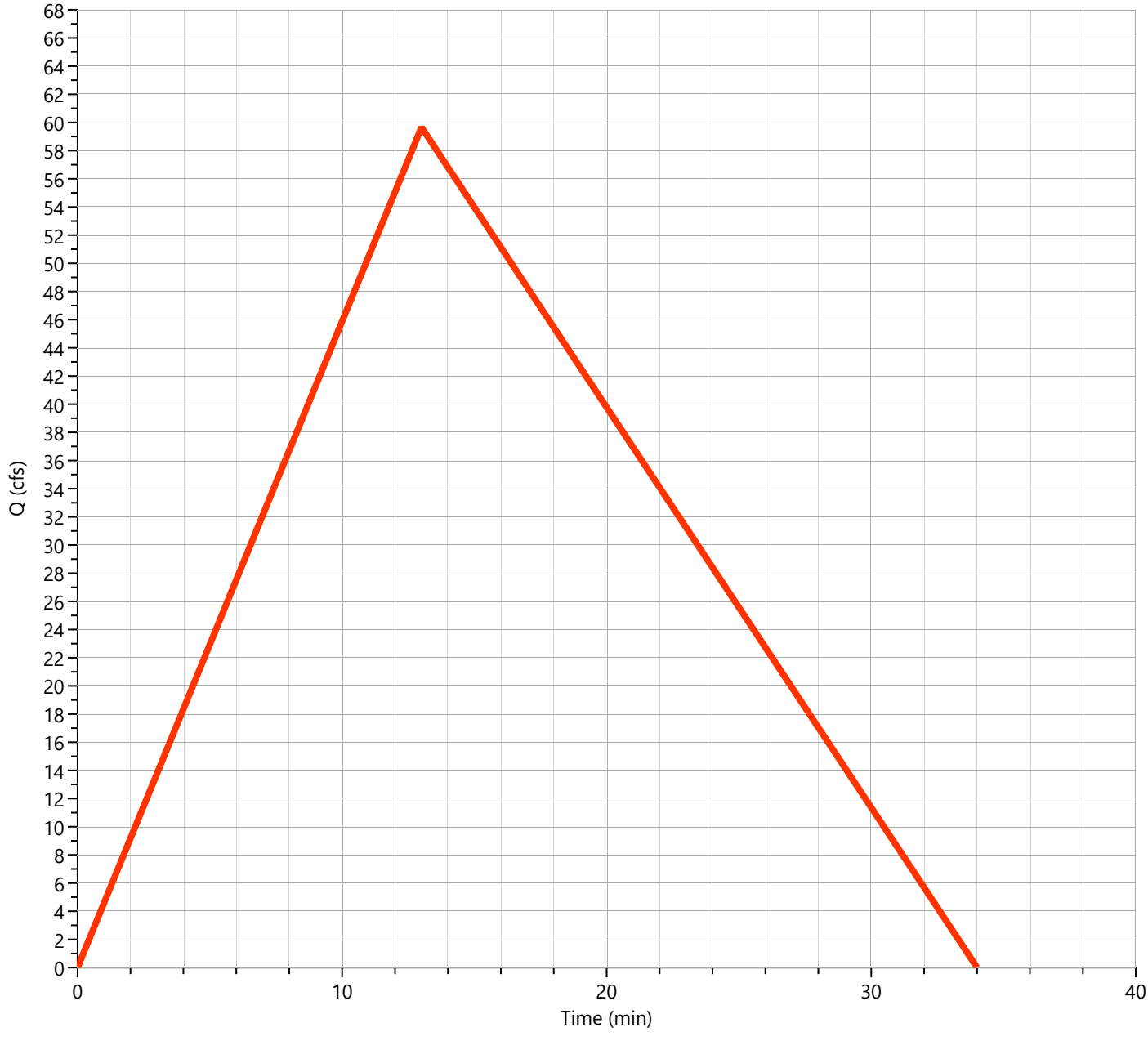
*Center of mass detention time = 24 min*



## Post-Dev Basin "E-2"

## Hyd. No. 15

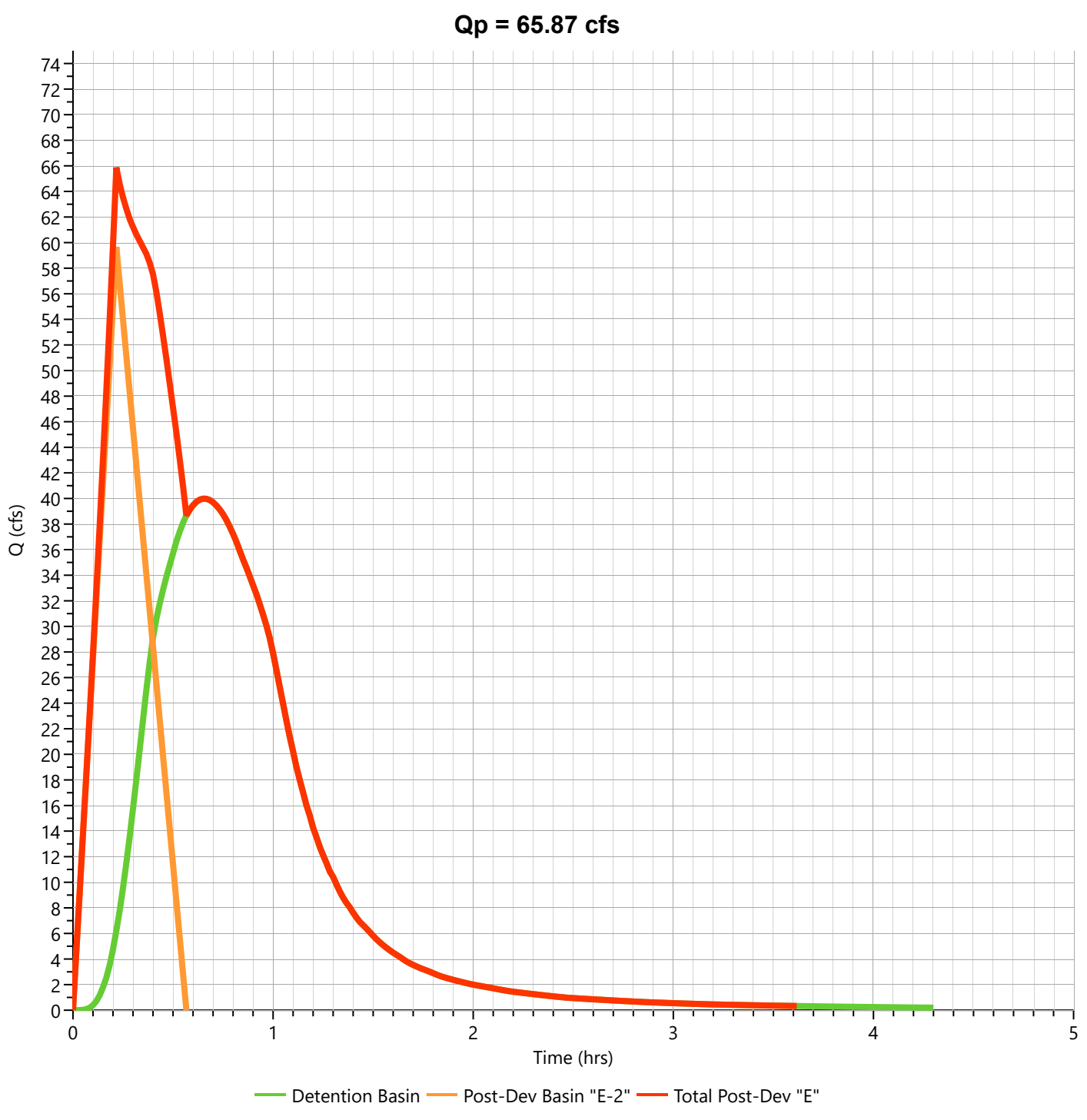
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 59.65 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Runoff Volume | = 62,118 cuft |
| Drainage Area | = 15.86 ac | Runoff Coeff. | = 0.56 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 13.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 6.72 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Total Post-Dev "E"

## Hyd. No. 16

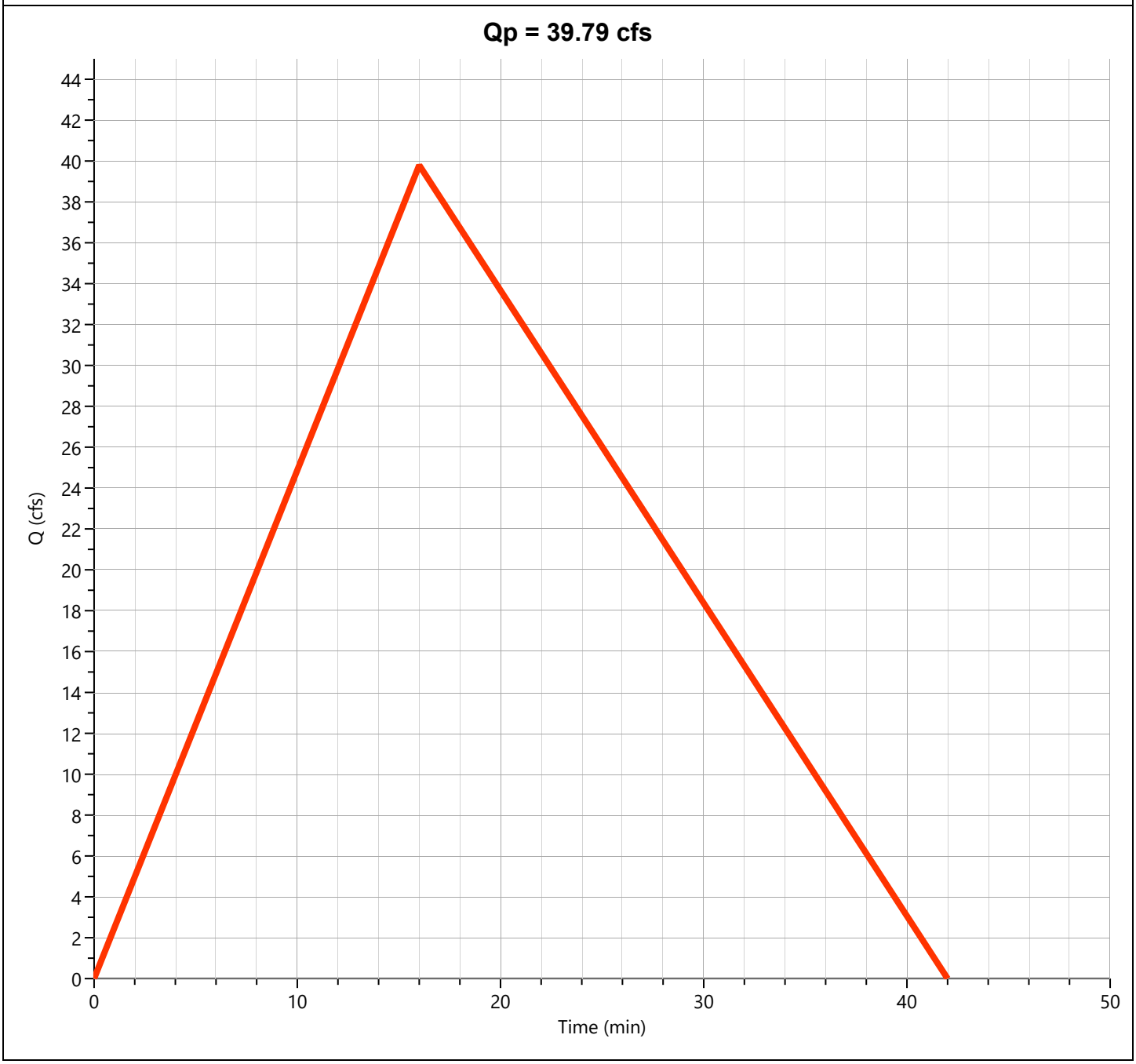
| | | | |
|---|---|---|---|
| Hydrograph Type | = Junction | Peak Flow | = 65.87 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 189,350 cuft |
| Inflow Hydrographs | = 15 | Total Contrib. Area | = 15.86 ac |



