WARE MALCOMB
architecture | planning | interiors | branding | civil

HYDROLOGY & HYDRAULICS STUDY

FOR THE:
HARDT STREET & BRIER DRIVE
SAN BERNARDINO, CA 92408
APN: 0281-301-17, 0281-311-06, 0281-311-07, 0281-311-08, 0281-311-11, 0281-311-12, 0281-311-18, 0281-311-19

PREPARED FOR:
OAK PROPERTIES
9747 BUSINESS PARK AVE.
SAN DIEGO, CA 92131
858.578.2467

PREPARED BY:
WARE MALCOMB
3911 SORRENTO VALLEY BLVD.
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PROJECT NO: SG20-0108

DATE PREPARED:
05/19/2023

TABLE OF CONTENTS

1.0 PROJECT DESCRIPTION

1.1 PURPOSE OF STUDY

The purpose of this study is to support the design and construction of multiple industrial facilities which include five (5) separate buildings with their own respective driveway and parking stalls.

The study will provide the following:

- Determine the 100-year onsite and offsite peak flows for pre-development and post development conditions.
- Confirm post-development peak flows does not exceed pre-development peak flows.
- Appropriately size all drainage structures throughout the proposed development.
- Ensure there are no negative impacts to the surrounding and downstream properties

1.2 PROJECT DESCRIPTION

The proposed project is within the census-designated place (CDP) limits of the City of San Bernardino. The project is split into three (3) separate developments, which located on both Hardt Street and Brier Drive in between Tippecanoe Avenue and Gifford Avenue. The three developments are distinguished by the Point of Compliance (POC).

POC-1 consists of 2.56 acres located on APN 0281-301-17, 0281-311-08, 0281-311-07, 0281-311-06. Site improvements will encompass the development of two (2) industrial buildings, parking areas, truck loading docks, driveway approaches, hardscape, and landscape. Additionally, POC-1 proposes the construction of multiple biofiltration basins, a modular wetlands system, multiple pumps, an underground detention system, and a storm drain system.

POC-2 consists of 1.24 acres located on APN 0281-311-11 & 0281-311-12. Site improvements will encompass the development of one (1) industrial building, parking areas, driveway approaches, hardscape, and landscape. Additionally, POC-2 proposes the construction of multiple biofiltration basins, pervious parking areas and multiple pumps.

POC-3 consists of 2.10 acres located on 0281-311-18 & 0281-311-19. Site improvements will encompass the development of two (2) industrial building, parking areas, driveway approaches, hardscape, and landscape. Additionally, POC-3 proposes the construction of an underground detention system, a modular wetland system, a pump, and a storm drain system.

Refer to **Appendix A** for the City of San Bernardino's Assessor's Map.

Figure 1: Vicinity Map

2.0 SITE DESCRIPTION

2.1 TOPOGRAPHY

The existing topography generally drains from the northeast to the southwest of the overall development. Runoff the from existing site is conveyed onto both Hardt Street and Brier Drive, which discharge into the San Timoteo Wash located roughly 1 mile southwest of the proposed development. Ultimately, the project runoff discharges into the Santa Ana River.

2.2 PRECIPITATION

Precipitation values for the hydrologic analysis were determined from site specific precipitation frequency estimated published online in the National Oceanic and Atmospheric Administration (NOAA) Atlas 14. Refer to **Appendix A** for the site-specific tabular output from NOAA Atlas 14.

2.3 SOIL TYPES

The type of soil and soil conditions are major factors affecting infiltration and resultant storm water runoff. The Natural Resources Conservation Service (NRCS) has classified soils into four general hydrologic soil groups for comparing infiltration and runoff rates. The groups are based on properties that influence runoff, such as water infiltration rate, texture, natural discharge, and moisture condition. The runoff potential is based on the amount of runoff at the end of a long duration storm that occurs after wetting and swelling of the soil not protected by vegetation.

Using the NRCS GIS soil data, this site was identified as approximately 100% Grangeville fine sandy loam, saline-alkali (Gs), which falls under hydrologic soil group B. Type B soils have moderate infiltration rates when thoroughly wet. Refer to **Appendix A** for NRCS Web Soil Survey Report.

2.4 FEMA MAPPING

The project site is covered by Map Number 06071C8684J of the FEMA Flood Insurance rate Map (FIRM) for the City of San Bernardino. The project is within a Zone X, which is not a Special Flood Hazard Area. A Zone X are areas determined to be outside the 0.2% annual chance floodplain. Refer to **Appendix A** for the FEMA FIRM Map.

3.0 HYDROLOGIC ANALYSIS

3.1 METHODOLOGY

Runoff calculations were prepared using the Modified Rational Method incorporated from the methodology described in Section D of the San Bernardino County Hydrology Manual (August 1986), in conjunction with the San Bernardino County Detention Basin Design Criteria. CIVILCADD/CIVIL DESIGN Engineering Software Version 9.1 (CivilD) was used to estimate time of concentration for the 2-year &100-year peak flow rates of the pre-developed and post-developed conditions (See **Appendix C**).

Unit hydrographs were prepared using the methodology described in Section E of the San Bernardino County Hydrology Manual for determine the 2-year & 100-year storm water volumes. CivilD Software was used to estimate the peak flow rates for both storm events over a 24-hour period (See **Appendix D**).

3.2 WATERSHED LIMITS

Drainage Management Areas were delineated for the project site's existing and proposed drainage conditions. Existing elevations, slopes and flow paths were established from the topography available at the time of this drainage study. Proposed elevations, slopes and flow paths were based on the proposed site grading plan. These hydrologic parameters are shown for existing and proposed conditions on Hydrology Exhibits in Appendix C.

3.3 INTENSITY AND TIME OF CONCENTRATION

Rainfall depths were interpolated in AES by inputting the 100-year 1-hour rainfall intensity from NOAA Atlas 14 and the log-log slope from the Intensity Duration Curve from the San Bernardino County Hydrology Manual. The existing conditions time of concentrations were calculated within CivilD given the drainage areas characteristics. The time of concentration calculated from the Modified Rational Method was used to calculate the lag time necessary to develop the unit hydrographs within the CivilD software.

3.4 CURVE NUMBERS AND LOSS RATES

The Antecedent Moisture Condition (AMC) is a common index used to describe how saturated a soil is before the design storm occurs. AMC III, which assumes the watershed is already saturated, was used for the 100-year storm analysis. AMC II was used for the 2-year analysis. The San Bernardino County Hydrology Manual provides Curve Numbers of Hydrologic Soil-Cover for AMC II. These AMC II Curve Numbers can be converted to AMC III Curve Numbers manually by use of Table C.1 from the San Bernardino County Hydrology Manual. However, CivilD automatically does this conversion within the program analysis. The existing condition's land use consists of barren natural ground cover. The proposed condition's land use is predominantly impervious with some commercial landscaping.

Loss Rates were calculated by using the methodology presented in Section C.6 of the San Bernardino County Hydrology Manual. The Loss Rate calculation is a function of the Curve Number, Initial Abstraction and 24-hour rainfall depth, and was used to develop the unit hydrographs.

4.0 SITE CONDITIONS

4.1 PRE-DEVELOPED CONDITIONS

In POC-1, the existing site is currently undeveloped barren land, which generally slopes from the northeast to the southwest. Runoff generated from the existing site sheet flows onto Hardt Street and conveyed west. The site currently discharges 1.486 cfs in the 2-year storm event and 6.595 cfs in the 100-year event.

In POC-2, the existing site is currently undeveloped barren land, which generally slopes from the southeast to the northwest. Runoff generated from the existing site sheet flows onto Hardt Street and conveyed west. The site currently discharges 0.945 cfs in the 2-year storm event and 4.043 cfs in the 100-year event.

In POC-3, the existing site is currently undeveloped barren land, which generally slopes from the northeast to the southwest. Runoff generated from the existing site sheet flows onto Brier Drive and conveyed west. The site currently discharges 1.214 cfs in the 2-year storm event and 5.067 cfs in the 100-year event.

See **Table** 1 below for the Pre-Development Conditions Hydrologic Summary Table. Refer to the Pre-Developed Hydrology Exhibit in **Appendix B**.

Table 1: Pre-Development Conditions Hydrologic Summary Table

POC ID	AREA (AC)	2-YEAR		100-YEAR	
		TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)
POC 1	2.54	14.67	1.486	13.250	6.595
POC 2	1.46	13.18	0.945	11.920	4.043
POC 3	1.88	13.23	1.214	12.490	5.067

4.2 POST-DEVELOPED CONDITIONS

POC-1 encompasses the development of two (2) industrial buildings. The proposed project site will construct three (3) BMPs, three (3) pumps, an underground detention system, and storm drain system for water quality treatment and peak flow mitigation. BMP-1 proposes the construction of a biofiltration system for water quality and a pump to discharge treated runoff onto Hardt Street. BMP-2 proposes the construction of a biofiltration system for water quality and a pump to discharge treated runoff onto Hardt Street. BMP-3 utilizes the construction of multiple inlets, which convey runoff to and underground detention system. The underground detention system will convey runoff into a modular wetlands system for water quality and ultimately be discharged via pump onto Hardt Street. In the 100-year storm event, runoff will weir over the top of the proposed biofiltration basin and discharge onto Hardt Street. The three BMPs confluence at POC-1 for a mitigated peak flow of 0.563 cfs in the 2-year and 1.997 cfs in the 100-year.

POC-2 encompasses the development of a single industrial building. The proposed project site will construct two (2) BMPs, two (2) pumps, and pervious pavement for water quality treatment and peak flow mitigation. BMP-1 proposes the construction of a biofiltration system for water quality and a pump to discharge treated runoff onto Hardt Street. BMP-2 proposes the construction of a biofiltration system for

water quality and a pump to discharge treated runoff onto Hardt Street. In the 100-year storm event, runoff will weir over the top of the proposed biofiltration basin and discharge onto Hardt Street. The two BMPs confluence at POC-2 for a mitigated peak flow of 0.831 cfs in the 2-year and 1.920 cfs in the 100-year.

POC-3 encompasses the development of a single industrial building. The proposed project site will construct a one (1) BMP, an underground detention system, and storm drain system for water quality treatment and peak flow mitigation. BMP-6 utilizes the construction of multiple inlets, which convey runoff to and underground detention system. The underground detention system will convey runoff into a modular wetlands system for water quality and ultimately be discharged via pump onto Brier Drive. In the 100-year storm event, runoff will weir over the top of the proposed biofiltration basin and discharge onto Brier Drive. BMP-6 is the only BMP located onsite for POC-3 so the mitigated flow for BMP-6 also represents the mitigated flow for POC-3. The mitigated flow for POC-3 is 0.590 cfs in the 2-year and 1.349 cfs in the 100-year.

