

**P. B. L. A. ENGINEERING, INC**

**PLANNING • ENGINEERING • SURVEYING**

***PRELIMINARY  
HYDROLOGY STUDY***

***MAJESTIC FREEWAY  
BUSINESS CENTER***

***BUILDING No. 14***

**RIVERSIDE COUNTY, CA**

**PREPARED FOR:**

**Majestic Freeway Business Center, LLC  
13191 Crossroads Parkway North  
6<sup>th</sup> Floor  
Industry, California 91746  
*Preparation Date: January, 2022***



Prepared under the supervision of:

\_\_\_\_\_  
Steve Levissee, P.E.

\_\_\_\_\_  
Date

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**P B L A   E N G I N E E R I N G ,   I N C .**

## **Background and Purpose**

Majestic Freeway Business Center, LLC is proposing to develop two logistics industrial buildings on approximately 19.6 acres of land in the County of Riverside. The property is located west of Harvill Avenue, north of Perry Street and south of Commerce Center Drive. The property is vacant and unimproved. The natural drainage pattern flows towards the intersection of Perry and Harvill at the north east corner of the site for the northerly  $\frac{1}{4}$  of the site. The remaining area flows to the southeast corner near the Perry Harvill intersection.

The purpose of this report is to establish the basis for final design of flood protection and drainage conveyance elements, ensure that these elements can be sized properly, and to ensure the development can comply with County of Riverside requirements when constructed.

## **Project Scope**

This study contemplates the entire project site, and both the existing pre-developed condition of the site and the post-developed proposed condition are analyzed for comparison to ensure compliance with current drainage policies and regulations. The analyses are based on comparing the total flows of the existing site & the proposed flows that gather in a basin on the southeast corner of the site.

The Hydrology Maps for both the existing condition and proposed condition are given in Appendix A & B respectively.

## **Flood Designation**

The property described on this survey lies within Zone "X" of the Flood Insurance Rate Map identified as Community Panel No. 1410 of 3805, map number 06065C1410G bearing an effective date of August 28, 2008.

Zone "X" is defined as areas outside the 0.2% annual chance floodplain.

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**Project Location**



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## Design Criteria and Methods

The runoff calculations presented in this study are produced using the Unit Hydrograph method as detailed in the current Riverside County Hydrology Manual. Because this is a preliminary study to determine feasibility, multiple recurrence interval storms were not produced as would be required on a final report. This study presents multiple storm events for the 100 year recurrence interval.

The County requires that any increased runoff does not exceed pre-development runoff.

The proposed detention basin is sized for the worst case 100 year storm event. Rainfall data, soil loss, and SCS curve numbers are based on the County Manual. No volume reduction is taken for infiltration, although the basins will incorporate under-drain systems to evacuate standing water. Detention basin volume and outflow calculations are produced with a spreadsheet program.

## Hydrology Model Assumptions

### Existing Condition:

**Runoff Index** = 81 – See exist Hydrology map for composite RI Calculation

**Soils Type** = A & B – Soil map included.

**Rainfall Data** – NOAA Atlas 14 per SB County requirements.

**AMC = 2** - Typical for studies of this nature.

**Unit Hydrograph Lag Time** – Calculated by Hydrology program based on physical properties.

**Base Flow** = 0 – There are no existing watercourses in the study catchment.

### Proposed Condition:

**Runoff Index** = 53 – See exist Hydrology map for composite RI Calculation

**Soils Type** = A & B – Soil map included.

**Rainfall Data** – NOAA Atlas 14 per SB County requirements.

**AMC = 2** - Typical for studies of this nature.

**Unit Hydrograph Lag Time** – Calculated by Hydrology program based on physical properties.

**Base Flow** = 0 – There are no existing watercourses in the study catchment.

## Basin Outlet Structures

The proposed structure will control outlet flows in the existing storm drain system located at the north east corner of the site. The basin outlet structure restricts flows to ensure proper Water Quality treatment volumes and outlet times are retained, ensure peak inflow attenuation, and safely outlet design storm flows to the existing storm drain systems.

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**Preliminary Hydrology Results**

**EXISTING CONDITION - AREA 1**

**RUNOFF (cfs)**

	1 HR	3 HR	6 HR	24 HR	24 HR TOTAL VOLUME (AC-FT)
100 YR	10.9	6.1	5.4	1.9	1.0

**EXISTING CONDITION - AREA 2**

**RUNOFF (cfs)**

	1 HR	3 HR	6 HR	24 HR	24 HR TOTAL VOLUME (AC-FT)
100 YR	42.0	22.6	18.8	7.1	2.3

**DEVELOPED CONDITION - AREA 1**

**BASIN INFLOW (cfs)**

	1 HR	3 HR	6 HR	24 HR	24 HR TOTAL VOLUME (AC-FT)
100 YR	13.8	6.6	5.9	1.9	1.1

**DEVELOPED CONDITION - AREA 2**

**BASIN INFLOW (cfs)**

	1 HR	3 HR	6 HR	24 HR	24 HR TOTAL VOLUME (AC-FT)
100 YR	42.0	24.7	21.9	8.2	4.6

**FLOOD ROUTING RESULTS - AREA 1/BASIN A**

**BASIN OUTFLOW (cfs)**

	1 HR	3 HR	6 HR	24 HR	24 HR TOTAL VOLUME (AC-FT)
100 YR	0.7	0.8	0.9	0.7	1.1

**FLOOD ROUTING RESULTS - AREA 2/BASIN B**

**BASIN OUTFLOW (cfs)**

	1 HR	3 HR	6 HR	24 HR	24 HR TOTAL VOLUME (AC-FT)
100 YR	2.6	2.9	3.03.1	3.1	4.6

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## **Conclusion**

This study and the related calculations indicated that the proposed development design flows can be conveyed to the existing storm drain system without danger of site flooding. Additionally, the detention basins are properly sized to attenuate the difference between pre-development runoff and runoff from the completed development.

Note that a final Hydrology and Hydraulics study will be required to accompany final construction documents to analyze final basin geometry, provide conveyance element hydraulics for proper pipe sizing, surface drainage facilities and energy dissipation.

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**APPENDIX A**  
**HYDROLOGY MAP – EXISTING CONDITION**

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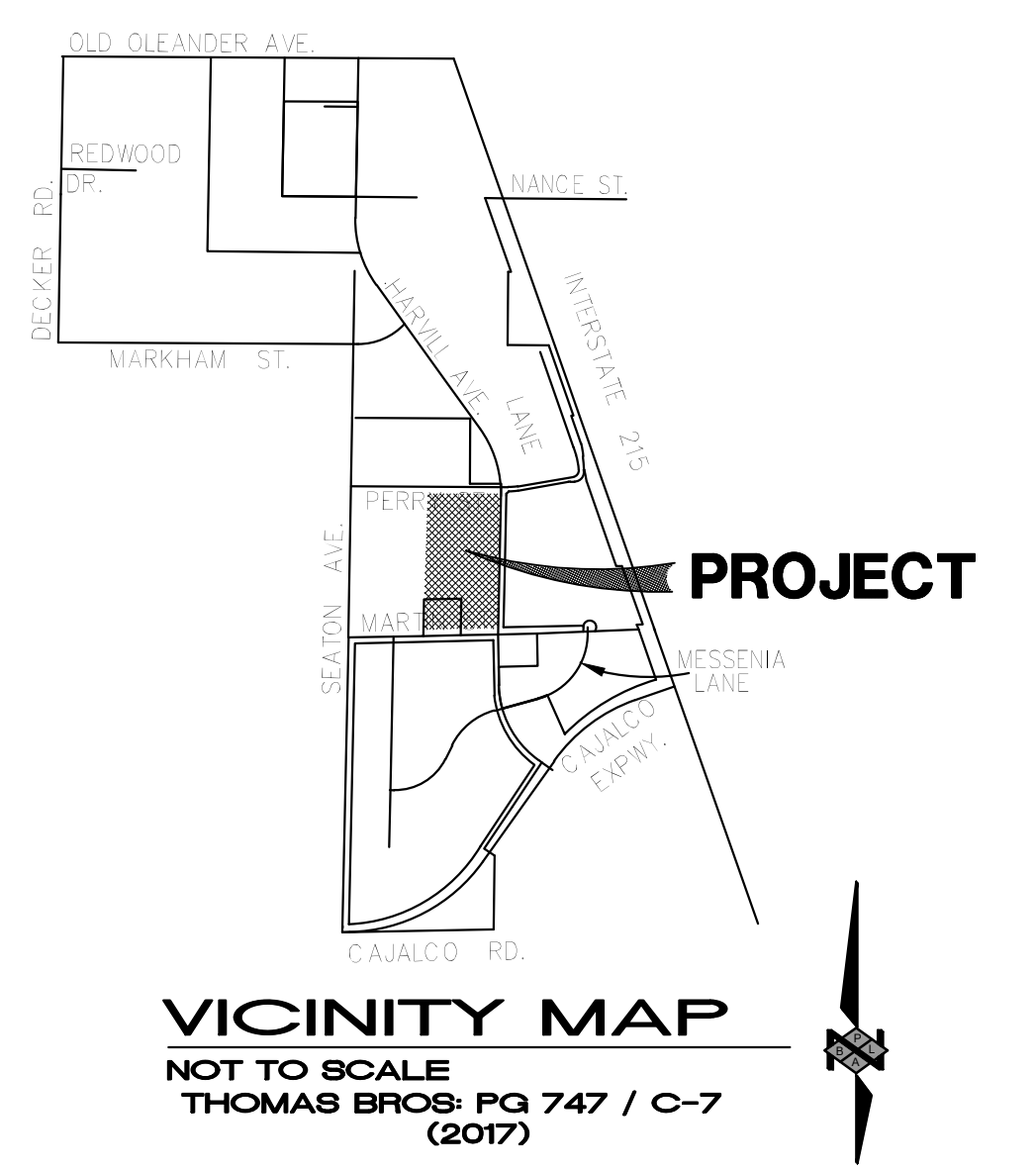
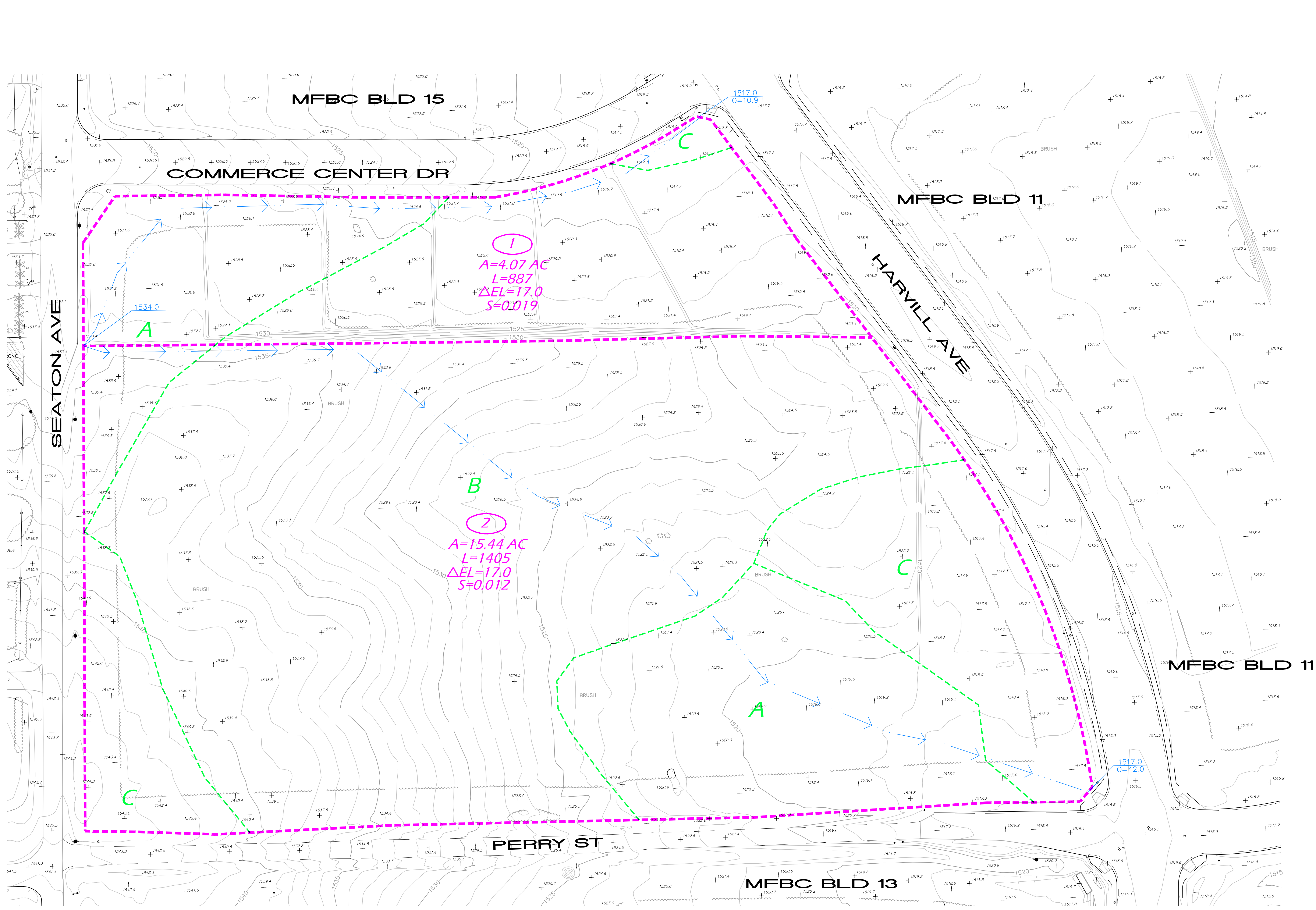
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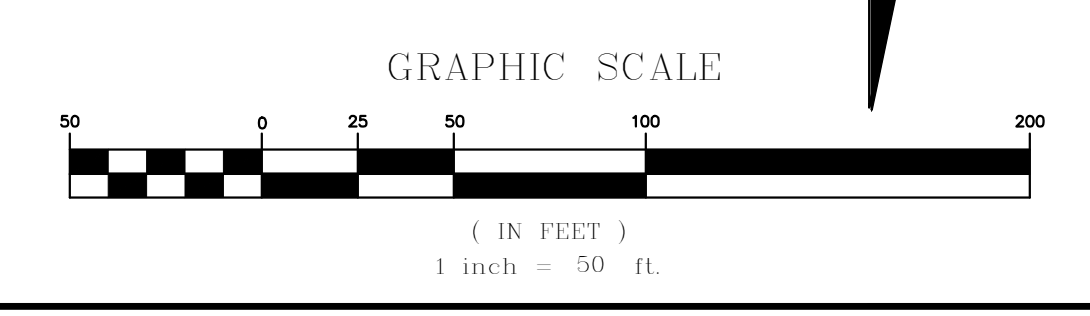


**RUNOFF INDEX CALCULATION**

SOIL TYPE A = 22% - RI=71  
 SOIL TYPE B = 63% - RI=82  
 SOIL TYPE C = 15% - RI=88  
 COMPOSITE RI = 81

**LEGEND**

- 1 — SUBAREA DESIGNATION
- SUBAREA BOUNDARY
- FLOWPATH THROUGH SUBAREA
- ← ← ← RUNOFF FROM SUBAREA (100 YEAR, 1 HOUR STORM)
- SOIL TYPE BOUNDARY
- A — SOIL TYPE



UNIT HYDROGRAPH MAP EXISTING CONDITION MFBC-BUILDING 14			
DATE	BY	REVISION	WO
			100-102
			1st Release
			Sht. 1 of 1

Jan 23 2022

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TOPOGRAPHY DATE: 3-7-05

**APPENDIX B**  
**HYDROLOGY MAP – DEVELOPED CONDITION**

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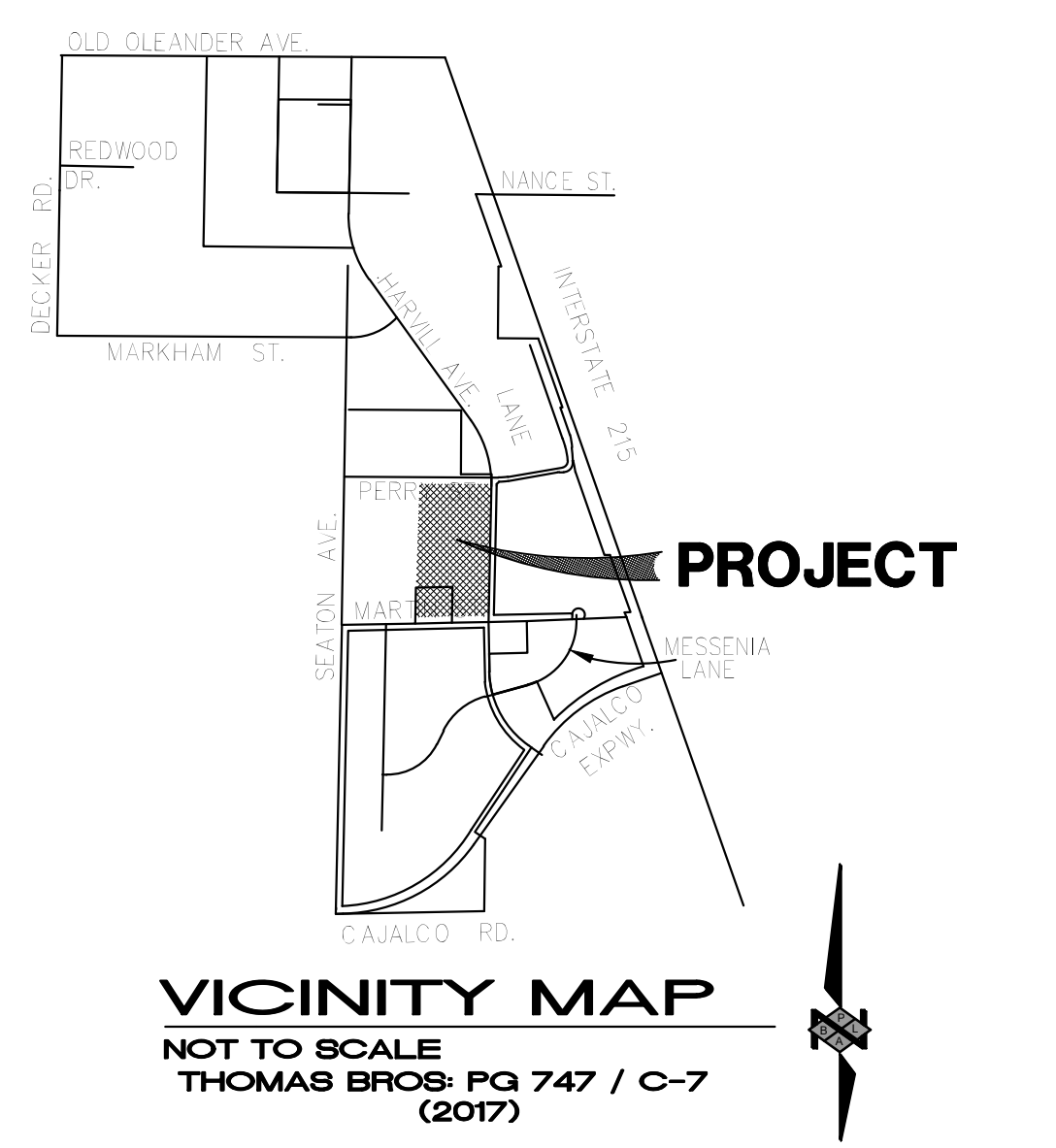
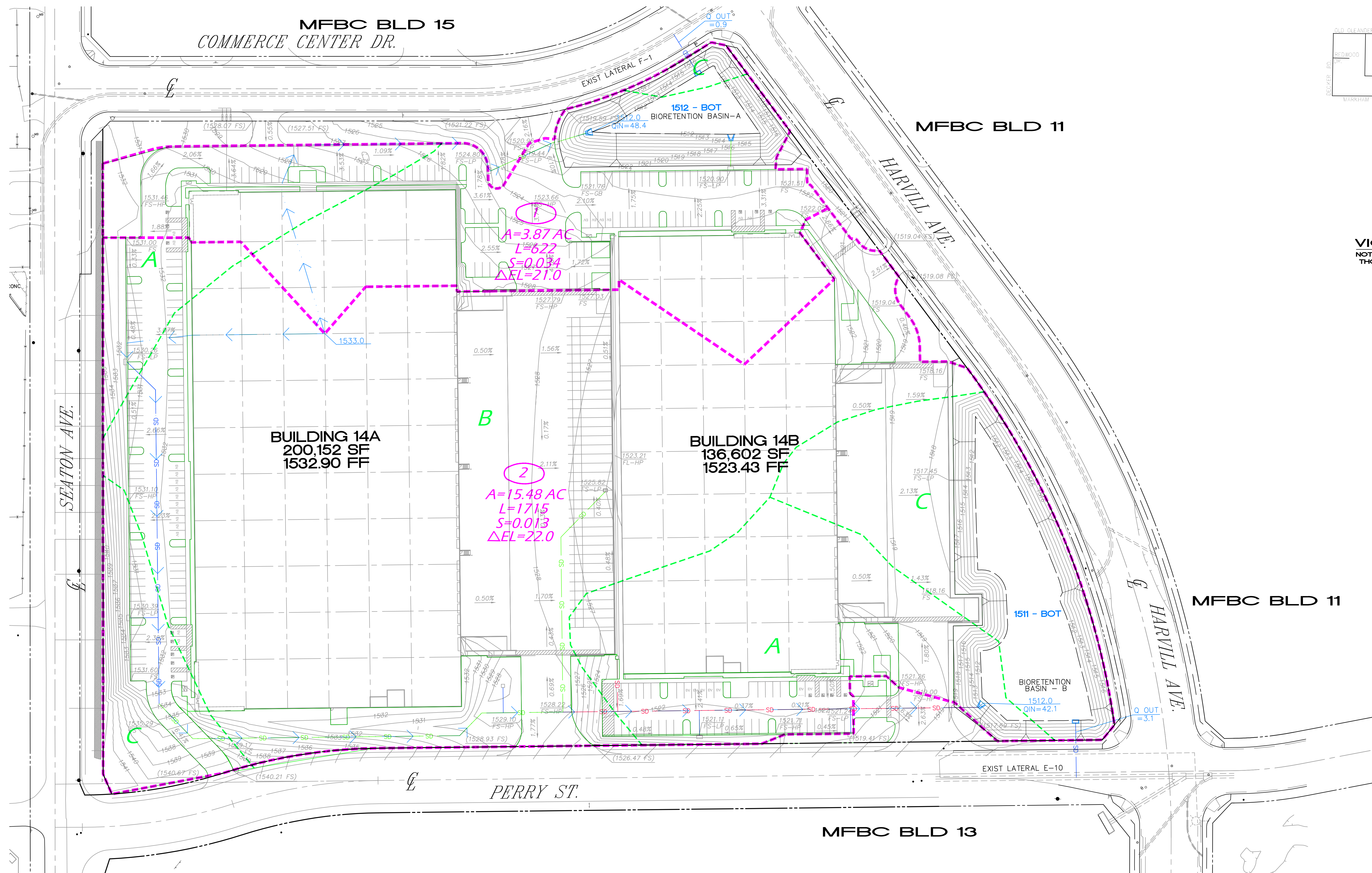
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**RUNOFF INDEX CALCULATION**

SOIL TYPE A = 19% - RI=32  
SOIL TYPE B = 66% - RI=56  
SOIL TYPE C = 15% - RI=69  
COMPOSITE RI = 53

**HYDROLOGY SUMMARY**

**INFLOW TO BASIN A**  
100 YR / 1 HR = 13.8  
100 YR / 3 HR = 6.6  
100 YR / 6 HR = 5.9  
100 YR / 24 HR = 1.9

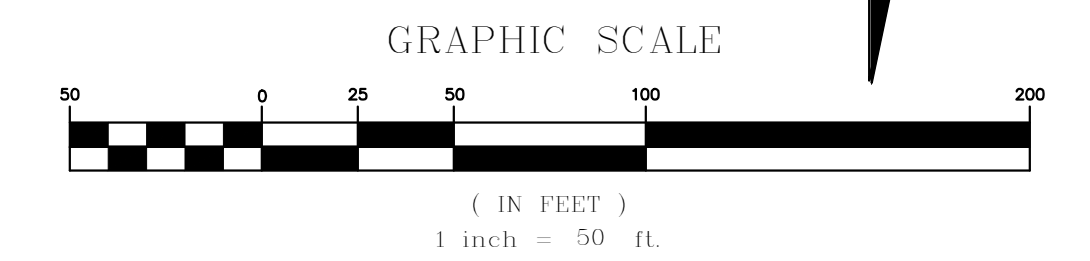
**OUTFLOW TO LATERAL F-1**  
100 YR / 1 HR = 0.7  
100 YR / 3 HR = 0.8  
100 YR / 6 HR = 0.9  
100 YR / 24 HR = 0.7

**INFLOW TO BASIN A**  
100 YR / 1 HR = 42.0  
100 YR / 3 HR = 24.8  
100 YR / 6 HR = 21.9  
100 YR / 24 HR = 8.2

**OUTFLOW TO LATERAL E-10**  
100 YR / 1 HR = 2.6  
100 YR / 3 HR = 2.9  
100 YR / 6 HR = 3.0  
100 YR / 24 HR = 3.1

**LEGEND**

- A — SUBAREA DESIGNATION
- — SUBAREA BOUNDARY
- — FLOWPATH THROUGH SUBAREA
- Q=10.0 — RUNOFF FROM SUBAREA (100 YEAR, 1 HOUR STORM)
- — SOIL TYPE BOUNDARY
- A — SOIL TYPE



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		<p><b>UNIT HYDROGRAPH MAP</b> <b>DEVELOPED CONDITION</b> <b>MFBC-BUILDING 14</b></p>				

**APPENDIX C**  
**UNIT HYDROGRAPH HYDROLOGY**  
**EXISTING CONDITION**

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Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102exuharea1100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

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MFBC BUILDING 14  
EXISTING HYDROGRAPH - AREA 1  
100102EXUHAREA1

-----  
Drainage Area = 4.07(Ac.) = 0.006 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 4.07(Ac.) = 0.006 Sq. Mi.  
Length along longest watercourse = 887.00(Ft.)  
Length along longest watercourse measured to centroid = 420.00(Ft.)  
Length along longest watercourse = 0.168 Mi.  
Length along longest watercourse measured to centroid = 0.080 Mi.  
Difference in elevation = 17.00(Ft.)  
Slope along watercourse = 101.1950 Ft./Mi.  
Average Manning's 'N' = 0.030  
Lag time = 0.058 Hr.  
Lag time = 3.49 Min.  
25% of lag time = 0.87 Min.  
40% of lag time = 1.39 Min.  
Unit time = 5.00 Min.  
Duration of storm = 1 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
4.07	0.46	1.86

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
4.07	1.33	5.41

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 0.456(In)  
Area Averaged 100-Year Rainfall = 1.330(In)

Point rain (area averaged) = 1.330(In)  
Areal adjustment factor = 100.00 %



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 1 - H O U R    S T O R M  
 R u n o f f    H y d r o g r a p h  
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Hydrograph in 5 Minute intervals ((CFS))

Time (h+m)	Volume Ac.Ft	Q (CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0039	0.57	VQ				
0+10	0.0138	1.44	VQ				
0+15	0.0264	1.82	VQ				
0+20	0.0411	2.14	Q				
0+25	0.0577	2.41	Q V				
0+30	0.0774	2.86	Q V				
0+35	0.1004	3.34	Q V				
0+40	0.1276	3.95	Q	V			
0+45	0.1634	5.19	Q	V			
0+50	0.2319	9.96			Q  V		
0+55	0.3071	10.92			Q	V	
1+ 0	0.3419	5.04	Q			V	
1+ 5	0.3604	2.69	Q				V
1+10	0.3676	1.05	Q				V
1+15	0.3711	0.51	Q				V
1+20	0.3719	0.12	Q				V
1+25	0.3722	0.04	Q				V

Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102exuharea13100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

-----  
MFBC BUILDING 14  
EXISTING HYDROGRAPH - AREA 1  
100102EXUHAREA1

-----  
Drainage Area = 4.07(Ac.) = 0.006 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 4.07(Ac.) = 0.006 Sq. Mi.  
Length along longest watercourse = 887.00(Ft.)  
Length along longest watercourse measured to centroid = 420.00(Ft.)  
Length along longest watercourse = 0.168 Mi.  
Length along longest watercourse measured to centroid = 0.080 Mi.  
Difference in elevation = 17.00(Ft.)  
Slope along watercourse = 101.1950 Ft./Mi.  
Average Manning's 'N' = 0.030  
Lag time = 0.058 Hr.  
Lag time = 3.49 Min.  
25% of lag time = 0.87 Min.  
40% of lag time = 1.39 Min.  
Unit time = 5.00 Min.  
Duration of storm = 3 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
4.07	0.79	3.23

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
4.07	1.99	8.10

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 0.794(In)  
Area Averaged 100-Year Rainfall = 1.990(In)

Point rain (area averaged) = 1.990(In)  
Areal adjustment factor = 100.00 %



Adjusted average point rain = 1.990(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 4.070                81.00            0.000  
 Total Area Entered =        4.07(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
81.0	81.0	0.233	0.000	0.233	1.000	0.233
						Sum (F) = 0.233

Area averaged mean soil loss (F) (In/Hr) = 0.233

Minimum soil loss rate ((In/Hr)) = 0.116

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.900

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 U n i t   H y d r o g r a p h  
 VALLEY S-Curve  
 -----

Unit Hydrograph Data  
 -----

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	143.424	31.550
2	0.167	286.848	47.477
3	0.250	430.273	11.582
4	0.333	573.697	5.089
5	0.417	717.121	2.666
6	0.500	860.545	1.637
		Sum = 100.000	Sum= 4.102

-----

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
			Max	Low	
1	0.08	1.30	0.310	0.233	( 0.279) 0.078
2	0.17	1.30	0.310	0.233	( 0.279) 0.078
3	0.25	1.10	0.263	0.233	( 0.236) 0.030
4	0.33	1.50	0.358	0.233	( 0.322) 0.126
5	0.42	1.50	0.358	0.233	( 0.322) 0.126
6	0.50	1.80	0.430	0.233	( 0.387) 0.197
7	0.58	1.50	0.358	0.233	( 0.322) 0.126
8	0.67	1.80	0.430	0.233	( 0.387) 0.197
9	0.75	1.80	0.430	0.233	( 0.387) 0.197
10	0.83	1.50	0.358	0.233	( 0.322) 0.126
11	0.92	1.60	0.382	0.233	( 0.344) 0.149
12	1.00	1.80	0.430	0.233	( 0.387) 0.197
13	1.08	2.20	0.525	0.233	( 0.473) 0.293
14	1.17	2.20	0.525	0.233	( 0.473) 0.293
15	1.25	2.20	0.525	0.233	( 0.473) 0.293
16	1.33	2.00	0.478	0.233	( 0.430) 0.245
17	1.42	2.60	0.621	0.233	( 0.559) 0.388
18	1.50	2.70	0.645	0.233	( 0.580) 0.412
19	1.58	2.40	0.573	0.233	( 0.516) 0.341
20	1.67	2.70	0.645	0.233	( 0.580) 0.412
21	1.75	3.30	0.788	0.233	( 0.709) 0.555
22	1.83	3.10	0.740	0.233	( 0.666) 0.508
23	1.92	2.90	0.693	0.233	( 0.623) 0.460
24	2.00	3.00	0.716	0.233	( 0.645) 0.484
25	2.08	3.10	0.740	0.233	( 0.666) 0.508

26	2.17	4.20	1.003	0.233	( 0.903)	0.770
27	2.25	5.00	1.194	0.233	( 1.075)	0.961
28	2.33	3.50	0.836	0.233	( 0.752)	0.603
29	2.42	6.80	1.624	0.233	( 1.461)	1.391
30	2.50	7.30	1.743	0.233	( 1.569)	1.511
31	2.58	8.20	1.958	0.233	( 1.762)	1.726
32	2.67	5.90	1.409	0.233	( 1.268)	1.176
33	2.75	2.00	0.478	0.233	( 0.430)	0.245
34	2.83	1.80	0.430	0.233	( 0.387)	0.197
35	2.92	1.80	0.430	0.233	( 0.387)	0.197
36	3.00	0.60	0.143	( 0.233)	0.129	0.014

(Loss Rate Not Used)

Sum = 100.0 Sum = 15.6

Flood volume = Effective rainfall 1.30(In)  
times area 4.1(Ac.)/[ (In)/(Ft.) ] = 0.4(Ac.Ft)  
Total soil loss = 0.69(In)  
Total soil loss = 0.234(Ac.Ft)  
Total rainfall = 1.99(In)  
Flood volume = 19218.2 Cubic Feet  
Total soil loss = 10181.8 Cubic Feet

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Peak flow rate of this hydrograph = 6.122(CFS)  
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3 - H O U R S T O R M  
R u n o f f H y d r o g r a p h

-----  
Hydrograph in 5 Minute intervals ((CFS))  
-----

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0007	0.10	Q				
0+10	0.0024	0.25	VQ				
0+15	0.0040	0.23	Q				
0+20	0.0059	0.27	VQ				
0+25	0.0090	0.45	VQ				
0+30	0.0130	0.58	VQ				
0+35	0.0174	0.64	VQ				
0+40	0.0218	0.64	VQ				
0+45	0.0270	0.76	VQ				
0+50	0.0318	0.70	Q				
0+55	0.0359	0.60	QV				
1+ 0	0.0406	0.68	QV				
1+ 5	0.0468	0.90	QV				
1+10	0.0544	1.10	Q				
1+15	0.0623	1.15	QV				
1+20	0.0700	1.12	Q V				
1+25	0.0785	1.23	Q V				
1+30	0.0889	1.52	Q V				
1+35	0.0995	1.53	Q V				
1+40	0.1099	1.52	Q V				
1+45	0.1225	1.83	Q  V				
1+50	0.1368	2.08	Q   V				
1+55	0.1506	2.00	Q   V				
2+ 0	0.1640	1.95	Q   V				
2+ 5	0.1779	2.01	Q   V				
2+10	0.1945	2.41	Q   V				
2+15	0.2163	3.17	Q   V				
2+20	0.2384	3.21	Q   V				
2+25	0.2638	3.68	Q   V				
2+30	0.3001	5.27	Q   V				
2+35	0.3423	6.12	Q   V				
2+40	0.3837	6.02	Q   V				
2+45	0.4109	3.94	Q   V				
2+50	0.4240	1.91	Q				

2+55	0.4329	1.29		Q				V
3+ 0	0.4384	0.79		Q				V
3+ 5	0.4402	0.27		Q				V
3+10	0.4408	0.09		Q				V
3+15	0.4411	0.04		Q				V
3+20	0.4412	0.01		Q				V
3+25	0.4412	0.00		Q				V

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Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102exuharea16100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

-----  
MFBC BUILDING 14  
EXISTING HYDROGRAPH - AREA 1  
100102EXUHAREA1

-----  
Drainage Area = 4.07(Ac.) = 0.006 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 4.07(Ac.) = 0.006 Sq. Mi.  
Length along longest watercourse = 887.00(Ft.)  
Length along longest watercourse measured to centroid = 420.00(Ft.)  
Length along longest watercourse = 0.168 Mi.  
Length along longest watercourse measured to centroid = 0.080 Mi.  
Difference in elevation = 17.00(Ft.)  
Slope along watercourse = 101.1950 Ft./Mi.  
Average Manning's 'N' = 0.030  
Lag time = 0.058 Hr.  
Lag time = 3.49 Min.  
25% of lag time = 0.87 Min.  
40% of lag time = 1.39 Min.  
Unit time = 5.00 Min.  
Duration of storm = 6 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
4.07	1.10	4.48

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
4.07	2.66	10.83

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 1.100(In)  
Area Averaged 100-Year Rainfall = 2.660(In)

Point rain (area averaged) = 2.660(In)  
Areal adjustment factor = 100.00 %

Adjusted average point rain = 2.660(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 4.070                81.00            0.000  
 Total Area Entered =        4.07(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
81.0	81.0	0.233	0.000	0.233	1.000	0.233
						Sum (F) = 0.233

Area averaged mean soil loss (F) (In/Hr) = 0.233

Minimum soil loss rate ((In/Hr)) = 0.116

(for 24 hour storm duration)

Soil loss rate (decimal) = 0.900

U n i t   H y d r o g r a p h  
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	143.424	31.550
2	0.167	286.848	47.477
3	0.250	430.273	11.582
4	0.333	573.697	5.089
5	0.417	717.121	2.666
6	0.500	860.545	1.637
Sum = 100.000			Sum= 4.102

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.50	( 0.233)	0.144	0.016
2	0.17	0.60	( 0.233)	0.172	0.019
3	0.25	0.60	( 0.233)	0.172	0.019
4	0.33	0.60	( 0.233)	0.172	0.019
5	0.42	0.60	( 0.233)	0.172	0.019
6	0.50	0.70	( 0.233)	0.201	0.022
7	0.58	0.70	( 0.233)	0.201	0.022
8	0.67	0.70	( 0.233)	0.201	0.022
9	0.75	0.70	( 0.233)	0.201	0.022
10	0.83	0.70	( 0.233)	0.201	0.022
11	0.92	0.70	( 0.233)	0.201	0.022
12	1.00	0.80	( 0.233)	0.230	0.026
13	1.08	0.80	( 0.233)	0.230	0.026
14	1.17	0.80	( 0.233)	0.230	0.026
15	1.25	0.80	( 0.233)	0.230	0.026
16	1.33	0.80	( 0.233)	0.230	0.026
17	1.42	0.80	( 0.233)	0.230	0.026
18	1.50	0.80	( 0.233)	0.230	0.026
19	1.58	0.80	( 0.233)	0.230	0.026
20	1.67	0.80	( 0.233)	0.230	0.026
21	1.75	0.80	( 0.233)	0.230	0.026
22	1.83	0.80	( 0.233)	0.230	0.026
23	1.92	0.80	( 0.233)	0.230	0.026
24	2.00	0.90	0.233 ( 0.259)		0.055
25	2.08	0.80	( 0.233)	0.230	0.026



Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001		0.02	Q				
0+10	0.0005		0.06	Q				
0+15	0.0010		0.07	Q				
0+20	0.0015		0.07	Q				
0+25	0.0021		0.08	Q				
0+30	0.0026		0.08	Q				
0+35	0.0032		0.09	Q				
0+40	0.0039		0.09	Q				
0+45	0.0045		0.09	Q				
0+50	0.0051		0.09	Q				
0+55	0.0057		0.09	Q				
1+ 0	0.0064		0.10	Q				
1+ 5	0.0071		0.10	Q				
1+10	0.0078		0.10	Q				
1+15	0.0085		0.10	Q				
1+20	0.0093		0.10	Q				
1+25	0.0100		0.10	Q				
1+30	0.0107		0.10	Q				
1+35	0.0114		0.10	Q				
1+40	0.0121		0.10	QV				
1+45	0.0129		0.10	QV				
1+50	0.0136		0.10	QV				
1+55	0.0143		0.10	QV				
2+ 0	0.0153		0.14	QV				
2+ 5	0.0164		0.16	QV				
2+10	0.0175		0.16	QV				
2+15	0.0189		0.21	QV				
2+20	0.0204		0.22	QV				
2+25	0.0219		0.22	QV				
2+30	0.0234		0.22	Q V				
2+35	0.0250		0.22	Q V				
2+40	0.0265		0.22	Q V				
2+45	0.0284		0.27	QV				
2+50	0.0306		0.33	QV				
2+55	0.0330		0.34	QV				
3+ 0	0.0354		0.35	Q V				
3+ 5	0.0378		0.35	Q V				
3+10	0.0406		0.40	Q V				
3+15	0.0437		0.46	Q V				
3+20	0.0470		0.47	Q V				
3+25	0.0506		0.52	Q V				
3+30	0.0549		0.63	Q V				
3+35	0.0601		0.75	Q V				
3+40	0.0658		0.83	Q V				
3+45	0.0720		0.90	Q V				
3+50	0.0787		0.98	Q V				
3+55	0.0859		1.04	Q V				
4+ 0	0.0935		1.11	Q V				
4+ 5	0.1016		1.17	Q V				
4+10	0.1104		1.28	Q V				
4+15	0.1200		1.40	Q V				
4+20	0.1306		1.53	Q  V				
4+25	0.1420		1.66	Q   V				
4+30	0.1540		1.75	Q   V				
4+35	0.1666		1.82	Q   V				
4+40	0.1799		1.93	Q   V				
4+45	0.1941		2.06	Q   V				
4+50	0.2088		2.14	Q   V				
4+55	0.2240		2.21	Q   V				
5+ 0	0.2401		2.33	Q   V				
5+ 5	0.2581		2.62	Q   V				
5+10	0.2798		3.16	Q   V				
5+15	0.3052		3.68	Q   V				
5+20	0.3334		4.10	Q   V				

5+25	0.3651	4.60			Q		V	
5+30	0.4021	5.37			Q		v	
5+35	0.4332	4.52			Q		v	
5+40	0.4469	1.99		Q				V
5+45	0.4528	0.85		Q				V
5+50	0.4556	0.42	Q					V
5+55	0.4571	0.21	Q					V
6+ 0	0.4576	0.07	Q					V
6+ 5	0.4577	0.03	Q					V
6+10	0.4578	0.01	Q					V
6+15	0.4578	0.00	Q					V
6+20	0.4578	0.00	Q					V
6+25	0.4578	0.00	Q					v

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U n i t   H y d r o g r a p h   A n a l y s i s

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Study date 01/21/22 File: 100102exuhareal24100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used

English Units used in output format

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MFBC BUILDING 14  
EXISTING HYDROGRAPH - AREA 1  
100102EXUHAREAL

-----  
Drainage Area = 4.07(Ac.) = 0.006 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 4.07(Ac.) = 0.006 Sq. Mi.  
Length along longest watercourse = 887.00(Ft.)  
Length along longest watercourse measured to centroid = 420.00(Ft.)  
Length along longest watercourse = 0.168 Mi.  
Length along longest watercourse measured to centroid = 0.080 Mi.  
Difference in elevation = 17.00(Ft.)  
Slope along watercourse = 101.1950 Ft./Mi.  
Average Manning's 'N' = 0.030  
Lag time = 0.058 Hr.  
Lag time = 3.49 Min.  
25% of lag time = 0.87 Min.  
40% of lag time = 1.39 Min.  
Unit time = 5.00 Min.  
Duration of storm = 24 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
4.07	1.91	7.77

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
4.07	4.84	19.70

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 1.910(In)  
Area Averaged 100-Year Rainfall = 4.840(In)

Point rain (area averaged) = 4.840(In)  
Areal adjustment factor = 100.00 %  
Adjusted average point rain = 4.840(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 4.070                81.00            0.000  
 Total Area Entered =        4.07(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
81.0	81.0	0.233	0.000	0.233	1.000	0.233
						Sum (F) = 0.233

Area averaged mean soil loss (F) (In/Hr) = 0.233  
 Minimum soil loss rate ((In/Hr)) = 0.116  
 (for 24 hour storm duration)  
 Soil low loss rate (decimal) = 0.900

-----  
 U n i t   H y d r o g r a p h  
 VALLEY S-Curve  
 -----

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	143.424	31.550
2	0.167	286.848	47.477
3	0.250	430.273	11.582
4	0.333	573.697	5.089
5	0.417	717.121	2.666
6	0.500	860.545	1.637
Sum = 100.000			Sum= 4.102

-----  
 The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max   Low	Effective (In/Hr)
1	0.08	0.039	( 0.412)   0.035	0.004
2	0.17	0.039	( 0.411)   0.035	0.004
3	0.25	0.039	( 0.409)   0.035	0.004
4	0.33	0.058	( 0.408)   0.052	0.006
5	0.42	0.058	( 0.406)   0.052	0.006
6	0.50	0.058	( 0.404)   0.052	0.006
7	0.58	0.058	( 0.403)   0.052	0.006
8	0.67	0.058	( 0.401)   0.052	0.006
9	0.75	0.058	( 0.400)   0.052	0.006
10	0.83	0.077	( 0.398)   0.070	0.008
11	0.92	0.077	( 0.397)   0.070	0.008
12	1.00	0.077	( 0.395)   0.070	0.008
13	1.08	0.058	( 0.393)   0.052	0.006
14	1.17	0.058	( 0.392)   0.052	0.006
15	1.25	0.058	( 0.390)   0.052	0.006
16	1.33	0.058	( 0.389)   0.052	0.006
17	1.42	0.058	( 0.387)   0.052	0.006
18	1.50	0.058	( 0.386)   0.052	0.006
19	1.58	0.058	( 0.384)   0.052	0.006
20	1.67	0.058	( 0.383)   0.052	0.006
21	1.75	0.058	( 0.381)   0.052	0.006
22	1.83	0.077	( 0.379)   0.070	0.008
23	1.92	0.077	( 0.378)   0.070	0.008
24	2.00	0.077	( 0.376)   0.070	0.008
25	2.08	0.077	( 0.375)   0.070	0.008
26	2.17	0.077	( 0.373)   0.070	0.008

27	2.25	0.13	0.077	( 0.372)	0.070	0.008
28	2.33	0.13	0.077	( 0.370)	0.070	0.008
29	2.42	0.13	0.077	( 0.369)	0.070	0.008
30	2.50	0.13	0.077	( 0.367)	0.070	0.008
31	2.58	0.17	0.097	( 0.366)	0.087	0.010
32	2.67	0.17	0.097	( 0.364)	0.087	0.010
33	2.75	0.17	0.097	( 0.363)	0.087	0.010
34	2.83	0.17	0.097	( 0.361)	0.087	0.010
35	2.92	0.17	0.097	( 0.360)	0.087	0.010
36	3.00	0.17	0.097	( 0.358)	0.087	0.010
37	3.08	0.17	0.097	( 0.357)	0.087	0.010
38	3.17	0.17	0.097	( 0.355)	0.087	0.010
39	3.25	0.17	0.097	( 0.354)	0.087	0.010
40	3.33	0.17	0.097	( 0.352)	0.087	0.010
41	3.42	0.17	0.097	( 0.351)	0.087	0.010
42	3.50	0.17	0.097	( 0.350)	0.087	0.010
43	3.58	0.17	0.097	( 0.348)	0.087	0.010
44	3.67	0.17	0.097	( 0.347)	0.087	0.010
45	3.75	0.17	0.097	( 0.345)	0.087	0.010
46	3.83	0.20	0.116	( 0.344)	0.105	0.012
47	3.92	0.20	0.116	( 0.342)	0.105	0.012
48	4.00	0.20	0.116	( 0.341)	0.105	0.012
49	4.08	0.20	0.116	( 0.339)	0.105	0.012
50	4.17	0.20	0.116	( 0.338)	0.105	0.012
51	4.25	0.20	0.116	( 0.336)	0.105	0.012
52	4.33	0.23	0.136	( 0.335)	0.122	0.014
53	4.42	0.23	0.136	( 0.334)	0.122	0.014
54	4.50	0.23	0.136	( 0.332)	0.122	0.014
55	4.58	0.23	0.136	( 0.331)	0.122	0.014
56	4.67	0.23	0.136	( 0.329)	0.122	0.014
57	4.75	0.23	0.136	( 0.328)	0.122	0.014
58	4.83	0.27	0.155	( 0.326)	0.139	0.015
59	4.92	0.27	0.155	( 0.325)	0.139	0.015
60	5.00	0.27	0.155	( 0.324)	0.139	0.015
61	5.08	0.20	0.116	( 0.322)	0.105	0.012
62	5.17	0.20	0.116	( 0.321)	0.105	0.012
63	5.25	0.20	0.116	( 0.319)	0.105	0.012
64	5.33	0.23	0.136	( 0.318)	0.122	0.014
65	5.42	0.23	0.136	( 0.317)	0.122	0.014
66	5.50	0.23	0.136	( 0.315)	0.122	0.014
67	5.58	0.27	0.155	( 0.314)	0.139	0.015
68	5.67	0.27	0.155	( 0.313)	0.139	0.015
69	5.75	0.27	0.155	( 0.311)	0.139	0.015
70	5.83	0.27	0.155	( 0.310)	0.139	0.015
71	5.92	0.27	0.155	( 0.308)	0.139	0.015
72	6.00	0.27	0.155	( 0.307)	0.139	0.015
73	6.08	0.30	0.174	( 0.306)	0.157	0.017
74	6.17	0.30	0.174	( 0.304)	0.157	0.017
75	6.25	0.30	0.174	( 0.303)	0.157	0.017
76	6.33	0.30	0.174	( 0.302)	0.157	0.017
77	6.42	0.30	0.174	( 0.300)	0.157	0.017
78	6.50	0.30	0.174	( 0.299)	0.157	0.017
79	6.58	0.33	0.194	( 0.298)	0.174	0.019
80	6.67	0.33	0.194	( 0.296)	0.174	0.019
81	6.75	0.33	0.194	( 0.295)	0.174	0.019
82	6.83	0.33	0.194	( 0.294)	0.174	0.019
83	6.92	0.33	0.194	( 0.292)	0.174	0.019
84	7.00	0.33	0.194	( 0.291)	0.174	0.019
85	7.08	0.33	0.194	( 0.290)	0.174	0.019
86	7.17	0.33	0.194	( 0.288)	0.174	0.019
87	7.25	0.33	0.194	( 0.287)	0.174	0.019
88	7.33	0.37	0.213	( 0.286)	0.192	0.021
89	7.42	0.37	0.213	( 0.284)	0.192	0.021
90	7.50	0.37	0.213	( 0.283)	0.192	0.021
91	7.58	0.40	0.232	( 0.282)	0.209	0.023
92	7.67	0.40	0.232	( 0.280)	0.209	0.023