## Post-Dev Basin "F"

## Hyd. No. 17

| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 39.79 cfs |
| Storm Frequency | = 50-yr | Time to Peak | = 0.27 hrs |
| Time Interval | = 1 min | Runoff Volume | = 51,000 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 | = 6.12 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



# Design Storm Report

Custom Storm filename:

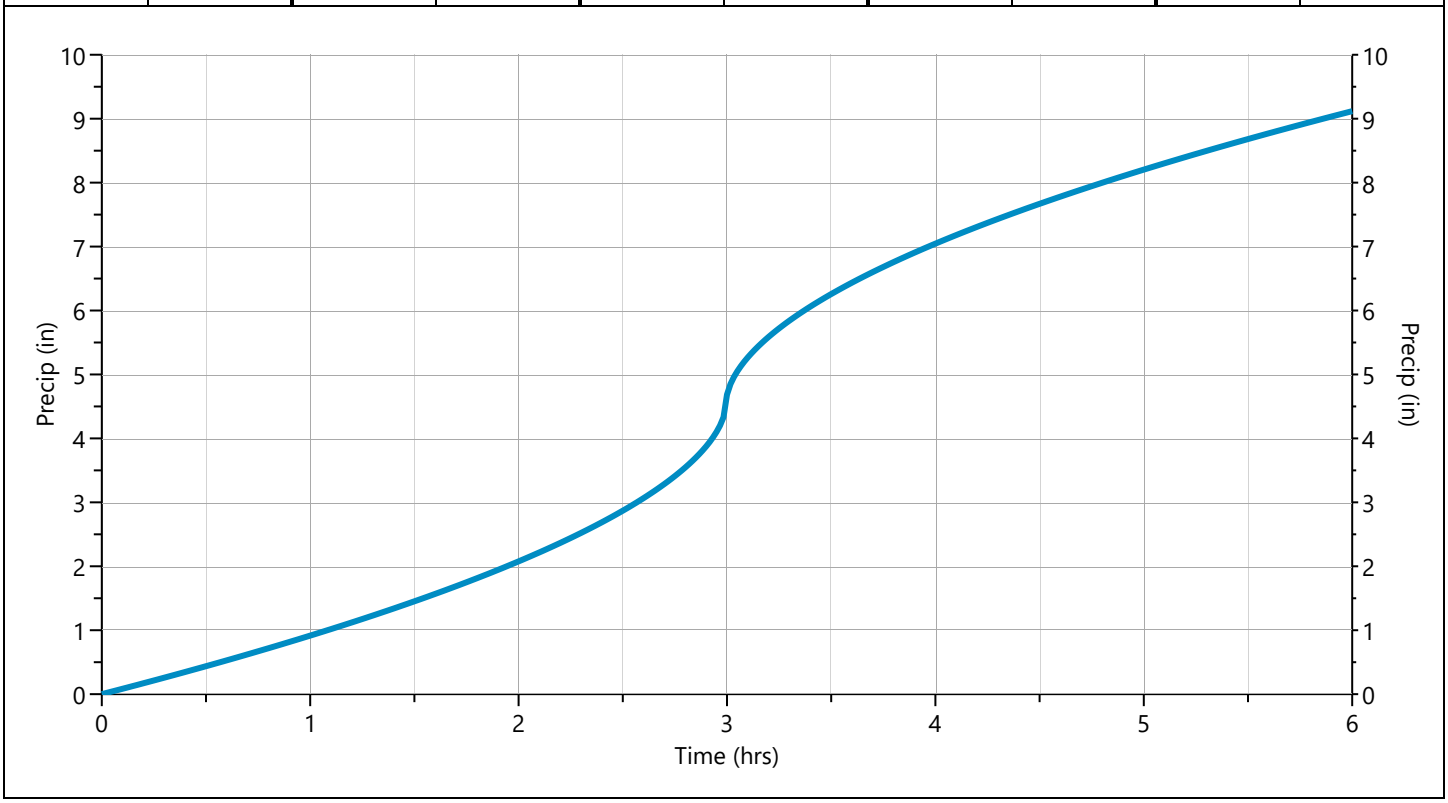
Hydrology Studio v 3.0.0.44

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, 50-yr | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) |
| 2.50 | 0.031084 | 2.68 | 0.038052 | 2.87 | 0.055600 | 3.05 | 0.090973 | 3.23 | 0.044236 |
| 2.52 | 0.031555 | 2.70 | 0.038971 | 2.88 | 0.058911 | 3.07 | 0.079152 | 3.25 | 0.042868 |
| 2.53 | 0.032050 | 2.72 | 0.039967 | 2.90 | 0.062959 | 3.08 | 0.071194 | 3.27 | 0.041628 |
| 2.55 | 0.032572 | 2.73 | 0.041049 | 2.92 | 0.068072 | 3.10 | 0.065354 | 3.28 | 0.040496 |
| 2.57 | 0.033121 | 2.75 | 0.042233 | 2.93 | 0.074833 | 3.12 | 0.060826 | 3.30 | 0.039459 |
| 2.58 | 0.033702 | 2.77 | 0.043534 | 2.95 | 0.084399 | 3.13 | 0.057178 | 3.32 | 0.038503 |
| 2.60 | 0.034317 | 2.78 | 0.044976 | 2.97 | 0.099564 | 3.15 | 0.054154 | 3.33 | 0.037618 |
| 2.62 | 0.034970 | 2.80 | 0.046583 | 2.98 | 0.129912 | 3.17 | 0.051594 | 3.35 | 0.036796 |
| 2.63 | 0.035664 | 2.82 | 0.048393 | **3.00** | **0.352737** | 3.18 | 0.049387 | 3.37 | 0.036029 |
| 2.65 | 0.036406 | 2.83 | 0.050452 | 3.02 | 0.164608 | 3.20 | 0.047460 | 3.38 | 0.035311 |
| 2.67 | 0.037200 | 2.85 | 0.052824 | 3.03 | 0.111512 | 3.22 | 0.045756 | 3.40 | 0.034638 |



# Hydrograph 100-yr Summary

Hydrology Studio v 3.0.0.44

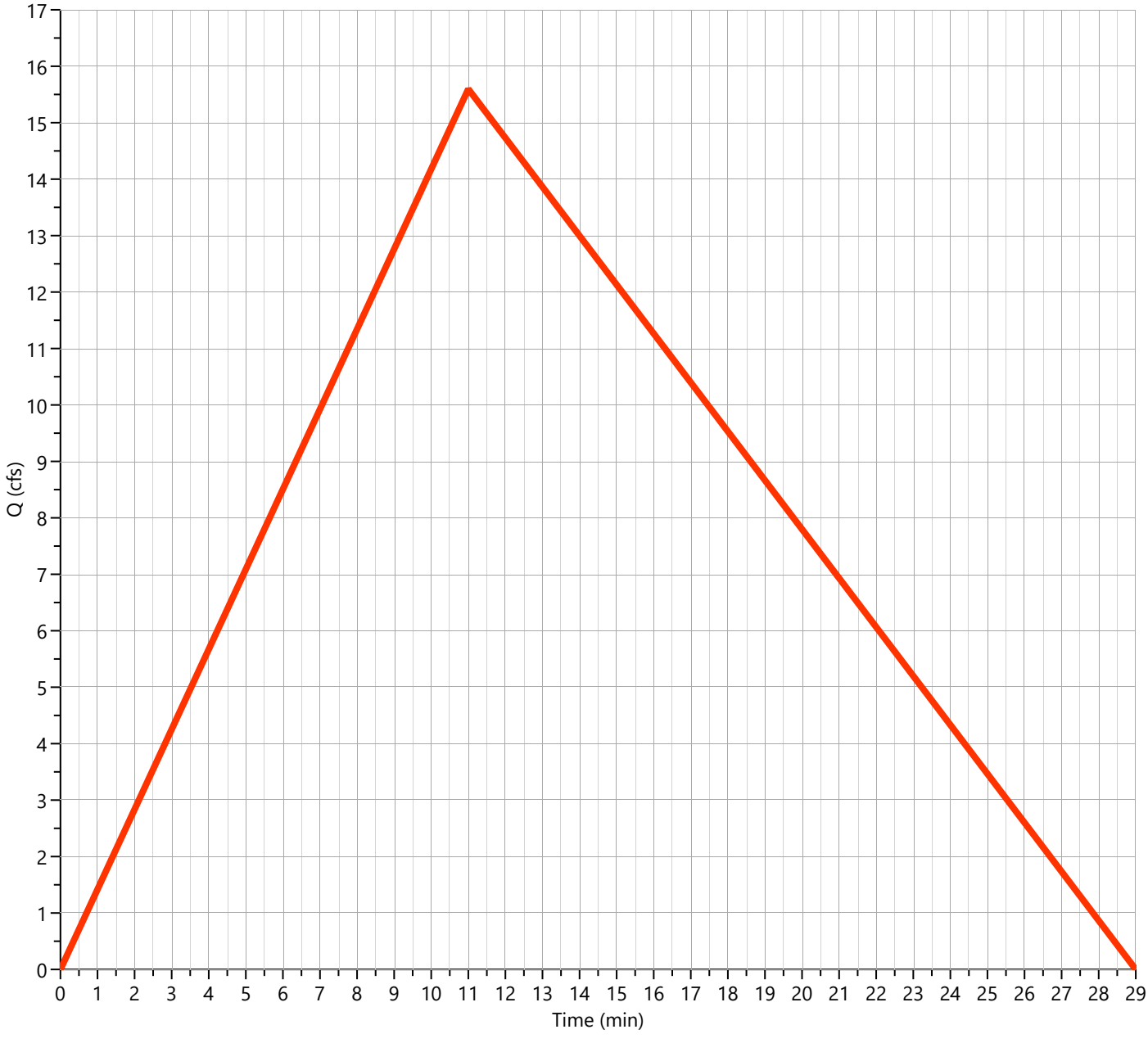
Project Name: Hilltop Subdivision
File: Detention Calculation 9-25-26.hys
09-25-2026