See **Table 2** for the Post-Development Conditions Hydrologic Summary Table. Refer to **Appendix B** for the Post-Developed Hydrology Exhibit.

Table 2: Post-Development Conditions Hydrologic Summary Table

POC ID	AREA (AC)	2-YEAR UNMITIGATED		2-YEAR MITIGATED		100-YEAR UNMITIGATED		100-YEAR MITIGATED	
		TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)
POC 1	2.56	8.922	3.618	18.376	0.563	7.258	11.129	11.245	1.997
POC 2	1.24	8.897	0.913	20.290	0.831	7.686	4.433	12.749	1.920
POC 3	2.10	5.336	2.710	15.060	0.590	4.764	8.292	14.764	1.349

5.0 HYDRAULIC ANALYSIS

5.1 CALCULATE MANNING ROUGHNESS COEFFICIENT

Per Hydraulic Design Manual Appendix A, the average Manning Roughness Coefficient of 0.013 is used for smooth finish asphalt pavement and concrete lined channel. An average Manning Roughness Coefficient of 0.035 is assumed for the natural terrain. The average Manning Roughness Coefficient of 0.013 is used for the storm drain pipes.

5.2 PIPE DESIGN

The resulting peak flows from CivilD are used to verify the proposed storm drain system is sized accordingly. This study used the 2020 Hydraflow Storm Sewer ACAD extension to determine the hydraulic grade lines (HGL)s, velocities, and pipe capacity. Refer to **Appendix D** for the results of the Hydraflow Storm Sewer analysis.

5.3 POND DESIGN

Resulting hydrographs from the hydrology software are used to determine the detention capacities for the underground detention chambers that will be used to mitigate peak flows and for hydromodification measures. This study used the 2020 Hydraflow Hydrograph ACAD extension to determine the peak discharge, time to peak, volume, maximum elevation, and maximum storage. Refer to **Appendix D** for the results of the Hydraflow Hydrograph analysis.

6.0 CONCLUSION

Flood mitigating facilities, underground detention chambers, pumps, and bypasses, will be utilized to mitigate the peak flows for all three (3) POCs. This study and resulting data indicate that the project will be significantly decreasing the 2-year and 100-year peak runoff.

It can therefore be concluded that the development of all four project sites will result in no negative impact on the existing downstream storm drain facilities or adjacent and downstream properties. Because the project is not located within or discharges to navigable waters, water of the United States, or Federal jurisdictional wetlands, as defined by the Clean Water Act, no 401/404 permit is required. In conclusion, the project has met the County of San Bernardino minimum requirements for the peak flow control.

7.0 REFERENCES

County of San Bernardino, Department of Public Works, August 1986 San Bernardino County Hydrology Manual

8.0 DECLARATION OF RESPONSIBLE CHARGE

I hereby declare that I am the engineer of work for this project. That I have exercised responsible charge over the design of the project as defined in section 6703 of the business and professions codes, and that the design is consistent with current design.

I understand that the check of the project drawings and specifications by the City of San Bernardino is confined to a review only and does not relieve me, as engineer of work, of my responsibilities for project design.

ENGINEER OF WORK

WARE MALCOMB
3911 Sorrento Valley Blvd.
Suite 120
San Diego, CA 92121
Tel: 858.638.7277
Fax: 858.683.7277

Project Number: SDG20-0108

Samuel Bellomio, RCE 90818 Date
Registration Expire: December 31, 2021

9.0 APPENDIX

APPENDIX A
FIGURES & TABLES

THIS MAP IS FOR THE PURPOSE OF AD VALOREM TAXATION ONLY.

Ptn. Parcel Map 5464, P.M. 60/31-34

City of San Bernardino 0281 - 30
Tax Rate Area
7045

1" = 100'

03

02

26
3.22 AC.
1
(3.24 AC.)

2
2.1 AC.
27
(1.27 AC.)

3

4
1.29 AC.
28

5

MAP 408-36-20 PAR.1
Ptn. Lot 11
3.08 AC.
18

72
R.S.B.
M.B. 7/2
Ptn. Lot 12
MAP 408-36-3A PAR.1
1.25 AC.
19

29
17

25
3.45 AC.
10
(1.66 AC.)

22
2.11 AC.
9

8

301
23
1.68 AC.
7

6

16
28

31

11
(1.61 AC.)

12
(1.14 AC.)

13
(1.11 AC.)

24
2.47 AC.

14
(1.11 AC.)

Par. 1
20

P.M. 98/47-48

Ptn. Par. 2
21

HARDT STREET

GIFFORD AVENUE

CAGE CANAL

GOULD (BRIER DRIVE) STREET

35

REVISED
06/19/08 RM
03/06/09 RM
07/27/09 LH

January 2005

Ptn. Parcel Map No. 8481, M.B. 98/47-48
Ptn. Rancho San Bernardino, M.B. 7/2

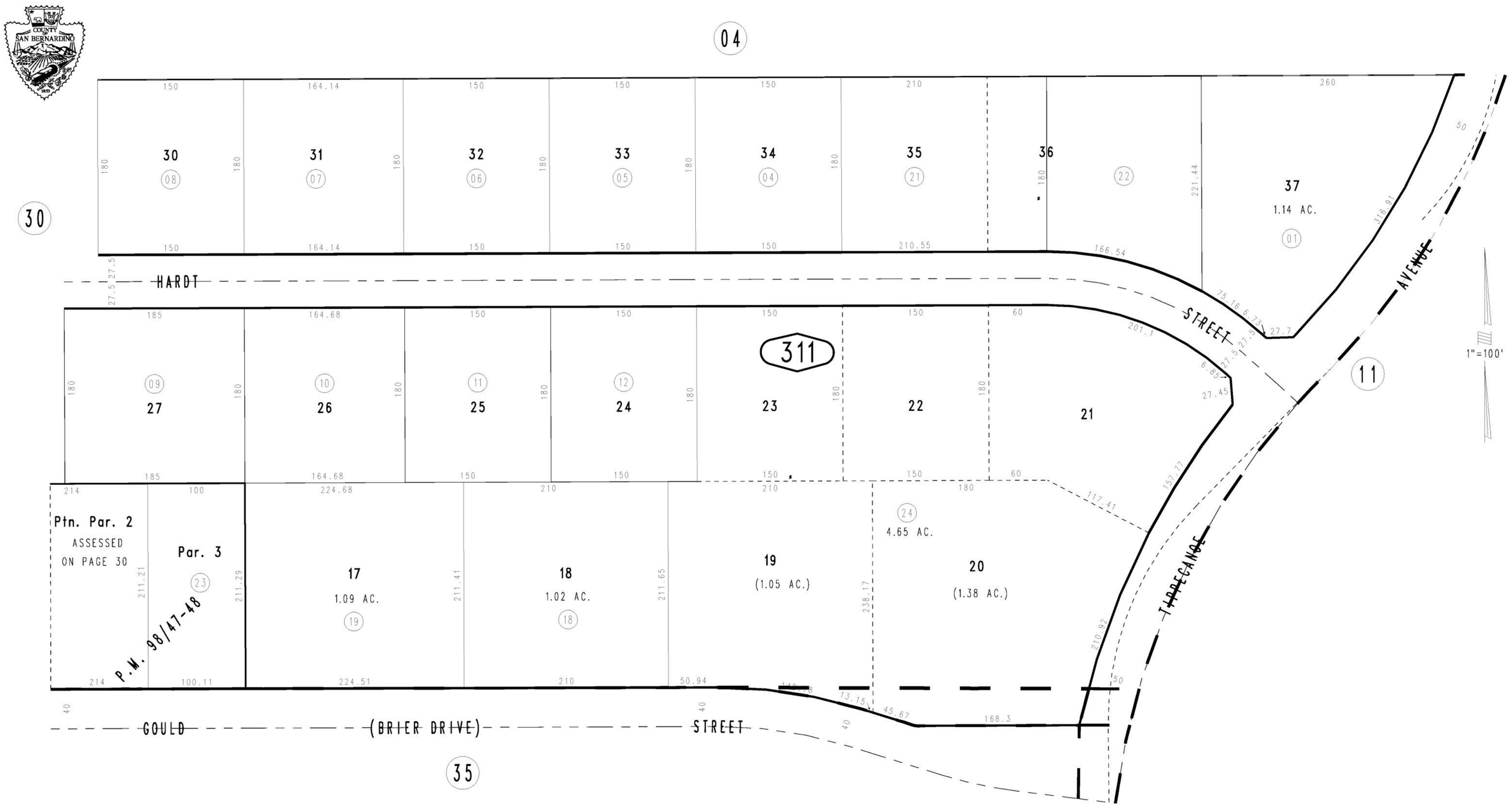
Ptn. N.E.1/4, Sec. 23
T.1S., R.4W.

Assessor's Map
Book 0281 Page 30
San Bernardino County

THIS MAP IS FOR THE PURPOSE OF AD VALOREM TAXATION ONLY.

Ptn. Parcel Map 5464, P.M. 60/31-34

City of San Bernardino 0281 - 31
Tax Rate Area
7045



January 2005

Ptn. Parcel Map No. 8481, P.M. 98/47-48

Ptn. N.E.1/4, Sec. 23
T.1S., R.4W.