93	7.75	0.40	0.232	( 0.279)	0.209	0.023
94	7.83	0.43	0.252	( 0.278)	0.227	0.025
95	7.92	0.43	0.252	( 0.277)	0.227	0.025
96	8.00	0.43	0.252	( 0.275)	0.227	0.025
97	8.08	0.50	0.290	( 0.274)	0.261	0.029
98	8.17	0.50	0.290	( 0.273)	0.261	0.029
99	8.25	0.50	0.290	( 0.271)	0.261	0.029
100	8.33	0.50	0.290	( 0.270)	0.261	0.029
101	8.42	0.50	0.290	( 0.269)	0.261	0.029
102	8.50	0.50	0.290	( 0.268)	0.261	0.029
103	8.58	0.53	0.310	0.266	( 0.279)	0.043
104	8.67	0.53	0.310	0.265	( 0.279)	0.045
105	8.75	0.53	0.310	0.264	( 0.279)	0.046
106	8.83	0.57	0.329	0.263	( 0.296)	0.066
107	8.92	0.57	0.329	0.261	( 0.296)	0.068
108	9.00	0.57	0.329	0.260	( 0.296)	0.069
109	9.08	0.63	0.368	0.259	( 0.331)	0.109
110	9.17	0.63	0.368	0.258	( 0.331)	0.110
111	9.25	0.63	0.368	0.256	( 0.331)	0.111
112	9.33	0.67	0.387	0.255	( 0.348)	0.132
113	9.42	0.67	0.387	0.254	( 0.348)	0.133
114	9.50	0.67	0.387	0.253	( 0.348)	0.134
115	9.58	0.70	0.407	0.252	( 0.366)	0.155
116	9.67	0.70	0.407	0.250	( 0.366)	0.156
117	9.75	0.70	0.407	0.249	( 0.366)	0.157
118	9.83	0.73	0.426	0.248	( 0.383)	0.178
119	9.92	0.73	0.426	0.247	( 0.383)	0.179
120	10.00	0.73	0.426	0.246	( 0.383)	0.180
121	10.08	0.50	0.290	0.244	( 0.261)	0.046
122	10.17	0.50	0.290	0.243	( 0.261)	0.047
123	10.25	0.50	0.290	0.242	( 0.261)	0.048
124	10.33	0.50	0.290	0.241	( 0.261)	0.049
125	10.42	0.50	0.290	0.240	( 0.261)	0.051
126	10.50	0.50	0.290	0.239	( 0.261)	0.052
127	10.58	0.67	0.387	0.237	( 0.348)	0.150
128	10.67	0.67	0.387	0.236	( 0.348)	0.151
129	10.75	0.67	0.387	0.235	( 0.348)	0.152
130	10.83	0.67	0.387	0.234	( 0.348)	0.153
131	10.92	0.67	0.387	0.233	( 0.348)	0.154
132	11.00	0.67	0.387	0.232	( 0.348)	0.156
133	11.08	0.63	0.368	0.230	( 0.331)	0.137
134	11.17	0.63	0.368	0.229	( 0.331)	0.138
135	11.25	0.63	0.368	0.228	( 0.331)	0.140
136	11.33	0.63	0.368	0.227	( 0.331)	0.141
137	11.42	0.63	0.368	0.226	( 0.331)	0.142
138	11.50	0.63	0.368	0.225	( 0.331)	0.143
139	11.58	0.57	0.329	0.224	( 0.296)	0.105
140	11.67	0.57	0.329	0.223	( 0.296)	0.106
141	11.75	0.57	0.329	0.222	( 0.296)	0.108
142	11.83	0.60	0.348	0.220	( 0.314)	0.128
143	11.92	0.60	0.348	0.219	( 0.314)	0.129
144	12.00	0.60	0.348	0.218	( 0.314)	0.130
145	12.08	0.83	0.484	0.217	( 0.436)	0.267
146	12.17	0.83	0.484	0.216	( 0.436)	0.268
147	12.25	0.83	0.484	0.215	( 0.436)	0.269
148	12.33	0.87	0.503	0.214	( 0.453)	0.289
149	12.42	0.87	0.503	0.213	( 0.453)	0.291
150	12.50	0.87	0.503	0.212	( 0.453)	0.292
151	12.58	0.93	0.542	0.211	( 0.488)	0.331
152	12.67	0.93	0.542	0.210	( 0.488)	0.332
153	12.75	0.93	0.542	0.209	( 0.488)	0.334
154	12.83	0.97	0.561	0.207	( 0.505)	0.354
155	12.92	0.97	0.561	0.206	( 0.505)	0.355
156	13.00	0.97	0.561	0.205	( 0.505)	0.356
157	13.08	1.13	0.658	0.204	( 0.592)	0.454
158	13.17	1.13	0.658	0.203	( 0.592)	0.455

159	13.25	1.13	0.658	0.202	( 0.592)	0.456
160	13.33	1.13	0.658	0.201	( 0.592)	0.457
161	13.42	1.13	0.658	0.200	( 0.592)	0.458
162	13.50	1.13	0.658	0.199	( 0.592)	0.459
163	13.58	0.77	0.445	0.198	( 0.401)	0.247
164	13.67	0.77	0.445	0.197	( 0.401)	0.248
165	13.75	0.77	0.445	0.196	( 0.401)	0.249
166	13.83	0.77	0.445	0.195	( 0.401)	0.250
167	13.92	0.77	0.445	0.194	( 0.401)	0.251
168	14.00	0.77	0.445	0.193	( 0.401)	0.252
169	14.08	0.90	0.523	0.192	( 0.470)	0.330
170	14.17	0.90	0.523	0.191	( 0.470)	0.331
171	14.25	0.90	0.523	0.190	( 0.470)	0.332
172	14.33	0.87	0.503	0.189	( 0.453)	0.314
173	14.42	0.87	0.503	0.188	( 0.453)	0.315
174	14.50	0.87	0.503	0.187	( 0.453)	0.316
175	14.58	0.87	0.503	0.186	( 0.453)	0.317
176	14.67	0.87	0.503	0.185	( 0.453)	0.318
177	14.75	0.87	0.503	0.184	( 0.453)	0.319
178	14.83	0.83	0.484	0.184	( 0.436)	0.300
179	14.92	0.83	0.484	0.183	( 0.436)	0.301
180	15.00	0.83	0.484	0.182	( 0.436)	0.302
181	15.08	0.80	0.465	0.181	( 0.418)	0.284
182	15.17	0.80	0.465	0.180	( 0.418)	0.285
183	15.25	0.80	0.465	0.179	( 0.418)	0.286
184	15.33	0.77	0.445	0.178	( 0.401)	0.267
185	15.42	0.77	0.445	0.177	( 0.401)	0.268
186	15.50	0.77	0.445	0.176	( 0.401)	0.269
187	15.58	0.63	0.368	0.175	( 0.331)	0.193
188	15.67	0.63	0.368	0.174	( 0.331)	0.193
189	15.75	0.63	0.368	0.173	( 0.331)	0.194
190	15.83	0.63	0.368	0.173	( 0.331)	0.195
191	15.92	0.63	0.368	0.172	( 0.331)	0.196
192	16.00	0.63	0.368	0.171	( 0.331)	0.197
193	16.08	0.13	0.077	( 0.170)	0.070	0.008
194	16.17	0.13	0.077	( 0.169)	0.070	0.008
195	16.25	0.13	0.077	( 0.168)	0.070	0.008
196	16.33	0.13	0.077	( 0.167)	0.070	0.008
197	16.42	0.13	0.077	( 0.166)	0.070	0.008
198	16.50	0.13	0.077	( 0.166)	0.070	0.008
199	16.58	0.10	0.058	( 0.165)	0.052	0.006
200	16.67	0.10	0.058	( 0.164)	0.052	0.006
201	16.75	0.10	0.058	( 0.163)	0.052	0.006
202	16.83	0.10	0.058	( 0.162)	0.052	0.006
203	16.92	0.10	0.058	( 0.161)	0.052	0.006
204	17.00	0.10	0.058	( 0.161)	0.052	0.006
205	17.08	0.17	0.097	( 0.160)	0.087	0.010
206	17.17	0.17	0.097	( 0.159)	0.087	0.010
207	17.25	0.17	0.097	( 0.158)	0.087	0.010
208	17.33	0.17	0.097	( 0.157)	0.087	0.010
209	17.42	0.17	0.097	( 0.157)	0.087	0.010
210	17.50	0.17	0.097	( 0.156)	0.087	0.010
211	17.58	0.17	0.097	( 0.155)	0.087	0.010
212	17.67	0.17	0.097	( 0.154)	0.087	0.010
213	17.75	0.17	0.097	( 0.154)	0.087	0.010
214	17.83	0.13	0.077	( 0.153)	0.070	0.008
215	17.92	0.13	0.077	( 0.152)	0.070	0.008
216	18.00	0.13	0.077	( 0.151)	0.070	0.008
217	18.08	0.13	0.077	( 0.151)	0.070	0.008
218	18.17	0.13	0.077	( 0.150)	0.070	0.008
219	18.25	0.13	0.077	( 0.149)	0.070	0.008
220	18.33	0.13	0.077	( 0.148)	0.070	0.008
221	18.42	0.13	0.077	( 0.148)	0.070	0.008
222	18.50	0.13	0.077	( 0.147)	0.070	0.008
223	18.58	0.10	0.058	( 0.146)	0.052	0.006
224	18.67	0.10	0.058	( 0.145)	0.052	0.006

225	18.75	0.10	0.058	( 0.145)	0.052	0.006
226	18.83	0.07	0.039	( 0.144)	0.035	0.004
227	18.92	0.07	0.039	( 0.143)	0.035	0.004
228	19.00	0.07	0.039	( 0.143)	0.035	0.004
229	19.08	0.10	0.058	( 0.142)	0.052	0.006
230	19.17	0.10	0.058	( 0.141)	0.052	0.006
231	19.25	0.10	0.058	( 0.141)	0.052	0.006
232	19.33	0.13	0.077	( 0.140)	0.070	0.008
233	19.42	0.13	0.077	( 0.139)	0.070	0.008
234	19.50	0.13	0.077	( 0.139)	0.070	0.008
235	19.58	0.10	0.058	( 0.138)	0.052	0.006
236	19.67	0.10	0.058	( 0.138)	0.052	0.006
237	19.75	0.10	0.058	( 0.137)	0.052	0.006
238	19.83	0.07	0.039	( 0.136)	0.035	0.004
239	19.92	0.07	0.039	( 0.136)	0.035	0.004
240	20.00	0.07	0.039	( 0.135)	0.035	0.004
241	20.08	0.10	0.058	( 0.134)	0.052	0.006
242	20.17	0.10	0.058	( 0.134)	0.052	0.006
243	20.25	0.10	0.058	( 0.133)	0.052	0.006
244	20.33	0.10	0.058	( 0.133)	0.052	0.006
245	20.42	0.10	0.058	( 0.132)	0.052	0.006
246	20.50	0.10	0.058	( 0.132)	0.052	0.006
247	20.58	0.10	0.058	( 0.131)	0.052	0.006
248	20.67	0.10	0.058	( 0.130)	0.052	0.006
249	20.75	0.10	0.058	( 0.130)	0.052	0.006
250	20.83	0.07	0.039	( 0.129)	0.035	0.004
251	20.92	0.07	0.039	( 0.129)	0.035	0.004
252	21.00	0.07	0.039	( 0.128)	0.035	0.004
253	21.08	0.10	0.058	( 0.128)	0.052	0.006
254	21.17	0.10	0.058	( 0.127)	0.052	0.006
255	21.25	0.10	0.058	( 0.127)	0.052	0.006
256	21.33	0.07	0.039	( 0.126)	0.035	0.004
257	21.42	0.07	0.039	( 0.126)	0.035	0.004
258	21.50	0.07	0.039	( 0.125)	0.035	0.004
259	21.58	0.10	0.058	( 0.125)	0.052	0.006
260	21.67	0.10	0.058	( 0.125)	0.052	0.006
261	21.75	0.10	0.058	( 0.124)	0.052	0.006
262	21.83	0.07	0.039	( 0.124)	0.035	0.004
263	21.92	0.07	0.039	( 0.123)	0.035	0.004
264	22.00	0.07	0.039	( 0.123)	0.035	0.004
265	22.08	0.10	0.058	( 0.122)	0.052	0.006
266	22.17	0.10	0.058	( 0.122)	0.052	0.006
267	22.25	0.10	0.058	( 0.122)	0.052	0.006
268	22.33	0.07	0.039	( 0.121)	0.035	0.004
269	22.42	0.07	0.039	( 0.121)	0.035	0.004
270	22.50	0.07	0.039	( 0.121)	0.035	0.004
271	22.58	0.07	0.039	( 0.120)	0.035	0.004
272	22.67	0.07	0.039	( 0.120)	0.035	0.004
273	22.75	0.07	0.039	( 0.120)	0.035	0.004
274	22.83	0.07	0.039	( 0.119)	0.035	0.004
275	22.92	0.07	0.039	( 0.119)	0.035	0.004
276	23.00	0.07	0.039	( 0.119)	0.035	0.004
277	23.08	0.07	0.039	( 0.118)	0.035	0.004
278	23.17	0.07	0.039	( 0.118)	0.035	0.004
279	23.25	0.07	0.039	( 0.118)	0.035	0.004
280	23.33	0.07	0.039	( 0.118)	0.035	0.004
281	23.42	0.07	0.039	( 0.117)	0.035	0.004
282	23.50	0.07	0.039	( 0.117)	0.035	0.004
283	23.58	0.07	0.039	( 0.117)	0.035	0.004
284	23.67	0.07	0.039	( 0.117)	0.035	0.004
285	23.75	0.07	0.039	( 0.117)	0.035	0.004
286	23.83	0.07	0.039	( 0.116)	0.035	0.004
287	23.92	0.07	0.039	( 0.116)	0.035	0.004
288	24.00	0.07	0.039	( 0.116)	0.035	0.004

(Loss Rate Not Used)

Sum = 100.0

Sum = 21.4

Flood volume = Effective rainfall 1.78(In)  
 times area 4.1(Ac.)/[ (In)/(Ft.) ] = 0.6(Ac.Ft)  
 Total soil loss = 3.06(In)  
 Total soil loss = 1.038(Ac.Ft)  
 Total rainfall = 4.84(In)  
 Flood volume = 26287.9 Cubic Feet  
 Total soil loss = 45218.2 Cubic Feet

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 Peak flow rate of this hydrograph = 1.879(CFS)  
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 +-----+

24 - H O U R S T O R M  
 R u n o f f H y d r o g r a p h

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 Hydrograph in 5 Minute intervals ((CFS))  
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Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.01	Q				
0+10	0.0001	0.01	Q				
0+15	0.0002	0.01	Q				
0+20	0.0003	0.02	Q				
0+25	0.0005	0.02	Q				
0+30	0.0007	0.02	Q				
0+35	0.0008	0.02	Q				
0+40	0.0010	0.02	Q				
0+45	0.0011	0.02	Q				
0+50	0.0013	0.03	Q				
0+55	0.0015	0.03	Q				
1+ 0	0.0017	0.03	Q				
1+ 5	0.0019	0.03	Q				
1+10	0.0021	0.03	Q				
1+15	0.0023	0.02	Q				
1+20	0.0025	0.02	Q				
1+25	0.0026	0.02	Q				
1+30	0.0028	0.02	Q				
1+35	0.0029	0.02	Q				
1+40	0.0031	0.02	Q				
1+45	0.0033	0.02	Q				
1+50	0.0035	0.03	Q				
1+55	0.0037	0.03	Q				
2+ 0	0.0039	0.03	Q				
2+ 5	0.0041	0.03	Q				
2+10	0.0043	0.03	Q				
2+15	0.0045	0.03	Q				
2+20	0.0048	0.03	Q				
2+25	0.0050	0.03	Q				
2+30	0.0052	0.03	Q				
2+35	0.0054	0.03	Q				
2+40	0.0057	0.04	Q				
2+45	0.0060	0.04	Q				
2+50	0.0062	0.04	Q				
2+55	0.0065	0.04	Q				
3+ 0	0.0068	0.04	Q				
3+ 5	0.0070	0.04	Q				
3+10	0.0073	0.04	Q				
3+15	0.0076	0.04	Q				
3+20	0.0079	0.04	Q				
3+25	0.0081	0.04	Q				
3+30	0.0084	0.04	Q				
3+35	0.0087	0.04	Q				
3+40	0.0090	0.04	Q				
3+45	0.0092	0.04	Q				
3+50	0.0095	0.04	Q				
3+55	0.0098	0.05	Q				

4+ 0	0.0102	0.05	Q				
4+ 5	0.0105	0.05	Q				
4+10	0.0108	0.05	Q				
4+15	0.0111	0.05	Q				
4+20	0.0115	0.05	Q				
4+25	0.0119	0.05	Q				
4+30	0.0122	0.05	Q				
4+35	0.0126	0.06	Q				
4+40	0.0130	0.06	Q				
4+45	0.0134	0.06	Q				
4+50	0.0138	0.06	Q				
4+55	0.0142	0.06	Q				
5+ 0	0.0146	0.06	Q				
5+ 5	0.0150	0.06	Q				
5+10	0.0154	0.05	QV				
5+15	0.0157	0.05	QV				
5+20	0.0161	0.05	QV				
5+25	0.0165	0.05	QV				
5+30	0.0168	0.05	QV				
5+35	0.0172	0.06	QV				
5+40	0.0177	0.06	QV				
5+45	0.0181	0.06	QV				
5+50	0.0185	0.06	QV				
5+55	0.0190	0.06	QV				
6+ 0	0.0194	0.06	QV				
6+ 5	0.0199	0.07	QV				
6+10	0.0203	0.07	QV				
6+15	0.0208	0.07	QV				
6+20	0.0213	0.07	QV				
6+25	0.0218	0.07	QV				
6+30	0.0223	0.07	QV				
6+35	0.0228	0.07	QV				
6+40	0.0233	0.08	QV				
6+45	0.0239	0.08	QV				
6+50	0.0244	0.08	QV				
6+55	0.0250	0.08	QV				
7+ 0	0.0255	0.08	QV				
7+ 5	0.0261	0.08	QV				
7+10	0.0266	0.08	QV				
7+15	0.0272	0.08	QV				
7+20	0.0277	0.08	QV				
7+25	0.0283	0.09	QV				
7+30	0.0289	0.09	QV				
7+35	0.0295	0.09	QV				
7+40	0.0302	0.09	Q V				
7+45	0.0308	0.09	Q V				
7+50	0.0315	0.10	Q V				
7+55	0.0322	0.10	Q V				
8+ 0	0.0329	0.10	Q V				
8+ 5	0.0337	0.11	Q V				
8+10	0.0345	0.12	Q V				
8+15	0.0353	0.12	Q V				
8+20	0.0361	0.12	Q V				
8+25	0.0369	0.12	Q V				
8+30	0.0377	0.12	Q V				
8+35	0.0387	0.14	Q V				
8+40	0.0398	0.17	Q V				
8+45	0.0410	0.18	Q V				
8+50	0.0425	0.21	Q V				
8+55	0.0443	0.25	IQV				
9+ 0	0.0461	0.27	IQ V				
9+ 5	0.0484	0.33	IQ V				
9+10	0.0512	0.41	IQ V				
9+15	0.0542	0.44	IQ V				
9+20	0.0575	0.47	IQ V				
9+25	0.0611	0.52	I Q V				



9+30	0.0648	0.54	Q V						
9+35	0.0687	0.57	Q V						
9+40	0.0730	0.62	Q V						
9+45	0.0774	0.63	Q V						
9+50	0.0820	0.67	Q V						
9+55	0.0869	0.71	Q V						
10+ 0	0.0919	0.73	Q V						
10+ 5	0.0957	0.56	Q V						
10+10	0.0978	0.30	Q V						
10+15	0.0995	0.25	Q V						
10+20	0.1010	0.22	Q V						
10+25	0.1025	0.21	Q V						
10+30	0.1039	0.21	Q V						
10+35	0.1063	0.34	Q V						
10+40	0.1099	0.53	Q V						
10+45	0.1139	0.58	Q V						
10+50	0.1181	0.61	Q V						
10+55	0.1224	0.62	Q V						
11+ 0	0.1268	0.63	Q V						
11+ 5	0.1310	0.61	Q V						
11+10	0.1350	0.58	Q V						
11+15	0.1389	0.58	Q V						
11+20	0.1429	0.58	Q V						
11+25	0.1469	0.58	Q V						
11+30	0.1509	0.58	Q V						
11+35	0.1546	0.54	Q V						
11+40	0.1578	0.47	Q V						
11+45	0.1609	0.45	Q V						
11+50	0.1642	0.47	Q V						
11+55	0.1677	0.51	Q V						
12+ 0	0.1713	0.52	Q V						
12+ 5	0.1762	0.71	Q V						
12+10	0.1829	0.98	Q V						
12+15	0.1901	1.05	Q V						
12+20	0.1977	1.11	Q V						
12+25	0.2057	1.16	Q V						
12+30	0.2139	1.18	Q V						
12+35	0.2224	1.24	Q V						
12+40	0.2316	1.33	Q V						
12+45	0.2408	1.35	Q V						
12+50	0.2504	1.39	Q V						
12+55	0.2603	1.43	Q V						
13+ 0	0.2702	1.45	Q V						
13+ 5	0.2811	1.58	Q V						
13+10	0.2934	1.78	Q V						
13+15	0.3060	1.83	Q V						
13+20	0.3188	1.85	Q V						
13+25	0.3316	1.87	Q V						
13+30	0.3446	1.88	Q V						
13+35	0.3556	1.61	Q V						
13+40	0.3639	1.20	Q V						
13+45	0.3715	1.10	Q V						
13+50	0.3788	1.06	Q V						
13+55	0.3859	1.04	Q V						
14+ 0	0.3930	1.03	Q V						
14+ 5	0.4008	1.13	Q V						
14+10	0.4097	1.29	Q V						
14+15	0.4189	1.33	Q V						
14+20	0.4280	1.33	Q V						
14+25	0.4370	1.30	Q V						
14+30	0.4459	1.30	Q V						
14+35	0.4549	1.30	Q V						
14+40	0.4638	1.30	Q V						
14+45	0.4728	1.30	Q V						
14+50	0.4817	1.28	Q V						
14+55	0.4903	1.25	Q V						

15+ 0	0.4988	1.24		Q				V	
15+ 5	0.5072	1.22		Q				V	
15+10	0.5154	1.18		Q				V	
15+15	0.5235	1.18		Q				V	
15+20	0.5314	1.15		Q				V	
15+25	0.5391	1.11		Q				V	
15+30	0.5467	1.11		Q				V	
15+35	0.5536	1.01		Q				V	
15+40	0.5596	0.86		Q				V	
15+45	0.5652	0.82		Q				V	
15+50	0.5708	0.81		Q				V	
15+55	0.5764	0.81		Q				V	
16+ 0	0.5819	0.80		Q				V	
16+ 5	0.5858	0.56		Q				V	
16+10	0.5871	0.19	Q					V	
16+15	0.5878	0.10	Q					V	
16+20	0.5883	0.07	Q					V	
16+25	0.5886	0.04	Q					V	
16+30	0.5888	0.03	Q					V	
16+35	0.5890	0.03	Q					V	
16+40	0.5892	0.03	Q					V	
16+45	0.5894	0.02	Q					V	
16+50	0.5895	0.02	Q					V	
16+55	0.5897	0.02	Q					V	
17+ 0	0.5899	0.02	Q					V	
17+ 5	0.5901	0.03	Q					V	
17+10	0.5903	0.04	Q					V	
17+15	0.5906	0.04	Q					V	
17+20	0.5908	0.04	Q					V	
17+25	0.5911	0.04	Q					V	
17+30	0.5914	0.04	Q					V	
17+35	0.5917	0.04	Q					V	
17+40	0.5919	0.04	Q					V	
17+45	0.5922	0.04	Q					V	
17+50	0.5925	0.04	Q					V	
17+55	0.5927	0.03	Q					V	
18+ 0	0.5929	0.03	Q					V	
18+ 5	0.5931	0.03	Q					V	
18+10	0.5934	0.03	Q					V	
18+15	0.5936	0.03	Q					V	
18+20	0.5938	0.03	Q					V	
18+25	0.5940	0.03	Q					V	
18+30	0.5942	0.03	Q					V	
18+35	0.5944	0.03	Q					V	
18+40	0.5946	0.03	Q					V	
18+45	0.5948	0.02	Q					V	
18+50	0.5949	0.02	Q					V	
18+55	0.5950	0.02	Q					V	
19+ 0	0.5952	0.02	Q					V	
19+ 5	0.5953	0.02	Q					V	
19+10	0.5954	0.02	Q					V	
19+15	0.5956	0.02	Q					V	
19+20	0.5958	0.03	Q					V	
19+25	0.5960	0.03	Q					V	
19+30	0.5962	0.03	Q					V	
19+35	0.5964	0.03	Q					V	
19+40	0.5966	0.03	Q					V	
19+45	0.5967	0.02	Q					V	
19+50	0.5969	0.02	Q					V	
19+55	0.5970	0.02	Q					V	
20+ 0	0.5971	0.02	Q					V	
20+ 5	0.5973	0.02	Q					V	
20+10	0.5974	0.02	Q					V	
20+15	0.5976	0.02	Q					V	
20+20	0.5977	0.02	Q					V	
20+25	0.5979	0.02	Q					V	

20+30	0.5981	0.02	Q				V
20+35	0.5982	0.02	Q				V
20+40	0.5984	0.02	Q				V
20+45	0.5986	0.02	Q				V
20+50	0.5987	0.02	Q				V
20+55	0.5988	0.02	Q				V
21+ 0	0.5989	0.02	Q				V
21+ 5	0.5991	0.02	Q				V
21+10	0.5992	0.02	Q				V
21+15	0.5994	0.02	Q				V
21+20	0.5995	0.02	Q				V
21+25	0.5996	0.02	Q				V
21+30	0.5998	0.02	Q				V
21+35	0.5999	0.02	Q				V
21+40	0.6000	0.02	Q				V
21+45	0.6002	0.02	Q				V
21+50	0.6003	0.02	Q				V
21+55	0.6005	0.02	Q				V
22+ 0	0.6006	0.02	Q				V
22+ 5	0.6007	0.02	Q				V
22+10	0.6009	0.02	Q				V
22+15	0.6010	0.02	Q				V
22+20	0.6012	0.02	Q				V
22+25	0.6013	0.02	Q				V
22+30	0.6014	0.02	Q				V
22+35	0.6015	0.02	Q				V
22+40	0.6016	0.02	Q				V
22+45	0.6017	0.02	Q				V
22+50	0.6018	0.02	Q				V
22+55	0.6020	0.02	Q				V
23+ 0	0.6021	0.02	Q				V
23+ 5	0.6022	0.02	Q				V
23+10	0.6023	0.02	Q				V
23+15	0.6024	0.02	Q				V
23+20	0.6025	0.02	Q				V
23+25	0.6026	0.02	Q				V
23+30	0.6027	0.02	Q				V
23+35	0.6028	0.02	Q				V
23+40	0.6029	0.02	Q				V
23+45	0.6030	0.02	Q				V
23+50	0.6032	0.02	Q				V
23+55	0.6033	0.02	Q				V
24+ 0	0.6034	0.02	Q				V
24+ 5	0.6034	0.01	Q				V
24+10	0.6035	0.00	Q				V
24+15	0.6035	0.00	Q				V
24+20	0.6035	0.00	Q				V
24+25	0.6035	0.00	Q				V

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Unit Hydrograph Analysis

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

-----  
MFBC - BUILDING 14  
EXISTING HYDROGRAPH - AREA 2  
100102EXUHAREA2

-----  
Drainage Area = 15.44(Ac.) = 0.024 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 15.44(Ac.) = 0.024 Sq. Mi.  
Length along longest watercourse = 1405.00(Ft.)  
Length along longest watercourse measured to centroid = 715.00(Ft.)  
Length along longest watercourse = 0.266 Mi.  
Length along longest watercourse measured to centroid = 0.135 Mi.  
Difference in elevation = 17.00(Ft.)  
Slope along watercourse = 63.8861 Ft./Mi.  
Average Manning's 'N' = 0.030  
Lag time = 0.092 Hr.  
Lag time = 5.55 Min.  
25% of lag time = 1.39 Min.  
40% of lag time = 2.22 Min.  
Unit time = 5.00 Min.  
Duration of storm = 1 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.44	0.46	7.04

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.44	1.33	20.54

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 0.456(In)  
Area Averaged 100-Year Rainfall = 1.330(In)

Point rain (area averaged) = 1.330(In)  
Areal adjustment factor = 99.99 %

Adjusted average point rain = 1.330(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
15.440 81.00 0.000
Total Area Entered = 15.44(Ac.)

RI RI Infil. Rate Impervious Adj. Infil. Rate Area% F
AMC2 AMC-2 (In/Hr) (Dec.%) (In/Hr) (Dec.) (In/Hr)
81.0 81.0 0.233 0.000 0.233 1.000 0.233
Sum (F) = 0.233

Area averaged mean soil loss (F) (In/Hr) = 0.233

Minimum soil loss rate ((In/Hr)) = 0.116

(for 24 hour storm duration)

Soil loss rate (decimal) = 0.900

Slope of intensity-duration curve for a 1 hour storm =0.5000

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Table with 5 columns: Unit time period (hrs), Time % of lag, Distribution Graph %, Unit Hydrograph (CFS). Rows 1-9 and a Sum row.

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Table with 6 columns: Unit Time (Hr.), Pattern Percent, Storm Rain (In/Hr), Loss rate(In./Hr) Max | Low, Effective (In/Hr). Rows 1-12.

(Loss Rate Not Used)
Sum = 100.0 Sum = 13.2

Flood volume = Effective rainfall 1.10(In)
times area 15.4(Ac.) / [(In)/(Ft.)] = 1.4(Ac.Ft)

Total soil loss = 0.23(In)
Total soil loss = 0.299(Ac.Ft)
Total rainfall = 1.33(In)
Flood volume = 61495.8 Cubic Feet

Total soil loss = 13036.6 Cubic Feet

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 Peak flow rate of this hydrograph = 41.980(CFS)  
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1 - H O U R S T O R M  
 R u n o f f H y d r o g r a p h

-----  
 Hydrograph in 5 Minute intervals ((CFS))  
 -----

Time (h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0076	1.11	Q				
0+10	0.0376	4.36	V Q				
0+15	0.0785	5.94	V Q				
0+20	0.1289	7.32	V Q				
0+25	0.1859	8.27	VQ				
0+30	0.2535	9.82	Q				
0+35	0.3332	11.56	Q				
0+40	0.4275	13.69	Q V				
0+45	0.5468	17.32	Q V				
0+50	0.7483	29.27	V Q				
0+55	1.0374	41.98	V  Q				
1+ 0	1.1984	23.36	Q				
1+ 5	1.2945	13.96	Q				
1+10	1.3428	7.02	Q				
1+15	1.3712	4.12	Q				
1+20	1.3893	2.64	Q				
1+25	1.4009	1.68	Q				
1+30	1.4091	1.19	Q				
1+35	1.4110	0.27	Q				
1+40	1.4117	0.11	Q				

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Unit Hydrograph Analysis

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

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MFBC - BUILDING 14  
EXISTING HYDROGRAPH - AREA 2  
100102EXUHAREA2

-----  
Drainage Area = 15.44(Ac.) = 0.024 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 15.44(Ac.) = 0.024 Sq. Mi.  
Length along longest watercourse = 1405.00(Ft.)  
Length along longest watercourse measured to centroid = 715.00(Ft.)  
Length along longest watercourse = 0.266 Mi.  
Length along longest watercourse measured to centroid = 0.135 Mi.  
Difference in elevation = 17.00(Ft.)  
Slope along watercourse = 63.8861 Ft./Mi.  
Average Manning's 'N' = 0.030  
Lag time = 0.092 Hr.  
Lag time = 5.55 Min.  
25% of lag time = 1.39 Min.  
40% of lag time = 2.22 Min.  
Unit time = 5.00 Min.  
Duration of storm = 3 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.44	0.79	12.26

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.44	1.99	30.73

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 0.794(In)  
Area Averaged 100-Year Rainfall = 1.990(In)

Point rain (area averaged) = 1.990(In)  
Areal adjustment factor = 99.99 %

Adjusted average point rain = 1.990(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 15.440                81.00            0.000  
 Total Area Entered =    15.44(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
81.0	81.0	0.233	0.000	0.233	1.000	0.233
						Sum (F) = 0.233

Area averaged mean soil loss (F) (In/Hr) = 0.233

Minimum soil loss rate ((In/Hr)) = 0.116

(for 24 hour storm duration)

Soil loss rate (decimal) = 0.900

-----  
 U n i t   H y d r o g r a p h  
 VALLEY S-Curve  
 -----

Unit Hydrograph Data  
 -----

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	90.149	16.222
2	0.167	180.298	47.116
3	0.250	270.448	17.390
4	0.333	360.597	7.634
5	0.417	450.746	4.417
6	0.500	540.895	2.822
7	0.583	631.045	1.924
8	0.667	721.194	1.229
9	0.750	811.343	1.247
Sum = 100.000			Sum= 15.561

-----

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max   Low	Effective (In/Hr)
1	0.08	1.30	0.310   ( 0.279)	0.078
2	0.17	1.30	0.310   ( 0.279)	0.078
3	0.25	1.10	0.263   ( 0.236)	0.030
4	0.33	1.50	0.358   ( 0.322)	0.126
5	0.42	1.50	0.358   ( 0.322)	0.126
6	0.50	1.80	0.430   ( 0.387)	0.197
7	0.58	1.50	0.358   ( 0.322)	0.126
8	0.67	1.80	0.430   ( 0.387)	0.197
9	0.75	1.80	0.430   ( 0.387)	0.197
10	0.83	1.50	0.358   ( 0.322)	0.126
11	0.92	1.60	0.382   ( 0.344)	0.149
12	1.00	1.80	0.430   ( 0.387)	0.197
13	1.08	2.20	0.525   ( 0.473)	0.293
14	1.17	2.20	0.525   ( 0.473)	0.293
15	1.25	2.20	0.525   ( 0.473)	0.293
16	1.33	2.00	0.478   ( 0.430)	0.245
17	1.42	2.60	0.621   ( 0.559)	0.388
18	1.50	2.70	0.645   ( 0.580)	0.412
19	1.58	2.40	0.573   ( 0.516)	0.340
20	1.67	2.70	0.645   ( 0.580)	0.412
21	1.75	3.30	0.788   ( 0.709)	0.555
22	1.83	3.10	0.740   ( 0.666)	0.508





2+40	1.3695	22.63				Q V	
2+45	1.4898	17.47				Q	V
2+50	1.5566	9.69					V
2+55	1.6018	6.57		Q			V
3+ 0	1.6343	4.71		Q			V
3+ 5	1.6524	2.63		Q			V
3+10	1.6627	1.49		Q			V
3+15	1.6687	0.87		Q			V
3+20	1.6717	0.43		Q			V
3+25	1.6727	0.15		Q			V
3+30	1.6733	0.08		Q			V
3+35	1.6736	0.04		Q			V
3+40	1.6736	0.00		Q			V

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Unit Hydrograph Analysis

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

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English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used

English Units used in output format

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MFBC - BUILDING 14  
EXISTING HYDROGRAPH - AREA 2  
100102EXUHAREA2

-----

Drainage Area = 15.44(Ac.) = 0.024 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 15.44(Ac.) = 0.024 Sq. Mi.  
Length along longest watercourse = 1405.00(Ft.)  
Length along longest watercourse measured to centroid = 715.00(Ft.)  
Length along longest watercourse = 0.266 Mi.  
Length along longest watercourse measured to centroid = 0.135 Mi.  
Difference in elevation = 17.00(Ft.)  
Slope along watercourse = 63.8861 Ft./Mi.  
Average Manning's 'N' = 0.030  
Lag time = 0.092 Hr.  
Lag time = 5.55 Min.  
25% of lag time = 1.39 Min.  
40% of lag time = 2.22 Min.  
Unit time = 5.00 Min.  
Duration of storm = 6 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.44	1.10	16.98

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.44	2.66	41.07

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 1.100(In)  
Area Averaged 100-Year Rainfall = 2.660(In)

Point rain (area averaged) = 2.660(In)  
Areal adjustment factor = 99.99 %

Adjusted average point rain = 2.660(In)

Sub-Area Data:

Area(Ac.)          Runoff Index      Impervious %  
 15.440              81.00              0.000  
 Total Area Entered =      15.44(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
81.0	81.0	0.233	0.000	0.233	1.000	0.233
						Sum (F) = 0.233

Area averaged mean soil loss (F) (In/Hr) = 0.233

Minimum soil loss rate ((In/Hr)) = 0.116

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.900

-----  
 U n i t   H y d r o g r a p h  
 VALLEY S-Curve  
 -----

Unit Hydrograph Data  
 -----

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	90.149	16.222
2	0.167	180.298	47.116
3	0.250	270.448	17.390
4	0.333	360.597	7.634
5	0.417	450.746	4.417
6	0.500	540.895	2.822
7	0.583	631.045	1.924
8	0.667	721.194	1.229
9	0.750	811.343	1.247
Sum = 100.000			Sum= 15.561

-----

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max   Low	Effective (In/Hr)
1	0.08	0.50	( 0.233)	0.144
2	0.17	0.60	( 0.233)	0.172
3	0.25	0.60	( 0.233)	0.172
4	0.33	0.60	( 0.233)	0.172
5	0.42	0.60	( 0.233)	0.172
6	0.50	0.70	( 0.233)	0.201
7	0.58	0.70	( 0.233)	0.201
8	0.67	0.70	( 0.233)	0.201
9	0.75	0.70	( 0.233)	0.201
10	0.83	0.70	( 0.233)	0.201
11	0.92	0.70	( 0.233)	0.201
12	1.00	0.80	( 0.233)	0.230
13	1.08	0.80	( 0.233)	0.230
14	1.17	0.80	( 0.233)	0.230
15	1.25	0.80	( 0.233)	0.230
16	1.33	0.80	( 0.233)	0.230
17	1.42	0.80	( 0.233)	0.230
18	1.50	0.80	( 0.233)	0.230
19	1.58	0.80	( 0.233)	0.230
20	1.67	0.80	( 0.233)	0.230
21	1.75	0.80	( 0.233)	0.230
22	1.83	0.80	( 0.233)	0.230

23	1.92	0.80	0.255	( 0.233)	0.230	0.026
24	2.00	0.90	0.287	0.233	( 0.259)	0.055
25	2.08	0.80	0.255	( 0.233)	0.230	0.026
26	2.17	0.90	0.287	0.233	( 0.259)	0.055
27	2.25	0.90	0.287	0.233	( 0.259)	0.055
28	2.33	0.90	0.287	0.233	( 0.259)	0.055
29	2.42	0.90	0.287	0.233	( 0.259)	0.055
30	2.50	0.90	0.287	0.233	( 0.259)	0.055
31	2.58	0.90	0.287	0.233	( 0.259)	0.055
32	2.67	0.90	0.287	0.233	( 0.259)	0.055
33	2.75	1.00	0.319	0.233	( 0.287)	0.087
34	2.83	1.00	0.319	0.233	( 0.287)	0.087
35	2.92	1.00	0.319	0.233	( 0.287)	0.087
36	3.00	1.00	0.319	0.233	( 0.287)	0.087
37	3.08	1.00	0.319	0.233	( 0.287)	0.087
38	3.17	1.10	0.351	0.233	( 0.316)	0.119
39	3.25	1.10	0.351	0.233	( 0.316)	0.119
40	3.33	1.10	0.351	0.233	( 0.316)	0.119
41	3.42	1.20	0.383	0.233	( 0.345)	0.150
42	3.50	1.30	0.415	0.233	( 0.373)	0.182
43	3.58	1.40	0.447	0.233	( 0.402)	0.214
44	3.67	1.40	0.447	0.233	( 0.402)	0.214
45	3.75	1.50	0.479	0.233	( 0.431)	0.246
46	3.83	1.50	0.479	0.233	( 0.431)	0.246
47	3.92	1.60	0.511	0.233	( 0.460)	0.278
48	4.00	1.60	0.511	0.233	( 0.460)	0.278
49	4.08	1.70	0.543	0.233	( 0.488)	0.310
50	4.17	1.80	0.575	0.233	( 0.517)	0.342
51	4.25	1.90	0.606	0.233	( 0.546)	0.374
52	4.33	2.00	0.638	0.233	( 0.575)	0.406
53	4.42	2.10	0.670	0.233	( 0.603)	0.438
54	4.50	2.10	0.670	0.233	( 0.603)	0.438
55	4.58	2.20	0.702	0.233	( 0.632)	0.470
56	4.67	2.30	0.734	0.233	( 0.661)	0.502
57	4.75	2.40	0.766	0.233	( 0.689)	0.533
58	4.83	2.40	0.766	0.233	( 0.689)	0.533
59	4.92	2.50	0.798	0.233	( 0.718)	0.565
60	5.00	2.60	0.830	0.233	( 0.747)	0.597
61	5.08	3.10	0.989	0.233	( 0.891)	0.757
62	5.17	3.60	1.149	0.233	( 1.034)	0.916
63	5.25	3.90	1.245	0.233	( 1.120)	1.012
64	5.33	4.20	1.341	0.233	( 1.207)	1.108
65	5.42	4.70	1.500	0.233	( 1.350)	1.268
66	5.50	5.60	1.787	0.233	( 1.609)	1.555
67	5.58	1.90	0.606	0.233	( 0.546)	0.374
68	5.67	0.90	0.287	0.233	( 0.259)	0.055
69	5.75	0.60	0.192	( 0.233)	0.172	0.019
70	5.83	0.50	0.160	( 0.233)	0.144	0.016
71	5.92	0.30	0.096	( 0.233)	0.086	0.010
72	6.00	0.20	0.064	( 0.233)	0.057	0.006

(Loss Rate Not Used)

Sum = 100.0

Sum = 16.2

Flood volume = Effective rainfall 1.35(In)  
times area 15.4(Ac.)/[ (In)/(Ft.) ] = 1.7(Ac.Ft)  
Total soil loss = 1.31(In)  
Total soil loss = 1.686(Ac.Ft)  
Total rainfall = 2.66(In)  
Flood volume = 75650.4 Cubic Feet  
Total soil loss = 73427.2 Cubic Feet

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Peak flow rate of this hydrograph = 18.781(CFS)  
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6 - H O U R S T O R M  
R u n o f f H y d r o g r a p h

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Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0003		0.04	Q				
0+10	0.0014		0.17	Q				
0+15	0.0030		0.23	Q				
0+20	0.0048		0.26	Q				
0+25	0.0067		0.27	Q				
0+30	0.0087		0.29	Q				
0+35	0.0109		0.32	Q				
0+40	0.0132		0.33	Q				
0+45	0.0156		0.34	Q				
0+50	0.0179		0.34	Q				
0+55	0.0203		0.35	Q				
1+ 0	0.0228		0.35	Q				
1+ 5	0.0254		0.38	Q				
1+10	0.0280		0.39	Q				
1+15	0.0307		0.39	Q				
1+20	0.0335		0.39	Q				
1+25	0.0362		0.40	Q				
1+30	0.0389		0.40	Q				
1+35	0.0416		0.40	Q				
1+40	0.0444		0.40	QV				
1+45	0.0471		0.40	QV				
1+50	0.0499		0.40	QV				
1+55	0.0526		0.40	QV				
2+ 0	0.0558		0.47	QV				
2+ 5	0.0600		0.61	IQ				
2+10	0.0638		0.55	IQ				
2+15	0.0688		0.72	IQ				
2+20	0.0742		0.78	IQ				
2+25	0.0798		0.81	IQ				
2+30	0.0855		0.83	IQ				
2+35	0.0912		0.84	IQV				
2+40	0.0970		0.85	IQV				
2+45	0.1034		0.93	IQV				
2+50	0.1115		1.17	IQ				
2+55	0.1201		1.25	IQ				
3+ 0	0.1290		1.29	IQ				
3+ 5	0.1380		1.31	IQV				
3+10	0.1477		1.41	IQV				
3+15	0.1591		1.65	IQ				
3+20	0.1711		1.74	IQ				
3+25	0.1839		1.87	IQV				
3+30	0.1991		2.20	IQ				
3+35	0.2171		2.62	IQ				
3+40	0.2377		2.99	IQ				
3+45	0.2599		3.22	VQ				
3+50	0.2842		3.53	VQ				
3+55	0.3101		3.75	IQ				
4+ 0	0.3379		4.05	VQ				
4+ 5	0.3673		4.26	IQ				
4+10	0.3992		4.64	IQ				
4+15	0.4342		5.08	IQ				
4+20	0.4723		5.54	VQ				
4+25	0.5138		6.01	VQ				
4+30	0.5579		6.41	IQ				
4+35	0.6039		6.67	IQ				
4+40	0.6526		7.08	IQV				
4+45	0.7045		7.53	IQV				
4+50	0.7591		7.93	IQ V				
4+55	0.8154		8.18	IQ V				
5+ 0	0.8745		8.58	IQ V				
5+ 5	0.9389		9.35	IQ V				

5+10	1.0152	11.08				QV		
5+15	1.1048	13.01				VQ		
5+20	1.2055	14.62				V	Q	
5+25	1.3179	16.32				V	Q	
5+30	1.4472	18.78				V	Q	
5+35	1.5757	18.65				VQ		
5+40	1.6469	10.34			Q		V	
5+45	1.6833	5.29		Q			V	
5+50	1.7047	3.10		Q			V	
5+55	1.7184	1.99		Q			V	
6+ 0	1.7272	1.28		Q			V	
6+ 5	1.7326	0.78		Q			V	
6+10	1.7356	0.44	Q				V	
6+15	1.7363	0.11	Q				V	
6+20	1.7365	0.03	Q				V	
6+25	1.7366	0.01	Q				V	
6+30	1.7367	0.01	Q				V	
6+35	1.7367	0.00	Q				V	
6+40	1.7367	0.00	Q				V	

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Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102EXUHAREA224100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

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MFBC - BUILDING 14  
EXISTING HYDROGRAPH - AREA 2  
100102EXUHAREA2

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Drainage Area = 15.44(Ac.) = 0.024 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 15.44(Ac.) = 0.024 Sq. Mi.  
Length along longest watercourse = 1405.00(Ft.)  
Length along longest watercourse measured to centroid = 715.00(Ft.)  
Length along longest watercourse = 0.266 Mi.  
Length along longest watercourse measured to centroid = 0.135 Mi.  
Difference in elevation = 17.00(Ft.)  
Slope along watercourse = 63.8861 Ft./Mi.  
Average Manning's 'N' = 0.030  
Lag time = 0.092 Hr.  
Lag time = 5.55 Min.  
25% of lag time = 1.39 Min.  
40% of lag time = 2.22 Min.  
Unit time = 5.00 Min.  
Duration of storm = 24 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.44	1.91	29.51

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.44	4.84	74.73

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 1.911(In)  
Area Averaged 100-Year Rainfall = 4.840(In)