| 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" | 15.60 | 0.18 | 13,742 | ---- | | |
| 2 | Rational | Pre-Dev Basin "B" | 52.42 | 0.25 | 62,983 | ---- | | |
| 3 | Rational | Pre-Dev Basin "C" | 29.57 | 0.18 | 26,057 | ---- | | |
| 4 | Rational | Pre-Dev Basin "D" | 13.38 | 0.13 | 8,572 | ---- | | |
| 5 | Rational | Pre-Dev Basin "E-1" | 42.33 | 0.20 | 40,692 | ---- | | |
| 6 | Rational | Pre-Dev Basin "E-2" | 71.90 | 0.22 | 74,872 | ---- | | |
| 7 | Junction | Total Pre Basin "E" | 112.1 | 0.22 | 113,981 | 5, 6 | | |
| 8 | Rational | Pre-Dev Basin "F" | 45.20 | 0.28 | 61,545 | ---- | | |
| 9 | Rational | Post-Dev Basin A | 14.80 | 0.25 | 17,786 | ---- | | |
| 10 | Rational | Post-Dev Basin B | 40.52 | 0.35 | 68,164 | ---- | | |
| 11 | Rational | Post-Dev Basin "C" | 30.24 | 0.18 | 26,649 | ---- | | |
| 12 | Rational | Post-Dev Basin "D" | 15.35 | 0.13 | 9,838 | ---- | | |
| 13 | Rational | Post-Dev Basin "E-1" | 76.20 | 0.38 | 140,392 | ---- | | |
| 14 | Pond Route | Detention Basin | 44.60 | 0.65 | 139,410 | 13 | 472.25 | 60,924 |
| 15 | Rational | Post-Dev Basin "E-2" | 64.77 | 0.22 | 67,448 | ---- | | |
| 16 | Junction | Total Post-Dev "E" | 71.78 | 0.22 | 205,478 | 14, 15 | | |
| 17 | Rational | Post-Dev Basin "F" | 43.19 | 0.27 | 55,359 | ---- | | |

## Pre-Dev Basin "A"

## Hyd. No. 1

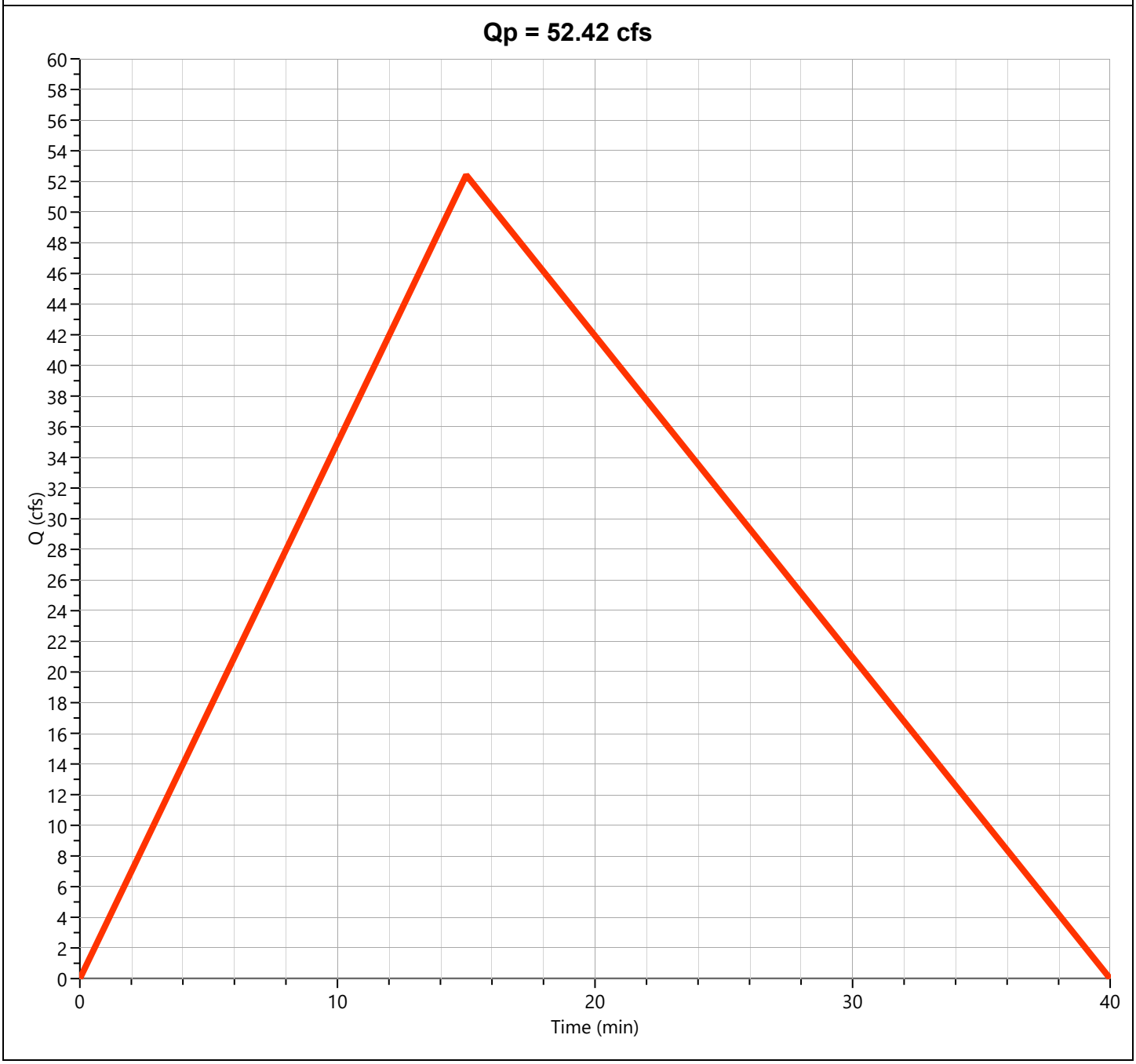
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 15.60 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 13,742 cuft |
| Drainage Area | = 3.2 ac | Runoff Coeff. | = 0.62 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 11.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 7.86 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Pre-Dev Basin "B"

## Hyd. No. 2

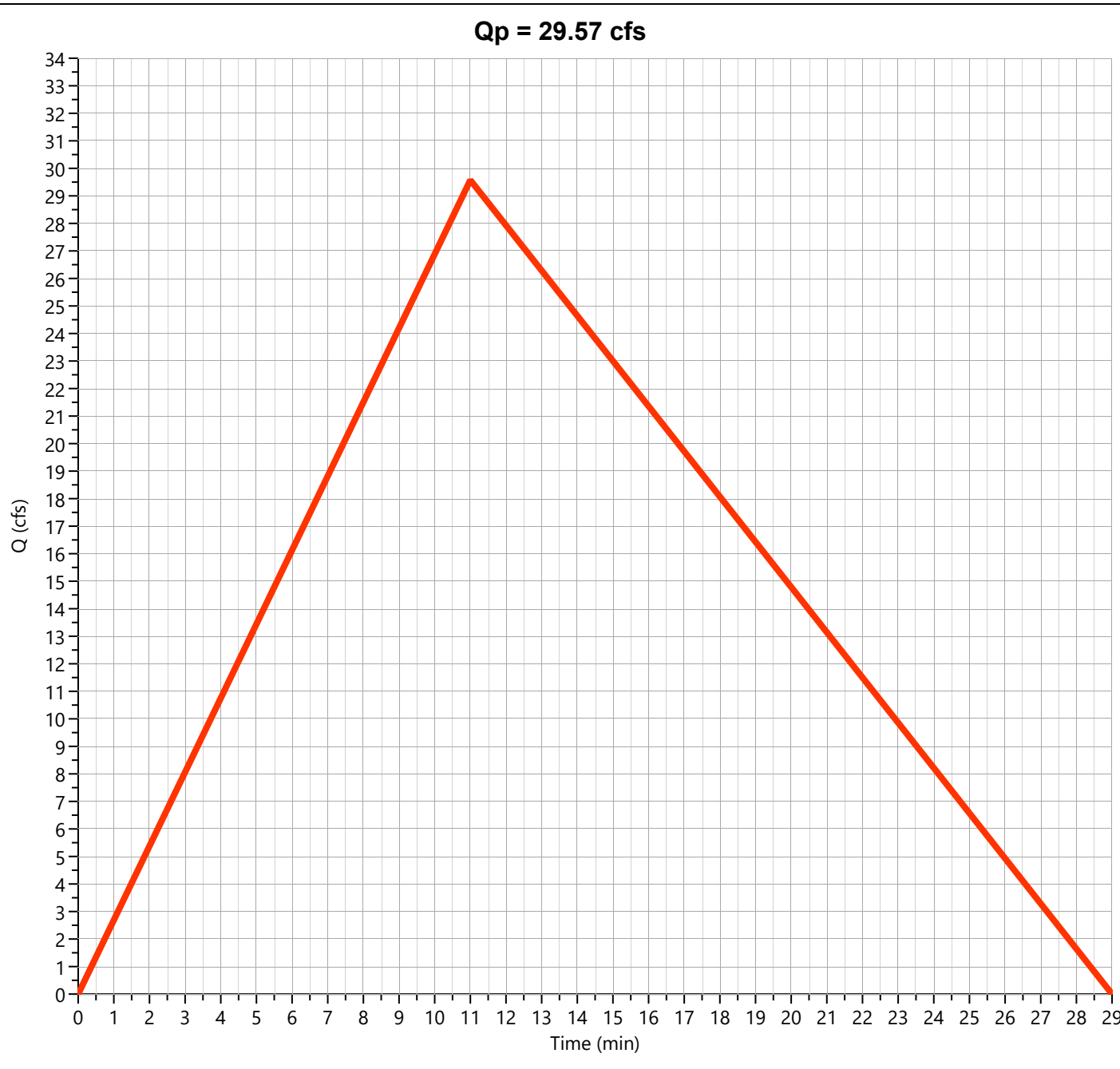
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 52.42 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.25 hrs |
| Time Interval | = 1 min | Runoff Volume | = 62,983 cuft |
| Drainage Area | = 14.74 ac | Runoff Coeff. | = 0.52 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 15.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 6.84 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Pre-Dev Basin "C"