Assessor's Map
Book 0281 Page 31
San Bernardino County

REVISED
03/06/09 RM

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11 North. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

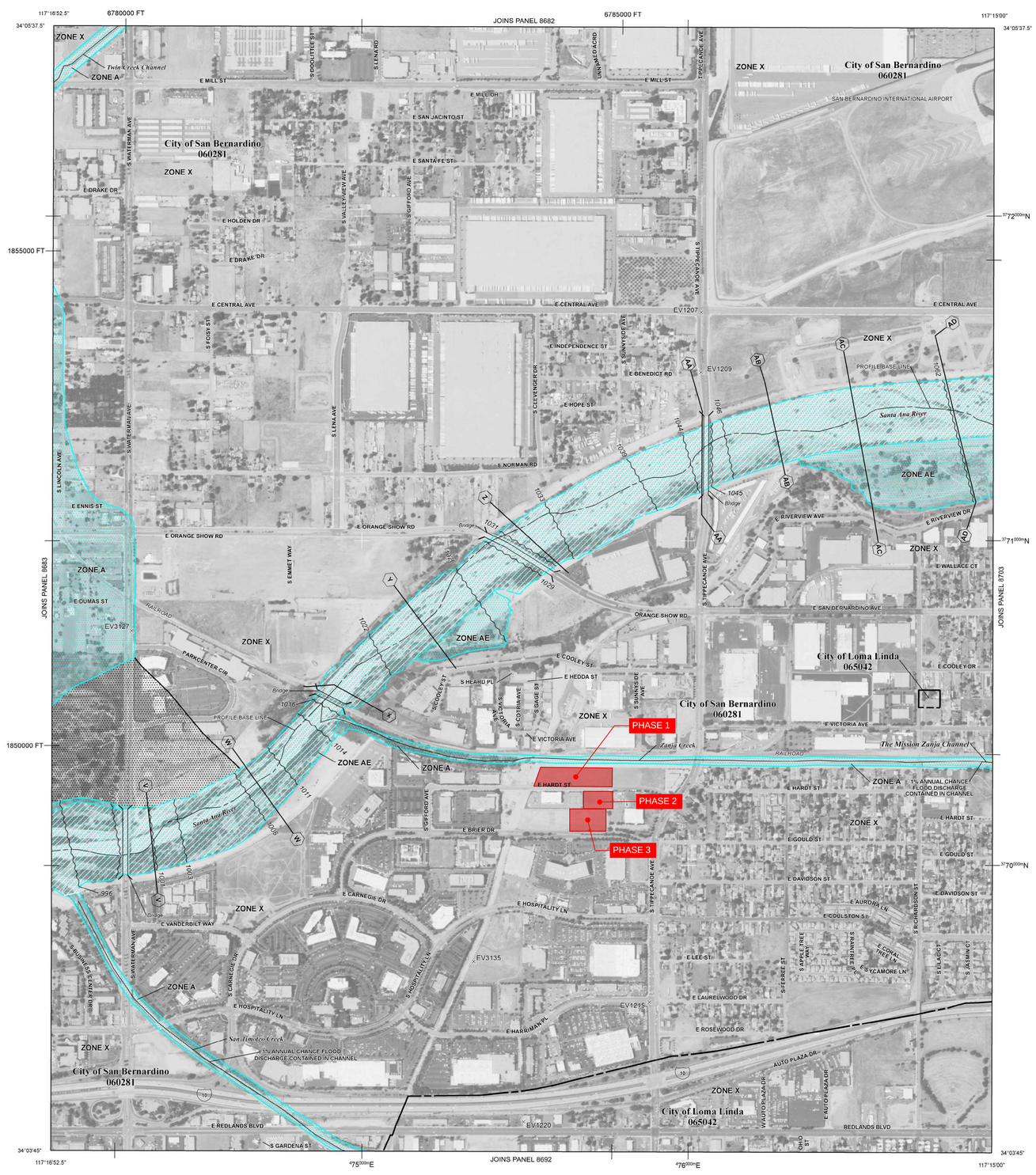
Base map information shown on this FIRM was provided in digital format by the San Bernardino County ISD.GIS Department. United States Geological Survey, the Bureau of Land Management, the United States Department of Agriculture, and the National Geodetic Survey. The imagery was flown by U.S. Department of Agriculture Farm Sevice Agency in 2012 and was produced with a 1-meter ground sampling distance.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
513 (EL 987)	Base Flood Elevation line and value; elevation in feet*
	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4275000mE	1000-meter Universal Transverse Mercator grid values, zone 11
6000000 FT	5000-foot grid ticks: California State Plane coordinate system, Zone V (FIPSZONE = 405), Lambert projection
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
September 2, 2016 – to change Base Flood Elevations, to add Base Flood Elevations, to change Special Flood Hazard Areas, to add Special Flood Hazard Areas, to change zone designations, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8684J

FIRM
FLOOD INSURANCE RATE MAP
SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 8684 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
LOMA LINDA, CITY OF	065042	8684	J
SAN BERNARDINO, CITY OF	060281	8684	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06071C8684J

MAP REVISED
SEPTEMBER 2, 2016

Federal Emergency Management Agency

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,720 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

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 1:24,000.

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

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

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

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

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

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

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 12, May 27, 2020

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

Date(s) aerial images were photographed: Apr 1, 2018—Jun 30, 2018

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
Gs	Grangeville fine sandy loam, saline-alkali	B	9.6	100.0%
Totals for Area of Interest			**9.6**	**100.0%**

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: San Bernardino, California, USA*
Latitude: 34.0724°, Longitude: -117.2645°
Elevation: 1047.84 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 Trypaluk, 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)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.100** (0.083-0.121)	**0.130** (0.108-0.158)	**0.171** (0.142-0.209)	**0.205** (0.168-0.252)	**0.251** (0.199-0.319)	**0.287** (0.223-0.373)	**0.324** (0.246-0.431)	**0.362** (0.267-0.497)	**0.415** (0.293-0.594)	**0.457** (0.311-0.677)
10-min	**0.143** (0.119-0.173)	**0.187** (0.155-0.227)	**0.245** (0.203-0.299)	**0.293** (0.241-0.361)	**0.360** (0.286-0.457)	**0.411** (0.320-0.534)	**0.464** (0.352-0.618)	**0.519** (0.383-0.712)	**0.595** (0.420-0.852)	**0.655** (0.446-0.971)
15-min	**0.173** (0.144-0.209)	**0.226** (0.188-0.275)	**0.297** (0.246-0.361)	**0.355** (0.292-0.436)	**0.435** (0.346-0.553)	**0.497** (0.387-0.646)	**0.561** (0.426-0.748)	**0.628** (0.463-0.861)	**0.720** (0.508-1.03)	**0.792** (0.540-1.17)
30-min	**0.256** (0.213-0.310)	**0.335** (0.278-0.407)	**0.439** (0.364-0.535)	**0.526** (0.432-0.646)	**0.644** (0.512-0.819)	**0.737** (0.573-0.957)	**0.831** (0.630-1.11)	**0.930** (0.685-1.28)	**1.07** (0.753-1.53)	**1.17** (0.799-1.74)
60-min	**0.374** (0.311-0.453)	**0.489** (0.407-0.594)	**0.642** (0.532-0.782)	**0.768** (0.632-0.944)	**0.942** (0.748-1.20)	**1.08** (0.837-1.40)	**1.22** (0.921-1.62)	**1.36** (1.00-1.86)	**1.56** (1.10-2.23)	**1.71** (1.17-2.54)
2-hr	**0.536** (0.447-0.651)	**0.690** (0.574-0.839)	**0.893** (0.740-1.09)	**1.06** (0.870-1.30)	**1.29** (1.02-1.63)	**1.46** (1.14-1.90)	**1.64** (1.24-2.18)	**1.82** (1.34-2.50)	**2.08** (1.47-2.97)	**2.27** (1.55-3.37)
3-hr	**0.659** (0.549-0.800)	**0.842** (0.700-1.02)	**1.08** (0.898-1.32)	**1.28** (1.05-1.57)	**1.55** (1.23-1.97)	**1.76** (1.37-2.28)	**1.97** (1.49-2.62)	**2.19** (1.61-3.00)	**2.48** (1.75-3.55)	**2.71** (1.85-4.02)
6-hr	**0.913** (0.760-1.11)	**1.16** (0.966-1.41)	**1.49** (1.23-1.81)	**1.75** (1.44-2.15)	**2.11** (1.68-2.69)	**2.39** (1.86-3.11)	**2.67** (2.03-3.56)	**2.96** (2.18-4.06)	**3.36** (2.37-4.80)	**3.66** (2.49-5.43)
12-hr	**1.20** (1.00-1.46)	**1.54** (1.28-1.87)	**1.97** (1.64-2.40)	**2.33** (1.92-2.86)	**2.81** (2.24-3.58)	**3.18** (2.48-4.14)	**3.56** (2.70-4.74)	**3.94** (2.91-5.41)	**4.46** (3.15-6.39)	**4.87** (3.32-7.21)
24-hr	**1.60** (1.41-1.84)	**2.07** (1.83-2.38)	**2.68** (2.36-3.10)	**3.18** (2.78-3.70)	**3.85** (3.26-4.64)	**4.37** (3.62-5.37)	**4.89** (3.96-6.16)	**5.43** (4.28-7.03)	**6.16** (4.66-8.30)	**6.72** (4.91-9.37)
2-day	**1.94** (1.72-2.23)	**2.55** (2.25-2.94)	**3.35** (2.96-3.88)	**4.01** (3.51-4.68)	**4.91** (4.15-5.91)	**5.60** (4.64-6.88)	**6.30** (5.10-7.93)	**7.02** (5.54-9.09)	**8.01** (6.06-10.8)	**8.77** (6.42-12.2)
3-day	**2.07** (1.84-2.39)	**2.77** (2.44-3.19)	**3.68** (3.25-4.26)	**4.44** (3.88-5.18)	**5.48** (4.64-6.60)	**6.28** (5.21-7.72)	**7.11** (5.76-8.95)	**7.96** (6.28-10.3)	**9.13** (6.91-12.3)	**10.0** (7.35-14.0)
4-day	**2.20** (1.95-2.54)	**2.97** (2.62-3.42)	**3.99** (3.52-4.61)	**4.83** (4.23-5.63)	**5.99** (5.07-7.22)	**6.90** (5.72-8.48)	**7.83** (6.34-9.86)	**8.80** (6.94-11.4)	**10.1** (7.67-13.7)	**11.2** (8.18-15.6)
7-day	**2.54** (2.25-2.92)	**3.47** (3.07-4.00)	**4.72** (4.16-5.46)	**5.76** (5.04-6.72)	**7.20** (6.10-8.67)	**8.32** (6.91-10.2)	**9.49** (7.69-12.0)	**10.7** (8.44-13.9)	**12.4** (9.38-16.7)	**13.7** (10.0-19.1)
10-day	**2.75** (2.44-3.17)	**3.80** (3.36-4.39)	**5.21** (4.60-6.03)	**6.39** (5.59-7.45)	**8.02** (6.79-9.66)	**9.31** (7.72-11.4)	**10.6** (8.62-13.4)	**12.0** (9.48-15.6)	**14.0** (10.6-18.8)	**15.5** (11.3-21.6)
20-day	**3.37** (2.99-3.89)	**4.72** (4.17-5.44)	**6.54** (5.77-7.57)	**8.07** (7.06-9.41)	**10.2** (8.65-12.3)	**11.9** (9.88-14.6)	**13.7** (11.1-17.2)	**15.5** (12.3-20.1)	**18.1** (13.7-24.5)	**20.2** (14.8-28.2)
30-day	**3.98** (3.53-4.59)	**5.57** (4.93-6.43)	**7.74** (6.83-8.95)	**9.56** (8.37-11.2)	**12.1** (10.3-14.6)	**14.2** (11.8-17.4)	**16.3** (13.2-20.6)	**18.6** (14.6-24.1)	**21.7** (16.5-29.3)	**24.3** (17.8-33.9)
45-day	**4.79** (4.24-5.52)	**6.65** (5.88-7.68)	**9.20** (8.11-10.6)	**11.4** (9.93-13.2)	**14.4** (12.2-17.4)	**16.8** (14.0-20.7)	**19.4** (15.7-24.4)	**22.1** (17.4-28.6)	**25.9** (19.6-34.9)	**29.0** (21.2-40.4)
60-day	**5.63** (4.98-6.48)	**7.72** (6.83-8.91)	**10.6** (9.34-12.3)	**13.0** (11.4-15.2)	**16.5** (14.0-19.9)	**19.3** (16.0-23.7)	**22.2** (18.0-28.0)	**25.3** (19.9-32.7)	**29.7** (22.4-40.0)	**33.2** (24.3-46.3)

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

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

Please refer to NOAA Atlas 14 document for more information.