Point rain (area averaged) = 4.840(In)  
Areal adjustment factor = 100.00 %



Adjusted average point rain = 4.840(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 15.440                81.00            0.000  
 Total Area Entered =    15.44(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
81.0	81.0	0.233	0.000	0.233	1.000	0.233
						Sum (F) = 0.233

Area averaged mean soil loss (F) (In/Hr) = 0.233

Minimum soil loss rate ((In/Hr)) = 0.116

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.900

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 U n i t   H y d r o g r a p h  
 VALLEY S-Curve  
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Unit Hydrograph Data  
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Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	90.149	16.222
2	0.167	180.298	47.116
3	0.250	270.448	17.390
4	0.333	360.597	7.634
5	0.417	450.746	4.417
6	0.500	540.895	2.822
7	0.583	631.045	1.924
8	0.667	721.194	1.229
9	0.750	811.343	1.247
Sum = 100.000			Sum= 15.561

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The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	( 0.412)	0.035	0.004
2	0.17	0.07	( 0.411)	0.035	0.004
3	0.25	0.07	( 0.409)	0.035	0.004
4	0.33	0.10	( 0.408)	0.052	0.006
5	0.42	0.10	( 0.406)	0.052	0.006
6	0.50	0.10	( 0.404)	0.052	0.006
7	0.58	0.10	( 0.403)	0.052	0.006
8	0.67	0.10	( 0.401)	0.052	0.006
9	0.75	0.10	( 0.400)	0.052	0.006
10	0.83	0.13	( 0.398)	0.070	0.008
11	0.92	0.13	( 0.397)	0.070	0.008
12	1.00	0.13	( 0.395)	0.070	0.008
13	1.08	0.10	( 0.393)	0.052	0.006
14	1.17	0.10	( 0.392)	0.052	0.006
15	1.25	0.10	( 0.390)	0.052	0.006
16	1.33	0.10	( 0.389)	0.052	0.006
17	1.42	0.10	( 0.387)	0.052	0.006
18	1.50	0.10	( 0.386)	0.052	0.006
19	1.58	0.10	( 0.384)	0.052	0.006
20	1.67	0.10	( 0.383)	0.052	0.006
21	1.75	0.10	( 0.381)	0.052	0.006
22	1.83	0.13	( 0.379)	0.070	0.008

23	1.92	0.13	0.077	( 0.378)	0.070	0.008
24	2.00	0.13	0.077	( 0.376)	0.070	0.008
25	2.08	0.13	0.077	( 0.375)	0.070	0.008
26	2.17	0.13	0.077	( 0.373)	0.070	0.008
27	2.25	0.13	0.077	( 0.372)	0.070	0.008
28	2.33	0.13	0.077	( 0.370)	0.070	0.008
29	2.42	0.13	0.077	( 0.369)	0.070	0.008
30	2.50	0.13	0.077	( 0.367)	0.070	0.008
31	2.58	0.17	0.097	( 0.366)	0.087	0.010
32	2.67	0.17	0.097	( 0.364)	0.087	0.010
33	2.75	0.17	0.097	( 0.363)	0.087	0.010
34	2.83	0.17	0.097	( 0.361)	0.087	0.010
35	2.92	0.17	0.097	( 0.360)	0.087	0.010
36	3.00	0.17	0.097	( 0.358)	0.087	0.010
37	3.08	0.17	0.097	( 0.357)	0.087	0.010
38	3.17	0.17	0.097	( 0.355)	0.087	0.010
39	3.25	0.17	0.097	( 0.354)	0.087	0.010
40	3.33	0.17	0.097	( 0.352)	0.087	0.010
41	3.42	0.17	0.097	( 0.351)	0.087	0.010
42	3.50	0.17	0.097	( 0.350)	0.087	0.010
43	3.58	0.17	0.097	( 0.348)	0.087	0.010
44	3.67	0.17	0.097	( 0.347)	0.087	0.010
45	3.75	0.17	0.097	( 0.345)	0.087	0.010
46	3.83	0.20	0.116	( 0.344)	0.105	0.012
47	3.92	0.20	0.116	( 0.342)	0.105	0.012
48	4.00	0.20	0.116	( 0.341)	0.105	0.012
49	4.08	0.20	0.116	( 0.339)	0.105	0.012
50	4.17	0.20	0.116	( 0.338)	0.105	0.012
51	4.25	0.20	0.116	( 0.336)	0.105	0.012
52	4.33	0.23	0.136	( 0.335)	0.122	0.014
53	4.42	0.23	0.136	( 0.334)	0.122	0.014
54	4.50	0.23	0.136	( 0.332)	0.122	0.014
55	4.58	0.23	0.136	( 0.331)	0.122	0.014
56	4.67	0.23	0.136	( 0.329)	0.122	0.014
57	4.75	0.23	0.136	( 0.328)	0.122	0.014
58	4.83	0.27	0.155	( 0.326)	0.139	0.015
59	4.92	0.27	0.155	( 0.325)	0.139	0.015
60	5.00	0.27	0.155	( 0.324)	0.139	0.015
61	5.08	0.20	0.116	( 0.322)	0.105	0.012
62	5.17	0.20	0.116	( 0.321)	0.105	0.012
63	5.25	0.20	0.116	( 0.319)	0.105	0.012
64	5.33	0.23	0.136	( 0.318)	0.122	0.014
65	5.42	0.23	0.136	( 0.317)	0.122	0.014
66	5.50	0.23	0.136	( 0.315)	0.122	0.014
67	5.58	0.27	0.155	( 0.314)	0.139	0.015
68	5.67	0.27	0.155	( 0.313)	0.139	0.015
69	5.75	0.27	0.155	( 0.311)	0.139	0.015
70	5.83	0.27	0.155	( 0.310)	0.139	0.015
71	5.92	0.27	0.155	( 0.308)	0.139	0.015
72	6.00	0.27	0.155	( 0.307)	0.139	0.015
73	6.08	0.30	0.174	( 0.306)	0.157	0.017
74	6.17	0.30	0.174	( 0.304)	0.157	0.017
75	6.25	0.30	0.174	( 0.303)	0.157	0.017
76	6.33	0.30	0.174	( 0.302)	0.157	0.017
77	6.42	0.30	0.174	( 0.300)	0.157	0.017
78	6.50	0.30	0.174	( 0.299)	0.157	0.017
79	6.58	0.33	0.194	( 0.298)	0.174	0.019
80	6.67	0.33	0.194	( 0.296)	0.174	0.019
81	6.75	0.33	0.194	( 0.295)	0.174	0.019
82	6.83	0.33	0.194	( 0.294)	0.174	0.019
83	6.92	0.33	0.194	( 0.292)	0.174	0.019
84	7.00	0.33	0.194	( 0.291)	0.174	0.019
85	7.08	0.33	0.194	( 0.290)	0.174	0.019
86	7.17	0.33	0.194	( 0.288)	0.174	0.019
87	7.25	0.33	0.194	( 0.287)	0.174	0.019
88	7.33	0.37	0.213	( 0.286)	0.192	0.021

89	7.42	0.37	0.213	( 0.284)	0.192	0.021
90	7.50	0.37	0.213	( 0.283)	0.192	0.021
91	7.58	0.40	0.232	( 0.282)	0.209	0.023
92	7.67	0.40	0.232	( 0.280)	0.209	0.023
93	7.75	0.40	0.232	( 0.279)	0.209	0.023
94	7.83	0.43	0.252	( 0.278)	0.227	0.025
95	7.92	0.43	0.252	( 0.277)	0.227	0.025
96	8.00	0.43	0.252	( 0.275)	0.227	0.025
97	8.08	0.50	0.290	( 0.274)	0.261	0.029
98	8.17	0.50	0.290	( 0.273)	0.261	0.029
99	8.25	0.50	0.290	( 0.271)	0.261	0.029
100	8.33	0.50	0.290	( 0.270)	0.261	0.029
101	8.42	0.50	0.290	( 0.269)	0.261	0.029
102	8.50	0.50	0.290	( 0.268)	0.261	0.029
103	8.58	0.53	0.310	0.266	( 0.279)	0.043
104	8.67	0.53	0.310	0.265	( 0.279)	0.045
105	8.75	0.53	0.310	0.264	( 0.279)	0.046
106	8.83	0.57	0.329	0.263	( 0.296)	0.066
107	8.92	0.57	0.329	0.261	( 0.296)	0.068
108	9.00	0.57	0.329	0.260	( 0.296)	0.069
109	9.08	0.63	0.368	0.259	( 0.331)	0.109
110	9.17	0.63	0.368	0.258	( 0.331)	0.110
111	9.25	0.63	0.368	0.256	( 0.331)	0.111
112	9.33	0.67	0.387	0.255	( 0.348)	0.132
113	9.42	0.67	0.387	0.254	( 0.348)	0.133
114	9.50	0.67	0.387	0.253	( 0.348)	0.134
115	9.58	0.70	0.407	0.252	( 0.366)	0.155
116	9.67	0.70	0.407	0.250	( 0.366)	0.156
117	9.75	0.70	0.407	0.249	( 0.366)	0.157
118	9.83	0.73	0.426	0.248	( 0.383)	0.178
119	9.92	0.73	0.426	0.247	( 0.383)	0.179
120	10.00	0.73	0.426	0.246	( 0.383)	0.180
121	10.08	0.50	0.290	0.244	( 0.261)	0.046
122	10.17	0.50	0.290	0.243	( 0.261)	0.047
123	10.25	0.50	0.290	0.242	( 0.261)	0.048
124	10.33	0.50	0.290	0.241	( 0.261)	0.049
125	10.42	0.50	0.290	0.240	( 0.261)	0.051
126	10.50	0.50	0.290	0.239	( 0.261)	0.052
127	10.58	0.67	0.387	0.237	( 0.348)	0.150
128	10.67	0.67	0.387	0.236	( 0.348)	0.151
129	10.75	0.67	0.387	0.235	( 0.348)	0.152
130	10.83	0.67	0.387	0.234	( 0.348)	0.153
131	10.92	0.67	0.387	0.233	( 0.348)	0.154
132	11.00	0.67	0.387	0.232	( 0.348)	0.156
133	11.08	0.63	0.368	0.230	( 0.331)	0.137
134	11.17	0.63	0.368	0.229	( 0.331)	0.138
135	11.25	0.63	0.368	0.228	( 0.331)	0.140
136	11.33	0.63	0.368	0.227	( 0.331)	0.141
137	11.42	0.63	0.368	0.226	( 0.331)	0.142
138	11.50	0.63	0.368	0.225	( 0.331)	0.143
139	11.58	0.57	0.329	0.224	( 0.296)	0.105
140	11.67	0.57	0.329	0.223	( 0.296)	0.106
141	11.75	0.57	0.329	0.222	( 0.296)	0.108
142	11.83	0.60	0.348	0.220	( 0.314)	0.128
143	11.92	0.60	0.348	0.219	( 0.314)	0.129
144	12.00	0.60	0.348	0.218	( 0.314)	0.130
145	12.08	0.83	0.484	0.217	( 0.436)	0.267
146	12.17	0.83	0.484	0.216	( 0.436)	0.268
147	12.25	0.83	0.484	0.215	( 0.436)	0.269
148	12.33	0.87	0.503	0.214	( 0.453)	0.289
149	12.42	0.87	0.503	0.213	( 0.453)	0.291
150	12.50	0.87	0.503	0.212	( 0.453)	0.292
151	12.58	0.93	0.542	0.211	( 0.488)	0.331
152	12.67	0.93	0.542	0.210	( 0.488)	0.332
153	12.75	0.93	0.542	0.209	( 0.488)	0.334
154	12.83	0.97	0.561	0.207	( 0.505)	0.354

155	12.92	0.97	0.561	0.206	( 0.505)	0.355
156	13.00	0.97	0.561	0.205	( 0.505)	0.356
157	13.08	1.13	0.658	0.204	( 0.592)	0.454
158	13.17	1.13	0.658	0.203	( 0.592)	0.455
159	13.25	1.13	0.658	0.202	( 0.592)	0.456
160	13.33	1.13	0.658	0.201	( 0.592)	0.457
161	13.42	1.13	0.658	0.200	( 0.592)	0.458
162	13.50	1.13	0.658	0.199	( 0.592)	0.459
163	13.58	0.77	0.445	0.198	( 0.401)	0.247
164	13.67	0.77	0.445	0.197	( 0.401)	0.248
165	13.75	0.77	0.445	0.196	( 0.401)	0.249
166	13.83	0.77	0.445	0.195	( 0.401)	0.250
167	13.92	0.77	0.445	0.194	( 0.401)	0.251
168	14.00	0.77	0.445	0.193	( 0.401)	0.252
169	14.08	0.90	0.523	0.192	( 0.470)	0.330
170	14.17	0.90	0.523	0.191	( 0.470)	0.331
171	14.25	0.90	0.523	0.190	( 0.470)	0.332
172	14.33	0.87	0.503	0.189	( 0.453)	0.314
173	14.42	0.87	0.503	0.188	( 0.453)	0.315
174	14.50	0.87	0.503	0.187	( 0.453)	0.316
175	14.58	0.87	0.503	0.186	( 0.453)	0.317
176	14.67	0.87	0.503	0.185	( 0.453)	0.318
177	14.75	0.87	0.503	0.184	( 0.453)	0.319
178	14.83	0.83	0.484	0.184	( 0.436)	0.300
179	14.92	0.83	0.484	0.183	( 0.436)	0.301
180	15.00	0.83	0.484	0.182	( 0.436)	0.302
181	15.08	0.80	0.465	0.181	( 0.418)	0.284
182	15.17	0.80	0.465	0.180	( 0.418)	0.285
183	15.25	0.80	0.465	0.179	( 0.418)	0.286
184	15.33	0.77	0.445	0.178	( 0.401)	0.267
185	15.42	0.77	0.445	0.177	( 0.401)	0.268
186	15.50	0.77	0.445	0.176	( 0.401)	0.269
187	15.58	0.63	0.368	0.175	( 0.331)	0.193
188	15.67	0.63	0.368	0.174	( 0.331)	0.193
189	15.75	0.63	0.368	0.173	( 0.331)	0.194
190	15.83	0.63	0.368	0.173	( 0.331)	0.195
191	15.92	0.63	0.368	0.172	( 0.331)	0.196
192	16.00	0.63	0.368	0.171	( 0.331)	0.197
193	16.08	0.13	0.077	( 0.170)	0.070	0.008
194	16.17	0.13	0.077	( 0.169)	0.070	0.008
195	16.25	0.13	0.077	( 0.168)	0.070	0.008
196	16.33	0.13	0.077	( 0.167)	0.070	0.008
197	16.42	0.13	0.077	( 0.166)	0.070	0.008
198	16.50	0.13	0.077	( 0.166)	0.070	0.008
199	16.58	0.10	0.058	( 0.165)	0.052	0.006
200	16.67	0.10	0.058	( 0.164)	0.052	0.006
201	16.75	0.10	0.058	( 0.163)	0.052	0.006
202	16.83	0.10	0.058	( 0.162)	0.052	0.006
203	16.92	0.10	0.058	( 0.161)	0.052	0.006
204	17.00	0.10	0.058	( 0.161)	0.052	0.006
205	17.08	0.17	0.097	( 0.160)	0.087	0.010
206	17.17	0.17	0.097	( 0.159)	0.087	0.010
207	17.25	0.17	0.097	( 0.158)	0.087	0.010
208	17.33	0.17	0.097	( 0.157)	0.087	0.010
209	17.42	0.17	0.097	( 0.157)	0.087	0.010
210	17.50	0.17	0.097	( 0.156)	0.087	0.010
211	17.58	0.17	0.097	( 0.155)	0.087	0.010
212	17.67	0.17	0.097	( 0.154)	0.087	0.010
213	17.75	0.17	0.097	( 0.154)	0.087	0.010
214	17.83	0.13	0.077	( 0.153)	0.070	0.008
215	17.92	0.13	0.077	( 0.152)	0.070	0.008
216	18.00	0.13	0.077	( 0.151)	0.070	0.008
217	18.08	0.13	0.077	( 0.151)	0.070	0.008
218	18.17	0.13	0.077	( 0.150)	0.070	0.008
219	18.25	0.13	0.077	( 0.149)	0.070	0.008
220	18.33	0.13	0.077	( 0.148)	0.070	0.008

221	18.42	0.13	0.077	( 0.148)	0.070	0.008
222	18.50	0.13	0.077	( 0.147)	0.070	0.008
223	18.58	0.10	0.058	( 0.146)	0.052	0.006
224	18.67	0.10	0.058	( 0.145)	0.052	0.006
225	18.75	0.10	0.058	( 0.145)	0.052	0.006
226	18.83	0.07	0.039	( 0.144)	0.035	0.004
227	18.92	0.07	0.039	( 0.143)	0.035	0.004
228	19.00	0.07	0.039	( 0.143)	0.035	0.004
229	19.08	0.10	0.058	( 0.142)	0.052	0.006
230	19.17	0.10	0.058	( 0.141)	0.052	0.006
231	19.25	0.10	0.058	( 0.141)	0.052	0.006
232	19.33	0.13	0.077	( 0.140)	0.070	0.008
233	19.42	0.13	0.077	( 0.139)	0.070	0.008
234	19.50	0.13	0.077	( 0.139)	0.070	0.008
235	19.58	0.10	0.058	( 0.138)	0.052	0.006
236	19.67	0.10	0.058	( 0.138)	0.052	0.006
237	19.75	0.10	0.058	( 0.137)	0.052	0.006
238	19.83	0.07	0.039	( 0.136)	0.035	0.004
239	19.92	0.07	0.039	( 0.136)	0.035	0.004
240	20.00	0.07	0.039	( 0.135)	0.035	0.004
241	20.08	0.10	0.058	( 0.134)	0.052	0.006
242	20.17	0.10	0.058	( 0.134)	0.052	0.006
243	20.25	0.10	0.058	( 0.133)	0.052	0.006
244	20.33	0.10	0.058	( 0.133)	0.052	0.006
245	20.42	0.10	0.058	( 0.132)	0.052	0.006
246	20.50	0.10	0.058	( 0.132)	0.052	0.006
247	20.58	0.10	0.058	( 0.131)	0.052	0.006
248	20.67	0.10	0.058	( 0.130)	0.052	0.006
249	20.75	0.10	0.058	( 0.130)	0.052	0.006
250	20.83	0.07	0.039	( 0.129)	0.035	0.004
251	20.92	0.07	0.039	( 0.129)	0.035	0.004
252	21.00	0.07	0.039	( 0.128)	0.035	0.004
253	21.08	0.10	0.058	( 0.128)	0.052	0.006
254	21.17	0.10	0.058	( 0.127)	0.052	0.006
255	21.25	0.10	0.058	( 0.127)	0.052	0.006
256	21.33	0.07	0.039	( 0.126)	0.035	0.004
257	21.42	0.07	0.039	( 0.126)	0.035	0.004
258	21.50	0.07	0.039	( 0.125)	0.035	0.004
259	21.58	0.10	0.058	( 0.125)	0.052	0.006
260	21.67	0.10	0.058	( 0.125)	0.052	0.006
261	21.75	0.10	0.058	( 0.124)	0.052	0.006
262	21.83	0.07	0.039	( 0.124)	0.035	0.004
263	21.92	0.07	0.039	( 0.123)	0.035	0.004
264	22.00	0.07	0.039	( 0.123)	0.035	0.004
265	22.08	0.10	0.058	( 0.122)	0.052	0.006
266	22.17	0.10	0.058	( 0.122)	0.052	0.006
267	22.25	0.10	0.058	( 0.122)	0.052	0.006
268	22.33	0.07	0.039	( 0.121)	0.035	0.004
269	22.42	0.07	0.039	( 0.121)	0.035	0.004
270	22.50	0.07	0.039	( 0.121)	0.035	0.004
271	22.58	0.07	0.039	( 0.120)	0.035	0.004
272	22.67	0.07	0.039	( 0.120)	0.035	0.004
273	22.75	0.07	0.039	( 0.120)	0.035	0.004
274	22.83	0.07	0.039	( 0.119)	0.035	0.004
275	22.92	0.07	0.039	( 0.119)	0.035	0.004
276	23.00	0.07	0.039	( 0.119)	0.035	0.004
277	23.08	0.07	0.039	( 0.118)	0.035	0.004
278	23.17	0.07	0.039	( 0.118)	0.035	0.004
279	23.25	0.07	0.039	( 0.118)	0.035	0.004
280	23.33	0.07	0.039	( 0.118)	0.035	0.004
281	23.42	0.07	0.039	( 0.117)	0.035	0.004
282	23.50	0.07	0.039	( 0.117)	0.035	0.004
283	23.58	0.07	0.039	( 0.117)	0.035	0.004
284	23.67	0.07	0.039	( 0.117)	0.035	0.004
285	23.75	0.07	0.039	( 0.117)	0.035	0.004
286	23.83	0.07	0.039	( 0.116)	0.035	0.004

287 23.92 0.07 0.039 ( 0.116) 0.035 0.004  
 288 24.00 0.07 0.039 ( 0.116) 0.035 0.004

(Loss Rate Not Used)

Sum = 100.0 Sum = 21.4

Flood volume = Effective rainfall 1.78(In)  
 times area 15.4(Ac.)/[ (In)/(Ft.) ] = 2.3(Ac.Ft)  
 Total soil loss = 3.06(In)  
 Total soil loss = 3.938(Ac.Ft)  
 Total rainfall = 4.84(In)  
 Flood volume = 99721.9 Cubic Feet  
 Total soil loss = 171538.3 Cubic Feet

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 Peak flow rate of this hydrograph = 7.053(CFS)  
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24 - H O U R S T O R M  
 R u n o f f H y d r o g r a p h

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 Hydrograph in 5 Minute intervals ((CFS))  
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Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q				
0+10	0.0003	0.04	Q				
0+15	0.0007	0.05	Q				
0+20	0.0011	0.06	Q				
0+25	0.0016	0.08	Q				
0+30	0.0021	0.08	Q				
0+35	0.0027	0.09	Q				
0+40	0.0033	0.09	Q				
0+45	0.0040	0.09	Q				
0+50	0.0046	0.09	Q				
0+55	0.0054	0.11	Q				
1+ 0	0.0061	0.11	Q				
1+ 5	0.0069	0.11	Q				
1+10	0.0076	0.10	Q				
1+15	0.0083	0.09	Q				
1+20	0.0089	0.09	Q				
1+25	0.0095	0.09	Q				
1+30	0.0102	0.09	Q				
1+35	0.0108	0.09	Q				
1+40	0.0114	0.09	Q				
1+45	0.0120	0.09	Q				
1+50	0.0127	0.10	Q				
1+55	0.0134	0.11	Q				
2+ 0	0.0142	0.11	Q				
2+ 5	0.0150	0.12	Q				
2+10	0.0159	0.12	Q				
2+15	0.0167	0.12	Q				
2+20	0.0175	0.12	Q				
2+25	0.0183	0.12	Q				
2+30	0.0192	0.12	Q				
2+35	0.0200	0.13	Q				
2+40	0.0210	0.14	Q				
2+45	0.0220	0.14	Q				
2+50	0.0230	0.15	Q				
2+55	0.0240	0.15	Q				
3+ 0	0.0251	0.15	Q				
3+ 5	0.0261	0.15	Q				
3+10	0.0271	0.15	Q				
3+15	0.0282	0.15	Q				
3+20	0.0292	0.15	Q				
3+25	0.0302	0.15	Q				
3+30	0.0313	0.15	Q				
3+35	0.0323	0.15	Q				

3+40	0.0334	0.15	Q				
3+45	0.0344	0.15	Q				
3+50	0.0355	0.16	Q				
3+55	0.0366	0.17	Q				
4+ 0	0.0378	0.18	Q				
4+ 5	0.0391	0.18	Q				
4+10	0.0403	0.18	Q				
4+15	0.0415	0.18	Q				
4+20	0.0428	0.18	Q				
4+25	0.0442	0.20	Q				
4+30	0.0456	0.21	Q				
4+35	0.0470	0.21	Q				
4+40	0.0485	0.21	Q				
4+45	0.0499	0.21	Q				
4+50	0.0514	0.22	Q				
4+55	0.0530	0.23	Q				
5+ 0	0.0546	0.24	Q				
5+ 5	0.0561	0.23	Q				
5+10	0.0575	0.20	QV				
5+15	0.0588	0.19	QV				
5+20	0.0602	0.19	QV				
5+25	0.0616	0.20	QV				
5+30	0.0630	0.21	QV				
5+35	0.0645	0.21	QV				
5+40	0.0661	0.23	QV				
5+45	0.0677	0.23	QV				
5+50	0.0693	0.24	QV				
5+55	0.0709	0.24	QV				
6+ 0	0.0726	0.24	QV				
6+ 5	0.0743	0.25	QV				
6+10	0.0761	0.26	IQ				
6+15	0.0779	0.27	IQ				
6+20	0.0797	0.27	IQ				
6+25	0.0816	0.27	IQ				
6+30	0.0835	0.27	IQ				
6+35	0.0853	0.28	IQ				
6+40	0.0873	0.29	IQ				
6+45	0.0894	0.30	IQ				
6+50	0.0914	0.30	IQ				
6+55	0.0935	0.30	IQ				
7+ 0	0.0956	0.30	IQ				
7+ 5	0.0976	0.30	IQ				
7+10	0.0997	0.30	IQ				
7+15	0.1018	0.30	IQ				
7+20	0.1039	0.31	IQ				
7+25	0.1061	0.32	IQ				
7+30	0.1083	0.33	IQ				
7+35	0.1106	0.33	IQ				
7+40	0.1130	0.35	IQ				
7+45	0.1155	0.35	IQV				
7+50	0.1180	0.36	IQV				
7+55	0.1206	0.38	IQV				
8+ 0	0.1232	0.38	IQV				
8+ 5	0.1260	0.40	IQV				
8+10	0.1289	0.43	IQV				
8+15	0.1319	0.44	IQV				
8+20	0.1350	0.44	IQV				
8+25	0.1381	0.45	IQV				
8+30	0.1412	0.45	IQV				
8+35	0.1445	0.49	IQV				
8+40	0.1486	0.60	I Q				
8+45	0.1531	0.65	I Q				
8+50	0.1581	0.73	I Q				
8+55	0.1643	0.90	I VQ				
9+ 0	0.1710	0.97	I VQ				
9+ 5	0.1787	1.12	I VQ				

9+10	0.1886	1.44	V Q						
9+15	0.1994	1.57	V Q						
9+20	0.2111	1.69	V Q						
9+25	0.2240	1.88	V Q						
9+30	0.2376	1.98	V Q						
9+35	0.2520	2.08	V Q						
9+40	0.2675	2.26	V Q						
9+45	0.2837	2.35	V Q						
9+50	0.3005	2.44	V Q						
9+55	0.3186	2.62	V Q						
10+ 0	0.3372	2.70	V Q						
10+ 5	0.3538	2.41	V Q						
10+10	0.3638	1.45	QV						
10+15	0.3715	1.11	Q V						
10+20	0.3782	0.98	Q V						
10+25	0.3844	0.91	Q V						
10+30	0.3904	0.87	Q V						
10+35	0.3979	1.09	Q V						
10+40	0.4103	1.79	Q						
10+45	0.4244	2.05	VQ						
10+50	0.4394	2.18	VQ						
10+55	0.4550	2.27	V Q						
11+ 0	0.4710	2.33	VQ						
11+ 5	0.4870	2.32	VQ						
11+10	0.5023	2.22	Q						
11+15	0.5175	2.20	QV						
11+20	0.5326	2.20	QV						
11+25	0.5478	2.20	QV						
11+30	0.5630	2.21	QV						
11+35	0.5776	2.12	Q V						
11+40	0.5904	1.85	Q V						
11+45	0.6025	1.76	Q V						
11+50	0.6148	1.78	Q V						
11+55	0.6280	1.92	Q V						
12+ 0	0.6415	1.97	Q  V						
12+ 5	0.6576	2.34	Q V						
12+10	0.6807	3.36	V Q						
12+15	0.7065	3.74	V Q						
12+20	0.7339	3.97	V Q						
12+25	0.7630	4.23	V Q						
12+30	0.7930	4.36	V Q						
12+35	0.8243	4.54	V Q						
12+40	0.8579	4.88	V Q						
12+45	0.8926	5.04	V Q						
12+50	0.9281	5.15	V Q						
12+55	0.9648	5.34	V  Q						
13+ 0	1.0022	5.43	V  Q						
13+ 5	1.0417	5.73	V   Q						
13+10	1.0863	6.47	V   Q						
13+15	1.1329	6.77	V   Q						
13+20	1.1804	6.90	V   Q						
13+25	1.2286	6.99	V   Q						
13+30	1.2771	7.05	V   Q						
13+35	1.3223	6.56	V Q						
13+40	1.3570	5.03	Q V						
13+45	1.3879	4.49	Q   V						
13+50	1.4172	4.25	Q   V						
13+55	1.4456	4.12	Q   V						
14+ 0	1.4734	4.04	Q   V						
14+ 5	1.5023	4.19	Q   V						
14+10	1.5349	4.73	Q   V						
14+15	1.5688	4.92	Q   V						
14+20	1.6031	4.98	Q   V						
14+25	1.6368	4.90	Q   V						
14+30	1.6706	4.90	Q   V						
14+35	1.7044	4.91	Q   V						



14+40	1.7384	4.93			Q	V	
14+45	1.7725	4.95			Q	V	
14+50	1.8063	4.91			Q	V	
14+55	1.8392	4.78			Q	V	
15+ 0	1.8719	4.74			Q	V	
15+ 5	1.9041	4.68			Q	V	
15+10	1.9354	4.54			Q	V	
15+15	1.9664	4.50			Q	V	
15+20	1.9969	4.43			Q	V	
15+25	2.0265	4.29			Q	V	
15+30	2.0556	4.24			Q	V	
15+35	2.0834	4.03			Q	V	
15+40	2.1072	3.46		Q		V	
15+45	2.1295	3.25		Q		V	
15+50	2.1513	3.16		Q		V	
15+55	2.1728	3.12		Q		V	
16+ 0	2.1942	3.10		Q		V	
16+ 5	2.2121	2.61		Q		V	
16+10	2.2205	1.21		Q		V	
16+15	2.2252	0.68		Q		V	
16+20	2.2284	0.46		Q		V	
16+25	2.2306	0.33		Q		V	
16+30	2.2324	0.25		Q		V	
16+35	2.2337	0.19		Q		V	
16+40	2.2346	0.14		Q		V	
16+45	2.2353	0.10		Q		V	
16+50	2.2359	0.09		Q		V	
16+55	2.2366	0.09		Q		V	
17+ 0	2.2372	0.09		Q		V	
17+ 5	2.2379	0.10		Q		V	
17+10	2.2388	0.13		Q		V	
17+15	2.2397	0.14		Q		V	
17+20	2.2407	0.14		Q		V	
17+25	2.2417	0.15		Q		V	
17+30	2.2427	0.15		Q		V	
17+35	2.2438	0.15		Q		V	
17+40	2.2448	0.15		Q		V	
17+45	2.2458	0.15		Q		V	
17+50	2.2469	0.15		Q		V	
17+55	2.2478	0.13		Q		V	
18+ 0	2.2486	0.13		Q		V	
18+ 5	2.2495	0.12		Q		V	
18+10	2.2503	0.12		Q		V	
18+15	2.2512	0.12		Q		V	
18+20	2.2520	0.12		Q		V	
18+25	2.2528	0.12		Q		V	
18+30	2.2537	0.12		Q		V	
18+35	2.2545	0.12		Q		V	
18+40	2.2552	0.10		Q		V	
18+45	2.2558	0.10		Q		V	
18+50	2.2564	0.09		Q		V	
18+55	2.2569	0.07		Q		V	
19+ 0	2.2574	0.07		Q		V	
19+ 5	2.2579	0.07		Q		V	
19+10	2.2585	0.08		Q		V	
19+15	2.2590	0.09		Q		V	
19+20	2.2597	0.09		Q		V	
19+25	2.2604	0.11		Q		V	
19+30	2.2612	0.11		Q		V	
19+35	2.2620	0.11		Q		V	
19+40	2.2627	0.10		Q		V	
19+45	2.2633	0.09		Q		V	
19+50	2.2639	0.09		Q		V	
19+55	2.2644	0.07		Q		V	
20+ 0	2.2649	0.07		Q		V	
20+ 5	2.2654	0.07		Q		V	

20+10	2.2659	0.08	Q				V
20+15	2.2665	0.09	Q				V
20+20	2.2671	0.09	Q				V
20+25	2.2677	0.09	Q				V
20+30	2.2683	0.09	Q				V
20+35	2.2690	0.09	Q				V
20+40	2.2696	0.09	Q				V
20+45	2.2702	0.09	Q				V
20+50	2.2708	0.09	Q				V
20+55	2.2713	0.07	Q				V
21+ 0	2.2717	0.07	Q				V
21+ 5	2.2722	0.07	Q				V
21+10	2.2728	0.08	Q				V
21+15	2.2734	0.09	Q				V
21+20	2.2739	0.08	Q				V
21+25	2.2744	0.07	Q				V
21+30	2.2749	0.06	Q				V
21+35	2.2753	0.07	Q				V
21+40	2.2759	0.08	Q				V
21+45	2.2765	0.09	Q				V
21+50	2.2770	0.08	Q				V
21+55	2.2775	0.07	Q				V
22+ 0	2.2780	0.06	Q				V
22+ 5	2.2784	0.07	Q				V
22+10	2.2790	0.08	Q				V
22+15	2.2796	0.09	Q				V
22+20	2.2802	0.08	Q				V
22+25	2.2806	0.07	Q				V
22+30	2.2811	0.06	Q				V
22+35	2.2815	0.06	Q				V
22+40	2.2819	0.06	Q				V
22+45	2.2824	0.06	Q				V
22+50	2.2828	0.06	Q				V
22+55	2.2832	0.06	Q				V
23+ 0	2.2836	0.06	Q				V
23+ 5	2.2840	0.06	Q				V
23+10	2.2845	0.06	Q				V
23+15	2.2849	0.06	Q				V
23+20	2.2853	0.06	Q				V
23+25	2.2857	0.06	Q				V
23+30	2.2861	0.06	Q				V
23+35	2.2865	0.06	Q				V
23+40	2.2869	0.06	Q				V
23+45	2.2874	0.06	Q				V
23+50	2.2878	0.06	Q				V
23+55	2.2882	0.06	Q				V
24+ 0	2.2886	0.06	Q				V
24+ 5	2.2890	0.05	Q				V
24+10	2.2891	0.02	Q				V
24+15	2.2892	0.01	Q				V
24+20	2.2892	0.01	Q				V
24+25	2.2893	0.00	Q				V
24+30	2.2893	0.00	Q				V
24+35	2.2893	0.00	Q				V
24+40	2.2893	0.00	Q				V

---

**APPENDIX D**  
**UNIT HYDROGRAPH HYDROLOGY**  
**DEVELOPED CONDITION**

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**PBLA ENGINEERING, INC.**

1809 E. Dyer Rd., Suite 301  
Santa Ana, CA 92705  
(888)714-9642

981 Corporate Center Drive, Suite 150  
Pomona, CA 91768  
(626) 512-4934

1481 Ford Street, Suite 201  
Redlands, CA 92373  
(714) 620-4960

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Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102PRUHA11100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

-----  
MFBC - BUILDING 14  
DEVELOPED UNIT HYDROGRAPH - AREA 1  
100102PRUHA1

-----  
Drainage Area = 3.87(Ac.) = 0.006 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 3.87(Ac.) = 0.006 Sq. Mi.  
Length along longest watercourse = 622.00(Ft.)  
Length along longest watercourse measured to centroid = 307.00(Ft.)  
Length along longest watercourse = 0.118 Mi.  
Length along longest watercourse measured to centroid = 0.058 Mi.  
Difference in elevation = 21.00(Ft.)  
Slope along watercourse = 178.2637 Ft./Mi.  
Average Manning's 'N' = 0.015  
Lag time = 0.020 Hr.  
Lag time = 1.21 Min.  
25% of lag time = 0.30 Min.  
40% of lag time = 0.49 Min.  
Unit time = 5.00 Min.  
Duration of storm = 1 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
3.87	0.46	1.76

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
3.87	1.33	5.15

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 0.456(In)  
Area Averaged 100-Year Rainfall = 1.330(In)

Point rain (area averaged) = 1.330(In)  
Areal adjustment factor = 100.00 %

Adjusted average point rain = 1.330(In)

Sub-Area Data:

Area(Ac.)          Runoff Index    Impervious %  
 3.870                53.00            0.730  
 Total Area Entered =          3.87(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
53.0	53.0	0.541	0.730	0.186	1.000	0.186
						Sum (F) = 0.186

Area averaged mean soil loss (F) (In/Hr) = 0.186  
 Minimum soil loss rate ((In/Hr)) = 0.093  
 (for 24 hour storm duration)  
 Soil loss rate (decimal) = 0.320

-----  
 Slope of intensity-duration curve for a 1 hour storm =0.5000  
 -----

U n i t   H y d r o g r a p h  
 VALLEY S-Curve

-----  
 Unit Hydrograph Data  
 -----

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	411.782	65.881
2	0.167	823.563	34.119
		Sum = 100.000	Sum= 3.900

-----

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)	Effective
(Hr.)	Percent	(In/Hr)	Max   Low	(In/Hr)
1	0.08	4.20	0.186 ( 0.214)	0.485
2	0.17	4.30	0.186 ( 0.220)	0.501
3	0.25	5.00	0.186 ( 0.255)	0.612
4	0.33	5.00	0.186 ( 0.255)	0.612
5	0.42	5.80	0.186 ( 0.296)	0.740
6	0.50	6.50	0.186 ( 0.332)	0.852
7	0.58	7.40	0.186 ( 0.378)	0.995
8	0.67	8.60	0.186 ( 0.439)	1.187
9	0.75	12.30	0.186 ( 0.628)	1.777
10	0.83	29.10	0.186 ( 1.486)	4.458
11	0.92	6.80	0.186 ( 0.347)	0.900
12	1.00	5.00	0.186 ( 0.255)	0.612

(Loss Rate Not Used)  
 Sum = 100.0    Sum = 13.7

Flood volume = Effective rainfall          1.14(In)  
 times area                  3.9(Ac.)/[ (In)/(Ft.)] =          0.4(Ac.Ft)  
 Total soil loss =          0.19(In)  
 Total soil loss =          0.060(Ac.Ft)  
 Total rainfall =          1.33(In)  
 Flood volume =          16074.6 Cubic Feet  
 Total soil loss =          2608.7 Cubic Feet

-----  
 Peak flow rate of this hydrograph = 13.828 (CFS)  
 -----

+++++

1 - H O U R S T O R M  
 R u n o f f H y d r o g r a p h

-----  
 Hydrograph in 5 Minute intervals ((CFS))  
 -----

Time (h+m)	Volume Ac.Ft	Q (CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0086	1.25	V Q				
0+10	0.0219	1.93	VQ				
0+15	0.0373	2.24	Q				
0+20	0.0538	2.39	QV				
0+25	0.0725	2.72	Q V				
0+30	0.0944	3.17	Q V				
0+35	0.1198	3.69	Q   V				
0+40	0.1499	4.38	Q   V				
0+45	0.1923	6.15	Q	V			
0+50	0.2875	13.83	Q   V				
0+55	0.3443	8.25	Q			V	
1+ 0	0.3634	2.77	Q				V
1+ 5	0.3690	0.82	Q				V

-----

Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102PRUHA13100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used

English Units used in output format

-----  
MFBC - BUILDING 14  
DEVELOPED UNIT HYDROGRAPH - AREA 1  
100102PRUHA1

-----  
Drainage Area = 3.87(Ac.) = 0.006 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 3.87(Ac.) = 0.006 Sq. Mi.  
Length along longest watercourse = 622.00(Ft.)  
Length along longest watercourse measured to centroid = 307.00(Ft.)  
Length along longest watercourse = 0.118 Mi.  
Length along longest watercourse measured to centroid = 0.058 Mi.  
Difference in elevation = 21.00(Ft.)  
Slope along watercourse = 178.2637 Ft./Mi.  
Average Manning's 'N' = 0.015  
Lag time = 0.020 Hr.  
Lag time = 1.21 Min.  
25% of lag time = 0.30 Min.  
40% of lag time = 0.49 Min.  
Unit time = 5.00 Min.  
Duration of storm = 3 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
3.87	0.79	3.07

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
3.87	1.99	7.70

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 0.794(In)  
Area Averaged 100-Year Rainfall = 1.990(In)

Point rain (area averaged) = 1.990(In)  
Areal adjustment factor = 100.00 %

Adjusted average point rain = 1.990(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 3.870                53.00            0.730  
 Total Area Entered =        3.87(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
53.0	53.0	0.541	0.730	0.186	1.000	0.186
						Sum (F) = 0.186

Area averaged mean soil loss (F) (In/Hr) = 0.186

Minimum soil loss rate ((In/Hr)) = 0.093

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.320

U n i t   H y d r o g r a p h  
 VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	411.782	65.881
2	0.167	823.563	34.119
		Sum = 100.000	Sum= 3.900

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	( 0.186)	0.099	0.211
2	0.17	1.30	( 0.186)	0.099	0.211
3	0.25	1.10	( 0.186)	0.084	0.179
4	0.33	1.50	( 0.186)	0.115	0.244
5	0.42	1.50	( 0.186)	0.115	0.244
6	0.50	1.80	( 0.186)	0.138	0.292
7	0.58	1.50	( 0.186)	0.115	0.244
8	0.67	1.80	( 0.186)	0.138	0.292
9	0.75	1.80	( 0.186)	0.138	0.292
10	0.83	1.50	( 0.186)	0.115	0.244
11	0.92	1.60	( 0.186)	0.122	0.260
12	1.00	1.80	( 0.186)	0.138	0.292
13	1.08	2.20	( 0.186)	0.168	0.357
14	1.17	2.20	( 0.186)	0.168	0.357
15	1.25	2.20	( 0.186)	0.168	0.357
16	1.33	2.00	( 0.186)	0.153	0.325
17	1.42	2.60	0.186	( 0.199)	0.435
18	1.50	2.70	0.186	( 0.206)	0.459
19	1.58	2.40	( 0.186)	0.183	0.390
20	1.67	2.70	0.186	( 0.206)	0.459
21	1.75	3.30	0.186	( 0.252)	0.602
22	1.83	3.10	0.186	( 0.237)	0.555
23	1.92	2.90	0.186	( 0.222)	0.507
24	2.00	3.00	0.186	( 0.229)	0.531
25	2.08	3.10	0.186	( 0.237)	0.555
26	2.17	4.20	0.186	( 0.321)	0.817
27	2.25	5.00	0.186	( 0.382)	1.008
28	2.33	3.50	0.186	( 0.267)	0.650
29	2.42	6.80	0.186	( 0.520)	1.438



30	2.50	7.30	1.743	0.186	( 0.558)	1.558
31	2.58	8.20	1.958	0.186	( 0.627)	1.772
32	2.67	5.90	1.409	0.186	( 0.451)	1.223
33	2.75	2.00	0.478	( 0.186)	0.153	0.325
34	2.83	1.80	0.430	( 0.186)	0.138	0.292
35	2.92	1.80	0.430	( 0.186)	0.138	0.292
36	3.00	0.60	0.143	( 0.186)	0.046	0.097

(Loss Rate Not Used)

Sum = 100.0 Sum = 18.4

Flood volume = Effective rainfall 1.53(In)  
times area 3.9(Ac.)/[ (In)/(Ft.) ] = 0.5(Ac.Ft)  
Total soil loss = 0.46(In)  
Total soil loss = 0.148(Ac.Ft)  
Total rainfall = 1.99(In)  
Flood volume = 21500.7 Cubic Feet  
Total soil loss = 6454.5 Cubic Feet

-----  
Peak flow rate of this hydrograph = 6.630 (CFS)  
-----

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3 - H O U R S T O R M  
R u n o f f H y d r o g r a p h

-----  
Hydrograph in 5 Minute intervals ((CFS))  
-----

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0037	0.54	V Q				
0+10	0.0094	0.82	V Q				
0+15	0.0145	0.74	VQ				
0+20	0.0205	0.86	V Q				
0+25	0.0270	0.95	VQ				
0+30	0.0344	1.08	V Q				
0+35	0.0414	1.02	VQ				
0+40	0.0488	1.08	VQ				
0+45	0.0567	1.14	Q				
0+50	0.0637	1.02	QV				
0+55	0.0705	0.99	Q V				
1+ 0	0.0781	1.10	Q V				
1+ 5	0.0871	1.31	Q V				
1+10	0.0967	1.39	Q V				
1+15	0.1063	1.39	Q V				
1+20	0.1153	1.31	Q V				
1+25	0.1260	1.55	Q V				
1+30	0.1381	1.76	Q  V				
1+35	0.1492	1.61	Q   V				
1+40	0.1609	1.70	Q   V				
1+45	0.1758	2.16	Q   V				
1+50	0.1911	2.23	Q   V				
1+55	0.2052	2.04	Q   V				
2+ 0	0.2192	2.04	Q   V				
2+ 5	0.2339	2.13	Q   V				
2+10	0.2535	2.84	Q   V				
2+15	0.2788	3.68	Q   V				
2+20	0.2996	3.01	Q   V				
2+25	0.3310	4.56	Q   V				
2+30	0.3717	5.92	Q   V				
2+35	0.4174	6.63	Q   V				
2+40	0.4553	5.50	Q   V				
2+45	0.4723	2.46	Q   V				
2+50	0.4804	1.18	Q   V				
2+55	0.4883	1.14	Q   V				
3+ 0	0.4927	0.64	Q   V				
3+ 5	0.4936	0.13	Q   V				

Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102PRUHA16100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

-----  
MFBC - BUILDING 14  
DEVELOPED UNIT HYDROGRAPH - AREA 1  
100102PRUHA1

-----  
Drainage Area = 3.87(Ac.) = 0.006 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 3.87(Ac.) = 0.006 Sq. Mi.  
Length along longest watercourse = 622.00(Ft.)  
Length along longest watercourse measured to centroid = 307.00(Ft.)  
Length along longest watercourse = 0.118 Mi.  
Length along longest watercourse measured to centroid = 0.058 Mi.  
Difference in elevation = 21.00(Ft.)  
Slope along watercourse = 178.2637 Ft./Mi.  
Average Manning's 'N' = 0.015  
Lag time = 0.020 Hr.  
Lag time = 1.21 Min.  
25% of lag time = 0.30 Min.  
40% of lag time = 0.49 Min.  
Unit time = 5.00 Min.  
Duration of storm = 6 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
3.87	1.10	4.26

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
3.87	2.66	10.29

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 1.100(In)  
Area Averaged 100-Year Rainfall = 2.660(In)

Point rain (area averaged) = 2.660(In)  
Areal adjustment factor = 100.00 %

Adjusted average point rain = 2.660(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 3.870                53.00            0.730  
 Total Area Entered =        3.87(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
53.0	53.0	0.541	0.730	0.186	1.000	0.186
						Sum (F) = 0.186

Area averaged mean soil loss (F) (In/Hr) = 0.186

Minimum soil loss rate ((In/Hr)) = 0.093

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.320

-----  
 U n i t   H y d r o g r a p h  
 VALLEY S-Curve  
 -----

Unit Hydrograph Data  
 -----

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	411.782	65.881
2	0.167	823.563	34.119
		Sum = 100.000	Sum= 3.900

-----

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max   Low	Effective (In/Hr)
1	0.08	0.160	( 0.186)   0.051	0.109
2	0.17	0.192	( 0.186)   0.061	0.130
3	0.25	0.192	( 0.186)   0.061	0.130
4	0.33	0.192	( 0.186)   0.061	0.130
5	0.42	0.192	( 0.186)   0.061	0.130
6	0.50	0.223	( 0.186)   0.071	0.152
7	0.58	0.223	( 0.186)   0.071	0.152
8	0.67	0.223	( 0.186)   0.071	0.152
9	0.75	0.223	( 0.186)   0.071	0.152
10	0.83	0.223	( 0.186)   0.071	0.152
11	0.92	0.223	( 0.186)   0.071	0.152
12	1.00	0.255	( 0.186)   0.082	0.174
13	1.08	0.255	( 0.186)   0.082	0.174
14	1.17	0.255	( 0.186)   0.082	0.174
15	1.25	0.255	( 0.186)   0.082	0.174
16	1.33	0.255	( 0.186)   0.082	0.174
17	1.42	0.255	( 0.186)   0.082	0.174
18	1.50	0.255	( 0.186)   0.082	0.174
19	1.58	0.255	( 0.186)   0.082	0.174
20	1.67	0.255	( 0.186)   0.082	0.174
21	1.75	0.255	( 0.186)   0.082	0.174
22	1.83	0.255	( 0.186)   0.082	0.174
23	1.92	0.255	( 0.186)   0.082	0.174
24	2.00	0.287	( 0.186)   0.092	0.195
25	2.08	0.255	( 0.186)   0.082	0.174
26	2.17	0.287	( 0.186)   0.092	0.195
27	2.25	0.287	( 0.186)   0.092	0.195
28	2.33	0.287	( 0.186)   0.092	0.195
29	2.42	0.287	( 0.186)   0.092	0.195