## Hyd. No. 3

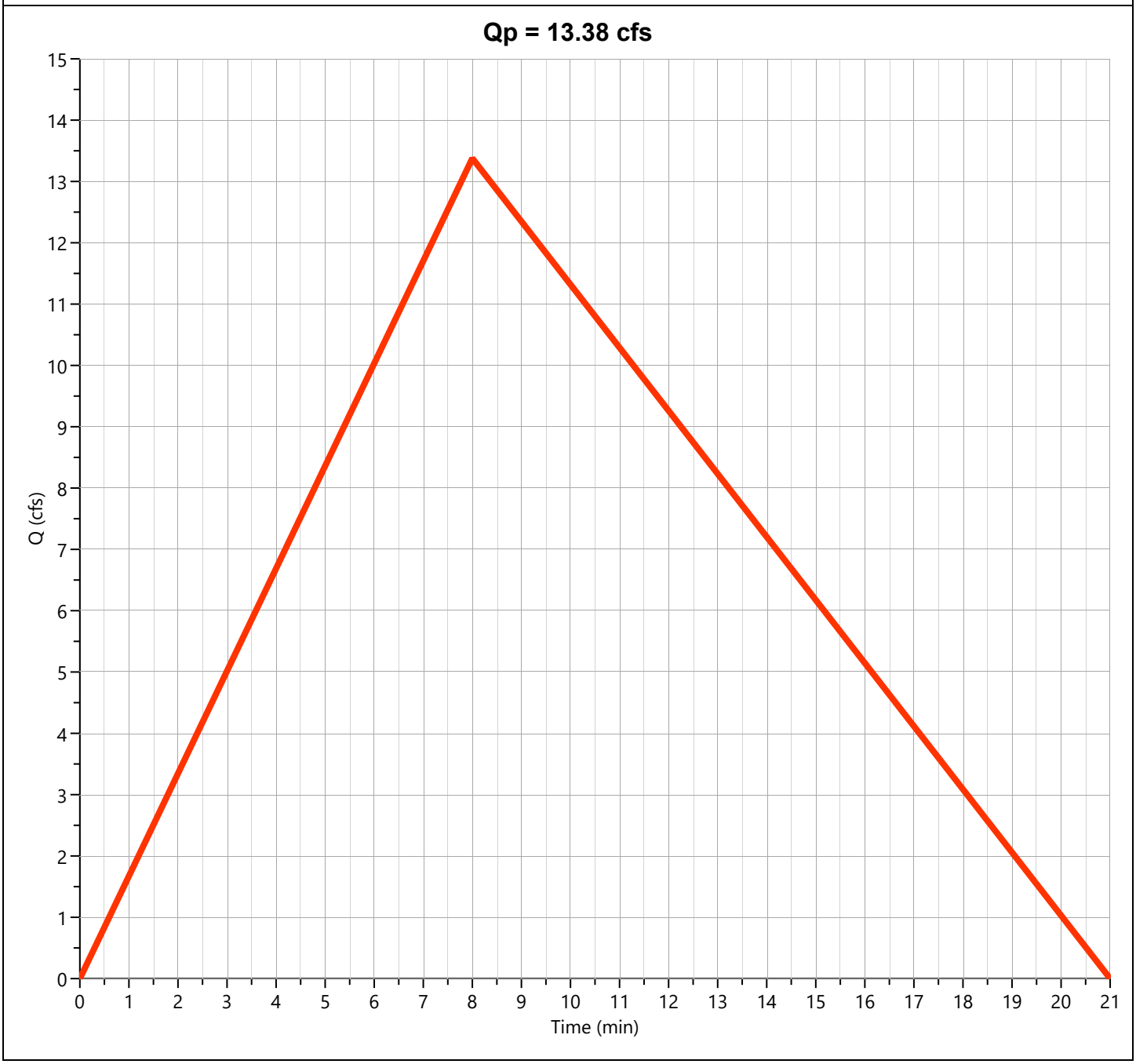
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 29.57 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 26,057 cuft |
| Drainage Area | = 6.84 ac | Runoff Coeff. | = 0.55 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 11.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 7.86 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Pre-Dev Basin "D"

## Hyd. No. 4

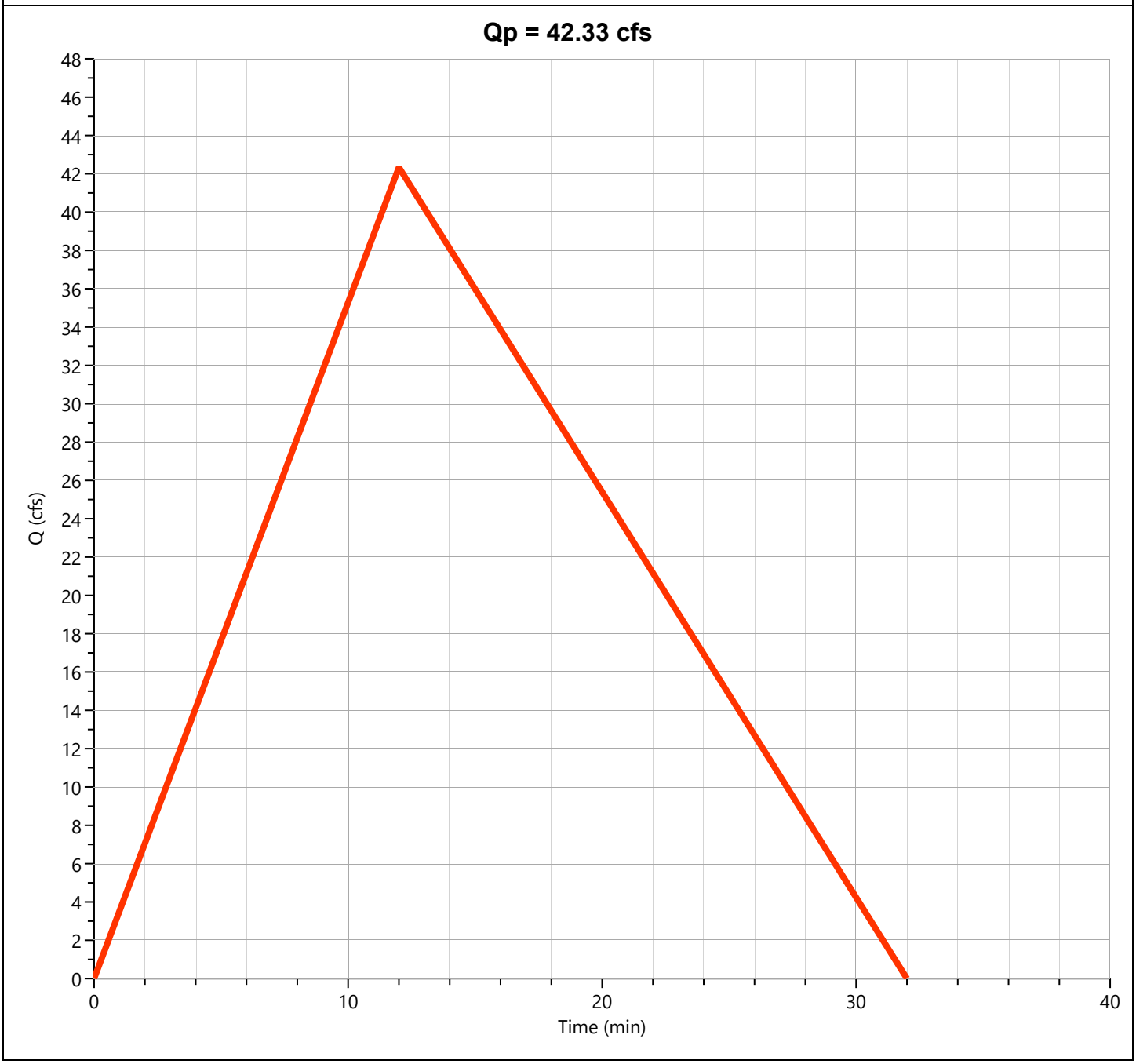
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 13.38 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.13 hrs |
| Time Interval | = 1 min | Runoff Volume | = 8,572 cuft |
| Drainage Area | = 2.95 ac | Runoff Coeff. | = 0.50 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 8.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 9.07 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Pre-Dev Basin "E-1"

## Hyd. No. 5

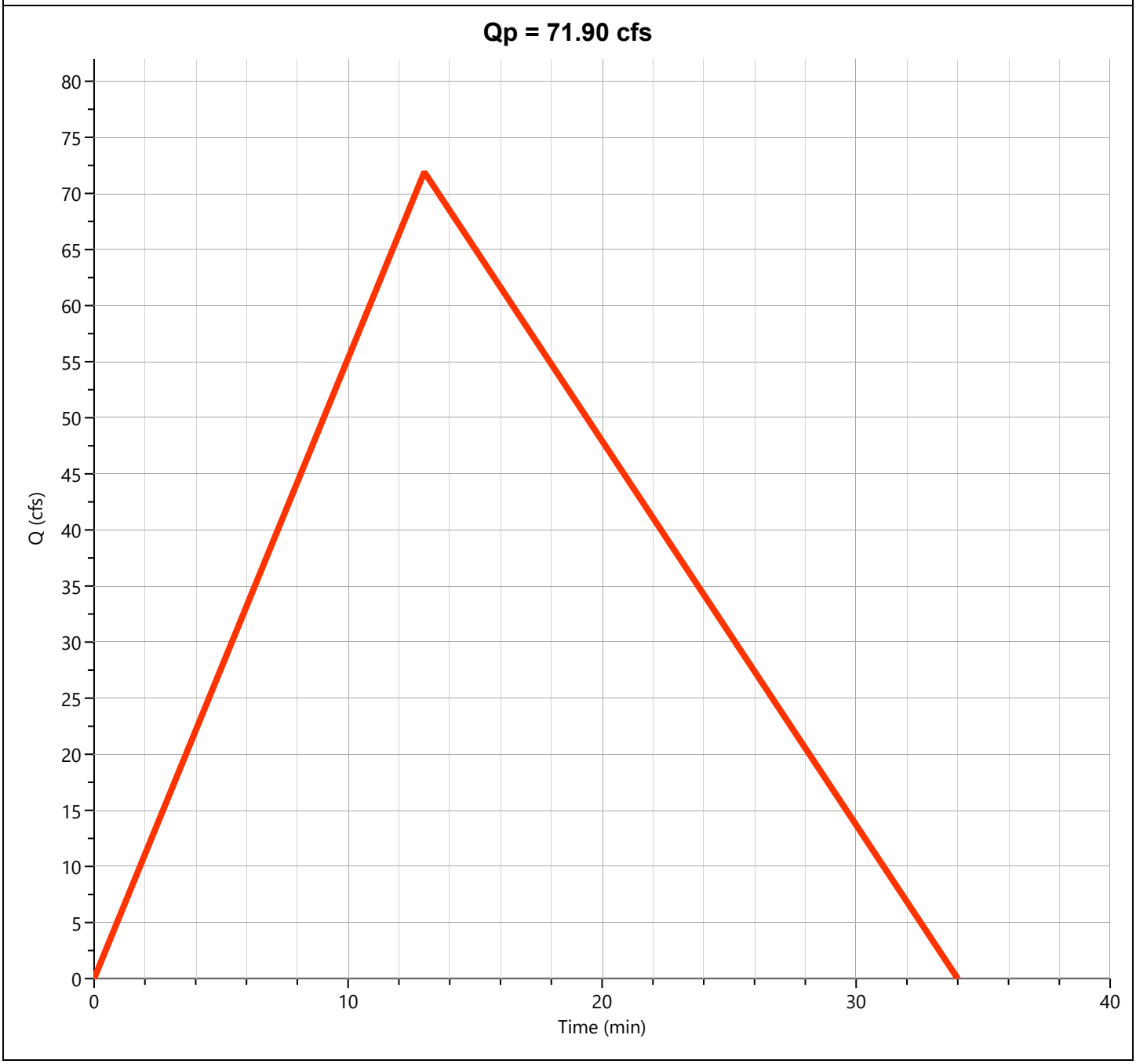
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 42.33 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.20 hrs |
| Time Interval | = 1 min | Runoff Volume | = 40,692 cuft |
| Drainage Area | = 11.2 ac | Runoff Coeff. | = 0.50 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 12.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 7.56 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Pre-Dev Basin "E-2"