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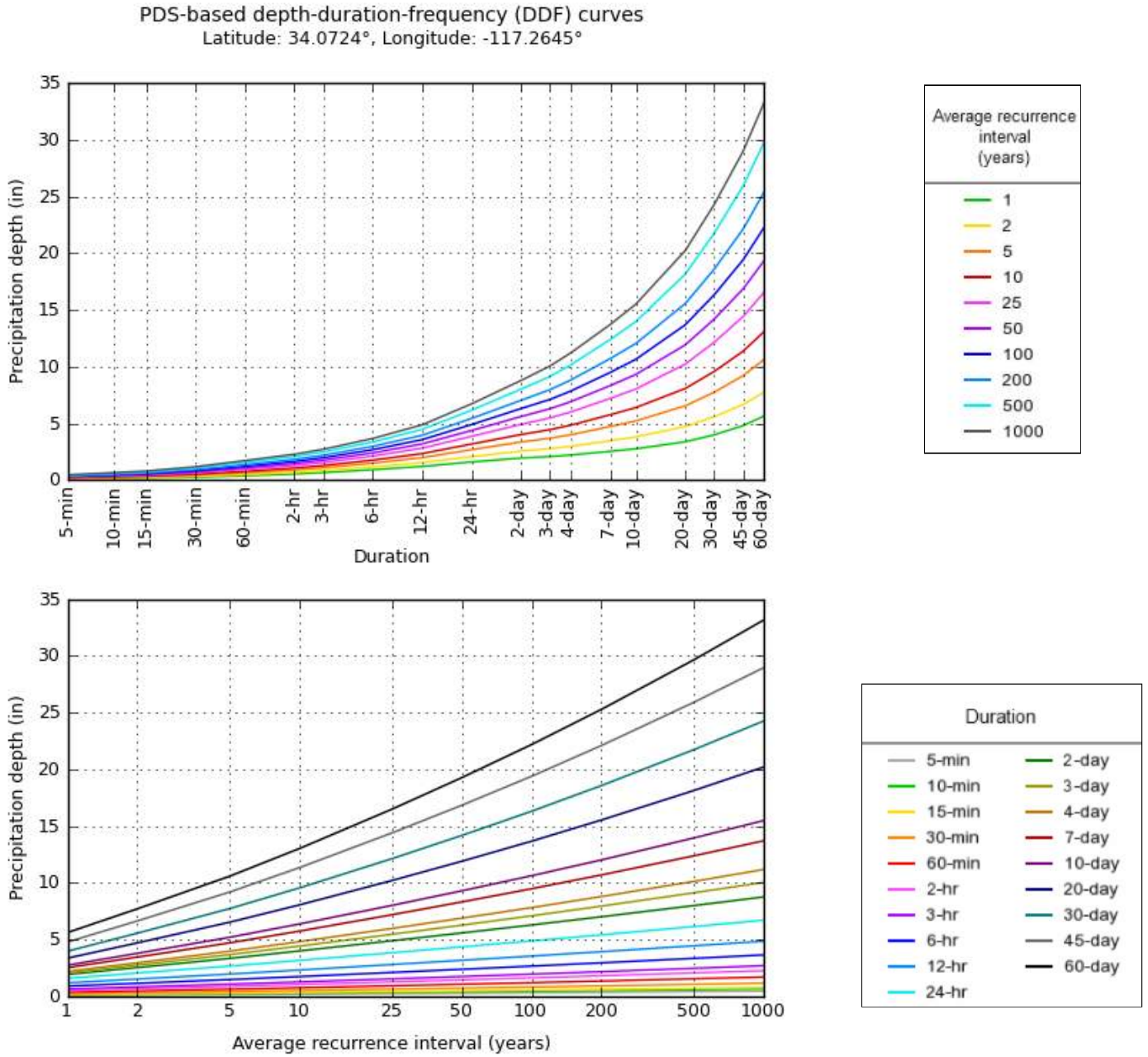
PF graphical



NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Tue Aug 24 17:02:39 2021

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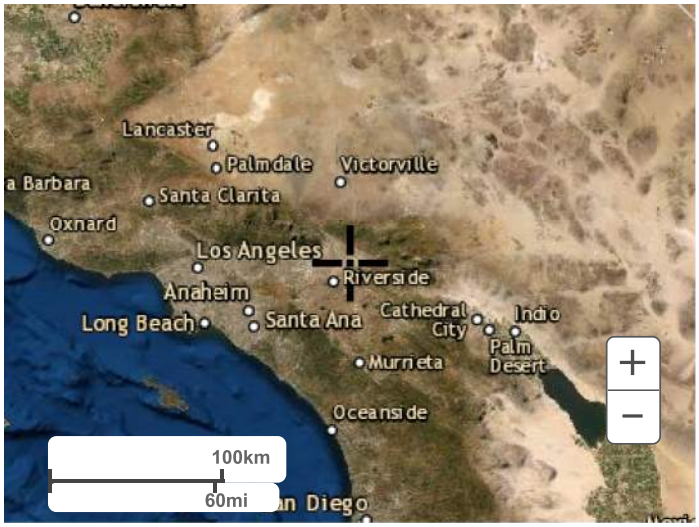
Maps & aerials

Small scale terrain

Large scale terrain

Large scale map

Large scale aerial



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

NOAA Atlas 14, Volume 6, Version 2
Location name: San Bernardino, California, USA*
Latitude: 34.0724°, Longitude: -117.2645°
Elevation: 1047.84 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 Trypaluk, 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/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.20** (0.996-1.45)	**1.56** (1.30-1.90)	**2.05** (1.70-2.51)	**2.46** (2.02-3.02)	**3.01** (2.39-3.83)	**3.44** (2.68-4.48)	**3.89** (2.95-5.17)	**4.34** (3.20-5.96)	**4.98** (3.52-7.13)	**5.48** (3.73-8.12)
10-min	**0.858** (0.714-1.04)	**1.12** (0.930-1.36)	**1.47** (1.22-1.79)	**1.76** (1.45-2.17)	**2.16** (1.72-2.74)	**2.47** (1.92-3.20)	**2.78** (2.11-3.71)	**3.11** (2.30-4.27)	**3.57** (2.52-5.11)	**3.93** (2.68-5.83)
15-min	**0.692** (0.576-0.836)	**0.904** (0.752-1.10)	**1.19** (0.984-1.44)	**1.42** (1.17-1.74)	**1.74** (1.38-2.21)	**1.99** (1.55-2.58)	**2.24** (1.70-2.99)	**2.51** (1.85-3.44)	**2.88** (2.03-4.12)	**3.17** (2.16-4.70)
30-min	**0.512** (0.426-0.620)	**0.670** (0.556-0.814)	**0.878** (0.728-1.07)	**1.05** (0.864-1.29)	**1.29** (1.02-1.64)	**1.47** (1.15-1.91)	**1.66** (1.26-2.22)	**1.86** (1.37-2.55)	**2.13** (1.51-3.05)	**2.35** (1.60-3.48)
60-min	**0.374** (0.311-0.453)	**0.489** (0.407-0.594)	**0.642** (0.532-0.782)	**0.768** (0.632-0.944)	**0.942** (0.748-1.20)	**1.08** (0.837-1.40)	**1.22** (0.921-1.62)	**1.36** (1.00-1.86)	**1.56** (1.10-2.23)	**1.71** (1.17-2.54)
2-hr	**0.268** (0.224-0.326)	**0.345** (0.287-0.420)	**0.446** (0.370-0.544)	**0.529** (0.435-0.650)	**0.642** (0.510-0.817)	**0.730** (0.568-0.948)	**0.820** (0.622-1.09)	**0.912** (0.672-1.25)	**1.04** (0.732-1.49)	**1.14** (0.774-1.68)
3-hr	**0.219** (0.183-0.266)	**0.280** (0.233-0.341)	**0.361** (0.299-0.440)	**0.426** (0.351-0.524)	**0.516** (0.410-0.656)	**0.585** (0.455-0.760)	**0.655** (0.497-0.873)	**0.728** (0.536-0.998)	**0.826** (0.583-1.18)	**0.902** (0.615-1.34)
6-hr	**0.152** (0.127-0.185)	**0.194** (0.161-0.236)	**0.248** (0.206-0.303)	**0.293** (0.241-0.360)	**0.353** (0.280-0.449)	**0.399** (0.310-0.519)	**0.447** (0.339-0.595)	**0.495** (0.365-0.679)	**0.560** (0.396-0.802)	**0.611** (0.416-0.906)
12-hr	**0.100** (0.083-0.121)	**0.127** (0.106-0.155)	**0.164** (0.136-0.200)	**0.193** (0.159-0.238)	**0.233** (0.186-0.297)	**0.264** (0.205-0.343)	**0.295** (0.224-0.394)	**0.327** (0.241-0.449)	**0.371** (0.262-0.530)	**0.404** (0.275-0.599)
24-hr	**0.067** (0.059-0.077)	**0.086** (0.076-0.099)	**0.112** (0.098-0.129)	**0.132** (0.116-0.154)	**0.160** (0.136-0.193)	**0.182** (0.151-0.224)	**0.204** (0.165-0.257)	**0.226** (0.178-0.293)	**0.257** (0.194-0.346)	**0.280** (0.205-0.390)
2-day	**0.040** (0.036-0.047)	**0.053** (0.047-0.061)	**0.070** (0.062-0.081)	**0.084** (0.073-0.097)	**0.102** (0.087-0.123)	**0.117** (0.097-0.143)	**0.131** (0.106-0.165)	**0.146** (0.115-0.189)	**0.167** (0.126-0.225)	**0.183** (0.134-0.255)
3-day	**0.029** (0.025-0.033)	**0.038** (0.034-0.044)	**0.051** (0.045-0.059)	**0.062** (0.054-0.072)	**0.076** (0.064-0.092)	**0.087** (0.072-0.107)	**0.099** (0.080-0.124)	**0.111** (0.087-0.143)	**0.127** (0.096-0.171)	**0.140** (0.102-0.195)
4-day	**0.023** (0.020-0.026)	**0.031** (0.027-0.036)	**0.042** (0.037-0.048)	**0.050** (0.044-0.059)	**0.062** (0.053-0.075)	**0.072** (0.060-0.088)	**0.082** (0.066-0.103)	**0.092** (0.072-0.119)	**0.106** (0.080-0.142)	**0.117** (0.085-0.163)
7-day	**0.015** (0.013-0.017)	**0.021** (0.018-0.024)	**0.028** (0.025-0.032)	**0.034** (0.030-0.040)	**0.043** (0.036-0.052)	**0.050** (0.041-0.061)	**0.056** (0.046-0.071)	**0.064** (0.050-0.083)	**0.074** (0.056-0.099)	**0.082** (0.060-0.114)
10-day	**0.011** (0.010-0.013)	**0.016** (0.014-0.018)	**0.022** (0.019-0.025)	**0.027** (0.023-0.031)	**0.033** (0.028-0.040)	**0.039** (0.032-0.048)	**0.044** (0.036-0.056)	**0.050** (0.040-0.065)	**0.058** (0.044-0.078)	**0.065** (0.047-0.090)
20-day	**0.007** (0.006-0.008)	**0.010** (0.009-0.011)	**0.014** (0.012-0.016)	**0.017** (0.015-0.020)	**0.021** (0.018-0.026)	**0.025** (0.021-0.031)	**0.028** (0.023-0.036)	**0.032** (0.026-0.042)	**0.038** (0.029-0.051)	**0.042** (0.031-0.059)
30-day	**0.006** (0.005-0.006)	**0.008** (0.007-0.009)	**0.011** (0.009-0.012)	**0.013** (0.012-0.015)	**0.017** (0.014-0.020)	**0.020** (0.016-0.024)	**0.023** (0.018-0.029)	**0.026** (0.020-0.033)	**0.030** (0.023-0.041)	**0.034** (0.025-0.047)
45-day	**0.004** (0.004-0.005)	**0.006** (0.005-0.007)	**0.009** (0.008-0.010)	**0.011** (0.009-0.012)	**0.013** (0.011-0.016)	**0.016** (0.013-0.019)	**0.018** (0.015-0.023)	**0.020** (0.016-0.027)	**0.024** (0.018-0.032)	**0.027** (0.020-0.037)
60-day	**0.004** (0.003-0.005)	**0.005** (0.005-0.006)	**0.007** (0.006-0.009)	**0.009** (0.008-0.011)	**0.011** (0.010-0.014)	**0.013** (0.011-0.016)	**0.015** (0.012-0.019)	**0.018** (0.014-0.023)	**0.021** (0.016-0.028)	**0.023** (0.017-0.032)