0+15	0.0087	0.51	V Q						
0+20	0.0122	0.51	V Q						
0+25	0.0157	0.51	V Q						
0+30	0.0196	0.56	VQ						
0+35	0.0237	0.59	VQ						
0+40	0.0278	0.59	VQ						
0+45	0.0319	0.59	Q						
0+50	0.0359	0.59	Q						
0+55	0.0400	0.59	Q						
1+ 0	0.0445	0.65	Q						
1+ 5	0.0492	0.68	QV						
1+10	0.0538	0.68	QV						
1+15	0.0585	0.68	QV						
1+20	0.0632	0.68	QV						
1+25	0.0678	0.68	Q V						
1+30	0.0725	0.68	Q V						
1+35	0.0772	0.68	Q V						
1+40	0.0818	0.68	Q V						
1+45	0.0865	0.68	Q V						
1+50	0.0912	0.68	Q V						
1+55	0.0958	0.68	Q V						
2+ 0	0.1009	0.73	Q V						
2+ 5	0.1057	0.71	Q V						
2+10	0.1108	0.73	Q V						
2+15	0.1160	0.76	Q V						
2+20	0.1213	0.76	Q V						
2+25	0.1265	0.76	Q V						
2+30	0.1318	0.76	Q V						
2+35	0.1370	0.76	Q V						
2+40	0.1423	0.76	Q V						
2+45	0.1479	0.82	Q V						
2+50	0.1538	0.85	Q V						
2+55	0.1596	0.85	Q V						
3+ 0	0.1654	0.85	Q V						
3+ 5	0.1713	0.85	Q V						
3+10	0.1775	0.90	Q  V						
3+15	0.1839	0.93	Q  V						
3+20	0.1903	0.93	Q  V						
3+25	0.1971	0.99	Q   V						
3+30	0.2045	1.07	Q   V						
3+35	0.2125	1.16	Q   V						
3+40	0.2206	1.19	Q   V						
3+45	0.2292	1.24	Q   V						
3+50	0.2379	1.27	Q   V						
3+55	0.2471	1.33	Q   V						
4+ 0	0.2564	1.36	Q   V						
4+ 5	0.2661	1.41	Q   V						
4+10	0.2764	1.50	Q   V						
4+15	0.2874	1.60	Q   V						
4+20	0.2993	1.72	Q   V						
4+25	0.3121	1.85	Q   V						
4+30	0.3251	1.89	Q   V						
4+35	0.3387	1.97	Q   V						
4+40	0.3531	2.10	Q   V						
4+45	0.3684	2.22	Q   V						
4+50	0.3840	2.26	Q   V						
4+55	0.4002	2.35	Q   V						
5+ 0	0.4172	2.47	Q   V						
5+ 5	0.4373	2.92	Q   V						
5+10	0.4618	3.55	Q   V						
5+15	0.4894	4.01	Q   V						
5+20	0.5195	4.38	Q   V						
5+25	0.5534	4.92	Q   V						
5+30	0.5938	5.87	Q   V						
5+35	0.6159	3.21	Q   V						
5+40	0.6232	1.06	Q   V						

5+45	0.6273	0.59	Q				V
5+50	0.6305	0.45	Q				V
5+55	0.6326	0.31	Q				V
6+ 0	0.6340	0.20	Q				V
6+ 5	0.6344	0.06	Q				V

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Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102PRUHA124100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

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English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

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MFBC - BUILDING 14  
DEVELOPED UNIT HYDROGRAPH - AREA 1  
100102PRUHA1

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Drainage Area = 3.87(Ac.) = 0.006 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 3.87(Ac.) = 0.006 Sq. Mi.  
Length along longest watercourse = 622.00(Ft.)  
Length along longest watercourse measured to centroid = 307.00(Ft.)  
Length along longest watercourse = 0.118 Mi.  
Length along longest watercourse measured to centroid = 0.058 Mi.  
Difference in elevation = 21.00(Ft.)  
Slope along watercourse = 178.2637 Ft./Mi.  
Average Manning's 'N' = 0.015  
Lag time = 0.020 Hr.  
Lag time = 1.21 Min.  
25% of lag time = 0.30 Min.  
40% of lag time = 0.49 Min.  
Unit time = 5.00 Min.  
Duration of storm = 24 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
3.87	1.91	7.39

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
3.87	4.84	18.73

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 1.910(In)  
Area Averaged 100-Year Rainfall = 4.840(In)

Point rain (area averaged) = 4.840(In)  
Areal adjustment factor = 100.00 %

Adjusted average point rain = 4.840(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 3.870                53.00            0.730  
 Total Area Entered =        3.87(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
53.0	53.0	0.541	0.730	0.186	1.000	0.186
						Sum (F) = 0.186

Area averaged mean soil loss (F) (In/Hr) = 0.186

Minimum soil loss rate ((In/Hr)) = 0.093

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.320

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 U n i t   H y d r o g r a p h  
 VALLEY S-Curve  
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Unit Hydrograph Data  
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Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	411.782	65.881
2	0.167	823.563	34.119
		Sum = 100.000	Sum= 3.900

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The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
(Hr.)	Percent	(In/Hr)	Max	Low	(In/Hr)
1	0.08	0.039	( 0.329)	0.012	0.026
2	0.17	0.039	( 0.328)	0.012	0.026
3	0.25	0.039	( 0.327)	0.012	0.026
4	0.33	0.058	( 0.325)	0.019	0.039
5	0.42	0.058	( 0.324)	0.019	0.039
6	0.50	0.058	( 0.323)	0.019	0.039
7	0.58	0.058	( 0.322)	0.019	0.039
8	0.67	0.058	( 0.320)	0.019	0.039
9	0.75	0.058	( 0.319)	0.019	0.039
10	0.83	0.077	( 0.318)	0.025	0.053
11	0.92	0.077	( 0.317)	0.025	0.053
12	1.00	0.077	( 0.315)	0.025	0.053
13	1.08	0.058	( 0.314)	0.019	0.039
14	1.17	0.058	( 0.313)	0.019	0.039
15	1.25	0.058	( 0.312)	0.019	0.039
16	1.33	0.058	( 0.310)	0.019	0.039
17	1.42	0.058	( 0.309)	0.019	0.039
18	1.50	0.058	( 0.308)	0.019	0.039
19	1.58	0.058	( 0.307)	0.019	0.039
20	1.67	0.058	( 0.305)	0.019	0.039
21	1.75	0.058	( 0.304)	0.019	0.039
22	1.83	0.077	( 0.303)	0.025	0.053
23	1.92	0.077	( 0.302)	0.025	0.053
24	2.00	0.077	( 0.301)	0.025	0.053
25	2.08	0.077	( 0.299)	0.025	0.053
26	2.17	0.077	( 0.298)	0.025	0.053
27	2.25	0.077	( 0.297)	0.025	0.053
28	2.33	0.077	( 0.296)	0.025	0.053
29	2.42	0.077	( 0.294)	0.025	0.053



30	2.50	0.13	0.077	( 0.293)	0.025	0.053
31	2.58	0.17	0.097	( 0.292)	0.031	0.066
32	2.67	0.17	0.097	( 0.291)	0.031	0.066
33	2.75	0.17	0.097	( 0.290)	0.031	0.066
34	2.83	0.17	0.097	( 0.288)	0.031	0.066
35	2.92	0.17	0.097	( 0.287)	0.031	0.066
36	3.00	0.17	0.097	( 0.286)	0.031	0.066
37	3.08	0.17	0.097	( 0.285)	0.031	0.066
38	3.17	0.17	0.097	( 0.284)	0.031	0.066
39	3.25	0.17	0.097	( 0.283)	0.031	0.066
40	3.33	0.17	0.097	( 0.281)	0.031	0.066
41	3.42	0.17	0.097	( 0.280)	0.031	0.066
42	3.50	0.17	0.097	( 0.279)	0.031	0.066
43	3.58	0.17	0.097	( 0.278)	0.031	0.066
44	3.67	0.17	0.097	( 0.277)	0.031	0.066
45	3.75	0.17	0.097	( 0.276)	0.031	0.066
46	3.83	0.20	0.116	( 0.274)	0.037	0.079
47	3.92	0.20	0.116	( 0.273)	0.037	0.079
48	4.00	0.20	0.116	( 0.272)	0.037	0.079
49	4.08	0.20	0.116	( 0.271)	0.037	0.079
50	4.17	0.20	0.116	( 0.270)	0.037	0.079
51	4.25	0.20	0.116	( 0.269)	0.037	0.079
52	4.33	0.23	0.136	( 0.267)	0.043	0.092
53	4.42	0.23	0.136	( 0.266)	0.043	0.092
54	4.50	0.23	0.136	( 0.265)	0.043	0.092
55	4.58	0.23	0.136	( 0.264)	0.043	0.092
56	4.67	0.23	0.136	( 0.263)	0.043	0.092
57	4.75	0.23	0.136	( 0.262)	0.043	0.092
58	4.83	0.27	0.155	( 0.261)	0.050	0.105
59	4.92	0.27	0.155	( 0.260)	0.050	0.105
60	5.00	0.27	0.155	( 0.258)	0.050	0.105
61	5.08	0.20	0.116	( 0.257)	0.037	0.079
62	5.17	0.20	0.116	( 0.256)	0.037	0.079
63	5.25	0.20	0.116	( 0.255)	0.037	0.079
64	5.33	0.23	0.136	( 0.254)	0.043	0.092
65	5.42	0.23	0.136	( 0.253)	0.043	0.092
66	5.50	0.23	0.136	( 0.252)	0.043	0.092
67	5.58	0.27	0.155	( 0.251)	0.050	0.105
68	5.67	0.27	0.155	( 0.250)	0.050	0.105
69	5.75	0.27	0.155	( 0.248)	0.050	0.105
70	5.83	0.27	0.155	( 0.247)	0.050	0.105
71	5.92	0.27	0.155	( 0.246)	0.050	0.105
72	6.00	0.27	0.155	( 0.245)	0.050	0.105
73	6.08	0.30	0.174	( 0.244)	0.056	0.118
74	6.17	0.30	0.174	( 0.243)	0.056	0.118
75	6.25	0.30	0.174	( 0.242)	0.056	0.118
76	6.33	0.30	0.174	( 0.241)	0.056	0.118
77	6.42	0.30	0.174	( 0.240)	0.056	0.118
78	6.50	0.30	0.174	( 0.239)	0.056	0.118
79	6.58	0.33	0.194	( 0.238)	0.062	0.132
80	6.67	0.33	0.194	( 0.236)	0.062	0.132
81	6.75	0.33	0.194	( 0.235)	0.062	0.132
82	6.83	0.33	0.194	( 0.234)	0.062	0.132
83	6.92	0.33	0.194	( 0.233)	0.062	0.132
84	7.00	0.33	0.194	( 0.232)	0.062	0.132
85	7.08	0.33	0.194	( 0.231)	0.062	0.132
86	7.17	0.33	0.194	( 0.230)	0.062	0.132
87	7.25	0.33	0.194	( 0.229)	0.062	0.132
88	7.33	0.37	0.213	( 0.228)	0.068	0.145
89	7.42	0.37	0.213	( 0.227)	0.068	0.145
90	7.50	0.37	0.213	( 0.226)	0.068	0.145
91	7.58	0.40	0.232	( 0.225)	0.074	0.158
92	7.67	0.40	0.232	( 0.224)	0.074	0.158
93	7.75	0.40	0.232	( 0.223)	0.074	0.158
94	7.83	0.43	0.252	( 0.222)	0.081	0.171
95	7.92	0.43	0.252	( 0.221)	0.081	0.171

96	8.00	0.43	0.252	( 0.220)	0.081	0.171
97	8.08	0.50	0.290	( 0.219)	0.093	0.197
98	8.17	0.50	0.290	( 0.218)	0.093	0.197
99	8.25	0.50	0.290	( 0.217)	0.093	0.197
100	8.33	0.50	0.290	( 0.216)	0.093	0.197
101	8.42	0.50	0.290	( 0.215)	0.093	0.197
102	8.50	0.50	0.290	( 0.214)	0.093	0.197
103	8.58	0.53	0.310	( 0.213)	0.099	0.211
104	8.67	0.53	0.310	( 0.212)	0.099	0.211
105	8.75	0.53	0.310	( 0.211)	0.099	0.211
106	8.83	0.57	0.329	( 0.210)	0.105	0.224
107	8.92	0.57	0.329	( 0.209)	0.105	0.224
108	9.00	0.57	0.329	( 0.208)	0.105	0.224
109	9.08	0.63	0.368	( 0.207)	0.118	0.250
110	9.17	0.63	0.368	( 0.206)	0.118	0.250
111	9.25	0.63	0.368	( 0.205)	0.118	0.250
112	9.33	0.67	0.387	( 0.204)	0.124	0.263
113	9.42	0.67	0.387	( 0.203)	0.124	0.263
114	9.50	0.67	0.387	( 0.202)	0.124	0.263
115	9.58	0.70	0.407	( 0.201)	0.130	0.276
116	9.67	0.70	0.407	( 0.200)	0.130	0.276
117	9.75	0.70	0.407	( 0.199)	0.130	0.276
118	9.83	0.73	0.426	( 0.198)	0.136	0.290
119	9.92	0.73	0.426	( 0.197)	0.136	0.290
120	10.00	0.73	0.426	( 0.196)	0.136	0.290
121	10.08	0.50	0.290	( 0.195)	0.093	0.197
122	10.17	0.50	0.290	( 0.194)	0.093	0.197
123	10.25	0.50	0.290	( 0.193)	0.093	0.197
124	10.33	0.50	0.290	( 0.192)	0.093	0.197
125	10.42	0.50	0.290	( 0.191)	0.093	0.197
126	10.50	0.50	0.290	( 0.190)	0.093	0.197
127	10.58	0.67	0.387	( 0.190)	0.124	0.263
128	10.67	0.67	0.387	( 0.189)	0.124	0.263
129	10.75	0.67	0.387	( 0.188)	0.124	0.263
130	10.83	0.67	0.387	( 0.187)	0.124	0.263
131	10.92	0.67	0.387	( 0.186)	0.124	0.263
132	11.00	0.67	0.387	( 0.185)	0.124	0.263
133	11.08	0.63	0.368	( 0.184)	0.118	0.250
134	11.17	0.63	0.368	( 0.183)	0.118	0.250
135	11.25	0.63	0.368	( 0.182)	0.118	0.250
136	11.33	0.63	0.368	( 0.181)	0.118	0.250
137	11.42	0.63	0.368	( 0.180)	0.118	0.250
138	11.50	0.63	0.368	( 0.180)	0.118	0.250
139	11.58	0.57	0.329	( 0.179)	0.105	0.224
140	11.67	0.57	0.329	( 0.178)	0.105	0.224
141	11.75	0.57	0.329	( 0.177)	0.105	0.224
142	11.83	0.60	0.348	( 0.176)	0.112	0.237
143	11.92	0.60	0.348	( 0.175)	0.112	0.237
144	12.00	0.60	0.348	( 0.174)	0.112	0.237
145	12.08	0.83	0.484	( 0.173)	0.155	0.329
146	12.17	0.83	0.484	( 0.172)	0.155	0.329
147	12.25	0.83	0.484	( 0.172)	0.155	0.329
148	12.33	0.87	0.503	( 0.171)	0.161	0.342
149	12.42	0.87	0.503	( 0.170)	0.161	0.342
150	12.50	0.87	0.503	( 0.169)	0.161	0.342
151	12.58	0.93	0.542	0.168 ( 0.173)		0.374
152	12.67	0.93	0.542	0.167 ( 0.173)		0.375
153	12.75	0.93	0.542	0.166 ( 0.173)		0.376
154	12.83	0.97	0.561	0.166 ( 0.180)		0.396
155	12.92	0.97	0.561	0.165 ( 0.180)		0.397
156	13.00	0.97	0.561	0.164 ( 0.180)		0.397
157	13.08	1.13	0.658	0.163 ( 0.211)		0.495
158	13.17	1.13	0.658	0.162 ( 0.211)		0.496
159	13.25	1.13	0.658	0.162 ( 0.211)		0.497
160	13.33	1.13	0.658	0.161 ( 0.211)		0.498
161	13.42	1.13	0.658	0.160 ( 0.211)		0.498

162	13.50	1.13	0.658	0.159	( 0.211)	0.499
163	13.58	0.77	0.445	( 0.158)	0.142	0.303
164	13.67	0.77	0.445	( 0.157)	0.142	0.303
165	13.75	0.77	0.445	( 0.157)	0.142	0.303
166	13.83	0.77	0.445	( 0.156)	0.142	0.303
167	13.92	0.77	0.445	( 0.155)	0.142	0.303
168	14.00	0.77	0.445	( 0.154)	0.142	0.303
169	14.08	0.90	0.523	0.153	( 0.167)	0.369
170	14.17	0.90	0.523	0.153	( 0.167)	0.370
171	14.25	0.90	0.523	0.152	( 0.167)	0.371
172	14.33	0.87	0.503	0.151	( 0.161)	0.352
173	14.42	0.87	0.503	0.150	( 0.161)	0.353
174	14.50	0.87	0.503	0.150	( 0.161)	0.354
175	14.58	0.87	0.503	0.149	( 0.161)	0.355
176	14.67	0.87	0.503	0.148	( 0.161)	0.355
177	14.75	0.87	0.503	0.147	( 0.161)	0.356
178	14.83	0.83	0.484	0.147	( 0.155)	0.337
179	14.92	0.83	0.484	0.146	( 0.155)	0.338
180	15.00	0.83	0.484	0.145	( 0.155)	0.339
181	15.08	0.80	0.465	0.144	( 0.149)	0.320
182	15.17	0.80	0.465	0.144	( 0.149)	0.321
183	15.25	0.80	0.465	0.143	( 0.149)	0.322
184	15.33	0.77	0.445	0.142	( 0.142)	0.303
185	15.42	0.77	0.445	0.141	( 0.142)	0.304
186	15.50	0.77	0.445	0.141	( 0.142)	0.305
187	15.58	0.63	0.368	( 0.140)	0.118	0.250
188	15.67	0.63	0.368	( 0.139)	0.118	0.250
189	15.75	0.63	0.368	( 0.138)	0.118	0.250
190	15.83	0.63	0.368	( 0.138)	0.118	0.250
191	15.92	0.63	0.368	( 0.137)	0.118	0.250
192	16.00	0.63	0.368	( 0.136)	0.118	0.250
193	16.08	0.13	0.077	( 0.136)	0.025	0.053
194	16.17	0.13	0.077	( 0.135)	0.025	0.053
195	16.25	0.13	0.077	( 0.134)	0.025	0.053
196	16.33	0.13	0.077	( 0.134)	0.025	0.053
197	16.42	0.13	0.077	( 0.133)	0.025	0.053
198	16.50	0.13	0.077	( 0.132)	0.025	0.053
199	16.58	0.10	0.058	( 0.132)	0.019	0.039
200	16.67	0.10	0.058	( 0.131)	0.019	0.039
201	16.75	0.10	0.058	( 0.130)	0.019	0.039
202	16.83	0.10	0.058	( 0.130)	0.019	0.039
203	16.92	0.10	0.058	( 0.129)	0.019	0.039
204	17.00	0.10	0.058	( 0.128)	0.019	0.039
205	17.08	0.17	0.097	( 0.128)	0.031	0.066
206	17.17	0.17	0.097	( 0.127)	0.031	0.066
207	17.25	0.17	0.097	( 0.126)	0.031	0.066
208	17.33	0.17	0.097	( 0.126)	0.031	0.066
209	17.42	0.17	0.097	( 0.125)	0.031	0.066
210	17.50	0.17	0.097	( 0.124)	0.031	0.066
211	17.58	0.17	0.097	( 0.124)	0.031	0.066
212	17.67	0.17	0.097	( 0.123)	0.031	0.066
213	17.75	0.17	0.097	( 0.123)	0.031	0.066
214	17.83	0.13	0.077	( 0.122)	0.025	0.053
215	17.92	0.13	0.077	( 0.121)	0.025	0.053
216	18.00	0.13	0.077	( 0.121)	0.025	0.053
217	18.08	0.13	0.077	( 0.120)	0.025	0.053
218	18.17	0.13	0.077	( 0.120)	0.025	0.053
219	18.25	0.13	0.077	( 0.119)	0.025	0.053
220	18.33	0.13	0.077	( 0.118)	0.025	0.053
221	18.42	0.13	0.077	( 0.118)	0.025	0.053
222	18.50	0.13	0.077	( 0.117)	0.025	0.053
223	18.58	0.10	0.058	( 0.117)	0.019	0.039
224	18.67	0.10	0.058	( 0.116)	0.019	0.039
225	18.75	0.10	0.058	( 0.116)	0.019	0.039
226	18.83	0.07	0.039	( 0.115)	0.012	0.026
227	18.92	0.07	0.039	( 0.114)	0.012	0.026

228	19.00	0.07	0.039	( 0.114)	0.012	0.026
229	19.08	0.10	0.058	( 0.113)	0.019	0.039
230	19.17	0.10	0.058	( 0.113)	0.019	0.039
231	19.25	0.10	0.058	( 0.112)	0.019	0.039
232	19.33	0.13	0.077	( 0.112)	0.025	0.053
233	19.42	0.13	0.077	( 0.111)	0.025	0.053
234	19.50	0.13	0.077	( 0.111)	0.025	0.053
235	19.58	0.10	0.058	( 0.110)	0.019	0.039
236	19.67	0.10	0.058	( 0.110)	0.019	0.039
237	19.75	0.10	0.058	( 0.109)	0.019	0.039
238	19.83	0.07	0.039	( 0.109)	0.012	0.026
239	19.92	0.07	0.039	( 0.108)	0.012	0.026
240	20.00	0.07	0.039	( 0.108)	0.012	0.026
241	20.08	0.10	0.058	( 0.107)	0.019	0.039
242	20.17	0.10	0.058	( 0.107)	0.019	0.039
243	20.25	0.10	0.058	( 0.106)	0.019	0.039
244	20.33	0.10	0.058	( 0.106)	0.019	0.039
245	20.42	0.10	0.058	( 0.106)	0.019	0.039
246	20.50	0.10	0.058	( 0.105)	0.019	0.039
247	20.58	0.10	0.058	( 0.105)	0.019	0.039
248	20.67	0.10	0.058	( 0.104)	0.019	0.039
249	20.75	0.10	0.058	( 0.104)	0.019	0.039
250	20.83	0.07	0.039	( 0.103)	0.012	0.026
251	20.92	0.07	0.039	( 0.103)	0.012	0.026
252	21.00	0.07	0.039	( 0.102)	0.012	0.026
253	21.08	0.10	0.058	( 0.102)	0.019	0.039
254	21.17	0.10	0.058	( 0.102)	0.019	0.039
255	21.25	0.10	0.058	( 0.101)	0.019	0.039
256	21.33	0.07	0.039	( 0.101)	0.012	0.026
257	21.42	0.07	0.039	( 0.101)	0.012	0.026
258	21.50	0.07	0.039	( 0.100)	0.012	0.026
259	21.58	0.10	0.058	( 0.100)	0.019	0.039
260	21.67	0.10	0.058	( 0.099)	0.019	0.039
261	21.75	0.10	0.058	( 0.099)	0.019	0.039
262	21.83	0.07	0.039	( 0.099)	0.012	0.026
263	21.92	0.07	0.039	( 0.098)	0.012	0.026
264	22.00	0.07	0.039	( 0.098)	0.012	0.026
265	22.08	0.10	0.058	( 0.098)	0.019	0.039
266	22.17	0.10	0.058	( 0.097)	0.019	0.039
267	22.25	0.10	0.058	( 0.097)	0.019	0.039
268	22.33	0.07	0.039	( 0.097)	0.012	0.026
269	22.42	0.07	0.039	( 0.096)	0.012	0.026
270	22.50	0.07	0.039	( 0.096)	0.012	0.026
271	22.58	0.07	0.039	( 0.096)	0.012	0.026
272	22.67	0.07	0.039	( 0.096)	0.012	0.026
273	22.75	0.07	0.039	( 0.095)	0.012	0.026
274	22.83	0.07	0.039	( 0.095)	0.012	0.026
275	22.92	0.07	0.039	( 0.095)	0.012	0.026
276	23.00	0.07	0.039	( 0.095)	0.012	0.026
277	23.08	0.07	0.039	( 0.094)	0.012	0.026
278	23.17	0.07	0.039	( 0.094)	0.012	0.026
279	23.25	0.07	0.039	( 0.094)	0.012	0.026
280	23.33	0.07	0.039	( 0.094)	0.012	0.026
281	23.42	0.07	0.039	( 0.094)	0.012	0.026
282	23.50	0.07	0.039	( 0.094)	0.012	0.026
283	23.58	0.07	0.039	( 0.093)	0.012	0.026
284	23.67	0.07	0.039	( 0.093)	0.012	0.026
285	23.75	0.07	0.039	( 0.093)	0.012	0.026
286	23.83	0.07	0.039	( 0.093)	0.012	0.026
287	23.92	0.07	0.039	( 0.093)	0.012	0.026
288	24.00	0.07	0.039	( 0.093)	0.012	0.026

(Loss Rate Not Used)

Sum = 100.0

Sum = 40.0

Flood volume = Effective rainfall 3.33(In)

times area 3.9(Ac.) / [(In)/(Ft.)] = 1.1(Ac.Ft)

Total soil loss = 1.51(In)

Total soil loss = 0.485(Ac.Ft)  
 Total rainfall = 4.84(In)  
 Flood volume = 46844.8 Cubic Feet  
 Total soil loss = 21147.5 Cubic Feet

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 Peak flow rate of this hydrograph = 1.947(CFS)  
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24 - H O U R S T O R M  
 R u n o f f H y d r o g r a p h

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 Hydrograph in 5 Minute intervals ((CFS))  
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Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0005	0.07	Q				
0+10	0.0012	0.10	Q				
0+15	0.0019	0.10	Q				
0+20	0.0028	0.14	Q				
0+25	0.0039	0.15	Q				
0+30	0.0049	0.15	Q				
0+35	0.0060	0.15	Q				
0+40	0.0071	0.15	Q				
0+45	0.0081	0.15	Q				
0+50	0.0094	0.19	Q				
0+55	0.0108	0.21	Q				
1+ 0	0.0123	0.21	Q				
1+ 5	0.0134	0.17	Q				
1+10	0.0145	0.15	Q				
1+15	0.0156	0.15	Q				
1+20	0.0166	0.15	Q				
1+25	0.0177	0.15	Q				
1+30	0.0187	0.15	Q				
1+35	0.0198	0.15	Q				
1+40	0.0209	0.15	Q				
1+45	0.0219	0.15	Q				
1+50	0.0232	0.19	Q				
1+55	0.0246	0.21	Q				
2+ 0	0.0261	0.21	Q				
2+ 5	0.0275	0.21	QV				
2+10	0.0289	0.21	QV				
2+15	0.0303	0.21	QV				
2+20	0.0317	0.21	QV				
2+25	0.0331	0.21	QV				
2+30	0.0345	0.21	QV				
2+35	0.0362	0.24	QV				
2+40	0.0380	0.26	IQ				
2+45	0.0397	0.26	IQ				
2+50	0.0415	0.26	IQ				
2+55	0.0433	0.26	IQ				
3+ 0	0.0450	0.26	IQ				
3+ 5	0.0468	0.26	IQ				
3+10	0.0486	0.26	IQ				
3+15	0.0503	0.26	IQ				
3+20	0.0521	0.26	IQ				
3+25	0.0539	0.26	IQV				
3+30	0.0557	0.26	IQV				
3+35	0.0574	0.26	IQV				
3+40	0.0592	0.26	IQV				
3+45	0.0610	0.26	IQV				
3+50	0.0630	0.29	IQV				
3+55	0.0651	0.31	IQV				
4+ 0	0.0672	0.31	IQV				
4+ 5	0.0693	0.31	IQV				
4+10	0.0715	0.31	IQV				

4+15	0.0736	0.31	QV				
4+20	0.0759	0.34	QV				
4+25	0.0784	0.36	QV				
4+30	0.0809	0.36	Q V				
4+35	0.0834	0.36	Q V				
4+40	0.0858	0.36	Q V				
4+45	0.0883	0.36	Q V				
4+50	0.0910	0.39	Q V				
4+55	0.0939	0.41	Q V				
5+ 0	0.0967	0.41	Q V				
5+ 5	0.0990	0.34	Q V				
5+10	0.1012	0.31	Q V				
5+15	0.1033	0.31	Q V				
5+20	0.1056	0.34	Q V				
5+25	0.1081	0.36	Q V				
5+30	0.1106	0.36	Q V				
5+35	0.1133	0.39	Q V				
5+40	0.1161	0.41	Q V				
5+45	0.1190	0.41	Q V				
5+50	0.1218	0.41	Q V				
5+55	0.1246	0.41	Q V				
6+ 0	0.1275	0.41	Q V				
6+ 5	0.1305	0.44	Q V				
6+10	0.1337	0.46	Q V				
6+15	0.1369	0.46	Q V				
6+20	0.1401	0.46	Q V				
6+25	0.1433	0.46	Q V				
6+30	0.1464	0.46	Q V				
6+35	0.1499	0.50	Q V				
6+40	0.1534	0.51	Q V				
6+45	0.1569	0.51	Q V				
6+50	0.1605	0.51	Q V				
6+55	0.1640	0.51	Q V				
7+ 0	0.1676	0.51	Q V				
7+ 5	0.1711	0.51	Q V				
7+10	0.1746	0.51	Q V				
7+15	0.1782	0.51	Q V				
7+20	0.1819	0.55	Q V				
7+25	0.1858	0.57	Q V				
7+30	0.1897	0.57	Q V				
7+35	0.1938	0.60	Q V				
7+40	0.1981	0.62	Q V				
7+45	0.2023	0.62	Q V				
7+50	0.2068	0.65	Q V				
7+55	0.2114	0.67	Q V				
8+ 0	0.2160	0.67	Q V				
8+ 5	0.2211	0.74	Q V				
8+10	0.2264	0.77	Q V				
8+15	0.2317	0.77	Q V				
8+20	0.2370	0.77	Q V				
8+25	0.2423	0.77	Q V				
8+30	0.2476	0.77	Q V				
8+35	0.2532	0.80	Q V				
8+40	0.2588	0.82	Q V				
8+45	0.2645	0.82	Q V				
8+50	0.2704	0.86	Q V				
8+55	0.2764	0.87	Q V				
9+ 0	0.2824	0.87	Q V				
9+ 5	0.2889	0.94	Q V				
9+10	0.2956	0.98	Q V				
9+15	0.3023	0.98	Q  V				
9+20	0.3093	1.01	Q  V				
9+25	0.3164	1.03	Q  V				
9+30	0.3234	1.03	Q   V				
9+35	0.3307	1.06	Q   V				
9+40	0.3382	1.08	Q   V				

9+45	0.3456	1.08	Q	V					
9+50	0.3533	1.11	Q	V					
9+55	0.3611	1.13	Q	V					
10+ 0	0.3688	1.13	Q	V					
10+ 5	0.3750	0.89	Q	V					
10+10	0.3803	0.77	Q	V					
10+15	0.3856	0.77	Q	V					
10+20	0.3909	0.77	Q	V					
10+25	0.3962	0.77	Q	V					
10+30	0.4015	0.77	Q	V					
10+35	0.4080	0.94	Q	V					
10+40	0.4151	1.03	Q	V					
10+45	0.4221	1.03	Q	V					
10+50	0.4292	1.03	Q	V					
10+55	0.4363	1.03	Q	V					
11+ 0	0.4434	1.03	Q	V					
11+ 5	0.4502	0.99	Q	V					
11+10	0.4569	0.98	Q	V					
11+15	0.4637	0.98	Q	V					
11+20	0.4704	0.98	Q	V					
11+25	0.4771	0.98	Q	V					
11+30	0.4838	0.98	Q	V					
11+35	0.4901	0.91	Q	V					
11+40	0.4961	0.87	Q	V					
11+45	0.5021	0.87	Q	V					
11+50	0.5084	0.91	Q	V					
11+55	0.5147	0.92	Q	V					
12+ 0	0.5211	0.92	Q	V					
12+ 5	0.5291	1.16	Q	V					
12+10	0.5379	1.28	Q	V					
12+15	0.5468	1.28	Q	V					
12+20	0.5559	1.32	Q	V					
12+25	0.5651	1.34	Q	V					
12+30	0.5743	1.34	Q	V					
12+35	0.5840	1.42	Q	V					
12+40	0.5941	1.46	Q	V					
12+45	0.6042	1.46	Q	V					
12+50	0.6146	1.52	Q	V					
12+55	0.6253	1.55	Q	V					
13+ 0	0.6359	1.55	Q	V					
13+ 5	0.6484	1.80	Q	V					
13+10	0.6617	1.93	Q	V					
13+15	0.6750	1.94	Q	V					
13+20	0.6884	1.94	Q	V					
13+25	0.7018	1.94	Q	V					
13+30	0.7152	1.95	Q	V					
13+35	0.7251	1.44	Q	V					
13+40	0.7333	1.18	Q	V					
13+45	0.7414	1.18	Q	V					
13+50	0.7495	1.18	Q	V					
13+55	0.7577	1.18	Q	V					
14+ 0	0.7658	1.18	Q	V					
14+ 5	0.7751	1.35	Q	V					
14+10	0.7851	1.44	Q	V					
14+15	0.7950	1.45	Q	V					
14+20	0.8047	1.40	Q	V					
14+25	0.8141	1.38	Q	V					
14+30	0.8236	1.38	Q	V					
14+35	0.8332	1.38	Q	V					
14+40	0.8427	1.39	Q	V					
14+45	0.8523	1.39	Q	V					
14+50	0.8615	1.34	Q	V					
14+55	0.8706	1.32	Q	V					
15+ 0	0.8797	1.32	Q	V					
15+ 5	0.8885	1.27	Q	V					
15+10	0.8971	1.25	Q	V					

15+15	0.9057	1.25		Q				V	
15+20	0.9140	1.21		Q				V	
15+25	0.9222	1.18		Q				V	
15+30	0.9304	1.19		Q				V	
15+35	0.9376	1.05		Q				V	
15+40	0.9443	0.98		Q				V	
15+45	0.9511	0.98		Q				V	
15+50	0.9578	0.98		Q				V	
15+55	0.9645	0.98		Q				V	
16+ 0	0.9712	0.98		Q				V	
16+ 5	0.9744	0.47		Q				V	
16+10	0.9759	0.21		Q				V	
16+15	0.9773	0.21		Q				V	
16+20	0.9787	0.21		Q				V	
16+25	0.9801	0.21		Q				V	
16+30	0.9815	0.21		Q				V	
16+35	0.9827	0.17		Q				V	
16+40	0.9838	0.15		Q				V	
16+45	0.9848	0.15		Q				V	
16+50	0.9859	0.15		Q				V	
16+55	0.9870	0.15		Q				V	
17+ 0	0.9880	0.15		Q				V	
17+ 5	0.9895	0.22		Q				V	
17+10	0.9913	0.26		Q				V	
17+15	0.9931	0.26		Q				V	
17+20	0.9948	0.26		Q				V	
17+25	0.9966	0.26		Q				V	
17+30	0.9984	0.26		Q				V	
17+35	1.0002	0.26		Q				V	
17+40	1.0019	0.26		Q				V	
17+45	1.0037	0.26		Q				V	
17+50	1.0052	0.22		Q				V	
17+55	1.0066	0.21		Q				V	
18+ 0	1.0081	0.21		Q				V	
18+ 5	1.0095	0.21		Q				V	
18+10	1.0109	0.21		Q				V	
18+15	1.0123	0.21		Q				V	
18+20	1.0137	0.21		Q				V	
18+25	1.0151	0.21		Q				V	
18+30	1.0165	0.21		Q				V	
18+35	1.0177	0.17		Q				V	
18+40	1.0188	0.15		Q				V	
18+45	1.0199	0.15		Q				V	
18+50	1.0207	0.12		Q				V	
18+55	1.0214	0.10		Q				V	
19+ 0	1.0221	0.10		Q				V	
19+ 5	1.0230	0.14		Q				V	
19+10	1.0241	0.15		Q				V	
19+15	1.0252	0.15		Q				V	
19+20	1.0265	0.19		Q				V	
19+25	1.0279	0.21		Q				V	
19+30	1.0293	0.21		Q				V	
19+35	1.0305	0.17		Q				V	
19+40	1.0315	0.15		Q				V	
19+45	1.0326	0.15		Q				V	
19+50	1.0334	0.12		Q				V	
19+55	1.0341	0.10		Q				V	
20+ 0	1.0348	0.10		Q				V	
20+ 5	1.0358	0.14		Q				V	
20+10	1.0368	0.15		Q				V	
20+15	1.0379	0.15		Q				V	
20+20	1.0390	0.15		Q				V	
20+25	1.0400	0.15		Q				V	
20+30	1.0411	0.15		Q				V	
20+35	1.0421	0.15		Q				V	
20+40	1.0432	0.15		Q				V	



20+45	1.0443	0.15	Q				V	
20+50	1.0451	0.12	Q				V	
20+55	1.0458	0.10	Q				V	
21+ 0	1.0465	0.10	Q				V	
21+ 5	1.0475	0.14	Q				V	
21+10	1.0485	0.15	Q				V	
21+15	1.0496	0.15	Q				V	
21+20	1.0504	0.12	Q				V	
21+25	1.0511	0.10	Q				V	
21+30	1.0518	0.10	Q				V	
21+35	1.0528	0.14	Q				V	
21+40	1.0538	0.15	Q				V	
21+45	1.0549	0.15	Q				V	
21+50	1.0557	0.12	Q				V	
21+55	1.0564	0.10	Q				V	
22+ 0	1.0571	0.10	Q				V	
22+ 5	1.0581	0.14	Q				V	
22+10	1.0591	0.15	Q				V	
22+15	1.0602	0.15	Q				V	
22+20	1.0610	0.12	Q				V	
22+25	1.0617	0.10	Q				V	
22+30	1.0624	0.10	Q				V	
22+35	1.0631	0.10	Q				V	
22+40	1.0638	0.10	Q				V	
22+45	1.0646	0.10	Q				V	
22+50	1.0653	0.10	Q				V	
22+55	1.0660	0.10	Q				V	
23+ 0	1.0667	0.10	Q				V	
23+ 5	1.0674	0.10	Q				V	
23+10	1.0681	0.10	Q				V	
23+15	1.0688	0.10	Q				V	
23+20	1.0695	0.10	Q				V	
23+25	1.0702	0.10	Q				V	
23+30	1.0709	0.10	Q				V	
23+35	1.0716	0.10	Q				V	
23+40	1.0723	0.10	Q				V	
23+45	1.0730	0.10	Q				V	
23+50	1.0738	0.10	Q				V	
23+55	1.0745	0.10	Q				V	
24+ 0	1.0752	0.10	Q				V	
24+ 5	1.0754	0.04	Q				V	

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Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102PRUHA21100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

-----  
MFBC BUILDING 14  
DEVELOPED UNIT HYDROGRAPH - AREA 2  
100102PRUHA2

-----  
Drainage Area = 15.48(Ac.) = 0.024 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 15.48(Ac.) = 0.024 Sq. Mi.  
Length along longest watercourse = 1715.00(Ft.)  
Length along longest watercourse measured to centroid = 872.00(Ft.)  
Length along longest watercourse = 0.325 Mi.  
Length along longest watercourse measured to centroid = 0.165 Mi.  
Difference in elevation = 22.00(Ft.)  
Slope along watercourse = 67.7318 Ft./Mi.  
Average Manning's 'N' = 0.015  
Lag time = 0.053 Hr.  
Lag time = 3.19 Min.  
25% of lag time = 0.80 Min.  
40% of lag time = 1.28 Min.  
Unit time = 5.00 Min.  
Duration of storm = 1 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.48	0.46	7.06

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.48	1.33	20.59

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 0.456(In)  
Area Averaged 100-Year Rainfall = 1.330(In)

Point rain (area averaged) = 1.330(In)  
Areal adjustment factor = 99.99 %

Adjusted average point rain = 1.330(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
15.480 53.00 0.790
Total Area Entered = 15.48(Ac.)

RI RI Infil. Rate Impervious Adj. Infil. Rate Area% F
AMC2 AMC-2 (In/Hr) (Dec.%) (In/Hr) (Dec.) (In/Hr)
53.0 53.0 0.541 0.790 0.156 1.000 0.156
Sum (F) = 0.156

Area averaged mean soil loss (F) (In/Hr) = 0.156

Minimum soil loss rate ((In/Hr)) = 0.078
(for 24 hour storm duration)

Soil loss rate (decimal) = 0.270

Slope of intensity-duration curve for a 1 hour storm =0.5000

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Table with 4 columns: Unit time period (hrs), Time % of lag, Distribution Graph %, Unit Hydrograph (CFS). Rows 1-6 and a Sum row.

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Table with 6 columns: Unit Time (Hr.), Pattern Percent, Storm Rain (In/Hr), Loss rate(In./Hr) Max | Low, Effective (In/Hr). Rows 1-12 and a Sum row.