## Hyd. No. 6

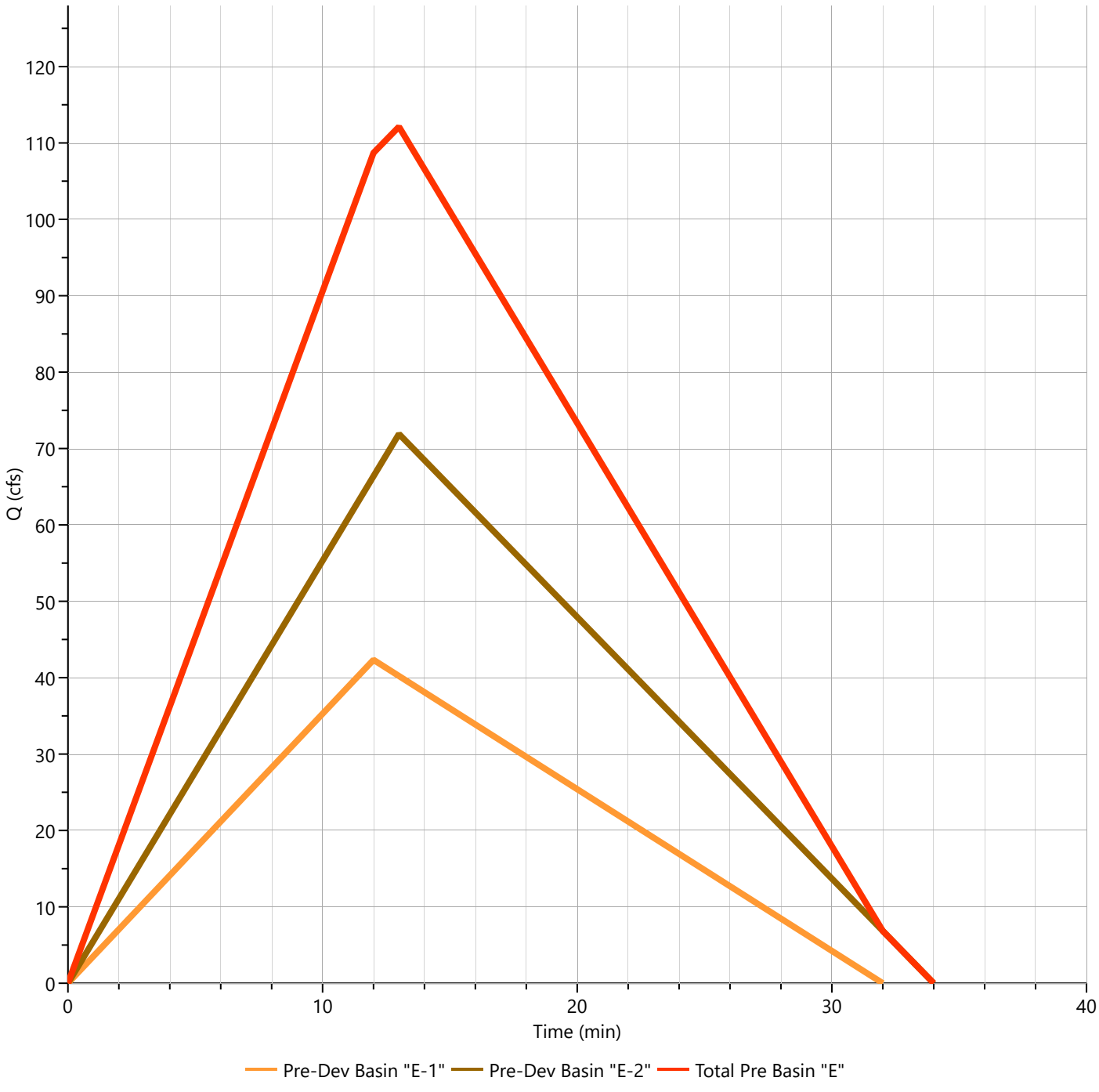
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 71.90 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Runoff Volume | = 74,872 cuft |
| Drainage Area | = 18.96 ac | Runoff Coeff. | = 0.52 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 13.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 7.29 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Total Pre Basin "E"

## Hyd. No. 7

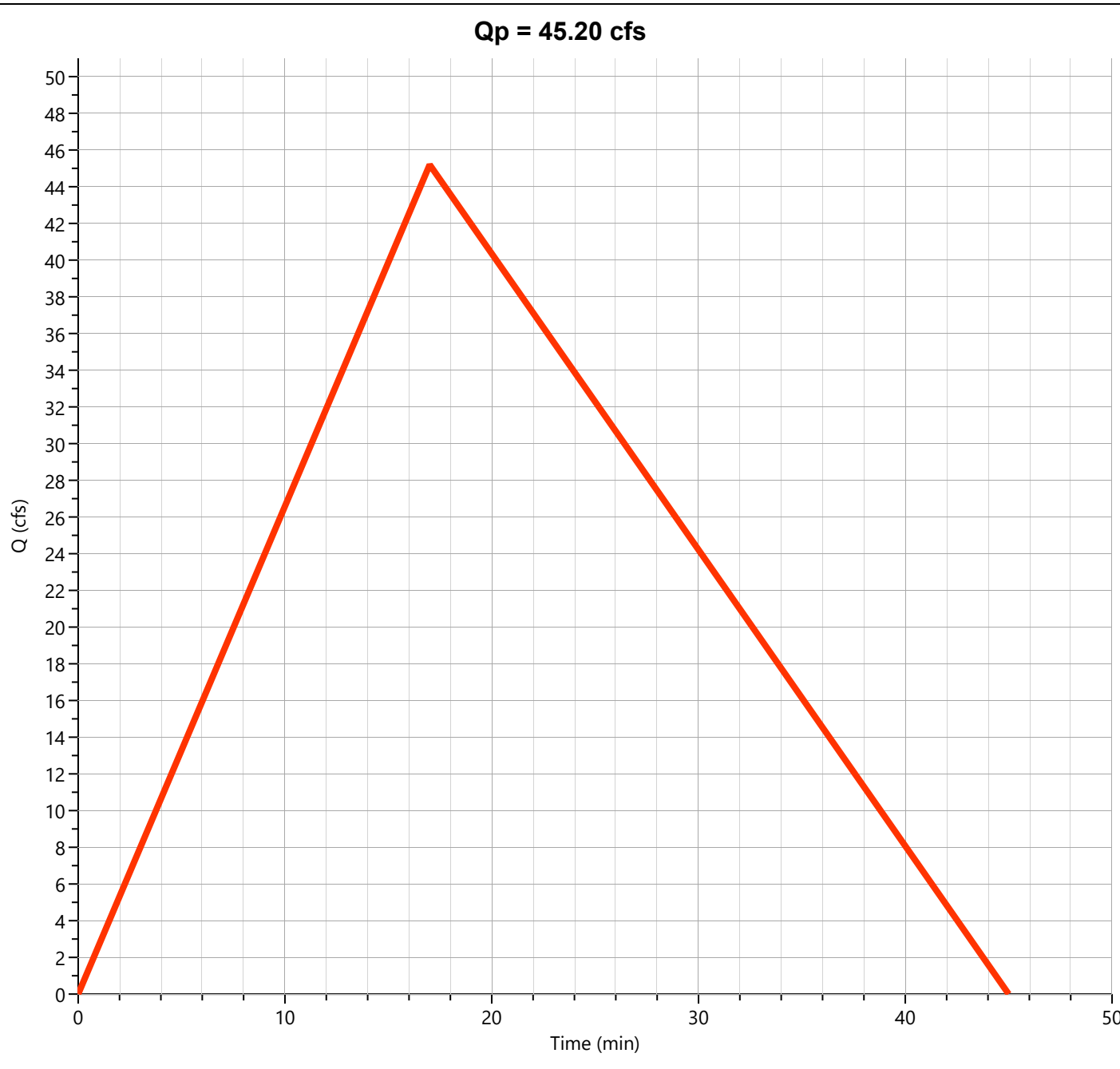
| | | | |
|---|---|---|---|
| Hydrograph Type | = Junction | Peak Flow | = 112.1 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 113,981 cuft |
| Inflow Hydrographs | = 5, 6 | Total Contrib. Area | = 30.16 ac |



## Pre-Dev Basin "F"

## Hyd. No. 8

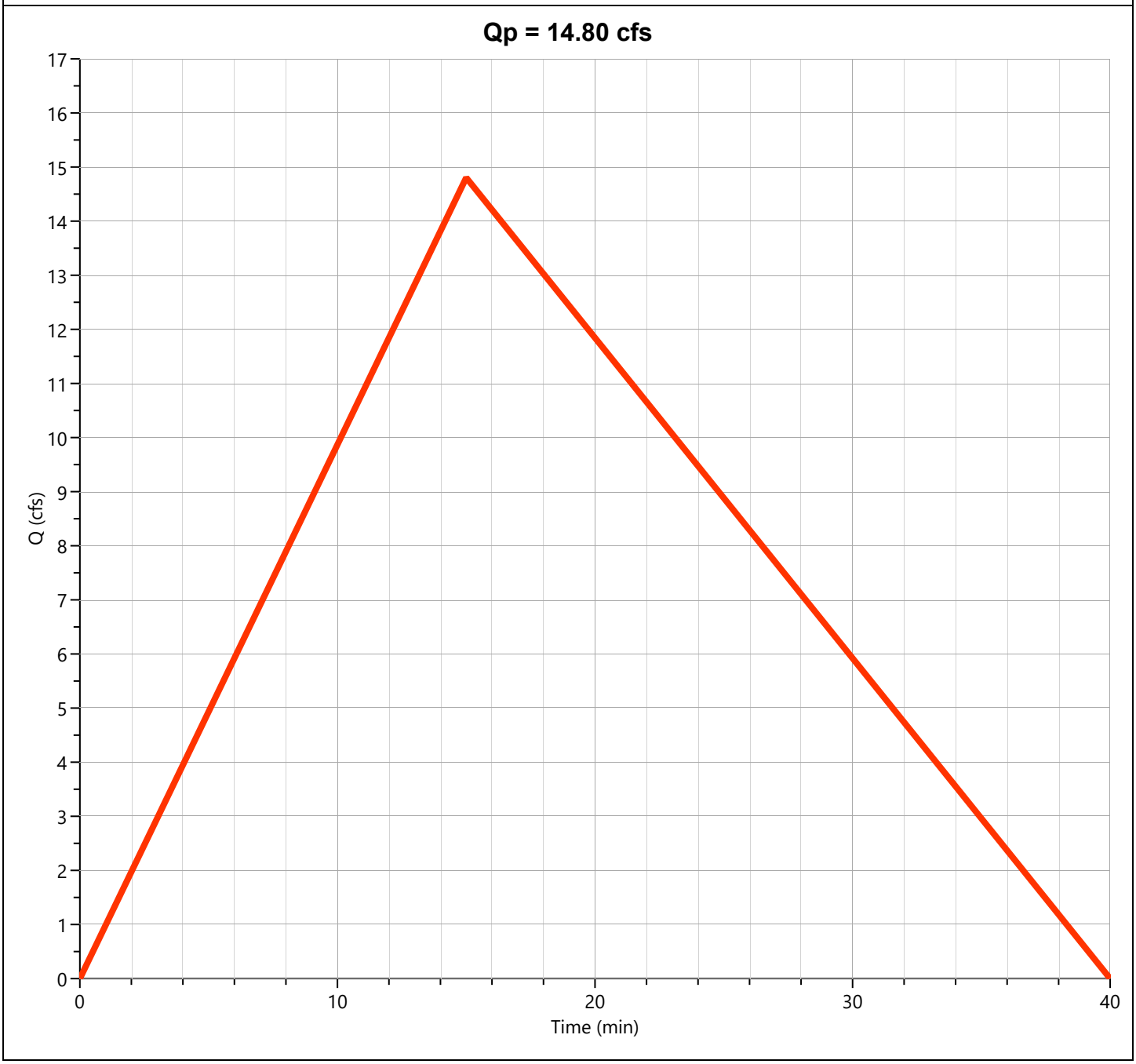
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 45.20 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.28 hrs |
| Time Interval | = 1 min | Runoff Volume | = 61,545 cuft |
| Drainage Area | = 13.19 ac | Runoff Coeff. | = 0.53 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 17.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 6.47 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Post-Dev Basin A