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

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

Please refer to NOAA Atlas 14 document for more information.

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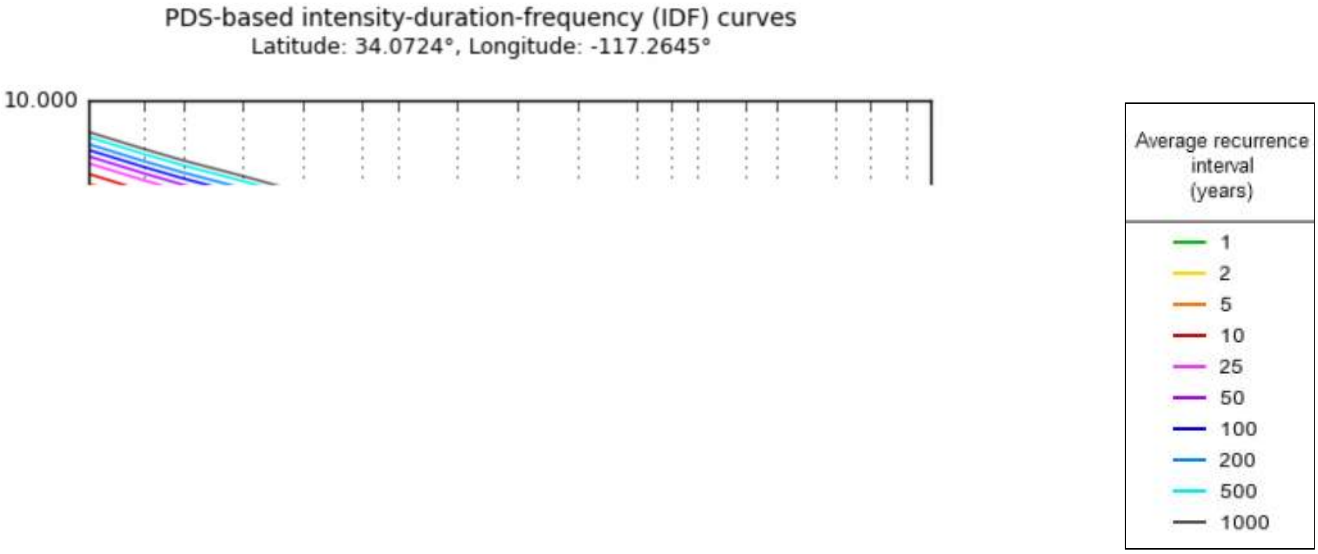
PF graphical



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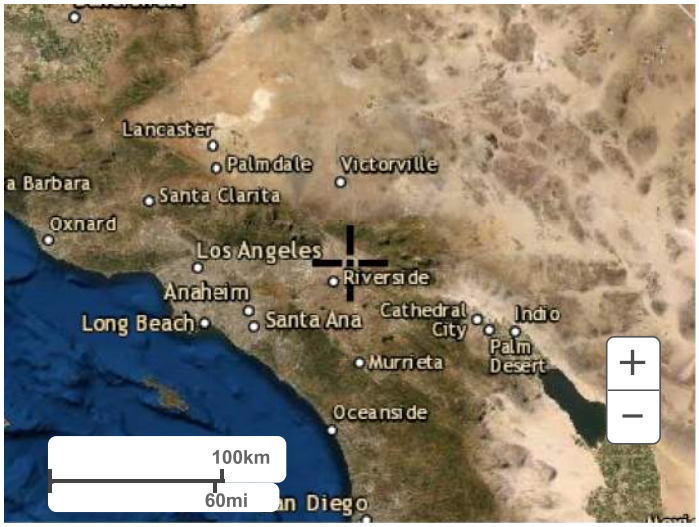
Maps & aerials

Small scale terrain

Large scale terrain

Large scale map

Large scale aerial



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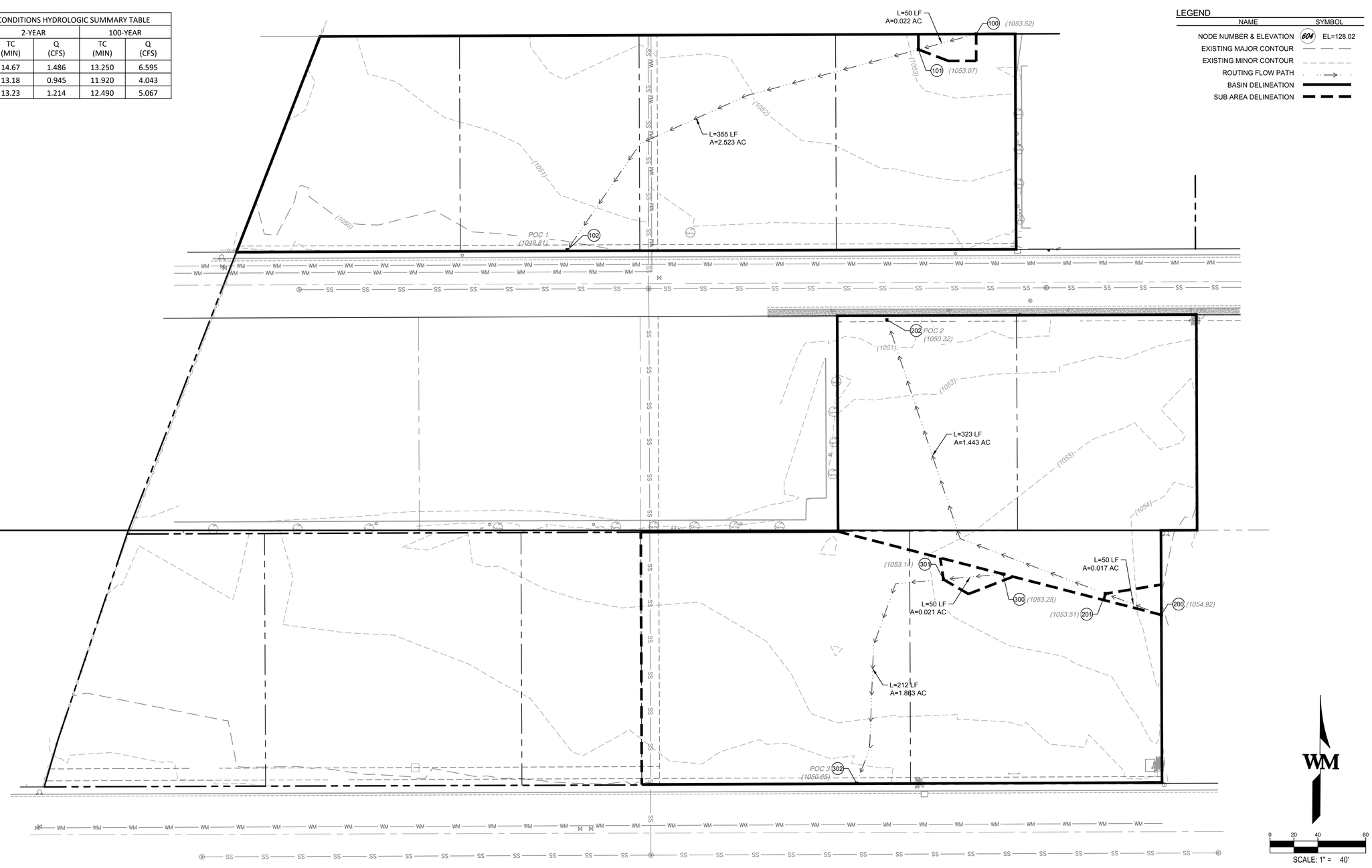
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