Sum = 100.0 Sum = 14.1

Flood volume = Effective rainfall 1.17(In)
times area 15.5(Ac.) / [(In)/(Ft.)] = 1.5(Ac.Ft)

Total soil loss = 0.16(In)
Total soil loss = 0.202(Ac.Ft)
Total rainfall = 1.33(In)
Flood volume = 65933.3 Cubic Feet
Total soil loss = 8792.1 Cubic Feet

-----  
 Peak flow rate of this hydrograph = 42.048 (CFS)  
 -----

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 1 - H O U R S T O R M  
 R u n o f f H y d r o g r a p h  
 -----

Hydrograph in 5 Minute intervals ((CFS))

Time (h+m)	Volume Ac.Ft	Q (CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0192	2.79	V Q				
0+10	0.0647	6.60	V Q				
0+15	0.1211	8.19	V Q				
0+20	0.1859	9.41	V Q				
0+25	0.2581	10.48	V Q				
0+30	0.3420	12.18		Q			
0+35	0.4386	14.03		Q			
0+40	0.5516	16.41		QV			
0+45	0.6987	21.37			QV		
0+50	0.9790	40.69				V Q	
0+55	1.2686	42.05				Q	
1+ 0	1.4042	19.70			Q		V
1+ 5	1.4753	10.33		Q			V
1+10	1.5003	3.63	Q				V
1+15	1.5104	1.47	Q				V
1+20	1.5130	0.37	Q				V
1+25	1.5136	0.10	Q				V

-----

Unit Hydrograph Analysis

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

-----  
MFBC BUILDING 14  
DEVELOPED UNIT HYDROGRAPH - AREA 2  
100102PRUHA2

-----  
Drainage Area = 15.48(Ac.) = 0.024 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 15.48(Ac.) = 0.024 Sq. Mi.  
Length along longest watercourse = 1715.00(Ft.)  
Length along longest watercourse measured to centroid = 872.00(Ft.)  
Length along longest watercourse = 0.325 Mi.  
Length along longest watercourse measured to centroid = 0.165 Mi.  
Difference in elevation = 22.00(Ft.)  
Slope along watercourse = 67.7318 Ft./Mi.  
Average Manning's 'N' = 0.015  
Lag time = 0.053 Hr.  
Lag time = 3.19 Min.  
25% of lag time = 0.80 Min.  
40% of lag time = 1.28 Min.  
Unit time = 5.00 Min.  
Duration of storm = 3 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.48	0.79	12.29

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.48	1.99	30.81

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 0.794(In)  
Area Averaged 100-Year Rainfall = 1.990(In)

Point rain (area averaged) = 1.990(In)  
Areal adjustment factor = 99.99 %

Adjusted average point rain = 1.990(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 15.480                53.00            0.790  
 Total Area Entered =    15.48(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
53.0	53.0	0.541	0.790	0.156	1.000	0.156
						Sum (F) = 0.156

Area averaged mean soil loss (F) (In/Hr) = 0.156

Minimum soil loss rate ((In/Hr)) = 0.078

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.270

-----  
 U n i t   H y d r o g r a p h  
 VALLEY S-Curve  
 -----

Unit Hydrograph Data  
 -----

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	156.730	34.765
2	0.167	313.460	46.512
3	0.250	470.190	10.804
4	0.333	626.920	4.680
5	0.417	783.650	2.285
6	0.500	940.380	0.954
		Sum = 100.000	Sum= 15.601

-----

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	1.30	0.310	( 0.156)	0.084
2	0.17	1.30	0.310	( 0.156)	0.084
3	0.25	1.10	0.263	( 0.156)	0.071
4	0.33	1.50	0.358	( 0.156)	0.097
5	0.42	1.50	0.358	( 0.156)	0.097
6	0.50	1.80	0.430	( 0.156)	0.116
7	0.58	1.50	0.358	( 0.156)	0.097
8	0.67	1.80	0.430	( 0.156)	0.116
9	0.75	1.80	0.430	( 0.156)	0.116
10	0.83	1.50	0.358	( 0.156)	0.097
11	0.92	1.60	0.382	( 0.156)	0.103
12	1.00	1.80	0.430	( 0.156)	0.116
13	1.08	2.20	0.525	( 0.156)	0.142
14	1.17	2.20	0.525	( 0.156)	0.142
15	1.25	2.20	0.525	( 0.156)	0.142
16	1.33	2.00	0.478	( 0.156)	0.129
17	1.42	2.60	0.621	0.156 ( 0.168)	0.464
18	1.50	2.70	0.645	0.156 ( 0.174)	0.488
19	1.58	2.40	0.573	( 0.156) 0.155	0.418
20	1.67	2.70	0.645	0.156 ( 0.174)	0.488
21	1.75	3.30	0.788	0.156 ( 0.213)	0.632
22	1.83	3.10	0.740	0.156 ( 0.200)	0.584
23	1.92	2.90	0.692	0.156 ( 0.187)	0.536
24	2.00	3.00	0.716	0.156 ( 0.193)	0.560
25	2.08	3.10	0.740	0.156 ( 0.200)	0.584

26	2.17	4.20	1.003	0.156	( 0.271)	0.846
27	2.25	5.00	1.194	0.156	( 0.322)	1.037
28	2.33	3.50	0.836	0.156	( 0.226)	0.679
29	2.42	6.80	1.624	0.156	( 0.438)	1.467
30	2.50	7.30	1.743	0.156	( 0.471)	1.587
31	2.58	8.20	1.958	0.156	( 0.529)	1.802
32	2.67	5.90	1.409	0.156	( 0.380)	1.252
33	2.75	2.00	0.478	( 0.156)	0.129	0.349
34	2.83	1.80	0.430	( 0.156)	0.116	0.314
35	2.92	1.80	0.430	( 0.156)	0.116	0.314
36	3.00	0.60	0.143	( 0.156)	0.039	0.105

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.2

Flood volume = Effective rainfall 1.60(In)  
times area 15.5(Ac.)/[ (In)/(Ft.) ] = 2.1(Ac.Ft)  
Total soil loss = 0.39(In)  
Total soil loss = 0.500(Ac.Ft)  
Total rainfall = 1.99(In)  
Flood volume = 90047.3 Cubic Feet  
Total soil loss = 21768.0 Cubic Feet

-----  
Peak flow rate of this hydrograph = 24.762(CFS)  
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3 - H O U R S T O R M  
R u n o f f H y d r o g r a p h  
-----  
Hydrograph in 5 Minute intervals ((CFS))  
-----

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0085	1.23	VQ				
0+10	0.0283	2.87	V Q				
0+15	0.0494	3.07	V Q				
0+20	0.0725	3.36	V Q				
0+25	0.0993	3.89	V Q				
0+30	0.1289	4.30	V Q				
0+35	0.1594	4.43	V Q				
0+40	0.1900	4.44	V Q				
0+45	0.2229	4.78	V Q				
0+50	0.2544	4.57	V Q				
0+55	0.2841	4.31	Q				
1+ 0	0.3154	4.55	Q				
1+ 5	0.3511	5.18	Q				
1+10	0.3906	5.74	Q				
1+15	0.4311	5.88	QV				
1+20	0.4707	5.76	Q V				
1+25	0.5132	6.16	QV				
1+30	0.5619	7.08	QV				
1+35	0.6105	7.05	Q V				
1+40	0.6589	7.03	Q  V				
1+45	0.7157	8.25	Q V				
1+50	0.7786	9.12	Q V				
1+55	0.8391	8.79	Q V				
2+ 0	0.8984	8.61	Q V				
2+ 5	0.9594	8.86	Q V				
2+10	1.0315	10.47	Q V				
2+15	1.1241	13.45	Q  V				
2+20	1.2161	13.35	Q   V				
2+25	1.3232	15.55	Q V				
2+30	1.4717	21.55	Q				
2+35	1.6422	24.76	V Q				
2+40	1.8076	24.02	Q V				
2+45	1.9165	15.81	Q				
2+50	1.9746	8.45	Q				

2+55	2.0185	6.36		Q				V
3+ 0	2.0484	4.34		Q				V
3+ 5	2.0610	1.83		Q				V
3+10	2.0649	0.57	Q					V
3+15	2.0665	0.24	Q					V
3+20	2.0671	0.08	Q					V
3+25	2.0672	0.02	Q					V

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Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102PRUHA26100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

-----  
MFBC BUILDING 14  
DEVELOPED UNIT HYDROGRAPH - AREA 2  
100102PRUHA2

-----  
Drainage Area = 15.48(Ac.) = 0.024 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 15.48(Ac.) = 0.024 Sq. Mi.  
Length along longest watercourse = 1715.00(Ft.)  
Length along longest watercourse measured to centroid = 872.00(Ft.)  
Length along longest watercourse = 0.325 Mi.  
Length along longest watercourse measured to centroid = 0.165 Mi.  
Difference in elevation = 22.00(Ft.)  
Slope along watercourse = 67.7318 Ft./Mi.  
Average Manning's 'N' = 0.015  
Lag time = 0.053 Hr.  
Lag time = 3.19 Min.  
25% of lag time = 0.80 Min.  
40% of lag time = 1.28 Min.  
Unit time = 5.00 Min.  
Duration of storm = 6 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.48	1.10	17.03

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.48	2.66	41.18

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 1.100(In)  
Area Averaged 100-Year Rainfall = 2.660(In)

Point rain (area averaged) = 2.660(In)  
Areal adjustment factor = 99.99 %

Adjusted average point rain = 2.660(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 15.480                53.00            0.790  
 Total Area Entered =    15.48(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
53.0	53.0	0.541	0.790	0.156	1.000	0.156
						Sum (F) = 0.156

Area averaged mean soil loss (F) (In/Hr) = 0.156

Minimum soil loss rate ((In/Hr)) = 0.078

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.270

-----  
 U n i t   H y d r o g r a p h  
 VALLEY S-Curve  
 -----

Unit Hydrograph Data  
 -----

Unit time period	Time % of lag	Distribution	Unit Hydrograph
(hrs)		Graph %	(CFS)
1	0.083	156.730	5.424
2	0.167	313.460	7.256
3	0.250	470.190	1.686
4	0.333	626.920	0.730
5	0.417	783.650	0.357
6	0.500	940.380	0.149
		Sum = 100.000	Sum= 15.601

-----

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time	Pattern	Storm Rain	Loss rate(In./Hr)		Effective
			Max	Low	
1	0.08	0.50	( 0.156)	0.043	0.117
2	0.17	0.60	( 0.156)	0.052	0.140
3	0.25	0.60	( 0.156)	0.052	0.140
4	0.33	0.60	( 0.156)	0.052	0.140
5	0.42	0.60	( 0.156)	0.052	0.140
6	0.50	0.70	( 0.156)	0.060	0.163
7	0.58	0.70	( 0.156)	0.060	0.163
8	0.67	0.70	( 0.156)	0.060	0.163
9	0.75	0.70	( 0.156)	0.060	0.163
10	0.83	0.70	( 0.156)	0.060	0.163
11	0.92	0.70	( 0.156)	0.060	0.163
12	1.00	0.80	( 0.156)	0.069	0.186
13	1.08	0.80	( 0.156)	0.069	0.186
14	1.17	0.80	( 0.156)	0.069	0.186
15	1.25	0.80	( 0.156)	0.069	0.186
16	1.33	0.80	( 0.156)	0.069	0.186
17	1.42	0.80	( 0.156)	0.069	0.186
18	1.50	0.80	( 0.156)	0.069	0.186
19	1.58	0.80	( 0.156)	0.069	0.186
20	1.67	0.80	( 0.156)	0.069	0.186
21	1.75	0.80	( 0.156)	0.069	0.186
22	1.83	0.80	( 0.156)	0.069	0.186
23	1.92	0.80	( 0.156)	0.069	0.186
24	2.00	0.90	( 0.156)	0.078	0.210
25	2.08	0.80	( 0.156)	0.069	0.186

26	2.17	0.90	0.287	( 0.156)	0.078	0.210
27	2.25	0.90	0.287	( 0.156)	0.078	0.210
28	2.33	0.90	0.287	( 0.156)	0.078	0.210
29	2.42	0.90	0.287	( 0.156)	0.078	0.210
30	2.50	0.90	0.287	( 0.156)	0.078	0.210
31	2.58	0.90	0.287	( 0.156)	0.078	0.210
32	2.67	0.90	0.287	( 0.156)	0.078	0.210
33	2.75	1.00	0.319	( 0.156)	0.086	0.233
34	2.83	1.00	0.319	( 0.156)	0.086	0.233
35	2.92	1.00	0.319	( 0.156)	0.086	0.233
36	3.00	1.00	0.319	( 0.156)	0.086	0.233
37	3.08	1.00	0.319	( 0.156)	0.086	0.233
38	3.17	1.10	0.351	( 0.156)	0.095	0.256
39	3.25	1.10	0.351	( 0.156)	0.095	0.256
40	3.33	1.10	0.351	( 0.156)	0.095	0.256
41	3.42	1.20	0.383	( 0.156)	0.103	0.280
42	3.50	1.30	0.415	( 0.156)	0.112	0.303
43	3.58	1.40	0.447	( 0.156)	0.121	0.326
44	3.67	1.40	0.447	( 0.156)	0.121	0.326
45	3.75	1.50	0.479	( 0.156)	0.129	0.350
46	3.83	1.50	0.479	( 0.156)	0.129	0.350
47	3.92	1.60	0.511	( 0.156)	0.138	0.373
48	4.00	1.60	0.511	( 0.156)	0.138	0.373
49	4.08	1.70	0.543	( 0.156)	0.147	0.396
50	4.17	1.80	0.575	( 0.156)	0.155	0.419
51	4.25	1.90	0.606	0.156 ( 0.164)		0.450
52	4.33	2.00	0.638	0.156 ( 0.172)		0.482
53	4.42	2.10	0.670	0.156 ( 0.181)		0.514
54	4.50	2.10	0.670	0.156 ( 0.181)		0.514
55	4.58	2.20	0.702	0.156 ( 0.190)		0.546
56	4.67	2.30	0.734	0.156 ( 0.198)		0.578
57	4.75	2.40	0.766	0.156 ( 0.207)		0.610
58	4.83	2.40	0.766	0.156 ( 0.207)		0.610
59	4.92	2.50	0.798	0.156 ( 0.215)		0.641
60	5.00	2.60	0.830	0.156 ( 0.224)		0.673
61	5.08	3.10	0.989	0.156 ( 0.267)		0.833
62	5.17	3.60	1.149	0.156 ( 0.310)		0.993
63	5.25	3.90	1.245	0.156 ( 0.336)		1.088
64	5.33	4.20	1.341	0.156 ( 0.362)		1.184
65	5.42	4.70	1.500	0.156 ( 0.405)		1.344
66	5.50	5.60	1.787	0.156 ( 0.483)		1.631
67	5.58	1.90	0.606	0.156 ( 0.164)		0.450
68	5.67	0.90	0.287	( 0.156)	0.078	0.210
69	5.75	0.60	0.192	( 0.156)	0.052	0.140
70	5.83	0.50	0.160	( 0.156)	0.043	0.117
71	5.92	0.30	0.096	( 0.156)	0.026	0.070
72	6.00	0.20	0.064	( 0.156)	0.017	0.047

(Loss Rate Not Used)

Sum = 100.0 Sum = 24.9

Flood volume = Effective rainfall 2.08(In)  
times area 15.5(Ac.) / [(In)/(Ft.)] = 2.7(Ac.Ft)  
Total soil loss = 0.58(In)  
Total soil loss = 0.754(Ac.Ft)  
Total rainfall = 2.66(In)  
Flood volume = 116628.9 Cubic Feet  
Total soil loss = 32834.9 Cubic Feet

-----  
Peak flow rate of this hydrograph = 21.876(CFS)  
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6 - H O U R S T O R M  
R u n o f f H y d r o g r a p h

-----  
Hydrograph in 5 Minute intervals ((CFS))  
-----

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0044	0.63	Q					
0+10	0.0154	1.60	V Q					
0+15	0.0290	1.97	V Q					
0+20	0.0434	2.09	V Q					
0+25	0.0582	2.15	V Q					
0+30	0.0741	2.31	V Q					
0+35	0.0912	2.48	V Q					
0+40	0.1085	2.52	V Q					
0+45	0.1260	2.53	V Q					
0+50	0.1435	2.54	VQ					
0+55	0.1610	2.55	VQ					
1+ 0	0.1794	2.67	VQ					
1+ 5	0.1990	2.84	VQ					
1+10	0.2188	2.88	Q					
1+15	0.2388	2.90	Q					
1+20	0.2588	2.91	Q					
1+25	0.2788	2.91	QV					
1+30	0.2989	2.91	QV					
1+35	0.3189	2.91	QV					
1+40	0.3389	2.91	Q V					
1+45	0.3590	2.91	Q V					
1+50	0.3790	2.91	Q V					
1+55	0.3990	2.91	Q V					
2+ 0	0.4200	3.04	Q V					
2+ 5	0.4412	3.08	Q V					
2+10	0.4623	3.08	Q V					
2+15	0.4845	3.22	Q V					
2+20	0.5069	3.25	Q V					
2+25	0.5294	3.26	Q V					
2+30	0.5519	3.27	Q V					
2+35	0.5745	3.27	Q V					
2+40	0.5970	3.27	Q V					
2+45	0.6204	3.40	Q V					
2+50	0.6450	3.57	Q V					
2+55	0.6699	3.61	Q V					
3+ 0	0.6948	3.63	Q V					
3+ 5	0.7199	3.63	Q V					
3+10	0.7458	3.76	Q  V					
3+15	0.7729	3.93	Q  V					
3+20	0.8002	3.97	Q  V					
3+25	0.8286	4.12	Q   V					
3+30	0.8590	4.42	Q   V					
3+35	0.8918	4.76	Q   V					
3+40	0.9261	4.98	Q   V					
3+45	0.9617	5.17	Q   V					
3+50	0.9987	5.37	Q   V					
3+55	1.0369	5.55	Q   V					
4+ 0	1.0765	5.74	Q   V					
4+ 5	1.1172	5.91	Q   V					
4+10	1.1601	6.23	Q   V					
4+15	1.2056	6.61	Q   V					
4+20	1.2543	7.07	Q   V					
4+25	1.3063	7.55	Q   V					
4+30	1.3605	7.87	Q   V					
4+35	1.4165	8.13	Q  V					
4+40	1.4756	8.58	Q   V					
4+45	1.5379	9.05	Q   V					
4+50	1.6024	9.37	Q   V					
4+55	1.6687	9.63	Q   V					
5+ 0	1.7381	10.07	Q   V					
5+ 5	1.8155	11.24	Q   V					
5+10	1.9074	13.35	Q   V					
5+15	2.0130	15.33	Q   V					
5+20	2.1297	16.95	Q  V					

5+25	2.2595	18.85				Q		V	
5+30	2.4101	21.88					Q	V	
5+35	2.5338	17.95				Q		V	
5+40	2.5938	8.72		Q				V	
5+45	2.6275	4.89		Q				V	
5+50	2.6489	3.11		Q				V	
5+55	2.6628	2.02		Q				V	
6+ 0	2.6711	1.20		Q				V	
6+ 5	2.6753	0.62	Q					V	
6+10	2.6767	0.19	Q					V	
6+15	2.6772	0.08	Q					V	
6+20	2.6774	0.03	Q					V	
6+25	2.6774	0.01	Q					V	

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Unit Hydrograph Analysis

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Study date 01/21/22 File: 100102PRUHA224100.out

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Riverside County Synthetic Unit Hydrology Method  
RCFC & WCD Manual date - April 1978

Program License Serial Number 6490

-----  
English (in-lb) Input Units Used  
English Rainfall Data (Inches) Input Values Used  
  
English Units used in output format

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MFBC BUILDING 14  
DEVELOPED UNIT HYDROGRAPH - AREA 2  
100102PRUHA2

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Drainage Area = 15.48(Ac.) = 0.024 Sq. Mi.  
Drainage Area for Depth-Area Areal Adjustment = 15.48(Ac.) = 0.024 Sq. Mi.  
Length along longest watercourse = 1715.00(Ft.)  
Length along longest watercourse measured to centroid = 872.00(Ft.)  
Length along longest watercourse = 0.325 Mi.  
Length along longest watercourse measured to centroid = 0.165 Mi.  
Difference in elevation = 22.00(Ft.)  
Slope along watercourse = 67.7318 Ft./Mi.  
Average Manning's 'N' = 0.015  
Lag time = 0.053 Hr.  
Lag time = 3.19 Min.  
25% of lag time = 0.80 Min.  
40% of lag time = 1.28 Min.  
Unit time = 5.00 Min.  
Duration of storm = 24 Hour(s)  
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.48	1.91	29.57

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
15.48	4.84	74.92

STORM EVENT (YEAR) = 100.00  
Area Averaged 2-Year Rainfall = 1.910(In)  
Area Averaged 100-Year Rainfall = 4.840(In)

Point rain (area averaged) = 4.840(In)  
Areal adjustment factor = 100.00 %

Adjusted average point rain = 4.840(In)

Sub-Area Data:

Area(Ac.)            Runoff Index    Impervious %  
 15.480                53.00            0.790  
 Total Area Entered =    15.48(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
53.0	53.0	0.541	0.790	0.156	1.000	0.156
						Sum (F) = 0.156

Area averaged mean soil loss (F) (In/Hr) = 0.156

Minimum soil loss rate ((In/Hr)) = 0.078

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.270

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 U n i t   H y d r o g r a p h  
 VALLEY S-Curve  
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Unit Hydrograph Data  
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Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	156.730	34.765
2	0.167	313.460	46.512
3	0.250	470.190	10.804
4	0.333	626.920	4.680
5	0.417	783.650	2.285
6	0.500	940.380	0.954
		Sum = 100.000	Sum= 15.601

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The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
			Max	Low	
1	0.08	0.07	( 0.277)	0.010	0.028
2	0.17	0.07	( 0.276)	0.010	0.028
3	0.25	0.07	( 0.275)	0.010	0.028
4	0.33	0.10	( 0.274)	0.016	0.042
5	0.42	0.10	( 0.273)	0.016	0.042
6	0.50	0.10	( 0.272)	0.016	0.042
7	0.58	0.10	( 0.271)	0.016	0.042
8	0.67	0.10	( 0.270)	0.016	0.042
9	0.75	0.10	( 0.269)	0.016	0.042
10	0.83	0.13	( 0.268)	0.021	0.057
11	0.92	0.13	( 0.267)	0.021	0.057
12	1.00	0.13	( 0.266)	0.021	0.057
13	1.08	0.10	( 0.265)	0.016	0.042
14	1.17	0.10	( 0.264)	0.016	0.042
15	1.25	0.10	( 0.263)	0.016	0.042
16	1.33	0.10	( 0.261)	0.016	0.042
17	1.42	0.10	( 0.260)	0.016	0.042
18	1.50	0.10	( 0.259)	0.016	0.042
19	1.58	0.10	( 0.258)	0.016	0.042
20	1.67	0.10	( 0.257)	0.016	0.042
21	1.75	0.10	( 0.256)	0.016	0.042
22	1.83	0.13	( 0.255)	0.021	0.057
23	1.92	0.13	( 0.254)	0.021	0.057
24	2.00	0.13	( 0.253)	0.021	0.057
25	2.08	0.13	( 0.252)	0.021	0.057

26	2.17	0.13	0.077	( 0.251)	0.021	0.057
27	2.25	0.13	0.077	( 0.250)	0.021	0.057
28	2.33	0.13	0.077	( 0.249)	0.021	0.057
29	2.42	0.13	0.077	( 0.248)	0.021	0.057
30	2.50	0.13	0.077	( 0.247)	0.021	0.057
31	2.58	0.17	0.097	( 0.246)	0.026	0.071
32	2.67	0.17	0.097	( 0.245)	0.026	0.071
33	2.75	0.17	0.097	( 0.244)	0.026	0.071
34	2.83	0.17	0.097	( 0.243)	0.026	0.071
35	2.92	0.17	0.097	( 0.242)	0.026	0.071
36	3.00	0.17	0.097	( 0.241)	0.026	0.071
37	3.08	0.17	0.097	( 0.240)	0.026	0.071
38	3.17	0.17	0.097	( 0.239)	0.026	0.071
39	3.25	0.17	0.097	( 0.238)	0.026	0.071
40	3.33	0.17	0.097	( 0.237)	0.026	0.071
41	3.42	0.17	0.097	( 0.236)	0.026	0.071
42	3.50	0.17	0.097	( 0.235)	0.026	0.071
43	3.58	0.17	0.097	( 0.234)	0.026	0.071
44	3.67	0.17	0.097	( 0.233)	0.026	0.071
45	3.75	0.17	0.097	( 0.232)	0.026	0.071
46	3.83	0.20	0.116	( 0.231)	0.031	0.085
47	3.92	0.20	0.116	( 0.230)	0.031	0.085
48	4.00	0.20	0.116	( 0.229)	0.031	0.085
49	4.08	0.20	0.116	( 0.228)	0.031	0.085
50	4.17	0.20	0.116	( 0.227)	0.031	0.085
51	4.25	0.20	0.116	( 0.226)	0.031	0.085
52	4.33	0.23	0.136	( 0.225)	0.037	0.099
53	4.42	0.23	0.136	( 0.224)	0.037	0.099
54	4.50	0.23	0.136	( 0.223)	0.037	0.099
55	4.58	0.23	0.136	( 0.222)	0.037	0.099
56	4.67	0.23	0.136	( 0.222)	0.037	0.099
57	4.75	0.23	0.136	( 0.221)	0.037	0.099
58	4.83	0.27	0.155	( 0.220)	0.042	0.113
59	4.92	0.27	0.155	( 0.219)	0.042	0.113
60	5.00	0.27	0.155	( 0.218)	0.042	0.113
61	5.08	0.20	0.116	( 0.217)	0.031	0.085
62	5.17	0.20	0.116	( 0.216)	0.031	0.085
63	5.25	0.20	0.116	( 0.215)	0.031	0.085
64	5.33	0.23	0.136	( 0.214)	0.037	0.099
65	5.42	0.23	0.136	( 0.213)	0.037	0.099
66	5.50	0.23	0.136	( 0.212)	0.037	0.099
67	5.58	0.27	0.155	( 0.211)	0.042	0.113
68	5.67	0.27	0.155	( 0.210)	0.042	0.113
69	5.75	0.27	0.155	( 0.209)	0.042	0.113
70	5.83	0.27	0.155	( 0.208)	0.042	0.113
71	5.92	0.27	0.155	( 0.207)	0.042	0.113
72	6.00	0.27	0.155	( 0.207)	0.042	0.113
73	6.08	0.30	0.174	( 0.206)	0.047	0.127
74	6.17	0.30	0.174	( 0.205)	0.047	0.127
75	6.25	0.30	0.174	( 0.204)	0.047	0.127
76	6.33	0.30	0.174	( 0.203)	0.047	0.127
77	6.42	0.30	0.174	( 0.202)	0.047	0.127
78	6.50	0.30	0.174	( 0.201)	0.047	0.127
79	6.58	0.33	0.194	( 0.200)	0.052	0.141
80	6.67	0.33	0.194	( 0.199)	0.052	0.141
81	6.75	0.33	0.194	( 0.198)	0.052	0.141
82	6.83	0.33	0.194	( 0.197)	0.052	0.141
83	6.92	0.33	0.194	( 0.197)	0.052	0.141
84	7.00	0.33	0.194	( 0.196)	0.052	0.141
85	7.08	0.33	0.194	( 0.195)	0.052	0.141
86	7.17	0.33	0.194	( 0.194)	0.052	0.141
87	7.25	0.33	0.194	( 0.193)	0.052	0.141
88	7.33	0.37	0.213	( 0.192)	0.057	0.155
89	7.42	0.37	0.213	( 0.191)	0.057	0.155
90	7.50	0.37	0.213	( 0.190)	0.057	0.155
91	7.58	0.40	0.232	( 0.190)	0.063	0.170



92	7.67	0.40	0.232	( 0.189)	0.063	0.170
93	7.75	0.40	0.232	( 0.188)	0.063	0.170
94	7.83	0.43	0.252	( 0.187)	0.068	0.184
95	7.92	0.43	0.252	( 0.186)	0.068	0.184
96	8.00	0.43	0.252	( 0.185)	0.068	0.184
97	8.08	0.50	0.290	( 0.184)	0.078	0.212
98	8.17	0.50	0.290	( 0.183)	0.078	0.212
99	8.25	0.50	0.290	( 0.183)	0.078	0.212
100	8.33	0.50	0.290	( 0.182)	0.078	0.212
101	8.42	0.50	0.290	( 0.181)	0.078	0.212
102	8.50	0.50	0.290	( 0.180)	0.078	0.212
103	8.58	0.53	0.310	( 0.179)	0.084	0.226
104	8.67	0.53	0.310	( 0.178)	0.084	0.226
105	8.75	0.53	0.310	( 0.178)	0.084	0.226
106	8.83	0.57	0.329	( 0.177)	0.089	0.240
107	8.92	0.57	0.329	( 0.176)	0.089	0.240
108	9.00	0.57	0.329	( 0.175)	0.089	0.240
109	9.08	0.63	0.368	( 0.174)	0.099	0.269
110	9.17	0.63	0.368	( 0.173)	0.099	0.269
111	9.25	0.63	0.368	( 0.173)	0.099	0.269
112	9.33	0.67	0.387	( 0.172)	0.105	0.283
113	9.42	0.67	0.387	( 0.171)	0.105	0.283
114	9.50	0.67	0.387	( 0.170)	0.105	0.283
115	9.58	0.70	0.407	( 0.169)	0.110	0.297
116	9.67	0.70	0.407	( 0.168)	0.110	0.297
117	9.75	0.70	0.407	( 0.168)	0.110	0.297
118	9.83	0.73	0.426	( 0.167)	0.115	0.311
119	9.92	0.73	0.426	( 0.166)	0.115	0.311
120	10.00	0.73	0.426	( 0.165)	0.115	0.311
121	10.08	0.50	0.290	( 0.164)	0.078	0.212
122	10.17	0.50	0.290	( 0.164)	0.078	0.212
123	10.25	0.50	0.290	( 0.163)	0.078	0.212
124	10.33	0.50	0.290	( 0.162)	0.078	0.212
125	10.42	0.50	0.290	( 0.161)	0.078	0.212
126	10.50	0.50	0.290	( 0.160)	0.078	0.212
127	10.58	0.67	0.387	( 0.160)	0.105	0.283
128	10.67	0.67	0.387	( 0.159)	0.105	0.283
129	10.75	0.67	0.387	( 0.158)	0.105	0.283
130	10.83	0.67	0.387	( 0.157)	0.105	0.283
131	10.92	0.67	0.387	( 0.157)	0.105	0.283
132	11.00	0.67	0.387	( 0.156)	0.105	0.283
133	11.08	0.63	0.368	( 0.155)	0.099	0.269
134	11.17	0.63	0.368	( 0.154)	0.099	0.269
135	11.25	0.63	0.368	( 0.154)	0.099	0.269
136	11.33	0.63	0.368	( 0.153)	0.099	0.269
137	11.42	0.63	0.368	( 0.152)	0.099	0.269
138	11.50	0.63	0.368	( 0.151)	0.099	0.269
139	11.58	0.57	0.329	( 0.151)	0.089	0.240
140	11.67	0.57	0.329	( 0.150)	0.089	0.240
141	11.75	0.57	0.329	( 0.149)	0.089	0.240
142	11.83	0.60	0.348	( 0.148)	0.094	0.254
143	11.92	0.60	0.348	( 0.148)	0.094	0.254
144	12.00	0.60	0.348	( 0.147)	0.094	0.254
145	12.08	0.83	0.484	( 0.146)	0.131	0.353
146	12.17	0.83	0.484	( 0.145)	0.131	0.353
147	12.25	0.83	0.484	( 0.145)	0.131	0.353
148	12.33	0.87	0.503	( 0.144)	0.136	0.367
149	12.42	0.87	0.503	( 0.143)	0.136	0.367
150	12.50	0.87	0.503	( 0.142)	0.136	0.367
151	12.58	0.93	0.542	0.142 ( 0.146)		0.400
152	12.67	0.93	0.542	0.141 ( 0.146)		0.401
153	12.75	0.93	0.542	0.140 ( 0.146)		0.402
154	12.83	0.97	0.561	0.140 ( 0.152)		0.422
155	12.92	0.97	0.561	0.139 ( 0.152)		0.423
156	13.00	0.97	0.561	0.138 ( 0.152)		0.423
157	13.08	1.13	0.658	0.137 ( 0.178)		0.521

158	13.17	1.13	0.658	0.137	( 0.178)	0.521
159	13.25	1.13	0.658	0.136	( 0.178)	0.522
160	13.33	1.13	0.658	0.135	( 0.178)	0.523
161	13.42	1.13	0.658	0.135	( 0.178)	0.524
162	13.50	1.13	0.658	0.134	( 0.178)	0.524
163	13.58	0.77	0.445	( 0.133)	0.120	0.325
164	13.67	0.77	0.445	( 0.133)	0.120	0.325
165	13.75	0.77	0.445	( 0.132)	0.120	0.325
166	13.83	0.77	0.445	( 0.131)	0.120	0.325
167	13.92	0.77	0.445	( 0.131)	0.120	0.325
168	14.00	0.77	0.445	( 0.130)	0.120	0.325
169	14.08	0.90	0.523	0.129	( 0.141)	0.393
170	14.17	0.90	0.523	0.129	( 0.141)	0.394
171	14.25	0.90	0.523	0.128	( 0.141)	0.395
172	14.33	0.87	0.503	0.127	( 0.136)	0.376
173	14.42	0.87	0.503	0.127	( 0.136)	0.377
174	14.50	0.87	0.503	0.126	( 0.136)	0.377
175	14.58	0.87	0.503	0.125	( 0.136)	0.378
176	14.67	0.87	0.503	0.125	( 0.136)	0.379
177	14.75	0.87	0.503	0.124	( 0.136)	0.379
178	14.83	0.83	0.484	0.123	( 0.131)	0.361
179	14.92	0.83	0.484	0.123	( 0.131)	0.361
180	15.00	0.83	0.484	0.122	( 0.131)	0.362
181	15.08	0.80	0.465	0.122	( 0.125)	0.343
182	15.17	0.80	0.465	0.121	( 0.125)	0.344
183	15.25	0.80	0.465	0.120	( 0.125)	0.344
184	15.33	0.77	0.445	0.120	( 0.120)	0.326
185	15.42	0.77	0.445	0.119	( 0.120)	0.326
186	15.50	0.77	0.445	0.118	( 0.120)	0.327
187	15.58	0.63	0.368	( 0.118)	0.099	0.269
188	15.67	0.63	0.368	( 0.117)	0.099	0.269
189	15.75	0.63	0.368	( 0.117)	0.099	0.269
190	15.83	0.63	0.368	( 0.116)	0.099	0.269
191	15.92	0.63	0.368	( 0.115)	0.099	0.269
192	16.00	0.63	0.368	( 0.115)	0.099	0.269
193	16.08	0.13	0.077	( 0.114)	0.021	0.057
194	16.17	0.13	0.077	( 0.114)	0.021	0.057
195	16.25	0.13	0.077	( 0.113)	0.021	0.057
196	16.33	0.13	0.077	( 0.113)	0.021	0.057
197	16.42	0.13	0.077	( 0.112)	0.021	0.057
198	16.50	0.13	0.077	( 0.111)	0.021	0.057
199	16.58	0.10	0.058	( 0.111)	0.016	0.042
200	16.67	0.10	0.058	( 0.110)	0.016	0.042
201	16.75	0.10	0.058	( 0.110)	0.016	0.042
202	16.83	0.10	0.058	( 0.109)	0.016	0.042
203	16.92	0.10	0.058	( 0.109)	0.016	0.042
204	17.00	0.10	0.058	( 0.108)	0.016	0.042
205	17.08	0.17	0.097	( 0.108)	0.026	0.071
206	17.17	0.17	0.097	( 0.107)	0.026	0.071
207	17.25	0.17	0.097	( 0.106)	0.026	0.071
208	17.33	0.17	0.097	( 0.106)	0.026	0.071
209	17.42	0.17	0.097	( 0.105)	0.026	0.071
210	17.50	0.17	0.097	( 0.105)	0.026	0.071
211	17.58	0.17	0.097	( 0.104)	0.026	0.071
212	17.67	0.17	0.097	( 0.104)	0.026	0.071
213	17.75	0.17	0.097	( 0.103)	0.026	0.071
214	17.83	0.13	0.077	( 0.103)	0.021	0.057
215	17.92	0.13	0.077	( 0.102)	0.021	0.057
216	18.00	0.13	0.077	( 0.102)	0.021	0.057
217	18.08	0.13	0.077	( 0.101)	0.021	0.057
218	18.17	0.13	0.077	( 0.101)	0.021	0.057
219	18.25	0.13	0.077	( 0.100)	0.021	0.057
220	18.33	0.13	0.077	( 0.100)	0.021	0.057
221	18.42	0.13	0.077	( 0.099)	0.021	0.057
222	18.50	0.13	0.077	( 0.099)	0.021	0.057
223	18.58	0.10	0.058	( 0.098)	0.016	0.042

224	18.67	0.10	0.058	( 0.098)	0.016	0.042
225	18.75	0.10	0.058	( 0.097)	0.016	0.042
226	18.83	0.07	0.039	( 0.097)	0.010	0.028
227	18.92	0.07	0.039	( 0.096)	0.010	0.028
228	19.00	0.07	0.039	( 0.096)	0.010	0.028
229	19.08	0.10	0.058	( 0.096)	0.016	0.042
230	19.17	0.10	0.058	( 0.095)	0.016	0.042
231	19.25	0.10	0.058	( 0.095)	0.016	0.042
232	19.33	0.13	0.077	( 0.094)	0.021	0.057
233	19.42	0.13	0.077	( 0.094)	0.021	0.057
234	19.50	0.13	0.077	( 0.093)	0.021	0.057
235	19.58	0.10	0.058	( 0.093)	0.016	0.042
236	19.67	0.10	0.058	( 0.093)	0.016	0.042
237	19.75	0.10	0.058	( 0.092)	0.016	0.042
238	19.83	0.07	0.039	( 0.092)	0.010	0.028
239	19.92	0.07	0.039	( 0.091)	0.010	0.028
240	20.00	0.07	0.039	( 0.091)	0.010	0.028
241	20.08	0.10	0.058	( 0.090)	0.016	0.042
242	20.17	0.10	0.058	( 0.090)	0.016	0.042
243	20.25	0.10	0.058	( 0.090)	0.016	0.042
244	20.33	0.10	0.058	( 0.089)	0.016	0.042
245	20.42	0.10	0.058	( 0.089)	0.016	0.042
246	20.50	0.10	0.058	( 0.089)	0.016	0.042
247	20.58	0.10	0.058	( 0.088)	0.016	0.042
248	20.67	0.10	0.058	( 0.088)	0.016	0.042
249	20.75	0.10	0.058	( 0.087)	0.016	0.042
250	20.83	0.07	0.039	( 0.087)	0.010	0.028
251	20.92	0.07	0.039	( 0.087)	0.010	0.028
252	21.00	0.07	0.039	( 0.086)	0.010	0.028
253	21.08	0.10	0.058	( 0.086)	0.016	0.042
254	21.17	0.10	0.058	( 0.086)	0.016	0.042
255	21.25	0.10	0.058	( 0.085)	0.016	0.042
256	21.33	0.07	0.039	( 0.085)	0.010	0.028
257	21.42	0.07	0.039	( 0.085)	0.010	0.028
258	21.50	0.07	0.039	( 0.084)	0.010	0.028
259	21.58	0.10	0.058	( 0.084)	0.016	0.042
260	21.67	0.10	0.058	( 0.084)	0.016	0.042
261	21.75	0.10	0.058	( 0.083)	0.016	0.042
262	21.83	0.07	0.039	( 0.083)	0.010	0.028
263	21.92	0.07	0.039	( 0.083)	0.010	0.028
264	22.00	0.07	0.039	( 0.083)	0.010	0.028
265	22.08	0.10	0.058	( 0.082)	0.016	0.042
266	22.17	0.10	0.058	( 0.082)	0.016	0.042
267	22.25	0.10	0.058	( 0.082)	0.016	0.042
268	22.33	0.07	0.039	( 0.082)	0.010	0.028
269	22.42	0.07	0.039	( 0.081)	0.010	0.028
270	22.50	0.07	0.039	( 0.081)	0.010	0.028
271	22.58	0.07	0.039	( 0.081)	0.010	0.028
272	22.67	0.07	0.039	( 0.081)	0.010	0.028
273	22.75	0.07	0.039	( 0.080)	0.010	0.028
274	22.83	0.07	0.039	( 0.080)	0.010	0.028
275	22.92	0.07	0.039	( 0.080)	0.010	0.028
276	23.00	0.07	0.039	( 0.080)	0.010	0.028
277	23.08	0.07	0.039	( 0.080)	0.010	0.028
278	23.17	0.07	0.039	( 0.079)	0.010	0.028
279	23.25	0.07	0.039	( 0.079)	0.010	0.028
280	23.33	0.07	0.039	( 0.079)	0.010	0.028
281	23.42	0.07	0.039	( 0.079)	0.010	0.028
282	23.50	0.07	0.039	( 0.079)	0.010	0.028
283	23.58	0.07	0.039	( 0.079)	0.010	0.028
284	23.67	0.07	0.039	( 0.079)	0.010	0.028
285	23.75	0.07	0.039	( 0.078)	0.010	0.028
286	23.83	0.07	0.039	( 0.078)	0.010	0.028
287	23.92	0.07	0.039	( 0.078)	0.010	0.028
288	24.00	0.07	0.039	( 0.078)	0.010	0.028

(Loss Rate Not Used)

Sum = 100.0 Sum = 42.8  
 Flood volume = Effective rainfall 3.57(In)  
 times area 15.5(Ac.)/[ (In)/(Ft.) ] = 4.6(Ac.Ft)  
 Total soil loss = 1.27(In)  
 Total soil loss = 1.638(Ac.Ft)  
 Total rainfall = 4.84(In)  
 Flood volume = 200617.1 Cubic Feet  
 Total soil loss = 71345.9 Cubic Feet

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 Peak flow rate of this hydrograph = 8.172(CFS)  
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24 - H O U R S T O R M  
 R u n o f f H y d r o g r a p h

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 Hydrograph in 5 Minute intervals ((CFS))  
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Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0011	0.15	Q				
0+10	0.0035	0.36	VQ				
0+15	0.0063	0.41	VQ				
0+20	0.0098	0.50	V Q				
0+25	0.0140	0.62	V Q				
0+30	0.0185	0.64	V Q				
0+35	0.0230	0.65	V Q				
0+40	0.0275	0.66	V Q				
0+45	0.0321	0.66	V Q				
0+50	0.0372	0.74	V Q				
0+55	0.0430	0.84	V Q				
1+ 0	0.0489	0.86	V Q				
1+ 5	0.0544	0.80	V Q				
1+10	0.0592	0.70	V Q				
1+15	0.0639	0.68	V Q				
1+20	0.0685	0.67	V Q				
1+25	0.0731	0.66	V Q				
1+30	0.0777	0.66	V Q				
1+35	0.0822	0.66	V Q				
1+40	0.0868	0.66	V Q				
1+45	0.0913	0.66	V Q				
1+50	0.0964	0.74	V Q				
1+55	0.1022	0.84	V Q				
2+ 0	0.1082	0.86	V Q				
2+ 5	0.1142	0.88	V Q				
2+10	0.1203	0.88	V Q				
2+15	0.1263	0.88	V Q				
2+20	0.1324	0.88	V Q				
2+25	0.1385	0.88	V Q				
2+30	0.1446	0.88	V Q				
2+35	0.1512	0.96	V Q				
2+40	0.1585	1.06	V Q				
2+45	0.1660	1.09	V Q				
2+50	0.1735	1.10	V Q				
2+55	0.1811	1.10	V Q				
3+ 0	0.1887	1.10	V Q				
3+ 5	0.1963	1.10	V Q				
3+10	0.2039	1.10	V Q				
3+15	0.2115	1.10	V Q				
3+20	0.2191	1.10	V Q				
3+25	0.2267	1.10	V Q				
3+30	0.2343	1.10	V Q				
3+35	0.2419	1.10	V Q				
3+40	0.2495	1.10	V Q				
3+45	0.2570	1.10	V Q				
3+50	0.2652	1.18	V Q				

3+55	0.2740	1.28	V Q					
4+ 0	0.2830	1.31	V Q					
4+ 5	0.2921	1.32	V Q					
4+10	0.3012	1.32	V Q					
4+15	0.3103	1.32	V Q					
4+20	0.3199	1.40	V Q					
4+25	0.3303	1.50	V Q					
4+30	0.3408	1.53	V Q					
4+35	0.3514	1.54	V Q					
4+40	0.3620	1.54	V Q					
4+45	0.3726	1.54	V Q					
4+50	0.3838	1.62	V Q					
4+55	0.3957	1.72	V Q					
5+ 0	0.4077	1.75	V Q					
5+ 5	0.4187	1.60	V Q					
5+10	0.4284	1.40	V Q					
5+15	0.4378	1.36	V Q					
5+20	0.4475	1.41	V Q					
5+25	0.4579	1.51	V Q					
5+30	0.4684	1.53	V Q					
5+35	0.4795	1.61	V Q					
5+40	0.4914	1.72	V Q					
5+45	0.5034	1.75	V Q					
5+50	0.5155	1.76	V Q					
5+55	0.5277	1.76	V Q					
6+ 0	0.5398	1.76	V Q					
6+ 5	0.5525	1.84	V Q					
6+10	0.5659	1.94	V Q					
6+15	0.5794	1.97	V Q					
6+20	0.5931	1.98	V Q					
6+25	0.6067	1.98	V Q					
6+30	0.6204	1.99	V Q					
6+35	0.6346	2.06	V Q					
6+40	0.6495	2.16	V Q					
6+45	0.6646	2.19	V Q					
6+50	0.6797	2.20	V Q					
6+55	0.6949	2.20	V Q					
7+ 0	0.7101	2.21	V Q					
7+ 5	0.7253	2.21	V Q					
7+10	0.7405	2.21	V Q					
7+15	0.7557	2.21	V Q					
7+20	0.7714	2.28	V Q					
7+25	0.7878	2.39	V Q					
7+30	0.8044	2.41	V Q					
7+35	0.8216	2.50	V Q					
7+40	0.8395	2.60	V Q					
7+45	0.8576	2.63	V Q					
7+50	0.8763	2.72	V Q					
7+55	0.8958	2.82	V Q					
8+ 0	0.9154	2.85	V Q					
8+ 5	0.9362	3.01	V Q					
8+10	0.9584	3.22	V Q					
8+15	0.9809	3.27	V Q					
8+20	1.0036	3.29	V Q					
8+25	1.0264	3.30	V Q					
8+30	1.0492	3.31	V Q					
8+35	1.0725	3.39	V Q					
8+40	1.0965	3.49	V Q					
8+45	1.1207	3.51	V Q					
8+50	1.1455	3.60	V Q					
8+55	1.1710	3.71	V Q					
9+ 0	1.1967	3.73	V Q					
9+ 5	1.2235	3.90	V Q					
9+10	1.2518	4.11	V Q					
9+15	1.2805	4.16	V Q					
9+20	1.3097	4.25	V Q					

9+25	1.3398	4.37	V	Q			
9+30	1.3701	4.39	V	Q			
9+35	1.4009	4.48	V	Q			
9+40	1.4326	4.59	V	Q			
9+45	1.4643	4.61	V	Q			
9+50	1.4967	4.70	V	Q			
9+55	1.5298	4.81	V	Q			
10+ 0	1.5631	4.84	V	Q			
10+ 5	1.5928	4.31	V	Q			
10+10	1.6176	3.60	Q				
10+15	1.6412	3.43	QV				
10+20	1.6644	3.36	QV				
10+25	1.6872	3.32	QV				
10+30	1.7100	3.31	QV				
10+35	1.7355	3.69	QV				
10+40	1.7644	4.21	VQ				
10+45	1.7942	4.32	VQ				
10+50	1.8243	4.38	VQ				
10+55	1.8547	4.40	VQ				
11+ 0	1.8850	4.41	VQ				
11+ 5	1.9149	4.34	VQ				
11+10	1.9440	4.23	Q				
11+15	1.9730	4.21	QV				
11+20	2.0019	4.20	QV				
11+25	2.0308	4.19	QV				
11+30	2.0597	4.19	QV				
11+35	2.0875	4.04	QV				
11+40	2.1139	3.83	QV				
11+45	2.1400	3.79	QV				
11+50	2.1664	3.84	QV				
11+55	2.1935	3.93	QV				
12+ 0	2.2207	3.95	QV				
12+ 5	2.2517	4.50	QV				
12+10	2.2877	5.22	VQ				
12+15	2.3248	5.39	VQ				
12+20	2.3630	5.54	VQ				
12+25	2.4021	5.68	VQ				
12+30	2.4415	5.72	VQ				
12+35	2.4822	5.91	VQ				
12+40	2.5246	6.15	VQ				
12+45	2.5674	6.22	VQ				
12+50	2.6112	6.36	VQ				
12+55	2.6561	6.52	VQ				
13+ 0	2.7014	6.57	VQ				
13+ 5	2.7505	7.12	VQ				
13+10	2.8045	7.84	VQ				
13+15	2.8597	8.02	VQ				
13+20	2.9155	8.10	VQ				
13+25	2.9716	8.15	VQ				
13+30	3.0279	8.17	VQ				
13+35	3.0768	7.10	VQ				
13+40	3.1157	5.65	Q	V			
13+45	3.1524	5.32	Q	V			
13+50	3.1880	5.17	Q	V			
13+55	3.2231	5.10	Q	V			
14+ 0	3.2581	5.07	Q	V			
14+ 5	3.2956	5.44	Q	V			
14+10	3.3365	5.94	Q	V			
14+15	3.3783	6.07	Q	V			
14+20	3.4198	6.02	Q	V			
14+25	3.4605	5.92	Q	V			
14+30	3.5012	5.90	Q	V			
14+35	3.5418	5.90	Q	V			
14+40	3.5825	5.90	Q	V			
14+45	3.6232	5.91	Q	V			
14+50	3.6632	5.81	Q	V			

14+55	3.7024	5.68				Q		V	
15+ 0	3.7414	5.66				Q		V	
15+ 5	3.7796	5.55				Q		V	
15+10	3.8169	5.41				Q		V	
15+15	3.8540	5.39				Q		V	
15+20	3.8904	5.28				Q		V	
15+25	3.9258	5.14				Q		V	
15+30	3.9610	5.12				Q		V	
15+35	3.9940	4.79				Q		V	
15+40	4.0240	4.36				Q		V	
15+45	4.0534	4.26				Q		V	
15+50	4.0825	4.22				Q		V	
15+55	4.1114	4.20				Q		V	
16+ 0	4.1403	4.19				Q		V	
16+ 5	4.1612	3.04			Q			V	
16+10	4.1716	1.50		Q				V	
16+15	4.1794	1.14		Q				V	
16+20	4.1862	0.99		Q				V	
16+25	4.1925	0.91		Q				V	
16+30	4.1986	0.88		Q				V	
16+35	4.2042	0.81		Q				V	
16+40	4.2090	0.70		Q				V	
16+45	4.2137	0.68		Q				V	
16+50	4.2183	0.67		Q				V	
16+55	4.2229	0.66		Q				V	
17+ 0	4.2274	0.66		Q				V	
17+ 5	4.2330	0.82		Q				V	
17+10	4.2401	1.02		Q				V	
17+15	4.2474	1.07		Q				V	
17+20	4.2549	1.09		Q				V	
17+25	4.2625	1.10		Q				V	
17+30	4.2701	1.10		Q				V	
17+35	4.2777	1.10		Q				V	
17+40	4.2853	1.10		Q				V	
17+45	4.2929	1.10		Q				V	
17+50	4.2999	1.03		Q				V	
17+55	4.3063	0.92		Q				V	
18+ 0	4.3125	0.90		Q				V	
18+ 5	4.3186	0.89		Q				V	
18+10	4.3247	0.88		Q				V	
18+15	4.3308	0.88		Q				V	
18+20	4.3369	0.88		Q				V	
18+25	4.3429	0.88		Q				V	
18+30	4.3490	0.88		Q				V	
18+35	4.3546	0.81		Q				V	
18+40	4.3594	0.70		Q				V	
18+45	4.3641	0.68		Q				V	
18+50	4.3682	0.59		Q				V	
18+55	4.3715	0.48		Q				V	
19+ 0	4.3747	0.46		Q				V	
19+ 5	4.3783	0.53		Q				V	
19+10	4.3826	0.62		Q				V	
19+15	4.3870	0.64		Q				V	
19+20	4.3920	0.73		Q				V	
19+25	4.3978	0.84		Q				V	
19+30	4.4038	0.86		Q				V	
19+35	4.4093	0.80		Q				V	
19+40	4.4141	0.70		Q				V	
19+45	4.4188	0.68		Q				V	
19+50	4.4229	0.59		Q				V	
19+55	4.4262	0.48		Q				V	
20+ 0	4.4294	0.46		Q				V	
20+ 5	4.4330	0.53		Q				V	
20+10	4.4373	0.62		Q				V	
20+15	4.4417	0.64		Q				V	
20+20	4.4462	0.65		Q				V	

20+25	4.4508	0.66	Q				V
20+30	4.4553	0.66	Q				V
20+35	4.4599	0.66	Q				V
20+40	4.4644	0.66	Q				V
20+45	4.4690	0.66	Q				V
20+50	4.4730	0.59	Q				V
20+55	4.4763	0.48	Q				V
21+ 0	4.4795	0.46	Q				V
21+ 5	4.4831	0.53	Q				V
21+10	4.4874	0.62	Q				V
21+15	4.4918	0.64	Q				V
21+20	4.4958	0.58	Q				V
21+25	4.4991	0.48	Q				V
21+30	4.5023	0.46	Q				V
21+35	4.5059	0.53	Q				V
21+40	4.5102	0.62	Q				V
21+45	4.5146	0.64	Q				V
21+50	4.5186	0.58	Q				V
21+55	4.5219	0.48	Q				V
22+ 0	4.5251	0.46	Q				V
22+ 5	4.5287	0.53	Q				V
22+10	4.5330	0.62	Q				V
22+15	4.5374	0.64	Q				V
22+20	4.5414	0.58	Q				V
22+25	4.5447	0.48	Q				V
22+30	4.5479	0.46	Q				V
22+35	4.5509	0.45	Q				V
22+40	4.5540	0.44	Q				V
22+45	4.5570	0.44	Q				V
22+50	4.5601	0.44	Q				V
22+55	4.5631	0.44	Q				V
23+ 0	4.5662	0.44	Q				V
23+ 5	4.5692	0.44	Q				V
23+10	4.5722	0.44	Q				V
23+15	4.5753	0.44	Q				V
23+20	4.5783	0.44	Q				V
23+25	4.5813	0.44	Q				V
23+30	4.5844	0.44	Q				V
23+35	4.5874	0.44	Q				V
23+40	4.5905	0.44	Q				V
23+45	4.5935	0.44	Q				V
23+50	4.5965	0.44	Q				V
23+55	4.5996	0.44	Q				V
24+ 0	4.6026	0.44	Q				V
24+ 5	4.6046	0.29	Q				V
24+10	4.6052	0.08	Q				V
24+15	4.6054	0.03	Q				V
24+20	4.6055	0.01	Q				V
24+25	4.6055	0.00	Q				V