## Hyd. No. 9

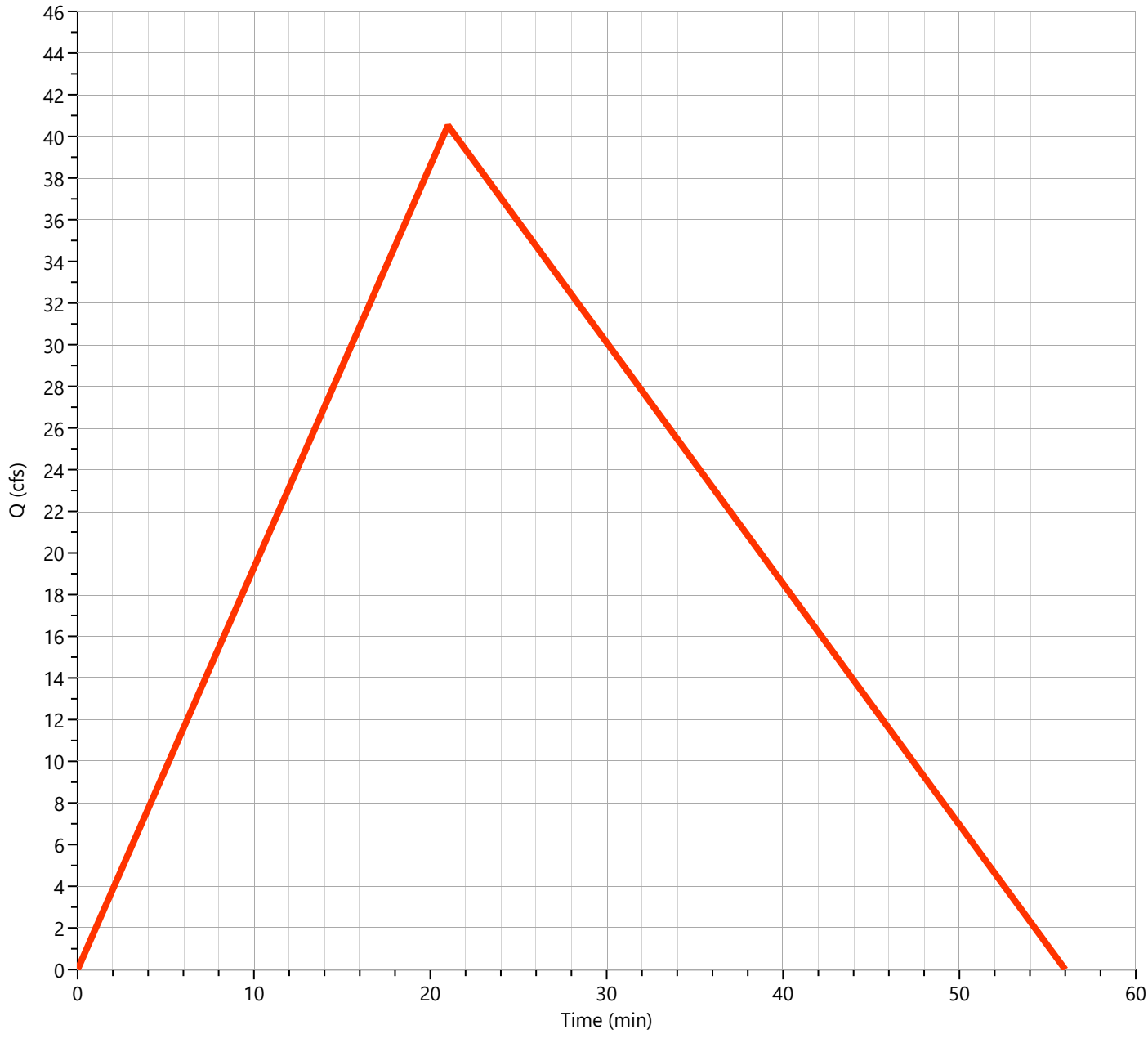
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 14.80 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.25 hrs |
| Time Interval | = 1 min | Runoff Volume | = 17,786 cuft |
| Drainage Area | = 3.33 ac | Runoff Coeff. | = 0.65 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 15.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 6.84 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 | = 40.52 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.35 hrs |
| Time Interval | = 1 min | Runoff Volume | = 68,164 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 | = 5.88 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Post-Dev Basin "C"

## Hyd. No. 11

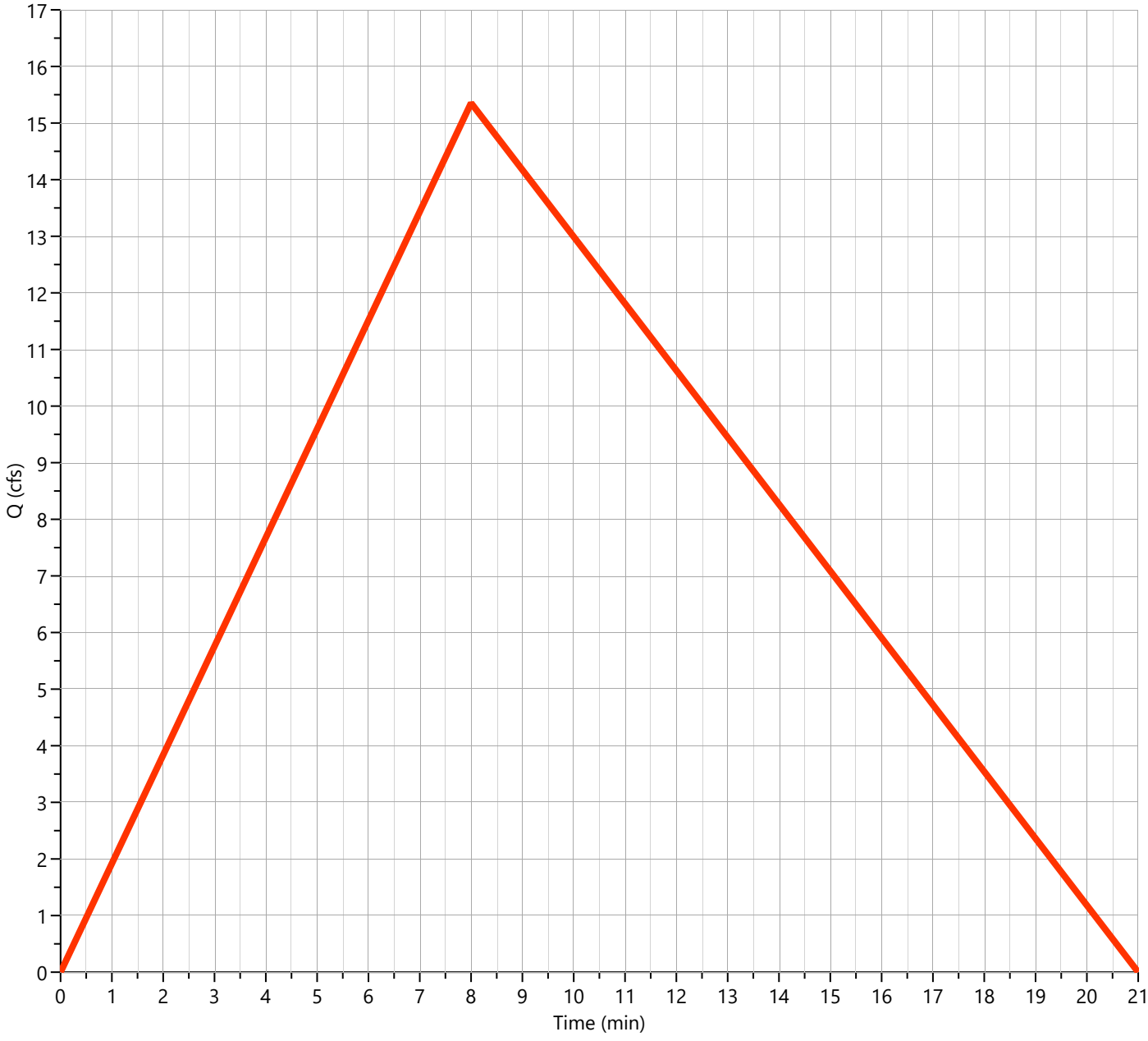
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 30.24 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.18 hrs |
| Time Interval | = 1 min | Runoff Volume | = 26,649 cuft |
| Drainage Area | = 6.75 ac | Runoff Coeff. | = 0.57 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 11.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 7.86 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Post-Dev Basin "D"