APPENDIX B
WATERSHED INFORMATION

PRE-DEVELOPMENT CONDITIONS HYDROLOGIC SUMMARY TABLE					
POC ID	AREA (AC)	2-YEAR		100-YEAR	
		TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)
POC 1	2.54	14.67	1.486	13.250	6.595
POC 2	1.46	13.18	0.945	11.920	4.043
POC 3	1.88	13.23	1.214	12.490	5.067



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ENGINEER'S SEAL

REGISTERED PROFESSIONAL ENGINEER
SAMUEL MICHAEL BELLOMIO
No. 90818
CIVIL
STATE OF CALIFORNIA

ENGINEER'S INFORMATION

PREPARED BY:
WARE MALCOMB
3391 SORRENTO VALLEY BLVD. SUITE 120
SAN DIEGO, CA 92121

SAMUEL BELLOMIO
R.C.E. NO. 90818
EXP. DATE: 12/31/2023

MARK	REVISIONS	BY	APPR.	DATE

BENCHMARK:

CONTROL POINT NO. L-523RS, 3" BRASS DISC STAMPED "L-523RS" AT INTERSECTION OF 3RD & TIPPICANOE

ELEV = 1068.52
DATUM: NAVD88

APPROVED _____ 2007

SENIOR CIVIL ENGINEER _____
REGISTERED CIVIL ENGINEER NO. _____

DRAWN BY: ALO

CHECKED BY: LS

RECOMMENDED BY:

CITY OF SAN BERNARDINO

DEVELOPMENT SERVICES~PUBLIC WORKS/ENGINEERING

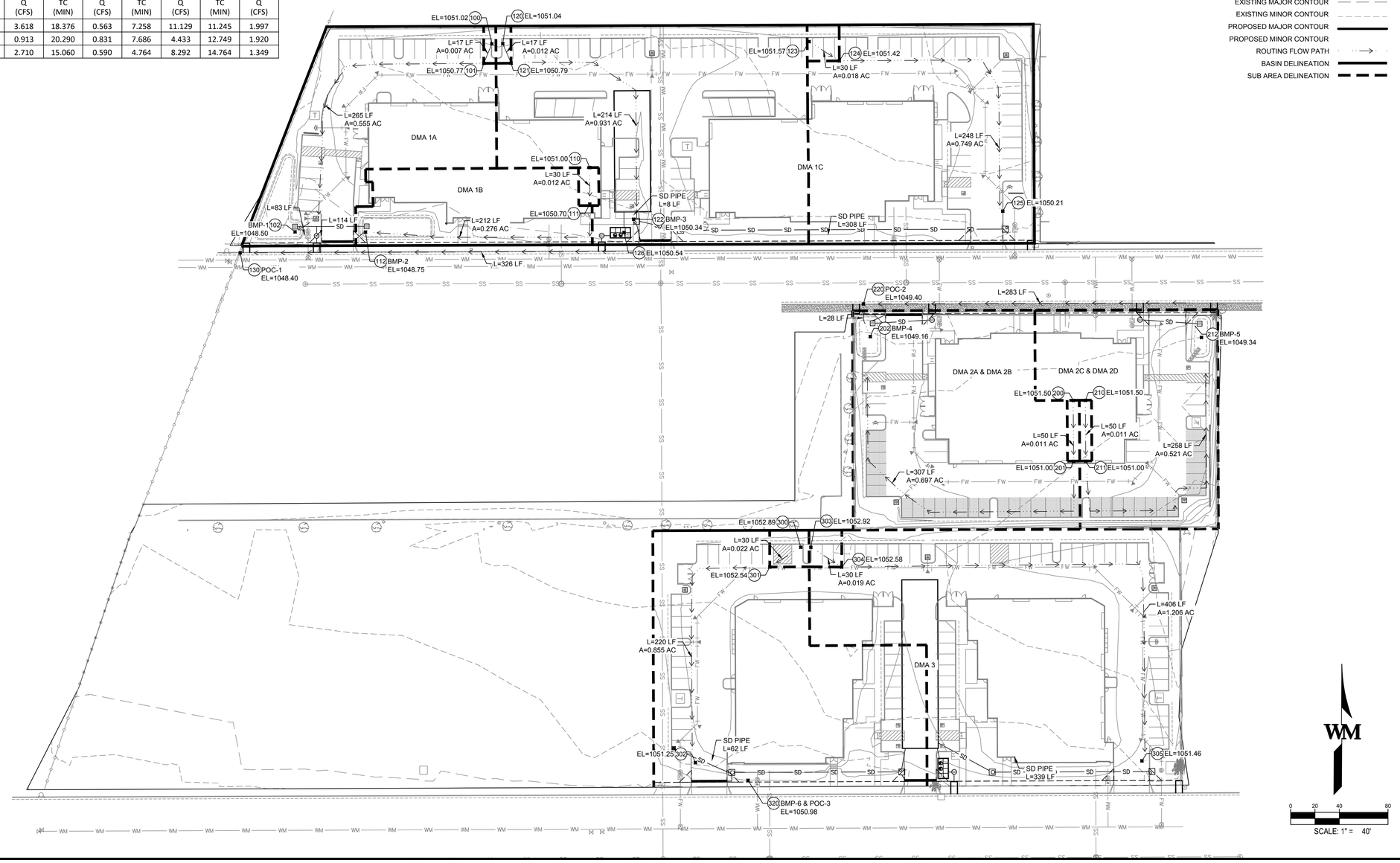
GRADING PLAN
FOR
HARDT & BRIER BUSINESS PARK
FROM
HARDT STREET TO BRIER DRIVE

FOR CITY USE ONLY: FILE NO. W.O. NO.

DRAWING NO. XXXX

SHEET ___ OF 24 SHEETS

POST-DEVELOPMENT CONDITIONS HYDROLOGIC SUMMARY TABLE									
POC ID	AREA (AC)	2-YEAR UNMITIGATED		2-YEAR MITIGATED		100-YEAR UNMITIGATED		100-YEAR MITIGATED	
		TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)	TC (MIN)	Q (CFS)
POC 1	2.56	8.922	3.618	18.376	0.563	7.258	11.129	11.245	1.997
POC 2	1.24	8.897	0.913	20.290	0.831	7.686	4.433	12.749	1.920
POC 3	2.10	5.336	2.710	15.060	0.590	4.764	8.292	14.764	1.349



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CIVIL ENGINEERING

3391 sorrento valley blvd. suite 120 san diego, ca 92121

p 858.638.7277 waremalcomb.com

ENGINEER'S SEAL

REGISTERED PROFESSIONAL ENGINEER — SAMUEL MICHAEL BELLOMIO — No. 90818 — CIVIL — STATE OF CALIFORNIA

ENGINEER'S INFORMATION

PREPARED BY:
WARE MALCOMB
3391 SORRENTO VALLEY BLVD. SUITE 120
SAN DIEGO, CA 92121

SAMUEL BELLOMIO
R.C.E. NO. 90818
EXP. DATE: 12/31/2023

MARK	REVISIONS	BY	APPR.	DATE

BENCHMARK:

CONTROL POINT NO. L-523RS, 3" BRASS DISC STAMPED "L-523RS" AT INTERSECTION OF 3RD & TIPPICANOE

ELEV = 1068.52
DATUM: NAVD88

APPROVED _____ 2007

SENIOR CIVIL ENGINEER _____
REGISTERED CIVIL ENGINEER NO. _____

DRAWN BY: ALO

CHECKED BY: LS

RECOMMENDED BY:

CITY OF SAN BERNARDINO
DEVELOPMENT SERVICES–PUBLIC WORKS/ENGINEERING

GRADING PLAN
FOR
HARDT & BRIER BUSINESS PARK
FROM
HARDT STREET TO BRIER DRIVE

FOR CITY USE ONLY: FILE NO. W.O. NO.

DRAWING NO. XXXX

SHEET ___ OF 24 SHEETS

APPENDIX C
HYDROLOGIC ANALYSIS

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

PRE DEVELOPMENT - POC 1
2 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:EXPOC1Q2.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.452 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 78.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.404(In/Hr)
Initial subarea data:
Initial area flow distance = 50.000(Ft.)
Top (of initial area) elevation = 1053.520(Ft.)
Bottom (of initial area) elevation = 1053.070(Ft.)
Difference in elevation = 0.450(Ft.)
Slope = 0.00900 s(%)= 0.90
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.440 min.
Rainfall intensity = 1.725(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.689
Subarea runoff = 0.026(CFS)
Total initial stream area = 0.022(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.404(In/Hr)

++
Process from Point/Station 101.000 to Point/Station 102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.148(Ft.), Average velocity = 0.719(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00
3	50.00	0.50

```
Manning's 'N' friction factor =   0.035
-----------------------------------------------------------------
Sub-Channel flow  =      0.792(CFS)
  '     '       flow top width =     14.849(Ft.)
  '     '    velocity=    0.719(Ft/s)
  '     '       area =      1.102(Sq.Ft)
  '     '       Froude number =     0.465

Upstream point elevation =  1053.070(Ft.)
Downstream point elevation =  1049.810(Ft.)
Flow length =   355.000(Ft.)
Travel time  =    8.23 min.
Time of concentration =   14.67 min.
Depth of flow =   0.148(Ft.)
Average velocity =   0.719(Ft/s)
Total irregular channel flow =     0.792(CFS)
Irregular channel normal depth above invert elev. =   0.148(Ft.)
Average velocity of channel(s) =   0.719(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 78.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.404(In/Hr)
Rainfall intensity =      1.052(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.555
Subarea runoff =      1.460(CFS) for    2.523(Ac.)
Total runoff =      1.486(CFS)
Effective area this stream =        2.54(Ac.)
Total Study Area (Main Stream No. 1) =        2.54(Ac.)
Area averaged Fm value =    0.404(In/Hr)
Depth of flow =   0.188(Ft.), Average velocity =   0.841(Ft/s)
End of computations, Total Study Area =            2.54 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  78.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

PRE DEVELOPMENT - POC 2
2 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:EXPOC2Q2.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.452 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 78.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.404(In/Hr)
Initial subarea data:
Initial area flow distance = 50.000(Ft.)
Top (of initial area) elevation = 1054.920(Ft.)
Bottom (of initial area) elevation = 1053.510(Ft.)
Difference in elevation = 1.410(Ft.)
Slope = 0.02820 s(%)= 2.82
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 5.125 min.
Rainfall intensity = 1.978(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.716
Subarea runoff = 0.024(CFS)
Total initial stream area = 0.017(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.404(In/Hr)

++
Process from Point/Station 201.000 to Point/Station 202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.126(Ft.), Average velocity = 0.668(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00
3	50.00	0.50