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**APPENDIX E**  
**DETENTION BASIN VOLUME CALCULATIONS**

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**PBLA ENGINEERING, INC.**

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(714) 620-4960

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# DETENTION BASIN DESIGN

MAJESTIC FREEWAY BUSINESS CENTER - BUILDING 14

## BASIN VOLUMES BY ELEVATION

### BASIN A

<u>ELEVATION</u>	<u>AREA</u>	<u>AREA</u>	<u>VOLUME</u>	<u>CUMULATIVE</u>	<u>CUMULATIVE</u>	BIO-FILTER LAYER
(FT)	(SF)	(AC)	(ACRE-FT)	(ACRE-FT)	(CU-FT)	
1509	8117	0.19	0	0	0	
1510	8117	0.19	0.07	0.075	3,247	
1511	8117	0.19	0.07	0.149	6,494	
1512	8117	0.19	0.19	0.335	14,611	
1513	10,055	0.23	0.21	0.544	23,697	
1514	12,115	0.28	0.25	0.798	34,782	
1515	14,297	0.33	0.30	1.102	47,988	
1516	16,603	0.38	0.35	1.456	63,438	

### BASIN B

<u>ELEVATION</u>	<u>AREA</u>	<u>AREA</u>	<u>VOLUME</u>	<u>CUMULATIVE</u>	<u>CUMULATIVE</u>	BIO-FILTER LAYER
(FT)	(SF)	(AC)	(ACRE-FT)	(ACRE-FT)	(CU-FT)	
1508	27,109	0.62	0.00	0.00	0	
1509	27,109	0.62	0.25	0.25	10,844	
1510	27,109	0.62	0.50	0.75	32,531	
1511	27,109	0.62	0.50	1.24	54,218	
1512	30,822	0.71	1.42	2.16	94,175	
1513	34,665	0.80	0.75	2.91	126,918	
1514	38,620	0.89	0.84	3.75	163,561	
1515	42,684	0.98	0.93	4.69	204,213	
1516	46,858	1.08	1.03	5.72	248,984	

**APPENDIX F**  
**DETENTION BASIN OUTFLOW CALCULATIONS**

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**PBLA ENGINEERING, INC.**

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**BASIN OUTFLOW CALCULATIONS**  
**DETENTION BASIN DESIGN**  
**MAJESTIC FREEWAY BUSINESS CENTER - BUILDING 11**

**BASIN A**

**OUTFLOW THROUGH CIRCULAR HOLE IN STRUCTURE**

FROM KING'S HANDBOOK, (4-3)

**$Q = Ca(2gh)^{1/2}$**

WHERE:

Q= DISCHARGE (CFS)

a= TOTAL AREA OF 8" HOLE (SF) =0.349

h = HEAD AT ORIFICE (FT)

C= DISCHARGE COEFFICIENT (KING'S 4-10) = 0.610

BIOTREATMENT FLOW = BOTTOM AREA x 4 IN/HR

8,117 SF x 4"/HR = 0.74 CFS

**OUTFLOW PER WATER SURFACE ELEVATION**

W/S ELEV	DEPTH	HEAD (h)	AREA (a)	Q (cfs)	TOTAL (cfs)
1509	0	0	--		0.00
1510	0	0	--		0.74
1511	0	0	--		0.74
1512	0	0	0.349	0.00	0.74
1513	1.00	0.5	0.349	1.21	1.95
1514	2.00	1.5	0.349	2.09	2.83
1515	3.00	2.5	0.349	2.70	3.44
1516	4.00	3.5	0.349	3.20	69.78

BIOTREATMENT  
LAYER

**TIME REQUIRED TO EMPTY BASIN**

ASSUMES CONSTANT HEAD BETWEEN STAGES

DELTA W/S ELEVS	HEAD (FT)	VOL (AC-FT)	VOLUME (C.F.)	Q out (CFS)	TIME (HRS)	CUMULATIVE (HRS)
1516.0	7.00	1.46	63,438	69.78	0.25	0.3
1515.0	6.00	1.10	47,988	3.44	3.87	4.1
1514.0	5.00	0.80	34,782	2.83	3.41	7.5
1513.0	4.00	0.54	23,697	1.95	3.38	10.9
1512.0	3.00	0.34	14,611	0.74	5.48	16.4
1511.0	2.00	0.15	6,494	0.74	2.44	18.8
1510.0	1.00	0.07	3,247	0.74	1.22	20.1

BIOTREATMENT  
LAYER

**OUTFLOW THROUGH TOP OF STRUCTURE**

SHARP EDGED WEIR ABOVE WATER QUALITY SCREEN

**$Q = CLH^{3/2}$**

WHERE:

C=WEIR COEFFICIENT (3.087)

L=WEIR LENGTH (21.33' FOR THIS STRUCTURE)

H=HEAD (FT)

W/S ELEV	DEPTH	HEAD (h)	Q (cfs)
1515	3.00	0.00	0.00
1516	4.00	1.00	65.85

**BASIN B**

**OUTFLOW THROUGH RECTANGULAR HOLE IN STRUCTURE**

FROM KING'S HANDBOOK, (4-3)

**$Q=Ca(2gh)^{1/2}$**

WHERE:

Q= DISCHARGE (CFS)

a= TOTAL AREA OF 8" HOLE (SF) =0.349

h = HEAD AT ORIFICE (FT)

C= DISCHARGE COEFFICIENT (KING'S 4-10) = 0.610

BIOTREATMENT FLOW = BOTTOM AREA x 4 IN/HR

27,109 SF x 4"/HR = 2.48 CFS

**OUTFLOW PER WATER SURFACE ELEVATION**

W/S ELEV	DEPTH	HEAD (h)	AREA (a)	Q (cfs)	TOTAL (cfs)
1508	0	0	--		0.00
1509	0	0	--		2.48
1510	0	0	--		2.48
1511	0	0	0	0.00	2.48
1512	1.0	0.5	0.349	1.21	3.69
1513	2.0	1.5	0.349	2.09	4.57
1514	3.0	2.5	0.349	2.70	5.18
1515	4.0	3.5	0.349	3.20	5.68
1516	5.0	4.5	0.349	3.62	71.95

BIOTREATMENT LAYER

**TIME REQUIRED TO EMPTY BASIN**

ASSUMES CONSTANT HEAD BETWEEN STAGES

DELTA W/S ELEVS	HEAD (FT)	VOL (AC-FT)	VOLUME (C.F.)	Q out (CFS)	TIME (HRS)	CUMULATIVE (HRS)
1516	8.00	5.72	248,984	71.95	0.96	1.0
1515	7.00	4.69	204,213	5.68	9.99	11.0
1514	6.00	3.75	163,561	5.18	8.77	19.7
1513	5.00	2.91	126,918	4.57	7.71	27.4
1512	4.00	2.16	94,175	2.48	10.55	38.0
1511	3.00	1.24	54,218	2.48	6.07	44.1
1510	2.00	0.75	32,531	2.48	3.64	47.7
1509	1.00	0.25	10,844	0.00	3.64	47.7

BIOTREATMENT LAYER

**OUTFLOW THROUGH TOP OF STRUCTURE**

SHARP EDGED WEIR ABOVE WATER QUALITY SCREEN

**$Q=CLH^{3/2}$**

WHERE:

C=WEIR COEFFICIENT (3.087)

L=WEIR LENGTH (21.33' FOR THIS STRUCTURE)

H=HEAD (FT)

W/S ELEV	DEPTH	HEAD (h)	Q (cfs)
1512	3.50	0.00	0.00
1513	4.50	1.00	65.85

**APPENDIX G**  
**FLOOD ROUTING CALCULATIONS**

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**PBLA ENGINEERING, INC.**

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Redlands, CA 92373  
(714) 620-4960

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FLOOD HYDROGRAPH ROUTING PROGRAM  
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018  
 Study date: 01/23/22

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 MFBC - BUILDING 14  
 BASIN A FLOOD ROUTING  
 100 YR - 1HR  
 100102RTEA  
 -----

Program License Serial Number 6490

-----  
 \*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 100102PRUHA11100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 13  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 13.828 (CFS)  
 Total volume = 0.369 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
 \*\*\*\*\*

+++++  
 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

-----  
 User entry of depth-outflow-storage data  
 -----

Total number of inflow hydrograph intervals = 13  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00 (Ft.)  
 -----

Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
 -----

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.075	0.740	0.072	0.078
2.000	0.149	0.740	0.146	0.152
3.000	0.335	0.740	0.332	0.338
4.000	0.544	1.950	0.537	0.551
5.000	0.798	2.830	0.788	0.808
6.000	1.102	3.440	1.090	1.114
7.000	1.456	69.800	1.216	1.696

-----  
 Hydrograph Detention Basin Routing

-----  
 Graph values: 'I'= unit inflow; 'O'=outflow at time shown  
 -----

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	3.5	6.91	10.37	13.83	Depth (Ft.)
0.083	1.25	0.04	0.004	O	I				0.06
0.167	1.93	0.14	0.014	O	I				0.19
0.250	2.24	0.27	0.027	O	I				0.37
0.333	2.39	0.40	0.041	O	I				0.55
0.417	2.72	0.55	0.055	O	I				0.74
0.500	3.17	0.70	0.071	O	I				0.95
0.583	3.69	0.74	0.090	O	I				1.20
0.667	4.38	0.74	0.113	O	I	I			1.51
0.750	6.15	0.74	0.144	O		I			1.93
0.833	13.83	0.74	0.208	O				I	2.31
0.917	8.25	0.74	0.278	O		I			2.70
1.000	2.77	0.74	0.311	O	I				2.87
1.083	0.82	0.74	0.319	O					2.91
1.167	0.00	0.74	0.316	IO					2.90
1.250	0.00	0.74	0.311	IO					2.87
1.333	0.00	0.74	0.306	IO					2.84
1.417	0.00	0.74	0.301	IO					2.82
1.500	0.00	0.74	0.296	IO					2.79
1.583	0.00	0.74	0.291	IO					2.76
1.667	0.00	0.74	0.286	IO					2.73
1.750	0.00	0.74	0.281	IO					2.71
1.833	0.00	0.74	0.276	IO					2.68
1.917	0.00	0.74	0.270	IO					2.65
2.000	0.00	0.74	0.265	IO					2.63
2.083	0.00	0.74	0.260	IO					2.60
2.167	0.00	0.74	0.255	IO					2.57
2.250	0.00	0.74	0.250	IO					2.54
2.333	0.00	0.74	0.245	IO					2.52
2.417	0.00	0.74	0.240	IO					2.49
2.500	0.00	0.74	0.235	IO					2.46
2.583	0.00	0.74	0.230	IO					2.43
2.667	0.00	0.74	0.225	IO					2.41
2.750	0.00	0.74	0.219	IO					2.38
2.833	0.00	0.74	0.214	IO					2.35
2.917	0.00	0.74	0.209	IO					2.32
3.000	0.00	0.74	0.204	IO					2.30
3.083	0.00	0.74	0.199	IO					2.27
3.167	0.00	0.74	0.194	IO					2.24
3.250	0.00	0.74	0.189	IO					2.21
3.333	0.00	0.74	0.184	IO					2.19
3.417	0.00	0.74	0.179	IO					2.16
3.500	0.00	0.74	0.174	IO					2.13
3.583	0.00	0.74	0.168	IO					2.10
3.667	0.00	0.74	0.163	IO					2.08
3.750	0.00	0.74	0.158	IO					2.05
3.833	0.00	0.74	0.153	IO					2.02
3.917	0.00	0.74	0.148	IO					1.99
4.000	0.00	0.74	0.143	IO					1.92
4.083	0.00	0.74	0.138	IO					1.85
4.167	0.00	0.74	0.133	IO					1.78
4.250	0.00	0.74	0.128	IO					1.71
4.333	0.00	0.74	0.123	IO					1.64
4.417	0.00	0.74	0.118	IO					1.57
4.500	0.00	0.74	0.112	IO					1.51
4.583	0.00	0.74	0.107	IO					1.44
4.667	0.00	0.74	0.102	IO					1.37
4.750	0.00	0.74	0.097	IO					1.30
4.833	0.00	0.74	0.092	IO					1.23
4.917	0.00	0.74	0.087	IO					1.16
5.000	0.00	0.74	0.082	IO					1.09



5.083	0.00	0.74	0.077	IO					1.02
5.167	0.00	0.71	0.072	IO					0.96
5.250	0.00	0.66	0.067	IO					0.89
5.333	0.00	0.62	0.063	IO					0.84
5.417	0.00	0.58	0.059	IO					0.78
5.500	0.00	0.54	0.055	IO					0.73
5.583	0.00	0.50	0.051	IO					0.68
5.667	0.00	0.47	0.048	IO					0.64
5.750	0.00	0.44	0.045	IO					0.59
5.833	0.00	0.41	0.042	O					0.56
5.917	0.00	0.38	0.039	O					0.52
6.000	0.00	0.36	0.036	O					0.48
6.083	0.00	0.34	0.034	O					0.45
6.167	0.00	0.31	0.032	O					0.42
6.250	0.00	0.29	0.030	O					0.40
6.333	0.00	0.27	0.028	O					0.37
6.417	0.00	0.26	0.026	O					0.35
6.500	0.00	0.24	0.024	O					0.32
6.583	0.00	0.22	0.023	O					0.30
6.667	0.00	0.21	0.021	O					0.28
6.750	0.00	0.19	0.020	O					0.26
6.833	0.00	0.18	0.018	O					0.25
6.917	0.00	0.17	0.017	O					0.23
7.000	0.00	0.16	0.016	O					0.21
7.083	0.00	0.15	0.015	O					0.20
7.167	0.00	0.14	0.014	O					0.19
7.250	0.00	0.13	0.013	O					0.17
7.333	0.00	0.12	0.012	O					0.16
7.417	0.00	0.11	0.011	O					0.15
7.500	0.00	0.11	0.011	O					0.14
7.583	0.00	0.10	0.010	O					0.13
7.667	0.00	0.09	0.009	O					0.12
7.750	0.00	0.09	0.009	O					0.12
7.833	0.00	0.08	0.008	O					0.11
7.917	0.00	0.08	0.008	O					0.10
8.000	0.00	0.07	0.007	O					0.09
8.083	0.00	0.07	0.007	O					0.09
8.167	0.00	0.06	0.006	O					0.08
8.250	0.00	0.06	0.006	O					0.08
8.333	0.00	0.05	0.005	O					0.07
8.417	0.00	0.05	0.005	O					0.07
8.500	0.00	0.05	0.005	O					0.06
8.583	0.00	0.04	0.004	O					0.06
8.667	0.00	0.04	0.004	O					0.06
8.750	0.00	0.04	0.004	O					0.05
8.833	0.00	0.04	0.004	O					0.05
8.917	0.00	0.03	0.003	O					0.04
9.000	0.00	0.03	0.003	O					0.04
9.083	0.00	0.03	0.003	O					0.04
9.167	0.00	0.03	0.003	O					0.04
9.250	0.00	0.03	0.003	O					0.03
9.333	0.00	0.02	0.002	O					0.03
9.417	0.00	0.02	0.002	O					0.03
9.500	0.00	0.02	0.002	O					0.03
9.583	0.00	0.02	0.002	O					0.03
9.667	0.00	0.02	0.002	O					0.02
9.750	0.00	0.02	0.002	O					0.02
9.833	0.00	0.02	0.002	O					0.02
9.917	0.00	0.01	0.001	O					0.02
10.000	0.00	0.01	0.001	O					0.02
10.083	0.00	0.01	0.001	O					0.02
10.167	0.00	0.01	0.001	O					0.02
10.250	0.00	0.01	0.001	O					0.02
10.333	0.00	0.01	0.001	O					0.01
10.417	0.00	0.01	0.001	O					0.01
10.500	0.00	0.01	0.001	O					0.01

10.583	0.00	0.01	0.001	0					0.01
10.667	0.00	0.01	0.001	0					0.01
10.750	0.00	0.01	0.001	0					0.01
10.833	0.00	0.01	0.001	0					0.01
10.917	0.00	0.01	0.001	0					0.01
11.000	0.00	0.01	0.001	0					0.01
11.083	0.00	0.01	0.001	0					0.01
11.167	0.00	0.01	0.001	0					0.01
11.250	0.00	0.00	0.001	0					0.01
11.333	0.00	0.00	0.000	0					0.01
11.417	0.00	0.00	0.000	0					0.01
11.500	0.00	0.00	0.000	0					0.01
11.583	0.00	0.00	0.000	0					0.01
11.667	0.00	0.00	0.000	0					0.00
11.750	0.00	0.00	0.000	0					0.00
11.833	0.00	0.00	0.000	0					0.00
11.917	0.00	0.00	0.000	0					0.00
12.000	0.00	0.00	0.000	0					0.00
12.083	0.00	0.00	0.000	0					0.00
12.167	0.00	0.00	0.000	0					0.00
12.250	0.00	0.00	0.000	0					0.00
12.333	0.00	0.00	0.000	0					0.00
12.417	0.00	0.00	0.000	0					0.00
12.500	0.00	0.00	0.000	0					0.00
12.583	0.00	0.00	0.000	0					0.00
12.667	0.00	0.00	0.000	0					0.00
12.750	0.00	0.00	0.000	0					0.00
12.833	0.00	0.00	0.000	0					0.00
12.917	0.00	0.00	0.000	0					0.00
13.000	0.00	0.00	0.000	0					0.00
13.083	0.00	0.00	0.000	0					0.00
13.167	0.00	0.00	0.000	0					0.00
13.250	0.00	0.00	0.000	0					0.00

\*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*

Number of intervals = 159  
Time interval = 5.0 (Min.)  
Maximum/Peak flow rate = 0.740 (CFS)  
Total volume = 0.369 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

\*\*\*\*\*

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FLOOD HYDROGRAPH ROUTING PROGRAM  
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018  
 Study date: 01/23/22

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 MFBC - BUILDING 14  
 BASIN A FLOOD ROUTING  
 100 YR - 3 HR  
 100102RTEA  
 -----

Program License Serial Number 6490

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 \*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 100102PRUHA13100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 37  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 6.630 (CFS)  
 Total volume = 0.494 (Ac.Ft)  
 Status of hydrographs being held in storage  
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
 \*\*\*\*\*

+++++  
 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

-----  
 User entry of depth-outflow-storage data  
 -----

Total number of inflow hydrograph intervals = 37  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00 (Ft.)  
 -----

Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
 -----

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.075	0.740	0.072	0.078
2.000	0.149	0.740	0.146	0.152
3.000	0.335	0.740	0.332	0.338
4.000	0.544	1.950	0.537	0.551
5.000	0.798	2.830	0.788	0.808
6.000	1.102	3.440	1.090	1.114
7.000	1.456	69.800	1.216	1.696

-----  
 Hydrograph Detention Basin Routing

-----  
 Graph values: 'I'= unit inflow; 'O'=outflow at time shown  
 -----

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.7	3.32	4.97	6.63	Depth (Ft.)
0.083	0.54	0.02	0.002	O	I				0.02
0.167	0.82	0.06	0.006	O	I				0.08
0.250	0.74	0.11	0.011	O	I				0.15
0.333	0.86	0.15	0.016	O	I				0.21
0.417	0.95	0.20	0.021	O	I				0.28
0.500	1.08	0.26	0.026	O	I				0.35
0.583	1.02	0.31	0.031	O	I				0.42
0.667	1.08	0.36	0.036	O	I				0.48
0.750	1.14	0.41	0.041	O	I				0.55
0.833	1.02	0.45	0.046	O	I				0.61
0.917	0.99	0.49	0.049	O	I				0.66
1.000	1.10	0.52	0.053	O	I				0.71
1.083	1.31	0.57	0.058	O	I				0.77
1.167	1.39	0.62	0.063	O	I				0.84
1.250	1.39	0.67	0.068	O	I				0.91
1.333	1.31	0.72	0.073	O	I				0.97
1.417	1.55	0.74	0.077	O	I				1.03
1.500	1.76	0.74	0.084	O	I				1.12
1.583	1.61	0.74	0.090	O	I				1.21
1.667	1.70	0.74	0.096	O	I				1.29
1.750	2.16	0.74	0.105	O	I				1.40
1.833	2.23	0.74	0.115	O	I				1.54
1.917	2.04	0.74	0.124	O	I				1.67
2.000	2.04	0.74	0.133	O	I				1.79
2.083	2.13	0.74	0.143	O	I				1.91
2.167	2.84	0.74	0.155	O	I				2.03
2.250	3.68	0.74	0.172	O	I	I			2.12
2.333	3.01	0.74	0.190	O	I	I			2.22
2.417	4.56	0.74	0.211	O	I	I			2.33
2.500	5.92	0.74	0.242	O	I	I	I		2.50
2.583	6.63	0.74	0.280	O	I	I	I	I	2.70
2.667	5.50	0.74	0.317	O	I	I	I		2.90
2.750	2.46	0.76	0.339	O	I	I	I		3.02
2.833	1.18	0.80	0.346	O	I	I	I		3.05
2.917	1.14	0.82	0.348	O	I	I	I		3.06
3.000	0.64	0.82	0.349	O	I	I	I		3.07
3.083	0.13	0.80	0.346	I	O	I	I		3.05
3.167	0.00	0.77	0.341	I	O	I	I		3.03
3.250	0.00	0.74	0.336	I	O	I	I		3.00
3.333	0.00	0.74	0.331	I	O	I	I		2.98
3.417	0.00	0.74	0.326	I	O	I	I		2.95
3.500	0.00	0.74	0.321	I	O	I	I		2.92
3.583	0.00	0.74	0.315	I	O	I	I		2.89
3.667	0.00	0.74	0.310	I	O	I	I		2.87
3.750	0.00	0.74	0.305	I	O	I	I		2.84
3.833	0.00	0.74	0.300	I	O	I	I		2.81
3.917	0.00	0.74	0.295	I	O	I	I		2.79
4.000	0.00	0.74	0.290	I	O	I	I		2.76
4.083	0.00	0.74	0.285	I	O	I	I		2.73
4.167	0.00	0.74	0.280	I	O	I	I		2.70
4.250	0.00	0.74	0.275	I	O	I	I		2.68
4.333	0.00	0.74	0.270	I	O	I	I		2.65
4.417	0.00	0.74	0.264	I	O	I	I		2.62
4.500	0.00	0.74	0.259	I	O	I	I		2.59
4.583	0.00	0.74	0.254	I	O	I	I		2.57
4.667	0.00	0.74	0.249	I	O	I	I		2.54
4.750	0.00	0.74	0.244	I	O	I	I		2.51
4.833	0.00	0.74	0.239	I	O	I	I		2.48
4.917	0.00	0.74	0.234	I	O	I	I		2.46
5.000	0.00	0.74	0.229	I	O	I	I		2.43

5.083	0.00	0.74	0.224	I	O					2.40
5.167	0.00	0.74	0.219	I	O					2.37
5.250	0.00	0.74	0.213	I	O					2.35
5.333	0.00	0.74	0.208	I	O					2.32
5.417	0.00	0.74	0.203	I	O					2.29
5.500	0.00	0.74	0.198	I	O					2.26
5.583	0.00	0.74	0.193	I	O					2.24
5.667	0.00	0.74	0.188	I	O					2.21
5.750	0.00	0.74	0.183	I	O					2.18
5.833	0.00	0.74	0.178	I	O					2.15
5.917	0.00	0.74	0.173	I	O					2.13
6.000	0.00	0.74	0.168	I	O					2.10
6.083	0.00	0.74	0.163	I	O					2.07
6.167	0.00	0.74	0.157	I	O					2.05
6.250	0.00	0.74	0.152	I	O					2.02
6.333	0.00	0.74	0.147	I	O					1.98
6.417	0.00	0.74	0.142	I	O					1.91
6.500	0.00	0.74	0.137	I	O					1.84
6.583	0.00	0.74	0.132	I	O					1.77
6.667	0.00	0.74	0.127	I	O					1.70
6.750	0.00	0.74	0.122	I	O					1.63
6.833	0.00	0.74	0.117	I	O					1.56
6.917	0.00	0.74	0.112	I	O					1.49
7.000	0.00	0.74	0.106	I	O					1.43
7.083	0.00	0.74	0.101	I	O					1.36
7.167	0.00	0.74	0.096	I	O					1.29
7.250	0.00	0.74	0.091	I	O					1.22
7.333	0.00	0.74	0.086	I	O					1.15
7.417	0.00	0.74	0.081	I	O					1.08
7.500	0.00	0.74	0.076	I	O					1.01
7.583	0.00	0.70	0.071	I	O					0.95
7.667	0.00	0.65	0.066	I	O					0.88
7.750	0.00	0.61	0.062	I	O					0.83
7.833	0.00	0.57	0.058	I	O					0.77
7.917	0.00	0.53	0.054	I	O					0.72
8.000	0.00	0.50	0.050	I	O					0.67
8.083	0.00	0.47	0.047	I	O					0.63
8.167	0.00	0.43	0.044	I	O					0.59
8.250	0.00	0.41	0.041	IO						0.55
8.333	0.00	0.38	0.038	IO						0.51
8.417	0.00	0.35	0.036	IO						0.48
8.500	0.00	0.33	0.034	IO						0.45
8.583	0.00	0.31	0.031	IO						0.42
8.667	0.00	0.29	0.029	IO						0.39
8.750	0.00	0.27	0.027	IO						0.37
8.833	0.00	0.25	0.026	IO						0.34
8.917	0.00	0.24	0.024	IO						0.32
9.000	0.00	0.22	0.022	IO						0.30
9.083	0.00	0.21	0.021	O						0.28
9.167	0.00	0.19	0.019	O						0.26
9.250	0.00	0.18	0.018	O						0.24
9.333	0.00	0.17	0.017	O						0.23
9.417	0.00	0.16	0.016	O						0.21
9.500	0.00	0.15	0.015	O						0.20
9.583	0.00	0.14	0.014	O						0.18
9.667	0.00	0.13	0.013	O						0.17
9.750	0.00	0.12	0.012	O						0.16
9.833	0.00	0.11	0.011	O						0.15
9.917	0.00	0.10	0.011	O						0.14
10.000	0.00	0.10	0.010	O						0.13
10.083	0.00	0.09	0.009	O						0.12
10.167	0.00	0.09	0.009	O						0.11
10.250	0.00	0.08	0.008	O						0.11
10.333	0.00	0.07	0.008	O						0.10
10.417	0.00	0.07	0.007	O						0.09
10.500	0.00	0.06	0.007	O						0.09

10.583	0.00	0.06	0.006	0					0.08
10.667	0.00	0.06	0.006	0					0.08
10.750	0.00	0.05	0.005	0					0.07
10.833	0.00	0.05	0.005	0					0.07
10.917	0.00	0.05	0.005	0					0.06
11.000	0.00	0.04	0.004	0					0.06
11.083	0.00	0.04	0.004	0					0.05
11.167	0.00	0.04	0.004	0					0.05
11.250	0.00	0.04	0.004	0					0.05
11.333	0.00	0.03	0.003	0					0.04
11.417	0.00	0.03	0.003	0					0.04
11.500	0.00	0.03	0.003	0					0.04
11.583	0.00	0.03	0.003	0					0.04
11.667	0.00	0.03	0.003	0					0.03
11.750	0.00	0.02	0.002	0					0.03
11.833	0.00	0.02	0.002	0					0.03
11.917	0.00	0.02	0.002	0					0.03
12.000	0.00	0.02	0.002	0					0.03
12.083	0.00	0.02	0.002	0					0.02
12.167	0.00	0.02	0.002	0					0.02
12.250	0.00	0.02	0.002	0					0.02
12.333	0.00	0.01	0.001	0					0.02
12.417	0.00	0.01	0.001	0					0.02
12.500	0.00	0.01	0.001	0					0.02
12.583	0.00	0.01	0.001	0					0.02
12.667	0.00	0.01	0.001	0					0.01
12.750	0.00	0.01	0.001	0					0.01
12.833	0.00	0.01	0.001	0					0.01
12.917	0.00	0.01	0.001	0					0.01
13.000	0.00	0.01	0.001	0					0.01
13.083	0.00	0.01	0.001	0					0.01
13.167	0.00	0.01	0.001	0					0.01
13.250	0.00	0.01	0.001	0					0.01
13.333	0.00	0.01	0.001	0					0.01
13.417	0.00	0.01	0.001	0					0.01
13.500	0.00	0.01	0.001	0					0.01
13.583	0.00	0.01	0.001	0					0.01
13.667	0.00	0.00	0.000	0					0.01
13.750	0.00	0.00	0.000	0					0.01
13.833	0.00	0.00	0.000	0					0.01
13.917	0.00	0.00	0.000	0					0.01
14.000	0.00	0.00	0.000	0					0.01
14.083	0.00	0.00	0.000	0					0.00
14.167	0.00	0.00	0.000	0					0.00
14.250	0.00	0.00	0.000	0					0.00
14.333	0.00	0.00	0.000	0					0.00
14.417	0.00	0.00	0.000	0					0.00
14.500	0.00	0.00	0.000	0					0.00
14.583	0.00	0.00	0.000	0					0.00
14.667	0.00	0.00	0.000	0					0.00
14.750	0.00	0.00	0.000	0					0.00
14.833	0.00	0.00	0.000	0					0.00
14.917	0.00	0.00	0.000	0					0.00
15.000	0.00	0.00	0.000	0					0.00
15.083	0.00	0.00	0.000	0					0.00
15.167	0.00	0.00	0.000	0					0.00
15.250	0.00	0.00	0.000	0					0.00
15.333	0.00	0.00	0.000	0					0.00
15.417	0.00	0.00	0.000	0					0.00
15.500	0.00	0.00	0.000	0					0.00
15.583	0.00	0.00	0.000	0					0.00
15.667	0.00	0.00	0.000	0					0.00

\*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*

Number of intervals = 188

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 0.821 (CFS)

Total volume = 0.493 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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FLOOD HYDROGRAPH ROUTING PROGRAM  
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018  
 Study date: 01/23/22

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 MFBC - BUILDING 14  
 BASIN A FLOOD ROUTING  
 100 YR - 6 HR  
 100102RTEA  
 -----

Program License Serial Number 6490

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 \*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 100102PRUHA16100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 73  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 5.868 (CFS)  
 Total volume = 0.634 (Ac.Ft)  
 Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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 User entry of depth-outflow-storage data

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 Total number of inflow hydrograph intervals = 73  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00 (Ft.)  
 -----

-----  
 Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
 -----

-----  
 Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.075	0.740	0.072	0.078
2.000	0.149	0.740	0.146	0.152
3.000	0.335	0.740	0.332	0.338
4.000	0.544	1.950	0.537	0.551
5.000	0.798	2.830	0.788	0.808
6.000	1.102	3.440	1.090	1.114
7.000	1.456	69.800	1.216	1.696

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Hydrograph Detention Basin Routing

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 Graph values: 'I'= unit inflow; 'O'=outflow at time shown  
 -----

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	1.5	2.93	4.40	5.87	Depth (Ft.)
0.083	0.28	0.01	0.001	OI					0.01
0.167	0.48	0.03	0.003	O I					0.05
0.250	0.51	0.06	0.006	O I					0.09
0.333	0.51	0.09	0.009	O I					0.13
0.417	0.51	0.12	0.012	O I					0.16
0.500	0.56	0.15	0.015	O I					0.20
0.583	0.59	0.18	0.018	O I					0.24
0.667	0.59	0.20	0.021	IO I					0.27
0.750	0.59	0.23	0.023	IO I					0.31
0.833	0.59	0.25	0.026	IO I					0.34
0.917	0.59	0.28	0.028	IO I					0.37
1.000	0.65	0.30	0.030	IO I					0.40
1.083	0.68	0.32	0.033	IO I					0.43
1.167	0.68	0.35	0.035	IO I					0.47
1.250	0.68	0.37	0.037	OI					0.50
1.333	0.68	0.39	0.039	OI					0.52
1.417	0.68	0.41	0.041	OI					0.55
1.500	0.68	0.42	0.043	OI					0.57
1.583	0.68	0.44	0.045	OI					0.60
1.667	0.68	0.46	0.046	OI					0.62
1.750	0.68	0.47	0.048	OI					0.64
1.833	0.68	0.48	0.049	OI					0.65
1.917	0.68	0.50	0.050	OI					0.67
2.000	0.73	0.51	0.052	OI					0.69
2.083	0.71	0.52	0.053	OI					0.71
2.167	0.73	0.54	0.054	OI					0.73
2.250	0.76	0.55	0.056	OI					0.75
2.333	0.76	0.57	0.057	OI					0.76
2.417	0.76	0.58	0.059	OI					0.78
2.500	0.76	0.59	0.060	OI					0.80
2.583	0.76	0.60	0.061	OI					0.81
2.667	0.76	0.61	0.062	OI					0.83
2.750	0.82	0.62	0.063	OI					0.84
2.833	0.85	0.64	0.065	OI					0.86
2.917	0.85	0.65	0.066	OI					0.88
3.000	0.85	0.66	0.067	OI					0.90
3.083	0.85	0.68	0.069	OI					0.91
3.167	0.90	0.69	0.070	OI					0.93
3.250	0.93	0.70	0.071	O I					0.95
3.333	0.93	0.72	0.073	O I					0.97
3.417	0.99	0.74	0.074	OI					0.99
3.500	1.07	0.74	0.077	OI					1.02
3.583	1.16	0.74	0.079	O I					1.06
3.667	1.19	0.74	0.082	O I					1.10
3.750	1.24	0.74	0.085	O I					1.14
3.833	1.27	0.74	0.089	O I					1.19
3.917	1.33	0.74	0.093	O I					1.24
4.000	1.36	0.74	0.097	O I					1.30
4.083	1.41	0.74	0.101	O I					1.36
4.167	1.50	0.74	0.106	O I					1.42
4.250	1.60	0.74	0.112	O I					1.50
4.333	1.72	0.74	0.118	O  I					1.58
4.417	1.85	0.74	0.125	O   I					1.68
4.500	1.89	0.74	0.133	O   I					1.79
4.583	1.97	0.74	0.141	O   I					1.90
4.667	2.10	0.74	0.150	O   I					2.01
4.750	2.22	0.74	0.160	O   I					2.06
4.833	2.26	0.74	0.170	O   I					2.11
4.917	2.35	0.74	0.181	O   I					2.17

5.000	2.47	0.74	0.193		O		I				2.23
5.083	2.92	0.74	0.206		O		I				2.31
5.167	3.55	0.74	0.223		O			I			2.40
5.250	4.01	0.74	0.244		O			I			2.51
5.333	4.38	0.74	0.268		O			I			2.64
5.417	4.92	0.74	0.295		O			I			2.78
5.500	5.87	0.74	0.327		O					I	2.96
5.583	3.21	0.84	0.353		O		I				3.09
5.667	1.06	0.89	0.362		O	I					3.13
5.750	0.59	0.89	0.361		O	I					3.12
5.833	0.45	0.88	0.359		O	I					3.11
5.917	0.31	0.86	0.355		O	I					3.10
6.000	0.20	0.83	0.351		O	I					3.08
6.083	0.06	0.81	0.346	I	O						3.05
6.167	0.00	0.78	0.341	I	O						3.03
6.250	0.00	0.75	0.336	I	O						3.00
6.333	0.00	0.74	0.331	I	O						2.98
6.417	0.00	0.74	0.326	I	O						2.95
6.500	0.00	0.74	0.321	I	O						2.92
6.583	0.00	0.74	0.316	I	O						2.90
6.667	0.00	0.74	0.310	I	O						2.87
6.750	0.00	0.74	0.305	I	O						2.84
6.833	0.00	0.74	0.300	I	O						2.81
6.917	0.00	0.74	0.295	I	O						2.79
7.000	0.00	0.74	0.290	I	O						2.76
7.083	0.00	0.74	0.285	I	O						2.73
7.167	0.00	0.74	0.280	I	O						2.70
7.250	0.00	0.74	0.275	I	O						2.68
7.333	0.00	0.74	0.270	I	O						2.65
7.417	0.00	0.74	0.265	I	O						2.62
7.500	0.00	0.74	0.259	I	O						2.59
7.583	0.00	0.74	0.254	I	O						2.57
7.667	0.00	0.74	0.249	I	O						2.54
7.750	0.00	0.74	0.244	I	O						2.51
7.833	0.00	0.74	0.239	I	O						2.48
7.917	0.00	0.74	0.234	I	O						2.46
8.000	0.00	0.74	0.229	I	O						2.43
8.083	0.00	0.74	0.224	I	O						2.40
8.167	0.00	0.74	0.219	I	O						2.37
8.250	0.00	0.74	0.214	I	O						2.35
8.333	0.00	0.74	0.209	I	O						2.32
8.417	0.00	0.74	0.203	I	O						2.29
8.500	0.00	0.74	0.198	I	O						2.27
8.583	0.00	0.74	0.193	I	O						2.24
8.667	0.00	0.74	0.188	I	O						2.21
8.750	0.00	0.74	0.183	I	O						2.18
8.833	0.00	0.74	0.178	I	O						2.16
8.917	0.00	0.74	0.173	I	O						2.13
9.000	0.00	0.74	0.168	I	O						2.10
9.083	0.00	0.74	0.163	I	O						2.07
9.167	0.00	0.74	0.158	I	O						2.05
9.250	0.00	0.74	0.152	I	O						2.02
9.333	0.00	0.74	0.147	I	O						1.98
9.417	0.00	0.74	0.142	I	O						1.91
9.500	0.00	0.74	0.137	I	O						1.84
9.583	0.00	0.74	0.132	I	O						1.77
9.667	0.00	0.74	0.127	I	O						1.70
9.750	0.00	0.74	0.122	I	O						1.63
9.833	0.00	0.74	0.117	I	O						1.56
9.917	0.00	0.74	0.112	I	O						1.50
10.000	0.00	0.74	0.107	I	O						1.43
10.083	0.00	0.74	0.102	I	O						1.36
10.167	0.00	0.74	0.096	I	O						1.29
10.250	0.00	0.74	0.091	I	O						1.22
10.333	0.00	0.74	0.086	I	O						1.15
10.417	0.00	0.74	0.081	I	O						1.08

10.500	0.00	0.74	0.076	I	o					1.01
10.583	0.00	0.70	0.071	I	o					0.95
10.667	0.00	0.66	0.066	I	o					0.89
10.750	0.00	0.61	0.062	I	o					0.83
10.833	0.00	0.57	0.058	I	o					0.77
10.917	0.00	0.53	0.054	I	o					0.72
11.000	0.00	0.50	0.051	I	o					0.67
11.083	0.00	0.47	0.047	I	o					0.63
11.167	0.00	0.44	0.044	I	o					0.59
11.250	0.00	0.41	0.041	I	o					0.55
11.333	0.00	0.38	0.039	I	o					0.51
11.417	0.00	0.36	0.036	IO						0.48
11.500	0.00	0.33	0.034	IO						0.45
11.583	0.00	0.31	0.031	IO						0.42
11.667	0.00	0.29	0.029	IO						0.39
11.750	0.00	0.27	0.027	IO						0.37
11.833	0.00	0.25	0.026	IO						0.34
11.917	0.00	0.24	0.024	IO						0.32
12.000	0.00	0.22	0.022	IO						0.30
12.083	0.00	0.21	0.021	IO						0.28
12.167	0.00	0.19	0.020	IO						0.26
12.250	0.00	0.18	0.018	o						0.24
12.333	0.00	0.17	0.017	o						0.23
12.417	0.00	0.16	0.016	o						0.21
12.500	0.00	0.15	0.015	o						0.20
12.583	0.00	0.14	0.014	o						0.19
12.667	0.00	0.13	0.013	o						0.17
12.750	0.00	0.12	0.012	o						0.16
12.833	0.00	0.11	0.011	o						0.15
12.917	0.00	0.10	0.011	o						0.14
13.000	0.00	0.10	0.010	o						0.13
13.083	0.00	0.09	0.009	o						0.12
13.167	0.00	0.09	0.009	o						0.12
13.250	0.00	0.08	0.008	o						0.11
13.333	0.00	0.07	0.008	o						0.10
13.417	0.00	0.07	0.007	o						0.09
13.500	0.00	0.06	0.007	o						0.09
13.583	0.00	0.06	0.006	o						0.08
13.667	0.00	0.06	0.006	o						0.08
13.750	0.00	0.05	0.005	o						0.07
13.833	0.00	0.05	0.005	o						0.07
13.917	0.00	0.05	0.005	o						0.06
14.000	0.00	0.04	0.004	o						0.06
14.083	0.00	0.04	0.004	o						0.05
14.167	0.00	0.04	0.004	o						0.05
14.250	0.00	0.04	0.004	o						0.05
14.333	0.00	0.03	0.003	o						0.04
14.417	0.00	0.03	0.003	o						0.04
14.500	0.00	0.03	0.003	o						0.04
14.583	0.00	0.03	0.003	o						0.04
14.667	0.00	0.03	0.003	o						0.03
14.750	0.00	0.02	0.002	o						0.03
14.833	0.00	0.02	0.002	o						0.03
14.917	0.00	0.02	0.002	o						0.03
15.000	0.00	0.02	0.002	o						0.03
15.083	0.00	0.02	0.002	o						0.02
15.167	0.00	0.02	0.002	o						0.02
15.250	0.00	0.02	0.002	o						0.02
15.333	0.00	0.01	0.001	o						0.02
15.417	0.00	0.01	0.001	o						0.02
15.500	0.00	0.01	0.001	o						0.02
15.583	0.00	0.01	0.001	o						0.02
15.667	0.00	0.01	0.001	o						0.01
15.750	0.00	0.01	0.001	o						0.01
15.833	0.00	0.01	0.001	o						0.01
15.917	0.00	0.01	0.001	o						0.01

16.000	0.00	0.01	0.001	0					0.01
16.083	0.00	0.01	0.001	0					0.01
16.167	0.00	0.01	0.001	0					0.01
16.250	0.00	0.01	0.001	0					0.01
16.333	0.00	0.01	0.001	0					0.01
16.417	0.00	0.01	0.001	0					0.01
16.500	0.00	0.01	0.001	0					0.01
16.583	0.00	0.01	0.001	0					0.01
16.667	0.00	0.00	0.000	0					0.01
16.750	0.00	0.00	0.000	0					0.01
16.833	0.00	0.00	0.000	0					0.01
16.917	0.00	0.00	0.000	0					0.01
17.000	0.00	0.00	0.000	0					0.01
17.083	0.00	0.00	0.000	0					0.00
17.167	0.00	0.00	0.000	0					0.00
17.250	0.00	0.00	0.000	0					0.00
17.333	0.00	0.00	0.000	0					0.00
17.417	0.00	0.00	0.000	0					0.00
17.500	0.00	0.00	0.000	0					0.00
17.583	0.00	0.00	0.000	0					0.00
17.667	0.00	0.00	0.000	0					0.00
17.750	0.00	0.00	0.000	0					0.00
17.833	0.00	0.00	0.000	0					0.00
17.917	0.00	0.00	0.000	0					0.00
18.000	0.00	0.00	0.000	0					0.00
18.083	0.00	0.00	0.000	0					0.00
18.167	0.00	0.00	0.000	0					0.00
18.250	0.00	0.00	0.000	0					0.00
18.333	0.00	0.00	0.000	0					0.00
18.417	0.00	0.00	0.000	0					0.00
18.500	0.00	0.00	0.000	0					0.00
18.583	0.00	0.00	0.000	0					0.00
18.667	0.00	0.00	0.000	0					0.00

\*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*

Number of intervals = 224  
Time interval = 5.0 (Min.)  
Maximum/Peak flow rate = 0.894 (CFS)  
Total volume = 0.634 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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FLOOD HYDROGRAPH ROUTING PROGRAM  
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018  
 Study date: 01/23/22

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 MFBC - BUILDING 14  
 BASIN A FLOOD ROUTING  
 100 YR - 24 HR  
 100102RTEA  
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Program License Serial Number 6490

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 \*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 100102PRUHA124100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 289  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 1.947 (CFS)  
 Total volume = 1.075 (Ac.Ft)  
 Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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 User entry of depth-outflow-storage data

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 Total number of inflow hydrograph intervals = 289  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00 (Ft.)  
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-----  
 Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)  
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 Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.075	0.740	0.072	0.078
2.000	0.149	0.740	0.146	0.152
3.000	0.335	0.740	0.332	0.338
4.000	0.544	1.950	0.537	0.551
5.000	0.798	2.830	0.788	0.808
6.000	1.102	3.440	1.090	1.114
7.000	1.456	69.800	1.216	1.696

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 Hydrograph Detention Basin Routing  
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Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	0.5	0.97	1.46	1.95	Depth (Ft.)
0.083	0.07	0.00	0.000	OI					0.00
0.167	0.10	0.01	0.001	OI					0.01
0.250	0.10	0.01	0.001	OI					0.02
0.333	0.14	0.02	0.002	O I					0.03
0.417	0.15	0.03	0.003	O I					0.04
0.500	0.15	0.04	0.004	O I					0.05
0.583	0.15	0.04	0.005	O I					0.06
0.667	0.15	0.05	0.005	O I					0.07
0.750	0.15	0.06	0.006	O I					0.08
0.833	0.19	0.07	0.007	O I					0.09
0.917	0.21	0.07	0.008	O I					0.10
1.000	0.21	0.08	0.008	O I					0.11
1.083	0.17	0.09	0.009	OI					0.12
1.167	0.15	0.10	0.010	OI					0.13
1.250	0.15	0.10	0.010	OI					0.13
1.333	0.15	0.10	0.010	OI					0.14
1.417	0.15	0.11	0.011	OI					0.14
1.500	0.15	0.11	0.011	OI					0.15
1.583	0.15	0.11	0.011	OI					0.15
1.667	0.15	0.11	0.012	OI					0.16
1.750	0.15	0.12	0.012	OI					0.16
1.833	0.19	0.12	0.012	O I					0.16
1.917	0.21	0.13	0.013	O I					0.17
2.000	0.21	0.13	0.013	O I					0.18
2.083	0.21	0.14	0.014	O I					0.18
2.167	0.21	0.14	0.014	O I					0.19
2.250	0.21	0.14	0.015	O I					0.20
2.333	0.21	0.15	0.015	O I					0.20
2.417	0.21	0.15	0.015	O I					0.21
2.500	0.21	0.16	0.016	O I					0.21
2.583	0.24	0.16	0.016	O I					0.22
2.667	0.26	0.17	0.017	O I					0.22
2.750	0.26	0.17	0.017	O I					0.23
2.833	0.26	0.18	0.018	O I					0.24
2.917	0.26	0.18	0.019	O I					0.25
3.000	0.26	0.19	0.019	O I					0.25
3.083	0.26	0.19	0.019	O I					0.26
3.167	0.26	0.20	0.020	O I					0.27
3.250	0.26	0.20	0.020	O I					0.27
3.333	0.26	0.20	0.021	O I					0.28
3.417	0.26	0.21	0.021	O I					0.28
3.500	0.26	0.21	0.021	O I					0.29
3.583	0.26	0.21	0.022	O I					0.29
3.667	0.26	0.22	0.022	O I					0.29
3.750	0.26	0.22	0.022	O I					0.30
3.833	0.29	0.22	0.023	O I					0.30
3.917	0.31	0.23	0.023	O I					0.31
4.000	0.31	0.23	0.024	O I					0.32
4.083	0.31	0.24	0.024	O I					0.32
4.167	0.31	0.24	0.025	O I					0.33
4.250	0.31	0.25	0.025	O I					0.33
4.333	0.34	0.25	0.026	O I					0.34
4.417	0.36	0.26	0.026	O I					0.35
4.500	0.36	0.27	0.027	O I					0.36
4.583	0.36	0.27	0.028	O I					0.37
4.667	0.36	0.28	0.028	O I					0.37
4.750	0.36	0.28	0.029	O I					0.38
4.833	0.39	0.29	0.029	O I					0.39