## Hyd. No. 12

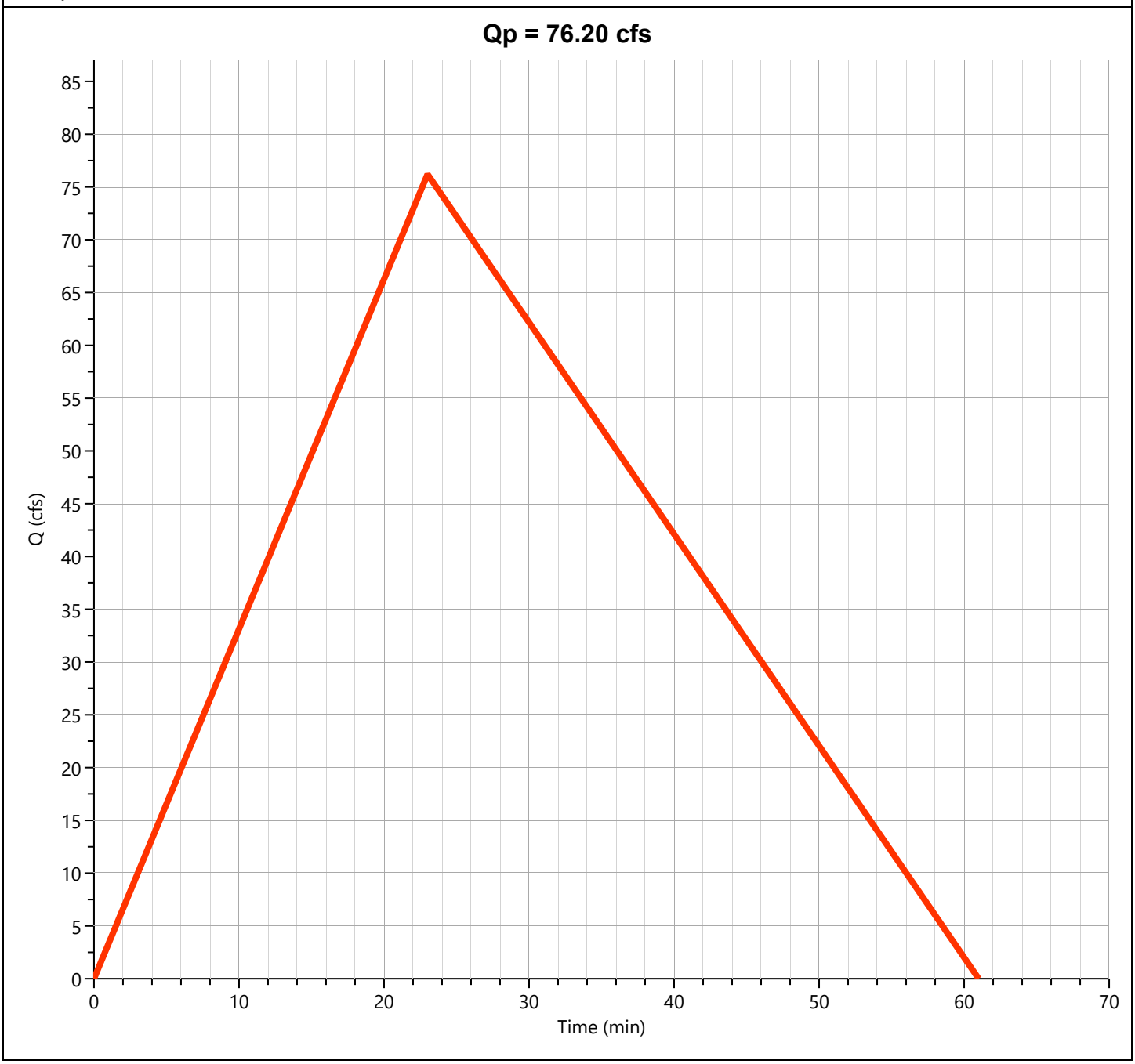
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 15.35 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.13 hrs |
| Time Interval | = 1 min | Runoff Volume | = 9,838 cuft |
| Drainage Area | = 2.97 ac | Runoff Coeff. | = 0.57 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 8.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 9.07 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 | = 76.20 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.38 hrs |
| Time Interval | = 1 min | Runoff Volume | = 140,392 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 | = 5.64 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



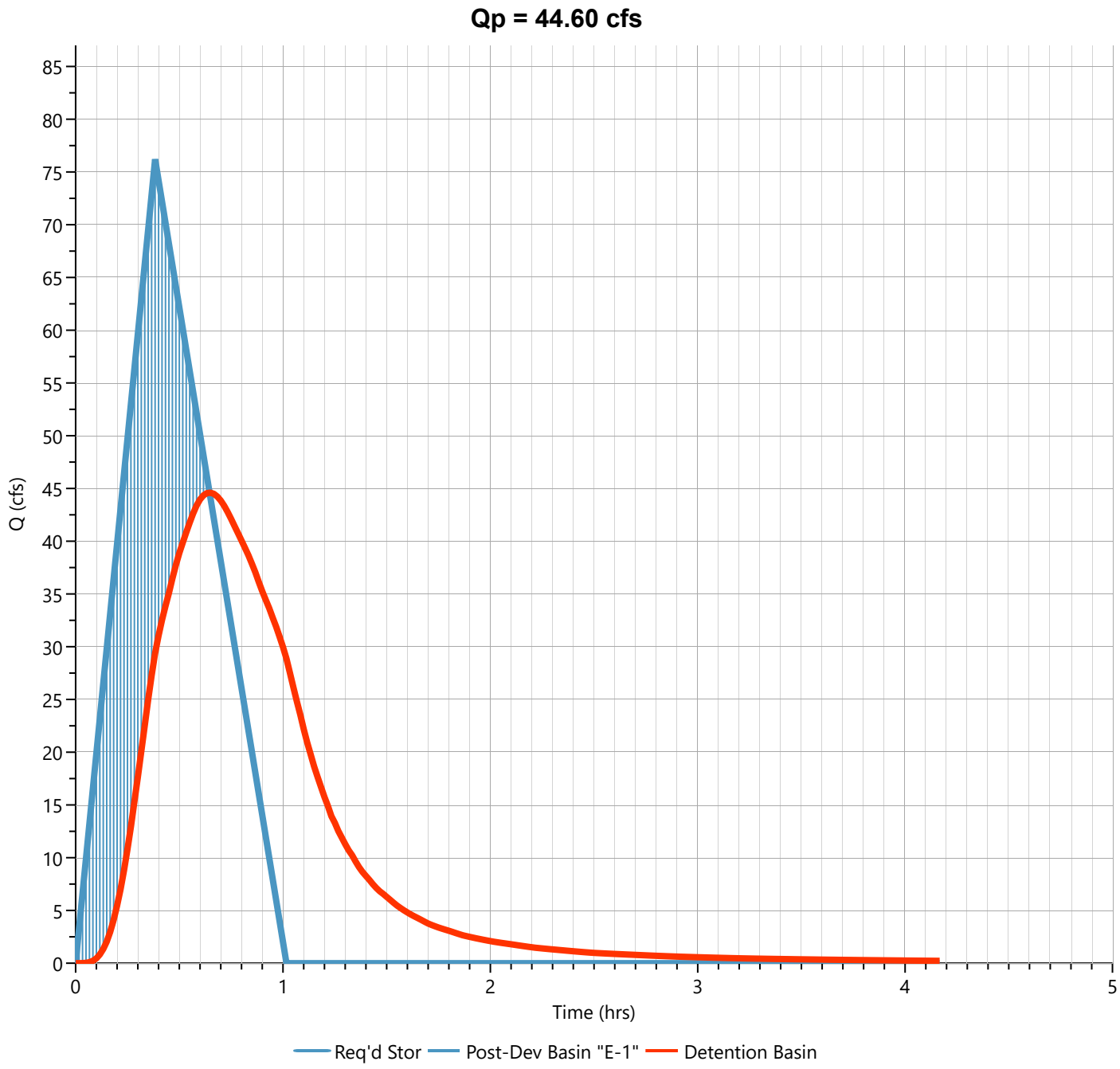
## Detention Basin

## Hyd. No. 14

| | | | |
|---|---|---|---|
| Hydrograph Type | = Pond Route | Peak Flow | = 44.60 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.65 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 139,410 cuft |
| Inflow Hydrograph | = 13 - Post-Dev Basin "E-1" | Max. Elevation | = 472.25 ft |
| Pond Name | = Hilltop Detention Pond | Max. Storage | = 60,924 cuft |

*Pond Routing by Storage Indication Method*

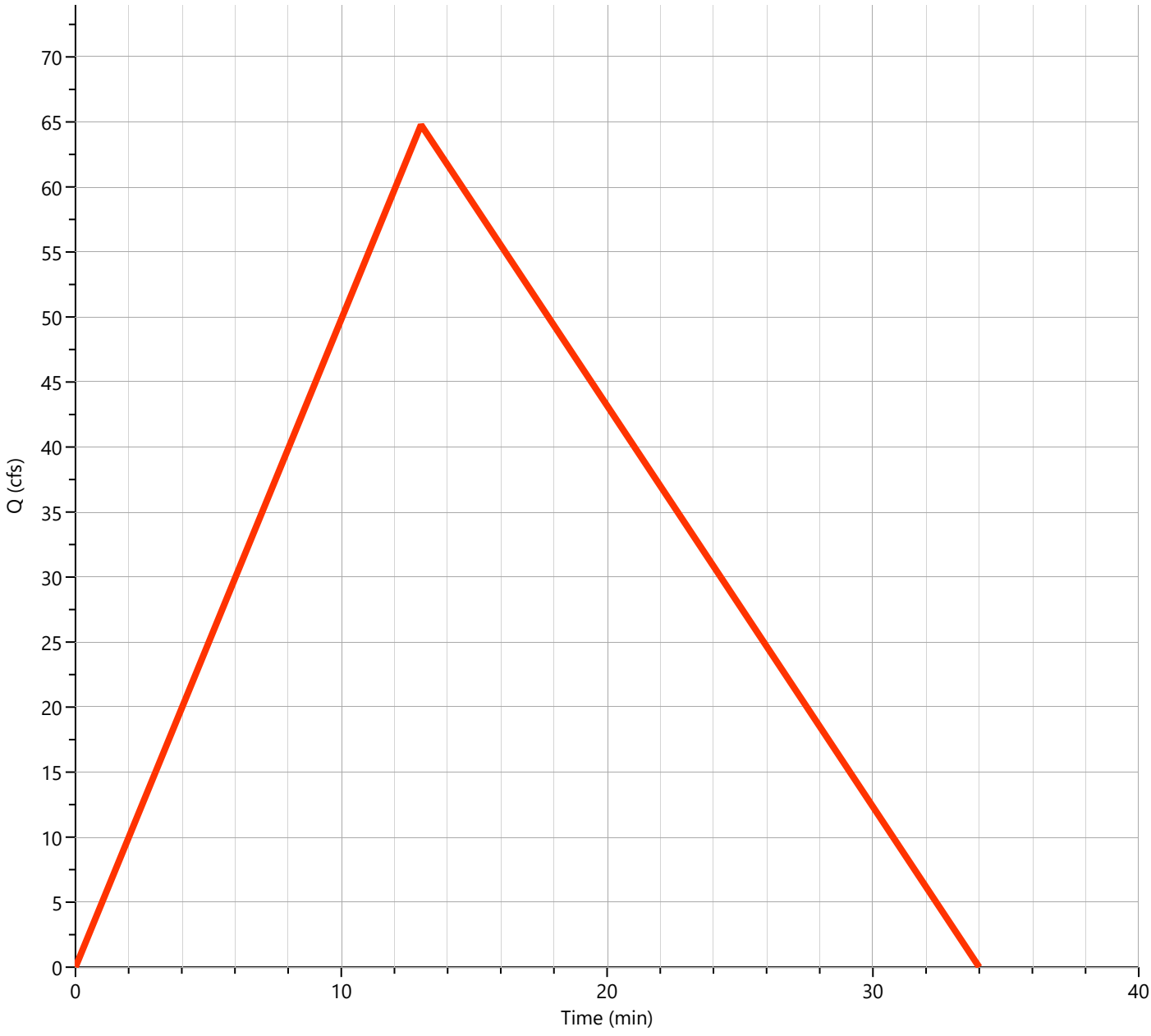
*Center of mass detention time = 24 min*