```
Manning's 'N' friction factor =   0.035
-----------------------------------------------------------------
Sub-Channel flow  =      0.532(CFS)
  '     '       flow top width =     12.613(Ft.)
  '     '    velocity=    0.668(Ft/s)
  '     '       area =      0.795(Sq.Ft)
  '     '       Froude number =     0.469

Upstream point elevation =  1053.510(Ft.)
Downstream point elevation =  1050.320(Ft.)
Flow length =   323.000(Ft.)
Travel time  =    8.05 min.
Time of concentration =   13.18 min.
Depth of flow =   0.126(Ft.)
Average velocity =   0.668(Ft/s)
Total irregular channel flow =     0.532(CFS)
Irregular channel normal depth above invert elev. =   0.126(Ft.)
Average velocity of channel(s) =   0.668(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 78.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.404(In/Hr)
Rainfall intensity =      1.122(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.576
Subarea runoff =      0.921(CFS) for    1.443(Ac.)
Total runoff =       0.945(CFS)
Effective area this stream =        1.46(Ac.)
Total Study Area (Main Stream No. 1) =        1.46(Ac.)
Area averaged Fm value =    0.404(In/Hr)
Depth of flow =   0.156(Ft.), Average velocity =   0.772(Ft/s)
End of computations, Total Study Area =            1.46 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  78.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

PRE DEVELOPMENT - POC 3
2 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:EXPOC3Q2.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.452 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 300.000 to Point/Station 301.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 78.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.404(In/Hr)
Initial subarea data:
Initial area flow distance = 50.000(Ft.)
Top (of initial area) elevation = 1053.250(Ft.)
Bottom (of initial area) elevation = 1053.140(Ft.)
Difference in elevation = 0.110(Ft.)
Slope = 0.00220 s(%)= 0.22
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.536 min.
Rainfall intensity = 1.457(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.651
Subarea runoff = 0.020(CFS)
Total initial stream area = 0.021(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.404(In/Hr)

++
Process from Point/Station 301.000 to Point/Station 302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.132(Ft.), Average velocity = 0.752(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00
3	50.00	0.50

```
Manning's 'N' friction factor =   0.035
-----------------------------------------------------------------
Sub-Channel flow  =      0.658(CFS)
  '     '       flow top width =     13.227(Ft.)
  '     '    velocity=    0.752(Ft/s)
  '     '       area =      0.875(Sq.Ft)
  '     '       Froude number =     0.516

Upstream point elevation =  1053.140(Ft.)
Downstream point elevation =  1050.650(Ft.)
Flow length =   212.000(Ft.)
Travel time  =    4.70 min.
Time of concentration =   13.23 min.
Depth of flow =   0.132(Ft.)
Average velocity =   0.752(Ft/s)
Total irregular channel flow =     0.658(CFS)
Irregular channel normal depth above invert elev. =   0.132(Ft.)
Average velocity of channel(s) =   0.752(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 78.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.404(In/Hr)
Rainfall intensity =      1.120(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.576
Subarea runoff =      1.194(CFS) for    1.863(Ac.)
Total runoff =      1.214(CFS)
Effective area this stream =        1.88(Ac.)
Total Study Area (Main Stream No. 1) =        1.88(Ac.)
Area averaged Fm value =    0.404(In/Hr)
Depth of flow =   0.166(Ft.), Average velocity =   0.877(Ft/s)
End of computations, Total Study Area =            1.88 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  78.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 09/30/21

PRE DEVELOPMENT - POC 1
100 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:EXPOC1Q100.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.220 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.140(In/Hr)
Initial subarea data:
Initial area flow distance = 50.000(Ft.)
Top (of initial area) elevation = 1053.520(Ft.)
Bottom (of initial area) elevation = 1053.070(Ft.)
Difference in elevation = 0.450(Ft.)
Slope = 0.00900 s(%)= 0.90
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.440 min.
Rainfall intensity = 4.655(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff = 0.089(CFS)
Total initial stream area = 0.022(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.140(In/Hr)

++
Process from Point/Station 101.000 to Point/Station 102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.197(Ft.), Average velocity = 0.869(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	50.00	0.00

```
       3            100.00              0.50
Manning's 'N' friction factor =   0.035
-----------------------------------------------------------------
Sub-Channel flow  =      3.383(CFS)
  '     '       flow top width =     39.470(Ft.)
  '     '    velocity=    0.869(Ft/s)
  '     '       area =      3.895(Sq.Ft)
  '     '       Froude number =     0.487

Upstream point elevation =  1053.070(Ft.)
Downstream point elevation =  1049.810(Ft.)
Flow length =   355.000(Ft.)
Travel time  =    6.81 min.
Time of concentration =   13.25 min.
Depth of flow =   0.197(Ft.)
Average velocity =   0.869(Ft/s)
Total irregular channel flow =     3.383(CFS)
Irregular channel normal depth above invert elev. =   0.197(Ft.)
Average velocity of channel(s) =   0.869(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      3.019(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.858
Subarea runoff =      6.506(CFS) for    2.523(Ac.)
Total runoff =      6.595(CFS)
Effective area this stream =        2.54(Ac.)
Total Study Area (Main Stream No. 1) =        2.54(Ac.)
Area averaged Fm value =    0.140(In/Hr)
Depth of flow =   0.253(Ft.), Average velocity =   1.026(Ft/s)
End of computations, Total Study Area =            2.54 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  78.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 09/30/21

PRE DEVELOPMENT - POC 2
100 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:EXPOC2Q100.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.220 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.140(In/Hr)
Initial subarea data:
Initial area flow distance = 50.000(Ft.)
Top (of initial area) elevation = 1054.920(Ft.)
Bottom (of initial area) elevation = 1053.510(Ft.)
Difference in elevation = 1.410(Ft.)
Slope = 0.02820 s(%)= 2.82
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 5.125 min.
Rainfall intensity = 5.339(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff = 0.080(CFS)
Total initial stream area = 0.017(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.140(In/Hr)

++
Process from Point/Station 201.000 to Point/Station 202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.163(Ft.), Average velocity = 0.792(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	50.00	0.00

```
       3            100.00              0.50
Manning's 'N' friction factor =   0.035
-----------------------------------------------------------------
Sub-Channel flow  =      2.093(CFS)
  '     '       flow top width =     32.515(Ft.)
  '     '    velocity=    0.792(Ft/s)
  '     '       area =      2.643(Sq.Ft)
  '     '       Froude number =     0.489

Upstream point elevation =  1053.510(Ft.)
Downstream point elevation =  1050.320(Ft.)
Flow length =   323.000(Ft.)
Travel time  =    6.80 min.
Time of concentration =   11.92 min.
Depth of flow =   0.163(Ft.)
Average velocity =   0.792(Ft/s)
Total irregular channel flow =     2.093(CFS)
Irregular channel normal depth above invert elev. =   0.163(Ft.)
Average velocity of channel(s) =   0.792(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      3.217(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.861
Subarea runoff =      3.963(CFS) for    1.443(Ac.)
Total runoff =      4.043(CFS)
Effective area this stream =        1.46(Ac.)
Total Study Area (Main Stream No. 1) =        1.46(Ac.)
Area averaged Fm value =    0.140(In/Hr)
Depth of flow =   0.208(Ft.), Average velocity =   0.933(Ft/s)
End of computations, Total Study Area =            1.46 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  78.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 09/30/21

PRE DEVELOPMENT - POC 3
100 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:EXPOC3Q100.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.220 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 300.000 to Point/Station 301.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.140(In/Hr)
Initial subarea data:
Initial area flow distance = 50.000(Ft.)
Top (of initial area) elevation = 1053.250(Ft.)
Bottom (of initial area) elevation = 1053.140(Ft.)
Difference in elevation = 0.110(Ft.)
Slope = 0.00220 s(%)= 0.22
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.536 min.
Rainfall intensity = 3.931(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.868
Subarea runoff = 0.072(CFS)
Total initial stream area = 0.021(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.140(In/Hr)

++
Process from Point/Station 301.000 to Point/Station 302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.171(Ft.), Average velocity = 0.894(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	50.00	0.00

```
       3            100.00              0.50
Manning's 'N' friction factor =   0.035
-----------------------------------------------------------------
Sub-Channel flow  =      2.618(CFS)
  '     '       flow top width =     34.233(Ft.)
  '     '    velocity=    0.894(Ft/s)
  '     '       area =      2.930(Sq.Ft)
  '     '       Froude number =     0.538

Upstream point elevation =  1053.140(Ft.)
Downstream point elevation =  1050.650(Ft.)
Flow length =   212.000(Ft.)
Travel time  =    3.95 min.
Time of concentration =   12.49 min.
Depth of flow =   0.171(Ft.)
Average velocity =   0.894(Ft/s)
Total irregular channel flow =     2.618(CFS)
Irregular channel normal depth above invert elev. =   0.171(Ft.)
Average velocity of channel(s) =   0.894(Ft/s)
 Adding area flow to channel
UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 78.00
Adjusted SCS curve number for AMC 3 = 92.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.140(In/Hr)
Rainfall intensity =      3.128(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.860
Subarea runoff =      4.995(CFS) for    1.863(Ac.)
Total runoff =       5.067(CFS)
Effective area this stream =        1.88(Ac.)
Total Study Area (Main Stream No. 1) =        1.88(Ac.)
Area averaged Fm value =    0.140(In/Hr)
Depth of flow =   0.219(Ft.), Average velocity =   1.054(Ft/s)
End of computations, Total Study Area =            1.88 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  78.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

POST DEVELOPMENT - POC 1 MITIGATED
2 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:POC1Q2MIT.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.452 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 102.000 to Point/Station 102.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.073(In/Hr)
Rainfall intensity = 1.026(In/Hr) for a 2.0 year storm
User specified values are as follows:
TC = 15.30 min. Rain intensity = 1.03(In/Hr)
Total area this stream = 0.56(Ac.)
Total Study Area (Main Stream No. 1) = 0.56(Ac.)
Total runoff = 0.13(CFS)

++
Process from Point/Station 102.000 to Point/Station 130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.076(Ft.), Average velocity = 0.450(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00
3	50.00	0.50

Manning's 'N' friction factor = 0.013

Sub-Channel flow = 0.131(CFS)
' ' flow top width = 7.633(Ft.)
' ' velocity= 0.450(Ft/s)
' ' area = 0.291(Sq.Ft)
' ' Froude number = 0.406