4.917	0.41	0.30	0.030		O I					0.40
5.000	0.41	0.30	0.031		O I					0.41
5.083	0.34	0.31	0.031		O					0.42
5.167	0.31	0.31	0.031		O					0.42
5.250	0.31	0.31	0.031		O					0.42
5.333	0.34	0.31	0.031		O					0.42
5.417	0.36	0.31	0.032		O					0.42
5.500	0.36	0.32	0.032		O					0.43
5.583	0.39	0.32	0.032		OI					0.43
5.667	0.41	0.33	0.033		OI					0.44
5.750	0.41	0.33	0.034		OI					0.45
5.833	0.41	0.34	0.034		OI					0.45
5.917	0.41	0.34	0.035		OI					0.46
6.000	0.41	0.35	0.035		OI					0.47
6.083	0.44	0.35	0.036		O I					0.47
6.167	0.46	0.36	0.036		O I					0.48
6.250	0.46	0.36	0.037		O I					0.49
6.333	0.46	0.37	0.038		OI					0.50
6.417	0.46	0.38	0.038		OI					0.51
6.500	0.46	0.38	0.039		OI					0.52
6.583	0.50	0.39	0.039		O I					0.53
6.667	0.51	0.40	0.040		O I					0.54
6.750	0.51	0.40	0.041		O I					0.55
6.833	0.51	0.41	0.042		O I					0.56
6.917	0.51	0.42	0.042		O I					0.57
7.000	0.51	0.42	0.043		O I					0.57
7.083	0.51	0.43	0.044		OI					0.58
7.167	0.51	0.44	0.044		OI					0.59
7.250	0.51	0.44	0.045		OI					0.60
7.333	0.55	0.45	0.045		O I					0.60
7.417	0.57	0.45	0.046		O I					0.61
7.500	0.57	0.46	0.047		O I					0.62
7.583	0.60	0.47	0.048		O I					0.63
7.667	0.62	0.48	0.048		O I					0.65
7.750	0.62	0.49	0.049		O I					0.66
7.833	0.65	0.50	0.050		O I					0.67
7.917	0.67	0.51	0.051		O I					0.69
8.000	0.67	0.52	0.053		O I					0.70
8.083	0.74	0.53	0.054		O I					0.72
8.167	0.77	0.54	0.055		O I					0.74
8.250	0.77	0.56	0.057		O I					0.76
8.333	0.77	0.57	0.058		O I					0.78
8.417	0.77	0.59	0.059		O I					0.79
8.500	0.77	0.60	0.061		O I					0.81
8.583	0.80	0.61	0.062		O I					0.83
8.667	0.82	0.62	0.063		O I					0.84
8.750	0.82	0.64	0.065		O I					0.86
8.833	0.86	0.65	0.066		O I					0.88
8.917	0.87	0.66	0.067		O I					0.90
9.000	0.87	0.68	0.069		O I					0.92
9.083	0.94	0.69	0.070		O I					0.94
9.167	0.98	0.71	0.072		O I					0.96
9.250	0.98	0.73	0.074		O I					0.98
9.333	1.01	0.74	0.076		O I					1.01
9.417	1.03	0.74	0.078		O I					1.03
9.500	1.03	0.74	0.079		O I					1.06
9.583	1.06	0.74	0.082		O I					1.09
9.667	1.08	0.74	0.084		O I					1.12
9.750	1.08	0.74	0.086		O I					1.15
9.833	1.11	0.74	0.089		O I					1.18
9.917	1.13	0.74	0.091		O I					1.22
10.000	1.13	0.74	0.094		O I					1.26
10.083	0.89	0.74	0.096		O I					1.28
10.167	0.77	0.74	0.096		O					1.29
10.250	0.77	0.74	0.097		O					1.29
10.333	0.77	0.74	0.097		O					1.30

10.417	0.77	0.74	0.097			O				1.30
10.500	0.77	0.74	0.097			O				1.30
10.583	0.94	0.74	0.098			O	I			1.31
10.667	1.03	0.74	0.100			O	I			1.33
10.750	1.03	0.74	0.102			O	I			1.36
10.833	1.03	0.74	0.104			O	I			1.39
10.917	1.03	0.74	0.106			O	I			1.42
11.000	1.03	0.74	0.108			O	I			1.44
11.083	0.99	0.74	0.110			O	I			1.47
11.167	0.98	0.74	0.111			O	I			1.49
11.250	0.98	0.74	0.113			O	I			1.51
11.333	0.98	0.74	0.114			O	I			1.53
11.417	0.98	0.74	0.116			O	I			1.56
11.500	0.98	0.74	0.118			O	I			1.58
11.583	0.91	0.74	0.119			O	I			1.60
11.667	0.87	0.74	0.120			O	I			1.61
11.750	0.87	0.74	0.121			O	I			1.62
11.833	0.91	0.74	0.122			O	I			1.64
11.917	0.92	0.74	0.123			O	I			1.65
12.000	0.92	0.74	0.125			O	I			1.67
12.083	1.16	0.74	0.127			O		I		1.70
12.167	1.28	0.74	0.130			O		I		1.74
12.250	1.28	0.74	0.134			O		I		1.79
12.333	1.32	0.74	0.138			O		I		1.85
12.417	1.34	0.74	0.142			O		I		1.90
12.500	1.34	0.74	0.146			O		I		1.96
12.583	1.42	0.74	0.150			O		I		2.01
12.667	1.46	0.74	0.155			O		I		2.03
12.750	1.46	0.74	0.160			O		I		2.06
12.833	1.52	0.74	0.165			O		I		2.09
12.917	1.55	0.74	0.171			O		I		2.12
13.000	1.55	0.74	0.176			O		I		2.15
13.083	1.80	0.74	0.183			O			I	2.18
13.167	1.93	0.74	0.190			O			I	2.22
13.250	1.94	0.74	0.199			O			I	2.27
13.333	1.94	0.74	0.207			O			I	2.31
13.417	1.94	0.74	0.215			O			I	2.36
13.500	1.95	0.74	0.223			O			I	2.40
13.583	1.44	0.74	0.230			O		I		2.44
13.667	1.18	0.74	0.234			O		I		2.46
13.750	1.18	0.74	0.237			O		I		2.47
13.833	1.18	0.74	0.240			O		I		2.49
13.917	1.18	0.74	0.243			O		I		2.51
14.000	1.18	0.74	0.246			O		I		2.52
14.083	1.35	0.74	0.250			O		I		2.54
14.167	1.44	0.74	0.254			O		I		2.57
14.250	1.45	0.74	0.259			O		I		2.59
14.333	1.40	0.74	0.264			O		I		2.62
14.417	1.38	0.74	0.268			O		I		2.64
14.500	1.38	0.74	0.273			O		I		2.67
14.583	1.38	0.74	0.277			O		I		2.69
14.667	1.39	0.74	0.282			O		I		2.71
14.750	1.39	0.74	0.286			O		I		2.74
14.833	1.34	0.74	0.290			O		I		2.76
14.917	1.32	0.74	0.294			O		I		2.78
15.000	1.32	0.74	0.298			O		I		2.80
15.083	1.27	0.74	0.302			O		I		2.82
15.167	1.25	0.74	0.306			O		I		2.84
15.250	1.25	0.74	0.309			O		I		2.86
15.333	1.21	0.74	0.313			O		I		2.88
15.417	1.18	0.74	0.316			O		I		2.90
15.500	1.19	0.74	0.319			O		I		2.91
15.583	1.05	0.74	0.322			O	I			2.93
15.667	0.98	0.74	0.323			O	I			2.94
15.750	0.98	0.74	0.325			O	I			2.95
15.833	0.98	0.74	0.327			O	I			2.96



15.917	0.98	0.74	0.328				O	I			2.96
16.000	0.98	0.74	0.330				O	I			2.97
16.083	0.47	0.74	0.330			I	O				2.97
16.167	0.21	0.74	0.327		I		O				2.96
16.250	0.21	0.74	0.323		I		O				2.94
16.333	0.21	0.74	0.320		I		O				2.92
16.417	0.21	0.74	0.316		I		O				2.90
16.500	0.21	0.74	0.312		I		O				2.88
16.583	0.17	0.74	0.309		I		O				2.86
16.667	0.15	0.74	0.305		I		O				2.84
16.750	0.15	0.74	0.301		I		O				2.81
16.833	0.15	0.74	0.296		I		O				2.79
16.917	0.15	0.74	0.292		I		O				2.77
17.000	0.15	0.74	0.288		I		O				2.75
17.083	0.22	0.74	0.285		I		O				2.73
17.167	0.26	0.74	0.281		I		O				2.71
17.250	0.26	0.74	0.278		I		O				2.69
17.333	0.26	0.74	0.274		I		O				2.67
17.417	0.26	0.74	0.271		I		O				2.66
17.500	0.26	0.74	0.268		I		O				2.64
17.583	0.26	0.74	0.265		I		O				2.62
17.667	0.26	0.74	0.261		I		O				2.60
17.750	0.26	0.74	0.258		I		O				2.59
17.833	0.22	0.74	0.254		I		O				2.57
17.917	0.21	0.74	0.251		I		O				2.55
18.000	0.21	0.74	0.247		I		O				2.53
18.083	0.21	0.74	0.243		I		O				2.51
18.167	0.21	0.74	0.240		I		O				2.49
18.250	0.21	0.74	0.236		I		O				2.47
18.333	0.21	0.74	0.232		I		O				2.45
18.417	0.21	0.74	0.229		I		O				2.43
18.500	0.21	0.74	0.225		I		O				2.41
18.583	0.17	0.74	0.221		I		O				2.39
18.667	0.15	0.74	0.217		I		O				2.37
18.750	0.15	0.74	0.213		I		O				2.35
18.833	0.12	0.74	0.209		I		O				2.32
18.917	0.10	0.74	0.205		I		O				2.30
19.000	0.10	0.74	0.200		I		O				2.28
19.083	0.14	0.74	0.196		I		O				2.25
19.167	0.15	0.74	0.192		I		O				2.23
19.250	0.15	0.74	0.188		I		O				2.21
19.333	0.19	0.74	0.184		I		O				2.19
19.417	0.21	0.74	0.180		I		O				2.17
19.500	0.21	0.74	0.177		I		O				2.15
19.583	0.17	0.74	0.173		I		O				2.13
19.667	0.15	0.74	0.169		I		O				2.11
19.750	0.15	0.74	0.165		I		O				2.08
19.833	0.12	0.74	0.161		I		O				2.06
19.917	0.10	0.74	0.156		I		O				2.04
20.000	0.10	0.74	0.152		I		O				2.02
20.083	0.14	0.74	0.148		I		O				1.98
20.167	0.15	0.74	0.144		I		O				1.93
20.250	0.15	0.74	0.140		I		O				1.87
20.333	0.15	0.74	0.135		I		O				1.82
20.417	0.15	0.74	0.131		I		O				1.76
20.500	0.15	0.74	0.127		I		O				1.71
20.583	0.15	0.74	0.123		I		O				1.65
20.667	0.15	0.74	0.119		I		O				1.60
20.750	0.15	0.74	0.115		I		O				1.54
20.833	0.12	0.74	0.111		I		O				1.49
20.917	0.10	0.74	0.107		I		O				1.43
21.000	0.10	0.74	0.102		I		O				1.37
21.083	0.14	0.74	0.098		I		O				1.31
21.167	0.15	0.74	0.094		I		O				1.26
21.250	0.15	0.74	0.090		I		O				1.20
21.333	0.12	0.74	0.086		I		O				1.15

21.417	0.10	0.74	0.082	I		o				1.09
21.500	0.10	0.74	0.077	I		o				1.03
21.583	0.14	0.72	0.073	I		o				0.97
21.667	0.15	0.68	0.069	I		o				0.92
21.750	0.15	0.65	0.066	I		o				0.88
21.833	0.12	0.61	0.062	I		o				0.83
21.917	0.10	0.58	0.059	I	o					0.79
22.000	0.10	0.55	0.056	I	o					0.74
22.083	0.14	0.52	0.053	I	o					0.70
22.167	0.15	0.50	0.050	I	o					0.67
22.250	0.15	0.47	0.048	I	o					0.64
22.333	0.12	0.45	0.046	I	o					0.61
22.417	0.10	0.43	0.044	I	o					0.58
22.500	0.10	0.41	0.041	I	o					0.55
22.583	0.10	0.39	0.039	I	o					0.52
22.667	0.10	0.37	0.037	I	o					0.50
22.750	0.10	0.35	0.036	I	o					0.48
22.833	0.10	0.34	0.034	I	o					0.45
22.917	0.10	0.32	0.032	I	o					0.43
23.000	0.10	0.31	0.031	I	o					0.41
23.083	0.10	0.29	0.030	I	o					0.40
23.167	0.10	0.28	0.028	I	o					0.38
23.250	0.10	0.27	0.027	I	o					0.36
23.333	0.10	0.26	0.026	I	o					0.35
23.417	0.10	0.25	0.025	I	o					0.33
23.500	0.10	0.24	0.024	I	o					0.32
23.583	0.10	0.23	0.023	I	o					0.31
23.667	0.10	0.22	0.022	I	o					0.30
23.750	0.10	0.21	0.022	I	o					0.29
23.833	0.10	0.21	0.021	I	o					0.28
23.917	0.10	0.20	0.020	I	o					0.27
24.000	0.10	0.19	0.020	I	o					0.26
24.083	0.04	0.18	0.019	I	o					0.25
24.167	0.00	0.17	0.018	I	o					0.23
24.250	0.00	0.16	0.016	I	o					0.22
24.333	0.00	0.15	0.015	I	o					0.20
24.417	0.00	0.14	0.014	I	o					0.19
24.500	0.00	0.13	0.013	I	o					0.18
24.583	0.00	0.12	0.013	I	o					0.17
24.667	0.00	0.12	0.012	IO						0.16
24.750	0.00	0.11	0.011	IO						0.15
24.833	0.00	0.10	0.010	IO						0.14
24.917	0.00	0.09	0.010	IO						0.13
25.000	0.00	0.09	0.009	IO						0.12
25.083	0.00	0.08	0.008	IO						0.11
25.167	0.00	0.08	0.008	IO						0.10
25.250	0.00	0.07	0.007	IO						0.10
25.333	0.00	0.07	0.007	IO						0.09
25.417	0.00	0.06	0.006	IO						0.08
25.500	0.00	0.06	0.006	o						0.08
25.583	0.00	0.05	0.006	o						0.07
25.667	0.00	0.05	0.005	o						0.07
25.750	0.00	0.05	0.005	o						0.06
25.833	0.00	0.04	0.005	o						0.06
25.917	0.00	0.04	0.004	o						0.06
26.000	0.00	0.04	0.004	o						0.05
26.083	0.00	0.04	0.004	o						0.05
26.167	0.00	0.03	0.003	o						0.05
26.250	0.00	0.03	0.003	o						0.04
26.333	0.00	0.03	0.003	o						0.04
26.417	0.00	0.03	0.003	o						0.04
26.500	0.00	0.03	0.003	o						0.03
26.583	0.00	0.02	0.002	o						0.03
26.667	0.00	0.02	0.002	o						0.03
26.750	0.00	0.02	0.002	o						0.03
26.833	0.00	0.02	0.002	o						0.03

26.917	0.00	0.02	0.002	0					0.02
27.000	0.00	0.02	0.002	0					0.02
27.083	0.00	0.02	0.002	0					0.02
27.167	0.00	0.02	0.002	0					0.02
27.250	0.00	0.01	0.001	0					0.02
27.333	0.00	0.01	0.001	0					0.02
27.417	0.00	0.01	0.001	0					0.02
27.500	0.00	0.01	0.001	0					0.02
27.583	0.00	0.01	0.001	0					0.01
27.667	0.00	0.01	0.001	0					0.01
27.750	0.00	0.01	0.001	0					0.01
27.833	0.00	0.01	0.001	0					0.01
27.917	0.00	0.01	0.001	0					0.01
28.000	0.00	0.01	0.001	0					0.01
28.083	0.00	0.01	0.001	0					0.01
28.167	0.00	0.01	0.001	0					0.01
28.250	0.00	0.01	0.001	0					0.01
28.333	0.00	0.01	0.001	0					0.01
28.417	0.00	0.01	0.001	0					0.01
28.500	0.00	0.01	0.001	0					0.01
28.583	0.00	0.00	0.000	0					0.01
28.667	0.00	0.00	0.000	0					0.01
28.750	0.00	0.00	0.000	0					0.01
28.833	0.00	0.00	0.000	0					0.01
28.917	0.00	0.00	0.000	0					0.00
29.000	0.00	0.00	0.000	0					0.00
29.083	0.00	0.00	0.000	0					0.00
29.167	0.00	0.00	0.000	0					0.00
29.250	0.00	0.00	0.000	0					0.00
29.333	0.00	0.00	0.000	0					0.00
29.417	0.00	0.00	0.000	0					0.00
29.500	0.00	0.00	0.000	0					0.00
29.583	0.00	0.00	0.000	0					0.00
29.667	0.00	0.00	0.000	0					0.00
29.750	0.00	0.00	0.000	0					0.00
29.833	0.00	0.00	0.000	0					0.00
29.917	0.00	0.00	0.000	0					0.00
30.000	0.00	0.00	0.000	0					0.00
30.083	0.00	0.00	0.000	0					0.00
30.167	0.00	0.00	0.000	0					0.00
30.250	0.00	0.00	0.000	0					0.00
30.333	0.00	0.00	0.000	0					0.00
30.417	0.00	0.00	0.000	0					0.00
30.500	0.00	0.00	0.000	0					0.00

\*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*

Number of intervals = 366  
Time interval = 5.0 (Min.)  
Maximum/Peak flow rate = 0.740 (CFS)  
Total volume = 1.075 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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FLOOD HYDROGRAPH ROUTING PROGRAM  
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018  
 Study date: 01/23/22

MFBC - BUILDING 14  
 BASIN B FLOOD ROUTING  
 100 TY - 1 HR  
 100102RTEB

Program License Serial Number 6490

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 100102PRUHA21100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 17  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 42.048 (CFS)  
 Total volume = 1.514 (Ac.Ft)  
 Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 17  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00 (Ft.)

Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.250	2.480	0.241	0.259
2.000	0.750	2.480	0.741	0.759
3.000	1.240	2.480	1.231	1.249
4.000	2.160	3.690	2.147	2.173
5.000	2.910	4.570	2.894	2.926
6.000	3.750	5.180	3.732	3.768
7.000	4.690	5.680	4.670	4.710
8.000	5.720	71.950	5.472	5.968

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 Hydrograph Detention Basin Routing  
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Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	10.5	21.02	31.54	42.05	Depth (Ft.)
0.083	2.79	0.09	0.009	O I					0.04
0.167	6.60	0.40	0.040	O I					0.16
0.250	8.19	0.86	0.087	O I					0.35
0.333	9.41	1.38	0.139	O I					0.56
0.417	10.48	1.95	0.196	O I					0.79
0.500	12.18	2.48	0.259	O I					1.02
0.583	14.03	2.48	0.332	O I					1.16
0.667	16.41	2.48	0.420	O I					1.34
0.750	21.37	2.48	0.533	O I		I			1.57
0.833	40.69	2.48	0.730	O I				I	1.96
0.917	42.05	2.48	0.998	O I				I	2.51
1.000	19.70	2.48	1.193	O I		I			2.90
1.083	10.33	2.53	1.279	O I					3.04
1.167	3.63	2.57	1.310	O I					3.08
1.250	1.47	2.57	1.310	O I					3.08
1.333	0.37	2.56	1.298	O I					3.06
1.417	0.10	2.54	1.282	O I					3.05
1.500	0.00	2.51	1.265	O I					3.03
1.583	0.00	2.49	1.248	O I					3.01
1.667	0.00	2.48	1.231	O I					2.98
1.750	0.00	2.48	1.214	O I					2.95
1.833	0.00	2.48	1.197	O I					2.91
1.917	0.00	2.48	1.180	O I					2.88
2.000	0.00	2.48	1.163	O I					2.84
2.083	0.00	2.48	1.146	O I					2.81
2.167	0.00	2.48	1.128	O I					2.77
2.250	0.00	2.48	1.111	O I					2.74
2.333	0.00	2.48	1.094	O I					2.70
2.417	0.00	2.48	1.077	O I					2.67
2.500	0.00	2.48	1.060	O I					2.63
2.583	0.00	2.48	1.043	O I					2.60
2.667	0.00	2.48	1.026	O I					2.56
2.750	0.00	2.48	1.009	O I					2.53
2.833	0.00	2.48	0.992	O I					2.49
2.917	0.00	2.48	0.975	O I					2.46
3.000	0.00	2.48	0.958	O I					2.42
3.083	0.00	2.48	0.941	O I					2.39
3.167	0.00	2.48	0.923	O I					2.35
3.250	0.00	2.48	0.906	O I					2.32
3.333	0.00	2.48	0.889	O I					2.28
3.417	0.00	2.48	0.872	O I					2.25
3.500	0.00	2.48	0.855	O I					2.21
3.583	0.00	2.48	0.838	O I					2.18
3.667	0.00	2.48	0.821	O I					2.14
3.750	0.00	2.48	0.804	O I					2.11
3.833	0.00	2.48	0.787	O I					2.08
3.917	0.00	2.48	0.770	O I					2.04
4.000	0.00	2.48	0.753	O I					2.01
4.083	0.00	2.48	0.736	O I					1.97
4.167	0.00	2.48	0.719	O I					1.94
4.250	0.00	2.48	0.701	O I					1.90
4.333	0.00	2.48	0.684	O I					1.87
4.417	0.00	2.48	0.667	O I					1.83
4.500	0.00	2.48	0.650	O I					1.80
4.583	0.00	2.48	0.633	O I					1.77
4.667	0.00	2.48	0.616	O I					1.73
4.750	0.00	2.48	0.599	O I					1.70
4.833	0.00	2.48	0.582	O I					1.66

4.917	0.00	2.48	0.565	IO					1.63
5.000	0.00	2.48	0.548	IO					1.60
5.083	0.00	2.48	0.531	IO					1.56
5.167	0.00	2.48	0.514	IO					1.53
5.250	0.00	2.48	0.496	IO					1.49
5.333	0.00	2.48	0.479	IO					1.46
5.417	0.00	2.48	0.462	IO					1.42
5.500	0.00	2.48	0.445	IO					1.39
5.583	0.00	2.48	0.428	IO					1.36
5.667	0.00	2.48	0.411	IO					1.32
5.750	0.00	2.48	0.394	IO					1.29
5.833	0.00	2.48	0.377	IO					1.25
5.917	0.00	2.48	0.360	IO					1.22
6.000	0.00	2.48	0.343	IO					1.19
6.083	0.00	2.48	0.326	IO					1.15
6.167	0.00	2.48	0.309	IO					1.12
6.250	0.00	2.48	0.292	IO					1.08
6.333	0.00	2.48	0.274	IO					1.05
6.417	0.00	2.48	0.257	IO					1.01
6.500	0.00	2.39	0.241	IO					0.96
6.583	0.00	2.23	0.225	IO					0.90
6.667	0.00	2.08	0.210	IO					0.84
6.750	0.00	1.94	0.196	IO					0.78
6.833	0.00	1.82	0.183	IO					0.73
6.917	0.00	1.70	0.171	IO					0.68
7.000	0.00	1.58	0.160	IO					0.64
7.083	0.00	1.48	0.149	IO					0.60
7.167	0.00	1.38	0.139	IO					0.56
7.250	0.00	1.29	0.130	O					0.52
7.333	0.00	1.20	0.121	O					0.49
7.417	0.00	1.13	0.113	O					0.45
7.500	0.00	1.05	0.106	O					0.42
7.583	0.00	0.98	0.099	O					0.40
7.667	0.00	0.92	0.092	O					0.37
7.750	0.00	0.86	0.086	O					0.35
7.833	0.00	0.80	0.081	O					0.32
7.917	0.00	0.75	0.075	O					0.30
8.000	0.00	0.70	0.070	O					0.28
8.083	0.00	0.65	0.066	O					0.26
8.167	0.00	0.61	0.061	O					0.25
8.250	0.00	0.57	0.057	O					0.23
8.333	0.00	0.53	0.053	O					0.21
8.417	0.00	0.50	0.050	O					0.20
8.500	0.00	0.46	0.047	O					0.19
8.583	0.00	0.43	0.044	O					0.17
8.667	0.00	0.40	0.041	O					0.16
8.750	0.00	0.38	0.038	O					0.15
8.833	0.00	0.35	0.035	O					0.14
8.917	0.00	0.33	0.033	O					0.13
9.000	0.00	0.31	0.031	O					0.12
9.083	0.00	0.29	0.029	O					0.12
9.167	0.00	0.27	0.027	O					0.11
9.250	0.00	0.25	0.025	O					0.10
9.333	0.00	0.23	0.024	O					0.09
9.417	0.00	0.22	0.022	O					0.09
9.500	0.00	0.20	0.021	O					0.08
9.583	0.00	0.19	0.019	O					0.08
9.667	0.00	0.18	0.018	O					0.07
9.750	0.00	0.17	0.017	O					0.07
9.833	0.00	0.16	0.016	O					0.06
9.917	0.00	0.14	0.015	O					0.06
10.000	0.00	0.14	0.014	O					0.05
10.083	0.00	0.13	0.013	O					0.05
10.167	0.00	0.12	0.012	O					0.05
10.250	0.00	0.11	0.011	O					0.04
10.333	0.00	0.10	0.010	O					0.04

10.417	0.00	0.10	0.010	0					0.04
10.500	0.00	0.09	0.009	0					0.04
10.583	0.00	0.08	0.008	0					0.03
10.667	0.00	0.08	0.008	0					0.03
10.750	0.00	0.07	0.007	0					0.03
10.833	0.00	0.07	0.007	0					0.03
10.917	0.00	0.06	0.006	0					0.03
11.000	0.00	0.06	0.006	0					0.02
11.083	0.00	0.06	0.006	0					0.02
11.167	0.00	0.05	0.005	0					0.02
11.250	0.00	0.05	0.005	0					0.02
11.333	0.00	0.05	0.005	0					0.02
11.417	0.00	0.04	0.004	0					0.02
11.500	0.00	0.04	0.004	0					0.02
11.583	0.00	0.04	0.004	0					0.01
11.667	0.00	0.03	0.003	0					0.01
11.750	0.00	0.03	0.003	0					0.01
11.833	0.00	0.03	0.003	0					0.01
11.917	0.00	0.03	0.003	0					0.01
12.000	0.00	0.03	0.003	0					0.01
12.083	0.00	0.02	0.002	0					0.01
12.167	0.00	0.02	0.002	0					0.01
12.250	0.00	0.02	0.002	0					0.01
12.333	0.00	0.02	0.002	0					0.01
12.417	0.00	0.02	0.002	0					0.01
12.500	0.00	0.02	0.002	0					0.01
12.583	0.00	0.02	0.002	0					0.01
12.667	0.00	0.02	0.002	0					0.01
12.750	0.00	0.01	0.001	0					0.01
12.833	0.00	0.01	0.001	0					0.01
12.917	0.00	0.01	0.001	0					0.00
13.000	0.00	0.01	0.001	0					0.00
13.083	0.00	0.01	0.001	0					0.00
13.167	0.00	0.01	0.001	0					0.00
13.250	0.00	0.01	0.001	0					0.00
13.333	0.00	0.01	0.001	0					0.00
13.417	0.00	0.01	0.001	0					0.00
13.500	0.00	0.01	0.001	0					0.00
13.583	0.00	0.01	0.001	0					0.00
13.667	0.00	0.01	0.001	0					0.00
13.750	0.00	0.01	0.001	0					0.00
13.833	0.00	0.01	0.001	0					0.00
13.917	0.00	0.01	0.001	0					0.00
14.000	0.00	0.01	0.001	0					0.00
14.083	0.00	0.00	0.000	0					0.00
14.167	0.00	0.00	0.000	0					0.00
14.250	0.00	0.00	0.000	0					0.00
14.333	0.00	0.00	0.000	0					0.00
14.417	0.00	0.00	0.000	0					0.00
14.500	0.00	0.00	0.000	0					0.00
14.583	0.00	0.00	0.000	0					0.00
14.667	0.00	0.00	0.000	0					0.00
14.750	0.00	0.00	0.000	0					0.00
14.833	0.00	0.00	0.000	0					0.00
14.917	0.00	0.00	0.000	0					0.00

\*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*

Number of intervals = 179  
Time interval = 5.0 (Min.)  
Maximum/Peak flow rate = 2.572 (CFS)  
Total volume = 1.513 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

\*\*\*\*\*

FLOOD HYDROGRAPH ROUTING PROGRAM  
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018  
 Study date: 01/23/22

MFBC - BUILDING 14  
 BASIN B FLOOD ROUTING  
 100 YR - 3 HR  
 100102RTEB

Program License Serial Number 6490

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 100102PRUHA23100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 41  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 24.762 (CFS)  
 Total volume = 2.067 (Ac.Ft)  
 Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

\*\*\*\*\*

+++++  
 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 41  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00 (Ft.)

Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.250	2.480	0.241	0.259
2.000	0.750	2.480	0.741	0.759
3.000	1.240	2.480	1.231	1.249
4.000	2.160	3.690	2.147	2.173
5.000	2.910	4.570	2.894	2.926
6.000	3.750	5.180	3.732	3.768
7.000	4.690	5.680	4.670	4.710
8.000	5.720	71.950	5.472	5.968



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 Hydrograph Detention Basin Routing  
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Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	6.2	12.38	18.57	24.76	Depth (Ft.)
0.083	1.23	0.04	0.004	OI					0.02
0.167	2.87	0.17	0.017	O I					0.07
0.250	3.07	0.36	0.036	O I					0.14
0.333	3.36	0.55	0.055	O I					0.22
0.417	3.89	0.75	0.076	O I					0.30
0.500	4.30	0.97	0.098	O I					0.39
0.583	4.43	1.20	0.120	O I					0.48
0.667	4.44	1.41	0.142	O I					0.57
0.750	4.78	1.62	0.163	O I					0.65
0.833	4.57	1.82	0.184	O I					0.73
0.917	4.31	2.00	0.201	O I					0.80
1.000	4.55	2.16	0.217	O I					0.87
1.083	5.18	2.34	0.235	O I					0.94
1.167	5.74	2.48	0.256	O I					1.01
1.250	5.88	2.48	0.279	O I					1.06
1.333	5.76	2.48	0.302	O I					1.10
1.417	6.16	2.48	0.326	O I					1.15
1.500	7.08	2.48	0.355	O I					1.21
1.583	7.05	2.48	0.386	O I					1.27
1.667	7.03	2.48	0.418	O I					1.34
1.750	8.25	2.48	0.453	O I					1.41
1.833	9.12	2.48	0.496	O I		I			1.49
1.917	8.79	2.48	0.541	O I		I			1.58
2.000	8.61	2.48	0.584	O I		I			1.67
2.083	8.86	2.48	0.627	O I		I			1.75
2.167	10.47	2.48	0.676	O I		I			1.85
2.250	13.45	2.48	0.741	O I		I			1.98
2.333	13.35	2.48	0.817	O I		I			2.14
2.417	15.55	2.48	0.899	O I		I			2.30
2.500	21.55	2.48	1.010	O I		I		I	2.53
2.583	24.76	2.48	1.152	O I		I		I	2.82
2.667	24.02	2.56	1.303	O I		I		I	3.07
2.750	15.81	2.72	1.422	O I		I		I	3.20
2.833	8.45	2.80	1.486	O I		I		I	3.27
2.917	6.36	2.85	1.518	O I		I		I	3.30
3.000	4.34	2.87	1.535	O I		I		I	3.32
3.083	1.83	2.87	1.536	O I		I		I	3.32
3.167	0.57	2.85	1.525	O I		I		I	3.31
3.250	0.24	2.83	1.508	O I		I		I	3.29
3.333	0.08	2.81	1.490	O I		I		I	3.27
3.417	0.02	2.78	1.471	O I		I		I	3.25
3.500	0.00	2.76	1.452	O I		I		I	3.23
3.583	0.00	2.73	1.433	O I		I		I	3.21
3.667	0.00	2.71	1.414	O I		I		I	3.19
3.750	0.00	2.68	1.396	O I		I		I	3.17
3.833	0.00	2.66	1.377	O I		I		I	3.15
3.917	0.00	2.64	1.359	O I		I		I	3.13
4.000	0.00	2.61	1.341	O I		I		I	3.11
4.083	0.00	2.59	1.323	O I		I		I	3.09
4.167	0.00	2.57	1.305	O I		I		I	3.07
4.250	0.00	2.54	1.288	O I		I		I	3.05
4.333	0.00	2.52	1.270	O I		I		I	3.03
4.417	0.00	2.50	1.253	O I		I		I	3.01
4.500	0.00	2.48	1.236	O I		I		I	2.99
4.583	0.00	2.48	1.219	O I		I		I	2.96
4.667	0.00	2.48	1.202	O I		I		I	2.92
4.750	0.00	2.48	1.185	O I		I		I	2.89
4.833	0.00	2.48	1.168	O I		I		I	2.85

4.917	0.00	2.48	1.150	I	O					2.82
5.000	0.00	2.48	1.133	I	O					2.78
5.083	0.00	2.48	1.116	I	O					2.75
5.167	0.00	2.48	1.099	I	O					2.71
5.250	0.00	2.48	1.082	I	O					2.68
5.333	0.00	2.48	1.065	I	O					2.64
5.417	0.00	2.48	1.048	I	O					2.61
5.500	0.00	2.48	1.031	I	O					2.57
5.583	0.00	2.48	1.014	I	O					2.54
5.667	0.00	2.48	0.997	I	O					2.50
5.750	0.00	2.48	0.980	I	O					2.47
5.833	0.00	2.48	0.963	I	O					2.43
5.917	0.00	2.48	0.945	I	O					2.40
6.000	0.00	2.48	0.928	I	O					2.36
6.083	0.00	2.48	0.911	I	O					2.33
6.167	0.00	2.48	0.894	I	O					2.29
6.250	0.00	2.48	0.877	I	O					2.26
6.333	0.00	2.48	0.860	I	O					2.22
6.417	0.00	2.48	0.843	I	O					2.19
6.500	0.00	2.48	0.826	I	O					2.15
6.583	0.00	2.48	0.809	I	O					2.12
6.667	0.00	2.48	0.792	I	O					2.09
6.750	0.00	2.48	0.775	I	O					2.05
6.833	0.00	2.48	0.758	I	O					2.02
6.917	0.00	2.48	0.741	I	O					1.98
7.000	0.00	2.48	0.723	I	O					1.95
7.083	0.00	2.48	0.706	I	O					1.91
7.167	0.00	2.48	0.689	I	O					1.88
7.250	0.00	2.48	0.672	I	O					1.84
7.333	0.00	2.48	0.655	I	O					1.81
7.417	0.00	2.48	0.638	I	O					1.78
7.500	0.00	2.48	0.621	I	O					1.74
7.583	0.00	2.48	0.604	I	O					1.71
7.667	0.00	2.48	0.587	I	O					1.67
7.750	0.00	2.48	0.570	I	O					1.64
7.833	0.00	2.48	0.553	I	O					1.61
7.917	0.00	2.48	0.536	I	O					1.57
8.000	0.00	2.48	0.518	I	O					1.54
8.083	0.00	2.48	0.501	I	O					1.50
8.167	0.00	2.48	0.484	I	O					1.47
8.250	0.00	2.48	0.467	I	O					1.43
8.333	0.00	2.48	0.450	I	O					1.40
8.417	0.00	2.48	0.433	I	O					1.37
8.500	0.00	2.48	0.416	I	O					1.33
8.583	0.00	2.48	0.399	I	O					1.30
8.667	0.00	2.48	0.382	I	O					1.26
8.750	0.00	2.48	0.365	I	O					1.23
8.833	0.00	2.48	0.348	I	O					1.20
8.917	0.00	2.48	0.331	I	O					1.16
9.000	0.00	2.48	0.314	I	O					1.13
9.083	0.00	2.48	0.296	I	O					1.09
9.167	0.00	2.48	0.279	I	O					1.06
9.250	0.00	2.48	0.262	I	O					1.02
9.333	0.00	2.43	0.245	I	O					0.98
9.417	0.00	2.27	0.229	I	O					0.92
9.500	0.00	2.12	0.214	I	O					0.86
9.583	0.00	1.98	0.200	I	O					0.80
9.667	0.00	1.85	0.187	I	O					0.75
9.750	0.00	1.73	0.174	I	O					0.70
9.833	0.00	1.62	0.163	I	O					0.65
9.917	0.00	1.51	0.152	IO						0.61
10.000	0.00	1.41	0.142	IO						0.57
10.083	0.00	1.32	0.133	IO						0.53
10.167	0.00	1.23	0.124	IO						0.50
10.250	0.00	1.15	0.116	IO						0.46
10.333	0.00	1.07	0.108	IO						0.43

10.417	0.00	1.00	0.101	IO					0.40
10.500	0.00	0.93	0.094	IO					0.38
10.583	0.00	0.87	0.088	IO					0.35
10.667	0.00	0.82	0.082	IO					0.33
10.750	0.00	0.76	0.077	O					0.31
10.833	0.00	0.71	0.072	O					0.29
10.917	0.00	0.66	0.067	O					0.27
11.000	0.00	0.62	0.063	O					0.25
11.083	0.00	0.58	0.058	O					0.23
11.167	0.00	0.54	0.055	O					0.22
11.250	0.00	0.51	0.051	O					0.20
11.333	0.00	0.47	0.048	O					0.19
11.417	0.00	0.44	0.044	O					0.18
11.500	0.00	0.41	0.042	O					0.17
11.583	0.00	0.38	0.039	O					0.16
11.667	0.00	0.36	0.036	O					0.14
11.750	0.00	0.34	0.034	O					0.14
11.833	0.00	0.31	0.032	O					0.13
11.917	0.00	0.29	0.029	O					0.12
12.000	0.00	0.27	0.028	O					0.11
12.083	0.00	0.26	0.026	O					0.10
12.167	0.00	0.24	0.024	O					0.10
12.250	0.00	0.22	0.022	O					0.09
12.333	0.00	0.21	0.021	O					0.08
12.417	0.00	0.19	0.020	O					0.08
12.500	0.00	0.18	0.018	O					0.07
12.583	0.00	0.17	0.017	O					0.07
12.667	0.00	0.16	0.016	O					0.06
12.750	0.00	0.15	0.015	O					0.06
12.833	0.00	0.14	0.014	O					0.06
12.917	0.00	0.13	0.013	O					0.05
13.000	0.00	0.12	0.012	O					0.05
13.083	0.00	0.11	0.011	O					0.05
13.167	0.00	0.10	0.011	O					0.04
13.250	0.00	0.10	0.010	O					0.04
13.333	0.00	0.09	0.009	O					0.04
13.417	0.00	0.09	0.009	O					0.03
13.500	0.00	0.08	0.008	O					0.03
13.583	0.00	0.07	0.008	O					0.03
13.667	0.00	0.07	0.007	O					0.03
13.750	0.00	0.07	0.007	O					0.03
13.833	0.00	0.06	0.006	O					0.02
13.917	0.00	0.06	0.006	O					0.02
14.000	0.00	0.05	0.005	O					0.02
14.083	0.00	0.05	0.005	O					0.02
14.167	0.00	0.05	0.005	O					0.02
14.250	0.00	0.04	0.004	O					0.02
14.333	0.00	0.04	0.004	O					0.02
14.417	0.00	0.04	0.004	O					0.02
14.500	0.00	0.04	0.004	O					0.01
14.583	0.00	0.03	0.003	O					0.01
14.667	0.00	0.03	0.003	O					0.01
14.750	0.00	0.03	0.003	O					0.01
14.833	0.00	0.03	0.003	O					0.01
14.917	0.00	0.02	0.003	O					0.01
15.000	0.00	0.02	0.002	O					0.01
15.083	0.00	0.02	0.002	O					0.01
15.167	0.00	0.02	0.002	O					0.01
15.250	0.00	0.02	0.002	O					0.01
15.333	0.00	0.02	0.002	O					0.01
15.417	0.00	0.02	0.002	O					0.01
15.500	0.00	0.02	0.002	O					0.01
15.583	0.00	0.01	0.001	O					0.01
15.667	0.00	0.01	0.001	O					0.01
15.750	0.00	0.01	0.001	O					0.01
15.833	0.00	0.01	0.001	O					0.00

15.917	0.00	0.01	0.001	0					0.00
16.000	0.00	0.01	0.001	0					0.00
16.083	0.00	0.01	0.001	0					0.00
16.167	0.00	0.01	0.001	0					0.00
16.250	0.00	0.01	0.001	0					0.00
16.333	0.00	0.01	0.001	0					0.00
16.417	0.00	0.01	0.001	0					0.00
16.500	0.00	0.01	0.001	0					0.00
16.583	0.00	0.01	0.001	0					0.00
16.667	0.00	0.01	0.001	0					0.00
16.750	0.00	0.01	0.001	0					0.00
16.833	0.00	0.01	0.001	0					0.00
16.917	0.00	0.00	0.000	0					0.00
17.000	0.00	0.00	0.000	0					0.00
17.083	0.00	0.00	0.000	0					0.00
17.167	0.00	0.00	0.000	0					0.00
17.250	0.00	0.00	0.000	0					0.00
17.333	0.00	0.00	0.000	0					0.00
17.417	0.00	0.00	0.000	0					0.00
17.500	0.00	0.00	0.000	0					0.00
17.583	0.00	0.00	0.000	0					0.00
17.667	0.00	0.00	0.000	0					0.00
17.750	0.00	0.00	0.000	0					0.00

\*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*

Number of intervals = 213  
Time interval = 5.0 (Min.)  
Maximum/Peak flow rate = 2.870 (CFS)  
Total volume = 2.067 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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FLOOD HYDROGRAPH ROUTING PROGRAM  
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018  
Study date: 01/23/22

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MFBC - BUILDING 14  
BASIN B FLOOD ROUTING  
100 YR - 6 HR  
100102RTEB  
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Program License Serial Number 6490

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\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 100102PRUHA26100.rte  
\*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
Number of intervals = 77  
Time interval = 5.0 (Min.)  
Maximum/Peak flow rate = 21.876 (CFS)  
Total volume = 2.677 (Ac.Ft)  
Status of hydrographs being held in storage  
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5  
Peak (CFS) 0.000 0.000 0.000 0.000 0.000  
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000  
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+++++  
Process from Point/Station 1.000 to Point/Station 2.000  
\*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

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User entry of depth-outflow-storage data  
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Total number of inflow hydrograph intervals = 77  
Hydrograph time unit = 5.000 (Min.)  
Initial depth in storage basin = 0.00 (Ft.)  
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Initial basin depth = 0.00 (Ft.)  
Initial basin storage = 0.00 (Ac.Ft)  
Initial basin outflow = 0.00 (CFS)  
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Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.250	2.480	0.241	0.259
2.000	0.750	2.480	0.741	0.759
3.000	1.240	2.480	1.231	1.249
4.000	2.160	3.690	2.147	2.173
5.000	2.910	4.570	2.894	2.926
6.000	3.750	5.180	3.732	3.768
7.000	4.690	5.680	4.670	4.710
8.000	5.720	71.950	5.472	5.968

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 Hydrograph Detention Basin Routing  
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Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	5.5	10.94	16.41	21.88	Depth (Ft.)
0.083	0.63	0.02	0.002	O					0.01
0.167	1.60	0.09	0.009	O I					0.04
0.250	1.97	0.21	0.021	O I					0.08
0.333	2.09	0.33	0.033	O I					0.13
0.417	2.15	0.44	0.045	O I					0.18
0.500	2.31	0.56	0.057	O I					0.23
0.583	2.48	0.68	0.069	O I					0.28
0.667	2.52	0.80	0.081	O I					0.32
0.750	2.53	0.92	0.092	O I					0.37
0.833	2.54	1.02	0.103	O I					0.41
0.917	2.55	1.12	0.113	O I					0.45
1.000	2.67	1.22	0.123	O I					0.49
1.083	2.84	1.32	0.133	O I					0.53
1.167	2.88	1.43	0.144	O I					0.57
1.250	2.90	1.52	0.153	O I					0.61
1.333	2.91	1.61	0.163	O I					0.65
1.417	2.91	1.70	0.171	O I					0.69
1.500	2.91	1.78	0.179	O I					0.72
1.583	2.91	1.85	0.187	O I					0.75
1.667	2.91	1.92	0.194	O I					0.78
1.750	2.91	1.99	0.200	O I					0.80
1.833	2.91	2.05	0.207	O I					0.83
1.917	2.91	2.11	0.212	O I					0.85
2.000	3.04	2.16	0.218	O I					0.87
2.083	3.08	2.22	0.224	O I					0.90
2.167	3.08	2.28	0.230	O I					0.92
2.250	3.22	2.34	0.236	O I					0.94
2.333	3.25	2.40	0.242	O I					0.97
2.417	3.26	2.45	0.247	O I					0.99
2.500	3.27	2.48	0.253	O I					1.01
2.583	3.27	2.48	0.258	O I					1.02
2.667	3.27	2.48	0.264	O I					1.03
2.750	3.40	2.48	0.270	O I					1.04
2.833	3.57	2.48	0.277	O I					1.05
2.917	3.61	2.48	0.284	O I					1.07
3.000	3.63	2.48	0.292	O I					1.08
3.083	3.63	2.48	0.300	O I					1.10
3.167	3.76	2.48	0.308	O I					1.12
3.250	3.93	2.48	0.318	O I					1.14
3.333	3.97	2.48	0.328	O I					1.16
3.417	4.12	2.48	0.339	O I					1.18
3.500	4.42	2.48	0.351	O I					1.20
3.583	4.76	2.48	0.365	O I					1.23
3.667	4.98	2.48	0.382	O I					1.26
3.750	5.17	2.48	0.400	O I					1.30
3.833	5.37	2.48	0.419	O I					1.34
3.917	5.55	2.48	0.440	O I					1.38
4.000	5.74	2.48	0.461	O I					1.42
4.083	5.91	2.48	0.484	O I					1.47
4.167	6.23	2.48	0.509	O I					1.52
4.250	6.61	2.48	0.536	O I					1.57
4.333	7.07	2.48	0.566	O I					1.63
4.417	7.55	2.48	0.600	O I					1.70
4.500	7.87	2.48	0.636	O I					1.77
4.583	8.13	2.48	0.674	O I					1.85
4.667	8.58	2.48	0.714	O I					1.93
4.750	9.05	2.48	0.758	O I					2.02
4.833	9.37	2.48	0.804	O I					2.11

4.917	9.63	2.48	0.852		O		I				2.21
5.000	10.07	2.48	0.903		O		I				2.31
5.083	11.24	2.48	0.959		O		I				2.43
5.167	13.35	2.48	1.027		O			I			2.57
5.250	15.33	2.48	1.109		O				I		2.73
5.333	16.95	2.48	1.203		O				I		2.92
5.417	18.85	2.57	1.309		O					I	3.07
5.500	21.88	2.73	1.431		O					I	3.21
5.583	17.95	2.89	1.548		O					I	3.34
5.667	8.72	2.98	1.620		O		I				3.41
5.750	4.89	3.01	1.646		O	I					3.44
5.833	3.11	3.02	1.653		O						3.45
5.917	2.02	3.02	1.650		I	O					3.45
6.000	1.20	3.01	1.640		I	O					3.43
6.083	0.62	2.99	1.626	I	O						3.42
6.167	0.19	2.96	1.608	I	O						3.40
6.250	0.08	2.94	1.589	I	O						3.38
6.333	0.03	2.91	1.569	I	O						3.36
6.417	0.01	2.89	1.549	I	O						3.34
6.500	0.00	2.86	1.529	I	O						3.31
6.583	0.00	2.83	1.510	I	O						3.29
6.667	0.00	2.81	1.490	I	O						3.27
6.750	0.00	2.78	1.471	I	O						3.25
6.833	0.00	2.76	1.452	I	O						3.23
6.917	0.00	2.73	1.433	I	O						3.21
7.000	0.00	2.71	1.414	I	O						3.19
7.083	0.00	2.68	1.396	I	O						3.17
7.167	0.00	2.66	1.377	I	O						3.15
7.250	0.00	2.64	1.359	I	O						3.13
7.333	0.00	2.61	1.341	I	O						3.11
7.417	0.00	2.59	1.323	I	O						3.09
7.500	0.00	2.57	1.305	I	O						3.07
7.583	0.00	2.54	1.288	I	O						3.05
7.667	0.00	2.52	1.270	I	O						3.03
7.750	0.00	2.50	1.253	I	O						3.01
7.833	0.00	2.48	1.236	I	O						2.99
7.917	0.00	2.48	1.219	I	O						2.96
8.000	0.00	2.48	1.202	I	O						2.92
8.083	0.00	2.48	1.185	I	O						2.89
8.167	0.00	2.48	1.168	I	O						2.85
8.250	0.00	2.48	1.150	I	O						2.82
8.333	0.00	2.48	1.133	I	O						2.78
8.417	0.00	2.48	1.116	I	O						2.75
8.500	0.00	2.48	1.099	I	O						2.71
8.583	0.00	2.48	1.082	I	O						2.68
8.667	0.00	2.48	1.065	I	O						2.64
8.750	0.00	2.48	1.048	I	O						2.61
8.833	0.00	2.48	1.031	I	O						2.57
8.917	0.00	2.48	1.014	I	O						2.54
9.000	0.00	2.48	0.997	I	O						2.50
9.083	0.00	2.48	0.980	I	O						2.47
9.167	0.00	2.48	0.963	I	O						2.43
9.250	0.00	2.48	0.945	I	O						2.40
9.333	0.00	2.48	0.928	I	O						2.36
9.417	0.00	2.48	0.911	I	O						2.33
9.500	0.00	2.48	0.894	I	O						2.29
9.583	0.00	2.48	0.877	I	O						2.26
9.667	0.00	2.48	0.860	I	O						2.22
9.750	0.00	2.48	0.843	I	O						2.19
9.833	0.00	2.48	0.826	I	O						2.15
9.917	0.00	2.48	0.809	I	O						2.12
10.000	0.00	2.48	0.792	I	O						2.09
10.083	0.00	2.48	0.775	I	O						2.05
10.167	0.00	2.48	0.758	I	O						2.02
10.250	0.00	2.48	0.741	I	O						1.98
10.333	0.00	2.48	0.723	I	O						1.95