## Post-Dev Basin "E-2"

## Hyd. No. 15

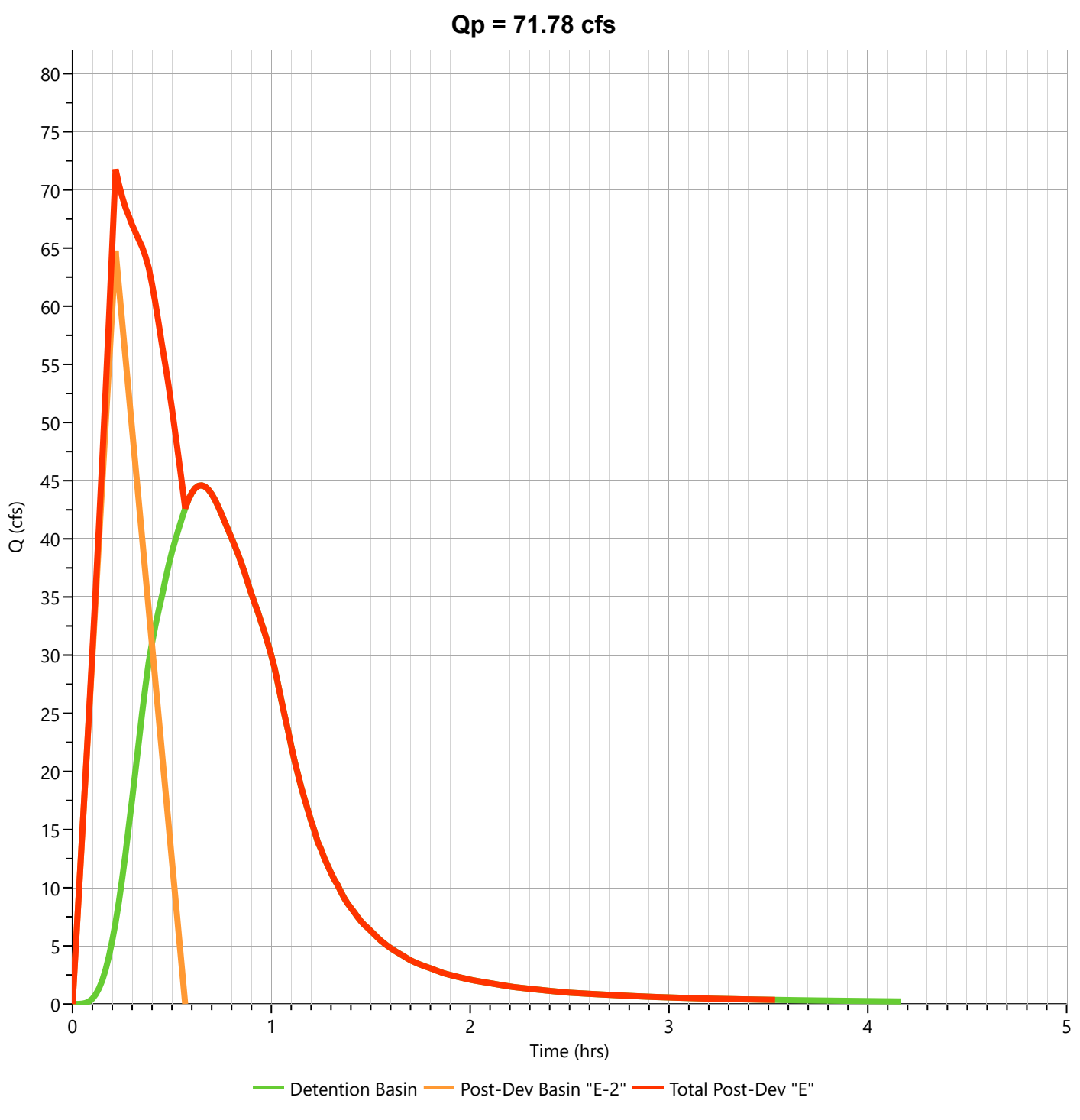
| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 64.77 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Runoff Volume | = 67,448 cuft |
| Drainage Area | = 15.86 ac | Runoff Coeff. | = 0.56 |
| Tc Method | = TR55 (See Worksheet) | Time of Conc. (Tc) | = 13.0 min |
| IDF Curve | = City of Bryant IDF Curve.idf | Intensity | = 7.29 in/hr |
| Freq. Corr. Factor | = 1.00 | Asc/Rec Limb Factors | = 1/1.67 |



## Total Post-Dev "E"

## Hyd. No. 16

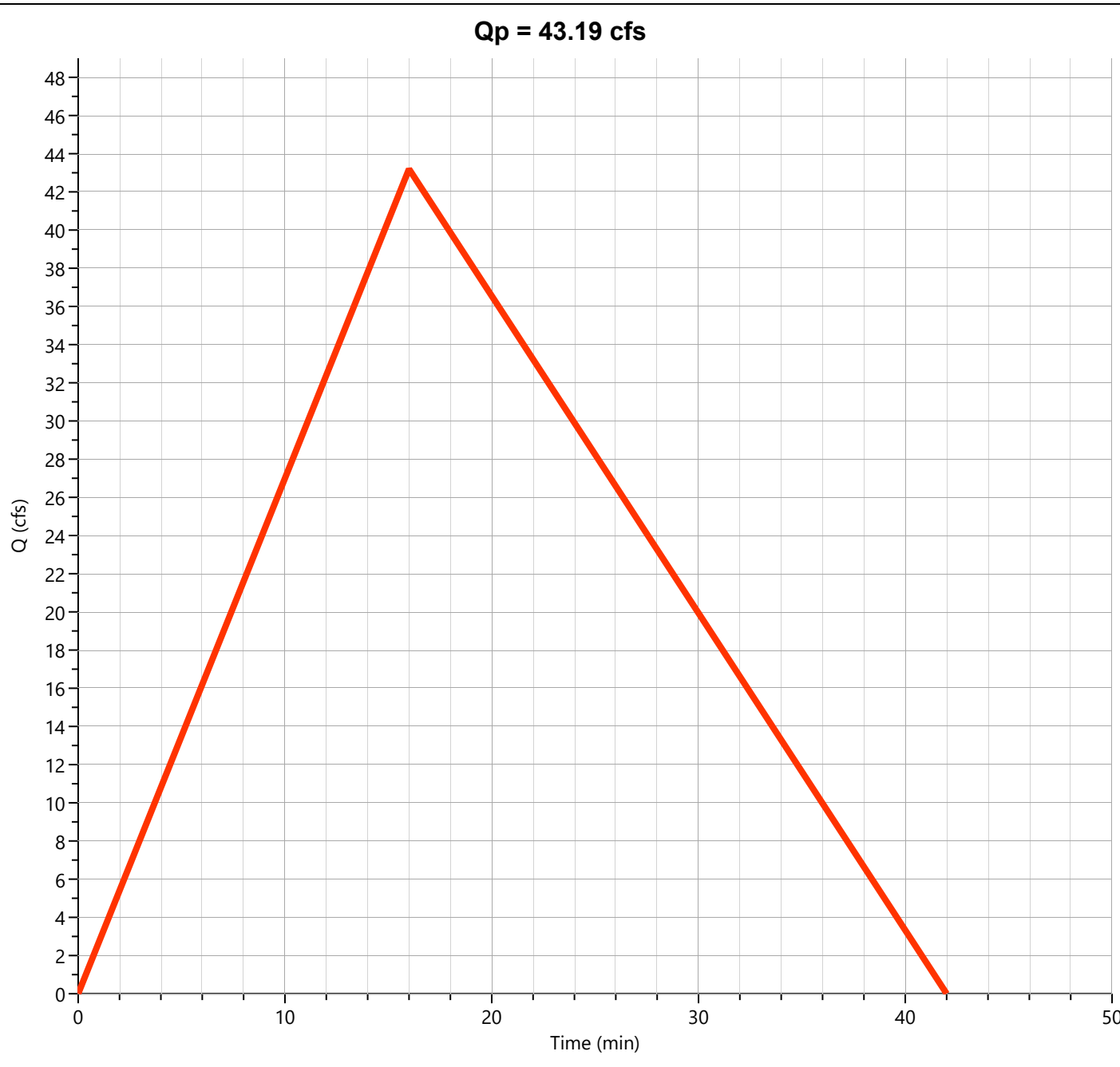
| | | | |
|---|---|---|---|
| Hydrograph Type | = Junction | Peak Flow | = 71.78 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.22 hrs |
| Time Interval | = 1 min | Hydrograph Volume | = 205,478 cuft |
| Inflow Hydrographs | = 15 | Total Contrib. Area | = 15.86 ac |



## Post-Dev Basin "F"

## Hyd. No. 17

| | | | |
|---|---|---|---|
| Hydrograph Type | = Rational | Peak Flow | = 43.19 cfs |
| Storm Frequency | = 100-yr | Time to Peak | = 0.27 hrs |
| Time Interval | = 1 min | Runoff Volume | = 55,359 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 | = 6.64 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, 100-yr | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) | Time (hrs) | Precip (in) |
| 2.50 | 0.033580 | 2.68 | 0.041135 | 2.87 | 0.060182 | 3.05 | 0.098636 | 3.23 | 0.047844 |
| 2.52 | 0.034090 | 2.70 | 0.042132 | 2.88 | 0.063778 | 3.07 | 0.085778 | 3.25 | 0.046360 |
| 2.53 | 0.034627 | 2.72 | 0.043212 | 2.90 | 0.068176 | 3.08 | 0.077126 | 3.27 | 0.045014 |
| 2.55 | 0.035192 | 2.73 | 0.044387 | 2.92 | 0.073733 | 3.10 | 0.070779 | 3.28 | 0.043787 |
| 2.57 | 0.035787 | 2.75 | 0.045671 | 2.93 | 0.081082 | 3.12 | 0.065859 | 3.30 | 0.042661 |
| 2.58 | 0.036417 | 2.77 | 0.047083 | 2.95 | 0.091485 | 3.13 | 0.061896 | 3.32 | 0.041624 |
| 2.60 | 0.037084 | 2.78 | 0.048647 | 2.97 | 0.107983 | 3.15 | 0.058612 | 3.33 | 0.040664 |
| 2.62 | 0.037792 | 2.80 | 0.050391 | 2.98 | 0.141026 | 3.17 | 0.055832 | 3.35 | 0.039772 |
| 2.63 | 0.038545 | 2.82 | 0.052356 | **3.00** | **0.384499** | 3.18 | 0.053436 | 3.37 | 0.038940 |
| 2.65 | 0.039349 | 2.83 | 0.054591 | 3.02 | 0.178836 | 3.20 | 0.051344 | 3.38 | 0.038162 |
| 2.67 | 0.040210 | 2.85 | 0.057167 | 3.03 | 0.120989 | 3.22 | 0.049495 | 3.40 | 0.037432 |