10.417	0.00	2.48	0.706	I	O					1.91
10.500	0.00	2.48	0.689	I	O					1.88
10.583	0.00	2.48	0.672	I	O					1.84
10.667	0.00	2.48	0.655	I	O					1.81
10.750	0.00	2.48	0.638	I	O					1.78
10.833	0.00	2.48	0.621	I	O					1.74
10.917	0.00	2.48	0.604	I	O					1.71
11.000	0.00	2.48	0.587	I	O					1.67
11.083	0.00	2.48	0.570	I	O					1.64
11.167	0.00	2.48	0.553	I	O					1.61
11.250	0.00	2.48	0.536	I	O					1.57
11.333	0.00	2.48	0.518	I	O					1.54
11.417	0.00	2.48	0.501	I	O					1.50
11.500	0.00	2.48	0.484	I	O					1.47
11.583	0.00	2.48	0.467	I	O					1.43
11.667	0.00	2.48	0.450	I	O					1.40
11.750	0.00	2.48	0.433	I	O					1.37
11.833	0.00	2.48	0.416	I	O					1.33
11.917	0.00	2.48	0.399	I	O					1.30
12.000	0.00	2.48	0.382	I	O					1.26
12.083	0.00	2.48	0.365	I	O					1.23
12.167	0.00	2.48	0.348	I	O					1.20
12.250	0.00	2.48	0.331	I	O					1.16
12.333	0.00	2.48	0.314	I	O					1.13
12.417	0.00	2.48	0.296	I	O					1.09
12.500	0.00	2.48	0.279	I	O					1.06
12.583	0.00	2.48	0.262	I	O					1.02
12.667	0.00	2.43	0.245	I	O					0.98
12.750	0.00	2.27	0.229	I	O					0.92
12.833	0.00	2.12	0.214	I	O					0.86
12.917	0.00	1.98	0.200	I	O					0.80
13.000	0.00	1.85	0.187	I	O					0.75
13.083	0.00	1.73	0.174	I	O					0.70
13.167	0.00	1.62	0.163	I	O					0.65
13.250	0.00	1.51	0.152	I	O					0.61
13.333	0.00	1.41	0.142	I	O					0.57
13.417	0.00	1.32	0.133	IO						0.53
13.500	0.00	1.23	0.124	IO						0.50
13.583	0.00	1.15	0.116	IO						0.46
13.667	0.00	1.07	0.108	IO						0.43
13.750	0.00	1.00	0.101	IO						0.40
13.833	0.00	0.93	0.094	IO						0.38
13.917	0.00	0.87	0.088	IO						0.35
14.000	0.00	0.82	0.082	IO						0.33
14.083	0.00	0.76	0.077	IO						0.31
14.167	0.00	0.71	0.072	IO						0.29
14.250	0.00	0.66	0.067	O						0.27
14.333	0.00	0.62	0.063	O						0.25
14.417	0.00	0.58	0.058	O						0.23
14.500	0.00	0.54	0.055	O						0.22
14.583	0.00	0.51	0.051	O						0.20
14.667	0.00	0.47	0.048	O						0.19
14.750	0.00	0.44	0.044	O						0.18
14.833	0.00	0.41	0.042	O						0.17
14.917	0.00	0.38	0.039	O						0.16
15.000	0.00	0.36	0.036	O						0.14
15.083	0.00	0.34	0.034	O						0.14
15.167	0.00	0.31	0.032	O						0.13
15.250	0.00	0.29	0.029	O						0.12
15.333	0.00	0.27	0.028	O						0.11
15.417	0.00	0.26	0.026	O						0.10
15.500	0.00	0.24	0.024	O						0.10
15.583	0.00	0.22	0.022	O						0.09
15.667	0.00	0.21	0.021	O						0.08
15.750	0.00	0.19	0.020	O						0.08
15.833	0.00	0.18	0.018	O						0.07



15.917	0.00	0.17	0.017	0					0.07
16.000	0.00	0.16	0.016	0					0.06
16.083	0.00	0.15	0.015	0					0.06
16.167	0.00	0.14	0.014	0					0.06
16.250	0.00	0.13	0.013	0					0.05
16.333	0.00	0.12	0.012	0					0.05
16.417	0.00	0.11	0.011	0					0.05
16.500	0.00	0.10	0.011	0					0.04
16.583	0.00	0.10	0.010	0					0.04
16.667	0.00	0.09	0.009	0					0.04
16.750	0.00	0.09	0.009	0					0.03
16.833	0.00	0.08	0.008	0					0.03
16.917	0.00	0.07	0.008	0					0.03
17.000	0.00	0.07	0.007	0					0.03
17.083	0.00	0.07	0.007	0					0.03
17.167	0.00	0.06	0.006	0					0.02
17.250	0.00	0.06	0.006	0					0.02
17.333	0.00	0.05	0.005	0					0.02
17.417	0.00	0.05	0.005	0					0.02
17.500	0.00	0.05	0.005	0					0.02
17.583	0.00	0.04	0.004	0					0.02
17.667	0.00	0.04	0.004	0					0.02
17.750	0.00	0.04	0.004	0					0.02
17.833	0.00	0.04	0.004	0					0.01
17.917	0.00	0.03	0.003	0					0.01
18.000	0.00	0.03	0.003	0					0.01
18.083	0.00	0.03	0.003	0					0.01
18.167	0.00	0.03	0.003	0					0.01
18.250	0.00	0.02	0.003	0					0.01
18.333	0.00	0.02	0.002	0					0.01
18.417	0.00	0.02	0.002	0					0.01
18.500	0.00	0.02	0.002	0					0.01
18.583	0.00	0.02	0.002	0					0.01
18.667	0.00	0.02	0.002	0					0.01
18.750	0.00	0.02	0.002	0					0.01
18.833	0.00	0.02	0.002	0					0.01
18.917	0.00	0.01	0.001	0					0.01
19.000	0.00	0.01	0.001	0					0.01
19.083	0.00	0.01	0.001	0					0.01
19.167	0.00	0.01	0.001	0					0.00
19.250	0.00	0.01	0.001	0					0.00
19.333	0.00	0.01	0.001	0					0.00
19.417	0.00	0.01	0.001	0					0.00
19.500	0.00	0.01	0.001	0					0.00
19.583	0.00	0.01	0.001	0					0.00
19.667	0.00	0.01	0.001	0					0.00
19.750	0.00	0.01	0.001	0					0.00
19.833	0.00	0.01	0.001	0					0.00
19.917	0.00	0.01	0.001	0					0.00
20.000	0.00	0.01	0.001	0					0.00
20.083	0.00	0.01	0.001	0					0.00
20.167	0.00	0.01	0.001	0					0.00
20.250	0.00	0.00	0.000	0					0.00
20.333	0.00	0.00	0.000	0					0.00
20.417	0.00	0.00	0.000	0					0.00
20.500	0.00	0.00	0.000	0					0.00
20.583	0.00	0.00	0.000	0					0.00
20.667	0.00	0.00	0.000	0					0.00
20.750	0.00	0.00	0.000	0					0.00
20.833	0.00	0.00	0.000	0					0.00
20.917	0.00	0.00	0.000	0					0.00
21.000	0.00	0.00	0.000	0					0.00
21.083	0.00	0.00	0.000	0					0.00

\*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*

Number of intervals = 253

Time interval = 5.0 (Min.)  
Maximum/Peak flow rate = 3.023 (CFS)  
Total volume = 2.677 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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FLOOD HYDROGRAPH ROUTING PROGRAM  
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018  
 Study date: 01/23/22

MFBC - BUILDING 14  
 BASIN B FLOOD ROUTING  
 100 YR - 24 HR  
 100102RTEB

Program License Serial Number 6490

\*\*\*\*\* HYDROGRAPH INFORMATION \*\*\*\*\*

From study/file name: 100102PRUHA224100.rte  
 \*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*  
 Number of intervals = 293  
 Time interval = 5.0 (Min.)  
 Maximum/Peak flow rate = 8.172 (CFS)  
 Total volume = 4.606 (Ac.Ft)  
 Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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+++++  
 Process from Point/Station 1.000 to Point/Station 2.000  
 \*\*\*\* RETARDING BASIN ROUTING \*\*\*\*

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 293  
 Hydrograph time unit = 5.000 (Min.)  
 Initial depth in storage basin = 0.00 (Ft.)

Initial basin depth = 0.00 (Ft.)  
 Initial basin storage = 0.00 (Ac.Ft)  
 Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.250	2.480	0.241	0.259
2.000	0.750	2.480	0.741	0.759
3.000	1.240	2.480	1.231	1.249
4.000	2.160	3.690	2.147	2.173
5.000	2.910	4.570	2.894	2.926
6.000	3.750	5.180	3.732	3.768
7.000	4.690	5.680	4.670	4.710
8.000	5.720	71.950	5.472	5.968

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 Hydrograph Detention Basin Routing  
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Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	2.0	4.09	6.13	8.17	Depth (Ft.)
0.083	0.15	0.01	0.001	O					0.00
0.167	0.36	0.02	0.002	O I					0.01
0.250	0.41	0.05	0.005	O I					0.02
0.333	0.50	0.07	0.007	O I					0.03
0.417	0.62	0.10	0.011	O I					0.04
0.500	0.64	0.14	0.014	O I					0.06
0.583	0.65	0.17	0.017	O I					0.07
0.667	0.66	0.21	0.021	O I					0.08
0.750	0.66	0.24	0.024	O I					0.09
0.833	0.74	0.27	0.027	O I					0.11
0.917	0.84	0.30	0.030	O I					0.12
1.000	0.86	0.34	0.034	O I					0.14
1.083	0.80	0.37	0.037	O I					0.15
1.167	0.70	0.39	0.040	O I					0.16
1.250	0.68	0.41	0.042	O I					0.17
1.333	0.67	0.43	0.043	O I					0.17
1.417	0.66	0.45	0.045	O I					0.18
1.500	0.66	0.46	0.046	O I					0.19
1.583	0.66	0.47	0.048	O I					0.19
1.667	0.66	0.49	0.049	O I					0.20
1.750	0.66	0.50	0.050	O I					0.20
1.833	0.74	0.51	0.052	O					0.21
1.917	0.84	0.53	0.053	O I					0.21
2.000	0.86	0.55	0.056	O I					0.22
2.083	0.88	0.57	0.058	O I					0.23
2.167	0.88	0.59	0.060	O I					0.24
2.250	0.88	0.61	0.062	O I					0.25
2.333	0.88	0.63	0.063	O I					0.25
2.417	0.88	0.65	0.065	O I					0.26
2.500	0.88	0.66	0.067	O I					0.27
2.583	0.96	0.68	0.068	O I					0.27
2.667	1.06	0.70	0.071	O I					0.28
2.750	1.09	0.73	0.073	O I					0.29
2.833	1.10	0.75	0.076	O I					0.30
2.917	1.10	0.77	0.078	O I					0.31
3.000	1.10	0.79	0.080	O I					0.32
3.083	1.10	0.81	0.082	O I					0.33
3.167	1.10	0.83	0.084	O I					0.34
3.250	1.10	0.85	0.086	O I					0.34
3.333	1.10	0.87	0.088	O I					0.35
3.417	1.10	0.88	0.089	O I					0.36
3.500	1.10	0.90	0.091	O I					0.36
3.583	1.10	0.91	0.092	O I					0.37
3.667	1.10	0.92	0.093	O I					0.37
3.750	1.10	0.94	0.094	O I					0.38
3.833	1.18	0.95	0.096	O I					0.38
3.917	1.28	0.97	0.098	O I					0.39
4.000	1.31	0.99	0.100	O I					0.40
4.083	1.32	1.01	0.102	O I					0.41
4.167	1.32	1.03	0.104	O I					0.42
4.250	1.32	1.05	0.106	O I					0.42
4.333	1.40	1.07	0.108	O I					0.43
4.417	1.50	1.10	0.111	O I					0.44
4.500	1.53	1.12	0.113	O I					0.45
4.583	1.54	1.15	0.116	O I					0.46
4.667	1.54	1.18	0.119	O I					0.47
4.750	1.54	1.20	0.121	O I					0.48
4.833	1.62	1.23	0.124	O I					0.49

4.917	1.72	1.26	0.127		O I					0.51
5.000	1.75	1.29	0.130		OI					0.52
5.083	1.60	1.31	0.132		OI					0.53
5.167	1.40	1.33	0.134		O					0.53
5.250	1.36	1.33	0.134		O					0.54
5.333	1.41	1.33	0.134		O					0.54
5.417	1.51	1.34	0.135		O					0.54
5.500	1.53	1.35	0.136		O					0.55
5.583	1.61	1.37	0.138		OI					0.55
5.667	1.72	1.39	0.140		OI					0.56
5.750	1.75	1.41	0.142		OI					0.57
5.833	1.76	1.43	0.144		OI					0.58
5.917	1.76	1.45	0.147		OI					0.59
6.000	1.76	1.47	0.149		OI					0.59
6.083	1.84	1.50	0.151		O I					0.60
6.167	1.94	1.52	0.153		O I					0.61
6.250	1.97	1.55	0.156		OI					0.63
6.333	1.98	1.58	0.159		OI					0.64
6.417	1.98	1.61	0.162		OI					0.65
6.500	1.99	1.63	0.164		OI					0.66
6.583	2.06	1.66	0.167		O I					0.67
6.667	2.16	1.69	0.170		O I					0.68
6.750	2.19	1.72	0.173		O I					0.69
6.833	2.20	1.75	0.176		O I					0.71
6.917	2.20	1.78	0.179		O I					0.72
7.000	2.21	1.81	0.182		OI					0.73
7.083	2.21	1.83	0.185		OI					0.74
7.167	2.21	1.86	0.187		OI					0.75
7.250	2.21	1.88	0.190		OI					0.76
7.333	2.28	1.91	0.192		OI					0.77
7.417	2.39	1.93	0.195		O I					0.78
7.500	2.41	1.96	0.198		O I					0.79
7.583	2.50	2.00	0.201		O I					0.81
7.667	2.60	2.03	0.205		O I					0.82
7.750	2.63	2.07	0.209		O I					0.84
7.833	2.72	2.11	0.213		O I					0.85
7.917	2.82	2.16	0.217		O I					0.87
8.000	2.85	2.20	0.222		O I					0.89
8.083	3.01	2.25	0.227		O I					0.91
8.167	3.22	2.31	0.232		O I					0.93
8.250	3.27	2.37	0.239		O I					0.96
8.333	3.29	2.43	0.245		O I					0.98
8.417	3.30	2.48	0.251		O I					1.00
8.500	3.31	2.48	0.256		O I					1.01
8.583	3.39	2.48	0.262		O I					1.02
8.667	3.49	2.48	0.269		O I					1.04
8.750	3.51	2.48	0.276		O I					1.05
8.833	3.60	2.48	0.283		O I					1.07
8.917	3.71	2.48	0.291		O I					1.08
9.000	3.73	2.48	0.300		O I					1.10
9.083	3.90	2.48	0.309		O I					1.12
9.167	4.11	2.48	0.320		O I					1.14
9.250	4.16	2.48	0.331		O I					1.16
9.333	4.25	2.48	0.343		O I					1.19
9.417	4.37	2.48	0.356		O I					1.21
9.500	4.39	2.48	0.369		O I					1.24
9.583	4.48	2.48	0.382		O I					1.26
9.667	4.59	2.48	0.396		O I					1.29
9.750	4.61	2.48	0.411		O I					1.32
9.833	4.70	2.48	0.426		O I					1.35
9.917	4.81	2.48	0.442		O I					1.38
10.000	4.84	2.48	0.458		O I					1.42
10.083	4.31	2.48	0.472		O I					1.44
10.167	3.60	2.48	0.482		O I					1.46
10.250	3.43	2.48	0.489		O I					1.48
10.333	3.36	2.48	0.496		O I					1.49

10.417	3.32	2.48	0.502		O	I				1.50
10.500	3.31	2.48	0.507		O	I				1.51
10.583	3.69	2.48	0.514		O	I				1.53
10.667	4.21	2.48	0.524		O	I				1.55
10.750	4.32	2.48	0.537		O	I				1.57
10.833	4.38	2.48	0.550		O	I				1.60
10.917	4.40	2.48	0.563		O	I				1.63
11.000	4.41	2.48	0.576		O	I				1.65
11.083	4.34	2.48	0.589		O	I				1.68
11.167	4.23	2.48	0.602		O	I				1.70
11.250	4.21	2.48	0.614		O	I				1.73
11.333	4.20	2.48	0.625		O	I				1.75
11.417	4.19	2.48	0.637		O	I				1.77
11.500	4.19	2.48	0.649		O	I				1.80
11.583	4.04	2.48	0.660		O	I				1.82
11.667	3.83	2.48	0.670		O	I				1.84
11.750	3.79	2.48	0.679		O	I				1.86
11.833	3.84	2.48	0.689		O	I				1.88
11.917	3.93	2.48	0.698		O	I				1.90
12.000	3.95	2.48	0.708		O	I				1.92
12.083	4.50	2.48	0.720		O	I				1.94
12.167	5.22	2.48	0.737		O		I			1.97
12.250	5.39	2.48	0.756		O		I			2.01
12.333	5.54	2.48	0.777		O		I			2.05
12.417	5.68	2.48	0.798		O		I			2.10
12.500	5.72	2.48	0.821		O		I			2.14
12.583	5.91	2.48	0.844		O		I			2.19
12.667	6.15	2.48	0.868		O		I			2.24
12.750	6.22	2.48	0.894		O		I			2.29
12.833	6.36	2.48	0.920		O		I			2.35
12.917	6.52	2.48	0.947		O		I			2.40
13.000	6.57	2.48	0.975		O		I			2.46
13.083	7.12	2.48	1.005		O			I		2.52
13.167	7.84	2.48	1.040		O			I		2.59
13.250	8.02	2.48	1.077		O			I		2.67
13.333	8.10	2.48	1.116		O			I		2.75
13.417	8.15	2.48	1.154		O			I		2.83
13.500	8.17	2.48	1.194		O			I		2.91
13.583	7.10	2.48	1.229		O			I		2.98
13.667	5.65	2.50	1.256		O		I			3.02
13.750	5.32	2.53	1.276		O		I			3.04
13.833	5.17	2.55	1.295		O		I			3.06
13.917	5.10	2.58	1.313		O		I			3.08
14.000	5.07	2.60	1.330		O		I			3.10
14.083	5.44	2.62	1.348		O		I			3.12
14.167	5.94	2.65	1.369		O		I			3.14
14.250	6.07	2.68	1.392		O		I			3.17
14.333	6.02	2.71	1.415		O		I			3.19
14.417	5.92	2.74	1.438		O		I			3.21
14.500	5.90	2.77	1.459		O		I			3.24
14.583	5.90	2.80	1.481		O		I			3.26
14.667	5.90	2.82	1.502		O		I			3.28
14.750	5.91	2.85	1.523		O		I			3.31
14.833	5.81	2.88	1.544		O		I			3.33
14.917	5.68	2.91	1.564		O		I			3.35
15.000	5.66	2.93	1.583		O		I			3.37
15.083	5.55	2.95	1.601		O		I			3.39
15.167	5.41	2.98	1.618		O		I			3.41
15.250	5.39	3.00	1.635		O		I			3.43
15.333	5.28	3.02	1.651		O		I			3.45
15.417	5.14	3.04	1.666		O		I			3.46
15.500	5.12	3.06	1.680		O		I			3.48
15.583	4.79	3.08	1.693		O		I			3.49
15.667	4.36	3.09	1.703		O		I			3.50
15.750	4.26	3.10	1.712		O	I				3.51
15.833	4.22	3.11	1.720		O	I				3.52

15.917	4.20	3.12	1.727			O	I			3.53
16.000	4.19	3.13	1.735			O	I			3.54
16.083	3.04	3.13	1.738			IO				3.54
16.167	1.50	3.13	1.732		I	O				3.53
16.250	1.14	3.11	1.720		I	O				3.52
16.333	0.99	3.09	1.706		I	O				3.51
16.417	0.91	3.07	1.691		I	O				3.49
16.500	0.88	3.05	1.676		I	O				3.47
16.583	0.81	3.03	1.661		I	O				3.46
16.667	0.70	3.01	1.645		I	O				3.44
16.750	0.68	2.99	1.629		I	O				3.42
16.833	0.67	2.97	1.613		I	O				3.41
16.917	0.66	2.95	1.598		I	O				3.39
17.000	0.66	2.93	1.582		I	O				3.37
17.083	0.82	2.91	1.567		I	O				3.36
17.167	1.02	2.89	1.553		I	O				3.34
17.250	1.07	2.88	1.541		I	O				3.33
17.333	1.09	2.86	1.528		I	O				3.31
17.417	1.10	2.84	1.516		I	O				3.30
17.500	1.10	2.83	1.504		I	O				3.29
17.583	1.10	2.81	1.492		I	O				3.27
17.667	1.10	2.80	1.481		I	O				3.26
17.750	1.10	2.78	1.469		I	O				3.25
17.833	1.03	2.77	1.457		I	O				3.24
17.917	0.92	2.75	1.445		I	O				3.22
18.000	0.90	2.73	1.432		I	O				3.21
18.083	0.89	2.72	1.420		I	O				3.20
18.167	0.88	2.70	1.407		I	O				3.18
18.250	0.88	2.68	1.395		I	O				3.17
18.333	0.88	2.67	1.382		I	O				3.15
18.417	0.88	2.65	1.370		I	O				3.14
18.500	0.88	2.64	1.358		I	O				3.13
18.583	0.81	2.62	1.346		I	O				3.12
18.667	0.70	2.60	1.333		I	O				3.10
18.750	0.68	2.59	1.320		I	O				3.09
18.833	0.59	2.57	1.307		I	O				3.07
18.917	0.48	2.55	1.293		I	O				3.06
19.000	0.46	2.53	1.278		I	O				3.04
19.083	0.53	2.51	1.264		I	O				3.03
19.167	0.62	2.49	1.251		I	O				3.01
19.250	0.64	2.48	1.238		I	O				3.00
19.333	0.73	2.48	1.226		I	O				2.97
19.417	0.84	2.48	1.214		I	O				2.95
19.500	0.86	2.48	1.203		I	O				2.92
19.583	0.80	2.48	1.192		I	O				2.90
19.667	0.70	2.48	1.180		I	O				2.88
19.750	0.68	2.48	1.168		I	O				2.85
19.833	0.59	2.48	1.155		I	O				2.83
19.917	0.48	2.48	1.141		I	O				2.80
20.000	0.46	2.48	1.128		I	O				2.77
20.083	0.53	2.48	1.114		I	O				2.74
20.167	0.62	2.48	1.101		I	O				2.72
20.250	0.64	2.48	1.088		I	O				2.69
20.333	0.65	2.48	1.076		I	O				2.66
20.417	0.66	2.48	1.063		I	O				2.64
20.500	0.66	2.48	1.050		I	O				2.61
20.583	0.66	2.48	1.038		I	O				2.59
20.667	0.66	2.48	1.025		I	O				2.56
20.750	0.66	2.48	1.013		I	O				2.54
20.833	0.59	2.48	1.000		I	O				2.51
20.917	0.48	2.48	0.987		I	O				2.48
21.000	0.46	2.48	0.973		I	O				2.45
21.083	0.53	2.48	0.959		I	O				2.43
21.167	0.62	2.48	0.946		I	O				2.40
21.250	0.64	2.48	0.933		I	O				2.37
21.333	0.58	2.48	0.920		I	O				2.35

21.417	0.48	2.48	0.907	I	O				2.32
21.500	0.46	2.48	0.893	I	O				2.29
21.583	0.53	2.48	0.879	I	O				2.26
21.667	0.62	2.48	0.866	I	O				2.24
21.750	0.64	2.48	0.854	I	O				2.21
21.833	0.58	2.48	0.841	I	O				2.19
21.917	0.48	2.48	0.827	I	O				2.16
22.000	0.46	2.48	0.813	I	O				2.13
22.083	0.53	2.48	0.800	I	O				2.10
22.167	0.62	2.48	0.787	I	O				2.07
22.250	0.64	2.48	0.774	I	O				2.05
22.333	0.58	2.48	0.761	I	O				2.02
22.417	0.48	2.48	0.748	I	O				2.00
22.500	0.46	2.48	0.734	I	O				1.97
22.583	0.45	2.48	0.720	I	O				1.94
22.667	0.44	2.48	0.706	I	O				1.91
22.750	0.44	2.48	0.692	I	O				1.88
22.833	0.44	2.48	0.678	I	O				1.86
22.917	0.44	2.48	0.664	I	O				1.83
23.000	0.44	2.48	0.650	I	O				1.80
23.083	0.44	2.48	0.636	I	O				1.77
23.167	0.44	2.48	0.622	I	O				1.74
23.250	0.44	2.48	0.608	I	O				1.72
23.333	0.44	2.48	0.593	I	O				1.69
23.417	0.44	2.48	0.579	I	O				1.66
23.500	0.44	2.48	0.565	I	O				1.63
23.583	0.44	2.48	0.551	I	O				1.60
23.667	0.44	2.48	0.537	I	O				1.57
23.750	0.44	2.48	0.523	I	O				1.55
23.833	0.44	2.48	0.509	I	O				1.52
23.917	0.44	2.48	0.495	I	O				1.49
24.000	0.44	2.48	0.481	I	O				1.46
24.083	0.29	2.48	0.467	I	O				1.43
24.167	0.08	2.48	0.451	I	O				1.40
24.250	0.03	2.48	0.434	I	O				1.37
24.333	0.01	2.48	0.417	I	O				1.33
24.417	0.00	2.48	0.400	I	O				1.30
24.500	0.00	2.48	0.383	I	O				1.27
24.583	0.00	2.48	0.366	I	O				1.23
24.667	0.00	2.48	0.349	I	O				1.20
24.750	0.00	2.48	0.332	I	O				1.16
24.833	0.00	2.48	0.315	I	O				1.13
24.917	0.00	2.48	0.298	I	O				1.10
25.000	0.00	2.48	0.281	I	O				1.06
25.083	0.00	2.48	0.264	I	O				1.03
25.167	0.00	2.45	0.247	I	O				0.99
25.250	0.00	2.28	0.230	I	O				0.92
25.333	0.00	2.13	0.215	I	O				0.86
25.417	0.00	1.99	0.201	I	O				0.80
25.500	0.00	1.86	0.188	I	O				0.75
25.583	0.00	1.74	0.175	I	O				0.70
25.667	0.00	1.62	0.164	I	O				0.65
25.750	0.00	1.52	0.153	I	O				0.61
25.833	0.00	1.42	0.143	I	O				0.57
25.917	0.00	1.32	0.133	I	O				0.53
26.000	0.00	1.23	0.124	I	O				0.50
26.083	0.00	1.15	0.116	I	O				0.47
26.167	0.00	1.08	0.109	I	O				0.43
26.250	0.00	1.01	0.101	I	O				0.41
26.333	0.00	0.94	0.095	I	O				0.38
26.417	0.00	0.88	0.088	I	O				0.35
26.500	0.00	0.82	0.083	I	O				0.33
26.583	0.00	0.77	0.077	I	O				0.31
26.667	0.00	0.71	0.072	I	O				0.29
26.750	0.00	0.67	0.067	I	O				0.27
26.833	0.00	0.62	0.063	I	O				0.25



26.917	0.00	0.58	0.059	I O					0.23
27.000	0.00	0.54	0.055	I O					0.22
27.083	0.00	0.51	0.051	IO					0.20
27.167	0.00	0.47	0.048	IO					0.19
27.250	0.00	0.44	0.045	IO					0.18
27.333	0.00	0.41	0.042	IO					0.17
27.417	0.00	0.39	0.039	IO					0.16
27.500	0.00	0.36	0.036	IO					0.15
27.583	0.00	0.34	0.034	IO					0.14
27.667	0.00	0.31	0.032	IO					0.13
27.750	0.00	0.29	0.030	IO					0.12
27.833	0.00	0.27	0.028	IO					0.11
27.917	0.00	0.26	0.026	IO					0.10
28.000	0.00	0.24	0.024	O					0.10
28.083	0.00	0.22	0.023	O					0.09
28.167	0.00	0.21	0.021	O					0.08
28.250	0.00	0.20	0.020	O					0.08
28.333	0.00	0.18	0.018	O					0.07
28.417	0.00	0.17	0.017	O					0.07
28.500	0.00	0.16	0.016	O					0.06
28.583	0.00	0.15	0.015	O					0.06
28.667	0.00	0.14	0.014	O					0.06
28.750	0.00	0.13	0.013	O					0.05
28.833	0.00	0.12	0.012	O					0.05
28.917	0.00	0.11	0.011	O					0.05
29.000	0.00	0.11	0.011	O					0.04
29.083	0.00	0.10	0.010	O					0.04
29.167	0.00	0.09	0.009	O					0.04
29.250	0.00	0.09	0.009	O					0.03
29.333	0.00	0.08	0.008	O					0.03
29.417	0.00	0.07	0.008	O					0.03
29.500	0.00	0.07	0.007	O					0.03
29.583	0.00	0.07	0.007	O					0.03
29.667	0.00	0.06	0.006	O					0.02
29.750	0.00	0.06	0.006	O					0.02
29.833	0.00	0.05	0.005	O					0.02
29.917	0.00	0.05	0.005	O					0.02
30.000	0.00	0.05	0.005	O					0.02
30.083	0.00	0.04	0.004	O					0.02
30.167	0.00	0.04	0.004	O					0.02
30.250	0.00	0.04	0.004	O					0.02
30.333	0.00	0.04	0.004	O					0.01
30.417	0.00	0.03	0.003	O					0.01
30.500	0.00	0.03	0.003	O					0.01
30.583	0.00	0.03	0.003	O					0.01
30.667	0.00	0.03	0.003	O					0.01
30.750	0.00	0.03	0.003	O					0.01
30.833	0.00	0.02	0.002	O					0.01
30.917	0.00	0.02	0.002	O					0.01
31.000	0.00	0.02	0.002	O					0.01
31.083	0.00	0.02	0.002	O					0.01
31.167	0.00	0.02	0.002	O					0.01
31.250	0.00	0.02	0.002	O					0.01
31.333	0.00	0.02	0.002	O					0.01
31.417	0.00	0.01	0.001	O					0.01
31.500	0.00	0.01	0.001	O					0.01
31.583	0.00	0.01	0.001	O					0.01
31.667	0.00	0.01	0.001	O					0.00
31.750	0.00	0.01	0.001	O					0.00
31.833	0.00	0.01	0.001	O					0.00
31.917	0.00	0.01	0.001	O					0.00
32.000	0.00	0.01	0.001	O					0.00
32.083	0.00	0.01	0.001	O					0.00
32.167	0.00	0.01	0.001	O					0.00
32.250	0.00	0.01	0.001	O					0.00
32.333	0.00	0.01	0.001	O					0.00

32.417	0.00	0.01	0.001	0					0.00
32.500	0.00	0.01	0.001	0					0.00
32.583	0.00	0.01	0.001	0					0.00
32.667	0.00	0.01	0.001	0					0.00
32.750	0.00	0.00	0.000	0					0.00
32.833	0.00	0.00	0.000	0					0.00
32.917	0.00	0.00	0.000	0					0.00
33.000	0.00	0.00	0.000	0					0.00
33.083	0.00	0.00	0.000	0					0.00
33.167	0.00	0.00	0.000	0					0.00
33.250	0.00	0.00	0.000	0					0.00
33.333	0.00	0.00	0.000	0					0.00
33.417	0.00	0.00	0.000	0					0.00
33.500	0.00	0.00	0.000	0					0.00
33.583	0.00	0.00	0.000	0					0.00

\*\*\*\*\*HYDROGRAPH DATA\*\*\*\*\*

Number of intervals = 403  
Time interval = 5.0 (Min.)  
Maximum/Peak flow rate = 3.135 (CFS)  
Total volume = 4.605 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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**APPENDIX H**  
**RIVERSIDE COUNTY HYDROLOGY**  
**REFERENCE DATA**

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**PBLA ENGINEERING, INC.**

1809 E. Dyer Rd., Suite 301  
Santa Ana, CA 92705  
(888)714-9642

981 Corporate Center Drive, Suite 150  
Pomona, CA 91768  
(626) 512-4934

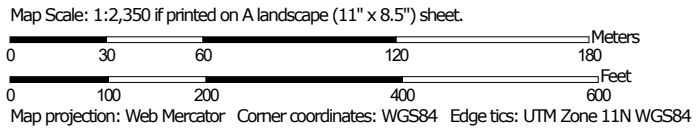
1481 Ford Street, Suite 201  
Redlands, CA 92373  
(714) 620-4960

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Hydrologic Soil Group—Western Riverside Area, California




Soil Map may not be valid at this scale.



## MAP LEGEND

### Area of Interest (AOI)









 Area of Interest (AOI)

### Soils

#### Soil Rating Polygons





 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Lines


 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Points





 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 Not rated or not available


### 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 1:15,800.

**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: Western Riverside Area, California  
 Survey Area Data: Version 14, Sep 13, 2021

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

Date(s) aerial images were photographed: May 25, 2019—Jun 25, 2019

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.

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AoC	Arlington fine sandy loam, deep, 2 to 8 percent slopes	B	13.2	60.8%
EnC2	Exeter sandy loam, 2 to 8 percent slopes, eroded	C	2.1	9.9%
FfC2	Fallbrook fine sandy loam, 2 to 8 percent slopes, eroded	C	1.3	5.8%
HcC	Hanford coarse sandy loam, 2 to 8 percent slopes	A	5.1	23.6%
<b>Totals for Area of Interest</b>			<b>21.7</b>	<b>100.0%</b>

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher



NOAA Atlas 14, Volume 6, Version 2  
Location name: Perris, California, USA\*  
Latitude: 33.8495°, Longitude: -117.2595°  
Elevation: 1528.55 ft\*\*



\* source: ESRI Maps  
\*\* source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Tryppaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

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) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.087 (0.073-0.105)	0.121 (0.101-0.146)	0.167 (0.139-0.203)	0.206 (0.170-0.252)	0.261 (0.208-0.331)	0.306 (0.239-0.396)	0.353 (0.268-0.469)	0.404 (0.298-0.552)	0.476 (0.336-0.680)	0.534 (0.364-0.792)
10-min	0.125 (0.104-0.151)	0.173 (0.144-0.209)	0.239 (0.199-0.290)	0.295 (0.244-0.361)	0.375 (0.299-0.475)	0.439 (0.342-0.568)	0.506 (0.385-0.673)	0.579 (0.427-0.792)	0.682 (0.482-0.974)	0.766 (0.522-1.14)
15-min	0.151 (0.126-0.182)	0.209 (0.175-0.253)	0.289 (0.241-0.351)	0.357 (0.295-0.437)	0.453 (0.361-0.574)	0.530 (0.413-0.687)	0.612 (0.465-0.814)	0.700 (0.516-0.958)	0.824 (0.583-1.18)	0.926 (0.631-1.37)
30-min	0.241 (0.202-0.292)	0.335 (0.280-0.406)	0.463 (0.386-0.562)	0.572 (0.472-0.700)	0.726 (0.578-0.920)	0.849 (0.662-1.10)	0.980 (0.745-1.30)	1.12 (0.827-1.53)	1.32 (0.933-1.89)	1.48 (1.01-2.20)
60-min	0.328 (0.275-0.397)	0.456 (0.381-0.552)	0.631 (0.525-0.765)	0.778 (0.642-0.953)	0.988 (0.787-1.25)	1.16 (0.901-1.50)	1.33 (1.01-1.77)	1.53 (1.13-2.09)	1.80 (1.27-2.57)	2.02 (1.38-2.99)
2-hr	0.492 (0.411-0.594)	0.653 (0.545-0.791)	0.870 (0.725-1.06)	1.05 (0.867-1.29)	1.30 (1.04-1.65)	1.50 (1.17-1.95)	1.71 (1.30-2.27)	1.92 (1.42-2.63)	2.22 (1.57-3.18)	2.46 (1.68-3.65)
3-hr	0.606 (0.507-0.733)	0.794 (0.663-0.961)	1.05 (0.869-1.27)	1.25 (1.03-1.53)	1.54 (1.23-1.95)	1.76 (1.37-2.28)	1.99 (1.51-2.65)	2.23 (1.65-3.05)	2.56 (1.81-3.66)	2.82 (1.92-4.18)
6-hr	0.851 (0.712-1.03)	1.10 (0.921-1.34)	1.44 (1.20-1.74)	1.71 (1.41-2.09)	2.08 (1.66-2.64)	2.37 (1.85-3.07)	2.66 (2.02-3.54)	2.97 (2.19-4.06)	3.38 (2.39-4.83)	3.71 (2.53-5.49)
12-hr	1.11 (0.927-1.34)	1.45 (1.21-1.76)	1.90 (1.58-2.31)	2.27 (1.87-2.78)	2.77 (2.21-3.51)	3.15 (2.46-4.08)	3.54 (2.69-4.70)	3.94 (2.91-5.39)	4.48 (3.17-6.41)	4.91 (3.35-7.27)
24-hr	1.43 (1.26-1.65)	1.91 (1.69-2.21)	2.54 (2.24-2.95)	3.06 (2.67-3.57)	3.76 (3.18-4.53)	4.29 (3.56-5.28)	4.84 (3.92-6.09)	5.40 (4.26-6.99)	6.16 (4.67-8.30)	6.75 (4.95-9.41)
2-day	1.66 (1.47-1.91)	2.26 (2.00-2.61)	3.05 (2.69-3.53)	3.69 (3.23-4.31)	4.58 (3.88-5.52)	5.26 (4.36-6.47)	5.96 (4.83-7.50)	6.68 (5.27-8.65)	7.67 (5.81-10.3)	8.44 (6.18-11.8)
3-day	1.76 (1.56-2.04)	2.43 (2.15-2.80)	3.31 (2.92-3.83)	4.04 (3.53-4.71)	5.03 (4.26-6.06)	5.81 (4.82-7.14)	6.60 (5.35-8.32)	7.43 (5.86-9.62)	8.57 (6.49-11.6)	9.47 (6.93-13.2)
4-day	1.90 (1.68-2.19)	2.64 (2.33-3.04)	3.62 (3.19-4.19)	4.43 (3.87-5.17)	5.55 (4.70-6.68)	6.42 (5.32-7.90)	7.32 (5.93-9.22)	8.26 (6.51-10.7)	9.56 (7.24-12.9)	10.6 (7.75-14.7)
7-day	2.06 (1.83-2.38)	2.91 (2.57-3.36)	4.05 (3.57-4.68)	4.99 (4.36-5.82)	6.30 (5.33-7.59)	7.32 (6.08-9.01)	8.39 (6.79-10.6)	9.50 (7.49-12.3)	11.0 (8.36-14.9)	12.3 (8.98-17.1)
10-day	2.12 (1.88-2.45)	3.03 (2.67-3.49)	4.24 (3.74-4.91)	5.26 (4.60-6.14)	6.68 (5.65-8.05)	7.80 (6.47-9.59)	8.96 (7.26-11.3)	10.2 (8.02-13.2)	11.9 (8.99-16.0)	13.2 (9.68-18.4)
20-day	2.43 (2.15-2.80)	3.51 (3.10-4.06)	5.00 (4.41-5.79)	6.27 (5.48-7.31)	8.07 (6.83-9.72)	9.51 (7.89-11.7)	11.0 (8.94-13.9)	12.7 (9.98-16.4)	14.9 (11.3-20.1)	16.8 (12.3-23.4)
30-day	2.76 (2.44-3.18)	3.99 (3.52-4.61)	5.71 (5.03-6.61)	7.19 (6.29-8.39)	9.33 (7.90-11.3)	11.1 (9.19-13.6)	12.9 (10.5-16.3)	14.9 (11.8-19.3)	17.8 (13.5-23.9)	20.1 (14.7-28.0)
45-day	3.20 (2.83-3.69)	4.58 (4.05-5.29)	6.55 (5.78-7.59)	8.28 (7.24-9.66)	10.8 (9.16-13.0)	12.9 (10.7-15.9)	15.2 (12.3-19.1)	17.7 (13.9-22.9)	21.3 (16.1-28.6)	24.2 (17.7-33.8)
60-day	3.62 (3.20-4.17)	5.10 (4.51-5.89)	7.26 (6.40-8.40)	9.17 (8.02-10.7)	12.0 (10.2-14.5)	14.4 (12.0-17.8)	17.1 (13.8-21.5)	20.0 (15.7-25.8)	24.2 (18.3-32.6)	27.8 (20.3-38.7)

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

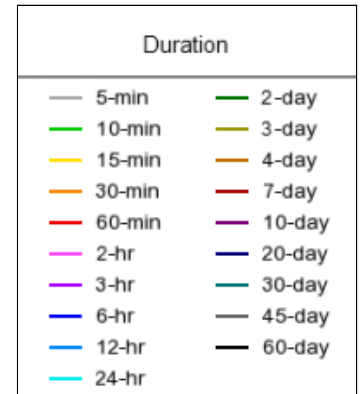
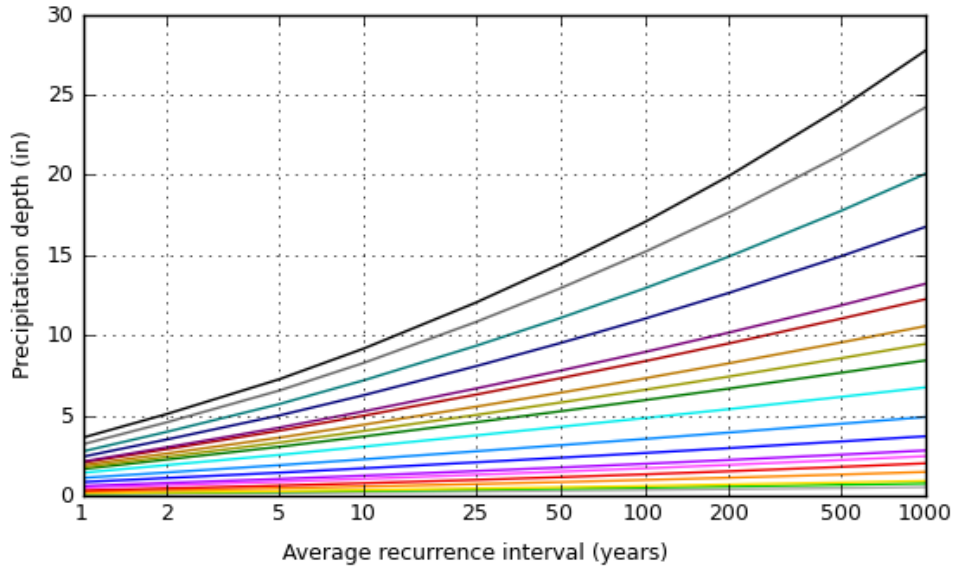
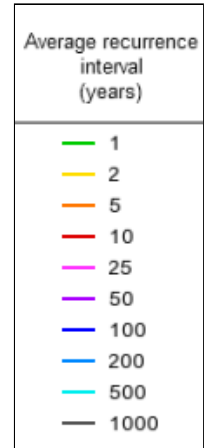
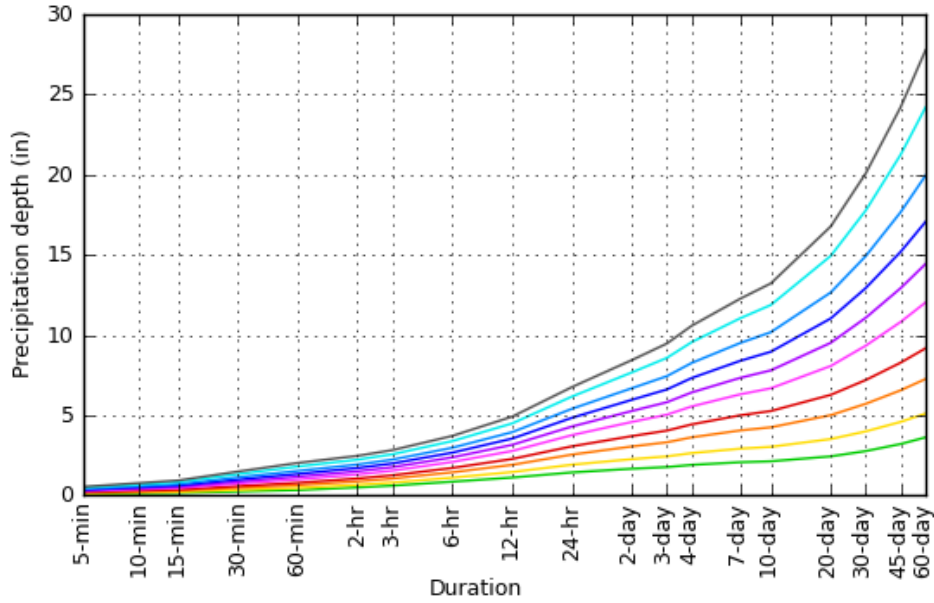
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PF graphical



### PDS-based depth-duration-frequency (DDF) curves

Latitude: 33.8495°, Longitude: -117.2595°



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### Maps & aerials

Small scale terrain



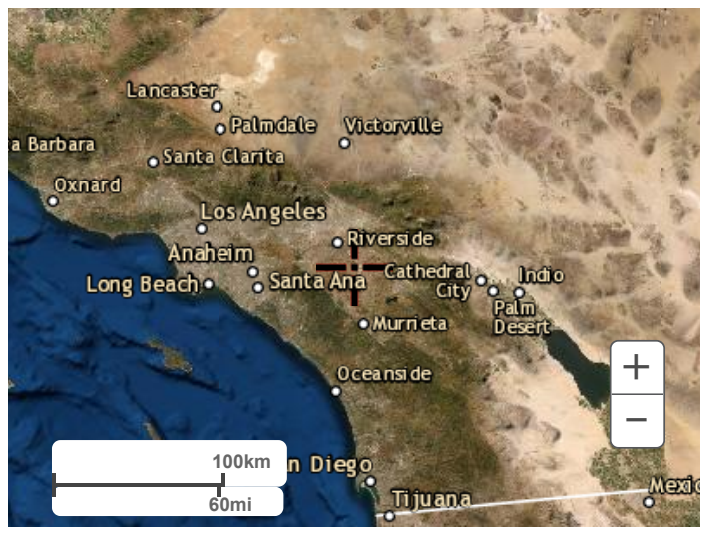
Large scale terrain



Large scale map



Large scale aerial



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RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group			
		A	B	C	D
<u>NATURAL COVERS -</u>					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
<u>URBAN COVERS -</u>					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
<u>AGRICULTURAL COVERS -</u>					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

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**RUNOFF INDEX NUMBERS  
FOR  
PERVIOUS AREAS**

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group			
		A	B	C	D
<u>AGRICULTURAL COVERS</u> (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)	See Note 4				
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard	See Note 4				

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.
2. Quality of cover definitions:  
 Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.  
 Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.  
 Good-Heavy or dense cover with more than 75 percent of the ground surface protected.
3. See Plate C-2 for a detailed description of cover types.
4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.
5. Reference Bibliography item 17.

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**RUNOFF INDEX NUMBERS  
 FOR  
 PERVIOUS AREAS**

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent (2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.
2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.
3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

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**IMPERVIOUS COVER  
FOR  
DEVELOPED AREAS**