Upstream point elevation = 1048.500(Ft.)

```
Downstream point elevation =  1048.400(Ft.)
Flow length =    83.000(Ft.)
Travel time  =    3.08 min.
Time of concentration =   18.38 min.
Depth of flow =   0.076(Ft.)
Average velocity =   0.450(Ft/s)
Total irregular channel flow =     0.131(CFS)
Irregular channel normal depth above invert elev. =   0.076(Ft.)
Average velocity of channel(s) =   0.450(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.562(Ac.)
Runoff from this stream =      0.131(CFS)
Time of concentration =   18.38 min.
Rainfall intensity =     0.919(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      112.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      1.248(In/Hr) for a     2.0 year storm
User specified values are as follows:
TC =  11.04 min.  Rain intensity =       1.25(In/Hr)
Total area this stream =         0.29(Ac.)
Total Study Area (Main Stream No. 2) =        0.85(Ac.)
Total runoff =      0.14(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Depth of flow =   0.065(Ft.), Average velocity =   0.648(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      0.139(CFS)
  '     '       flow top width =      6.549(Ft.)
  '     '    velocity=    0.648(Ft/s)
  '     '       area =      0.214(Sq.Ft)
  '     '       Froude number =     0.631

Upstream point elevation =  1048.750(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =   114.000(Ft.)
Travel time  =    2.93 min.
Time of concentration =   13.97 min.
Depth of flow =   0.065(Ft.)
```

```
Average velocity =   0.648(Ft/s)
Total irregular channel flow =     0.139(CFS)
Irregular channel normal depth above invert elev. =   0.065(Ft.)
Average velocity of channel(s) =   0.648(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.288(Ac.)
Runoff from this stream =      0.139(CFS)
Time of concentration =   13.97 min.
Rainfall intensity =     1.084(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      126.000 to Point/Station      126.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      0.857(In/Hr) for a     2.0 year storm
User specified values are as follows:
TC =  20.65 min.  Rain intensity =       0.86(In/Hr)
Total area this stream =         1.71(Ac.)
Total Study Area (Main Stream No. 3) =        2.56(Ac.)
Total runoff =      0.35(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      126.000 to Point/Station      130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Depth of flow =   0.083(Ft.), Average velocity =   1.034(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      0.355(CFS)
  '     '       flow top width =      8.287(Ft.)
  '     '    velocity=    1.034(Ft/s)
  '     '       area =      0.343(Sq.Ft)
  '     '       Froude number =     0.895

Upstream point elevation =  1050.260(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =   326.000(Ft.)
Travel time  =    5.26 min.
Time of concentration =   25.91 min.
Depth of flow =   0.083(Ft.)
Average velocity =   1.034(Ft/s)
Total irregular channel flow =     0.355(CFS)
Irregular channel normal depth above invert elev. =   0.083(Ft.)
Average velocity of channel(s) =   1.034(Ft/s)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      1.710(Ac.)
Runoff from this stream =      0.355(CFS)
Time of concentration =   25.91 min.
Rainfall intensity =     0.748(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC     Fm       Rainfall Intensity
 No.     (CFS)    (Ac.)       (min)  (In/Hr)     (In/Hr)


1      0.13     0.562     18.38    0.073      0.919
2      0.14     0.288     13.97    0.073      1.084
3      0.35     1.710     25.91    0.073      0.748
Qmax(1) =
           1.000 *    1.000 *     0.131) +
           0.837 *    1.000 *     0.139) +
           1.254 *    0.709 *     0.355) + =       0.563
Qmax(2) =
           1.194 *    0.760 *     0.131) +
           1.000 *    1.000 *     0.139) +
           1.497 *    0.539 *     0.355) + =       0.545
Qmax(3) =
           0.798 *    1.000 *     0.131) +
           0.668 *    1.000 *     0.139) +
           1.000 *    1.000 *     0.355) + =       0.552

Total of 3 main streams to confluence:
Flow rates before confluence point:
       1.131       1.139       1.355
Maximum flow rates at confluence using above data:
        0.563       0.545       0.552
Area of streams before confluence:
        0.562       0.288       1.710
Effective area values after confluence:
        2.063       1.637       2.560


Results of confluence:
Total flow rate =      0.563(CFS)
Time of concentration =    18.376 min.
Effective stream area after confluence  =      2.063(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.073(In/Hr)
Study area total =       2.56(Ac.)
End of computations, Total Study Area =            2.56 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  56.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

POST DEVELOPMENT - POC 2 MITIGATED
2 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:POC2Q2MIT.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.452 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 202.000 to Point/Station 202.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.073(In/Hr)
Rainfall intensity = 0.879(In/Hr) for a 2.0 year storm
User specified values are as follows:
TC = 19.80 min. Rain intensity = 0.88(In/Hr)
Total area this stream = 0.71(Ac.)
Total Study Area (Main Stream No. 1) = 0.71(Ac.)
Total runoff = 0.45(CFS)

++

Process from Point/Station 202.000 to Point/Station 220.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.097(Ft.), Average velocity = 0.952(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00
3	50.00	0.50

Manning's 'N' friction factor = 0.013

Sub-Channel flow = 0.446(CFS)
' ' flow top width = 9.682(Ft.)
' ' velocity= 0.952(Ft/s)
' ' area = 0.469(Sq.Ft)
' ' Froude number = 0.762

Upstream point elevation = 1049.510(Ft.)

```
Downstream point elevation =  1049.400(Ft.)
Flow length =    28.000(Ft.)
Travel time  =    0.49 min.
Time of concentration =   20.29 min.
Depth of flow =   0.097(Ft.)
Average velocity =   0.952(Ft/s)
Total irregular channel flow =     0.446(CFS)
Irregular channel normal depth above invert elev. =   0.097(Ft.)
Average velocity of channel(s) =   0.952(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.708(Ac.)
Runoff from this stream =      0.446(CFS)
Time of concentration =   20.29 min.
Rainfall intensity =     0.866(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      212.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      1.042(In/Hr) for a     2.0 year storm
User specified values are as follows:
TC =  14.91 min.  Rain intensity =       1.04(In/Hr)
Total area this stream =         0.53(Ac.)
Total Study Area (Main Stream No. 2) =        1.24(Ac.)
Total runoff =      0.39(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      220.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Depth of flow =   0.100(Ft.), Average velocity =   0.777(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      0.389(CFS)
  '     '       flow top width =     10.005(Ft.)
  '     '    velocity=    0.777(Ft/s)
  '     '       area =      0.501(Sq.Ft)
  '     '       Froude number =     0.612

Upstream point elevation =  1050.110(Ft.)
Downstream point elevation =  1049.400(Ft.)
Flow length =   283.000(Ft.)
Travel time  =    6.07 min.
Time of concentration =   20.98 min.
Depth of flow =   0.100(Ft.)
```

```
Average velocity =   0.777(Ft/s)
Total irregular channel flow =     0.389(CFS)
Irregular channel normal depth above invert elev. =   0.100(Ft.)
Average velocity of channel(s) =   0.777(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.532(Ac.)
Runoff from this stream =      0.389(CFS)
Time of concentration =   20.98 min.
Rainfall intensity =     0.849(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1      0.45     0.708     20.29    0.073      0.866
2      0.39     0.532     20.98    0.073      0.849
Qmax(1) =
          1.000 *    1.000 *     0.446) +
          1.022 *    0.967 *     0.389) + =       0.831
Qmax(2) =
          0.978 *    1.000 *     0.446) +
          1.000 *    1.000 *     0.389) + =       0.825

Total of 2 main streams to confluence:
Flow rates before confluence point:
       1.446       1.389
Maximum flow rates at confluence using above data:
        0.831        0.825
Area of streams before confluence:
        0.708        0.532
Effective area values after confluence:
        1.223        1.240


Results of confluence:
Total flow rate =       0.831(CFS)
Time of concentration =    20.290 min.
Effective stream area after confluence  =      1.223(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.073(In/Hr)
Study area total =       1.24(Ac.)
End of computations, Total Study Area =            1.24 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  56.0
```

MITIGATED POC-3 HAS ONE (1) BMP AND DOES NOT REQUIRE CONFLUENCING. NO CIVILD IS REQUIRED FOR POC-3. MITIGATED RUNOFF FOR POC-3 IS THE FOLLOWING:

Tc = 15.06 MIN

Q = 0.590 CFS

REFER TO THE HYDRAFLOW HYDROGRAPH ANALYSIS IN APPENDIX D.

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

POST DEVELOPMENT - POC 1 UNMITIGATED
2 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:POC1Q2.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.452 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.073(In/Hr)
Initial subarea data:
Initial area flow distance = 17.000(Ft.)
Top (of initial area) elevation = 1051.290(Ft.)
Bottom (of initial area) elevation = 1050.920(Ft.)
Difference in elevation = 0.370(Ft.)
Slope = 0.02176 s(%)= 2.18
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 2.030 min.
Rainfall intensity = 3.448(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff = 0.021(CFS)
Total initial stream area = 0.007(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.073(In/Hr)

++
Process from Point/Station 101.000 to Point/Station 102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.087(Ft.), Average velocity = 1.352(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00
3	50.00	0.50

```
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      0.512(CFS)
  '     '       flow top width =      8.707(Ft.)
  '     '    velocity=    1.352(Ft/s)
  '     '       area =      0.379(Sq.Ft)
  '     '       Froude number =     1.142

Upstream point elevation =  1050.920(Ft.)
Downstream point elevation =  1048.500(Ft.)
Flow length =   265.000(Ft.)
Travel time  =    3.27 min.
Time of concentration =    5.30 min.
Depth of flow =   0.087(Ft.)
Average velocity =   1.352(Ft/s)
Total irregular channel flow =     0.512(CFS)
Irregular channel normal depth above invert elev. =   0.087(Ft.)
Average velocity of channel(s) =   1.352(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      1.939(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.866
Subarea runoff =      0.922(CFS) for    0.555(Ac.)
Total runoff =      0.944(CFS)
Effective area this stream =        0.56(Ac.)
Total Study Area (Main Stream No. 1) =        0.56(Ac.)
Area averaged Fm value =    0.073(In/Hr)
Depth of flow =   0.109(Ft.), Average velocity =   1.575(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Depth of flow =   0.160(Ft.), Average velocity =   0.737(Ft/s)
       ******* Irregular Channel Data ***********
-----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      0.944(CFS)
  '     '       flow top width =     16.006(Ft.)
  '     '    velocity=    0.737(Ft/s)
  '     '       area =      1.281(Sq.Ft)
  '     '       Froude number =     0.459

Upstream point elevation =  1048.500(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =    83.000(Ft.)
Travel time  =    1.88 min.
Time of concentration =    7.18 min.
Depth of flow =   0.160(Ft.)
Average velocity =   0.737(Ft/s)
Total irregular channel flow =     0.944(CFS)
Irregular channel normal depth above invert elev. =   0.160(Ft.)
Average velocity of channel(s) =   0.737(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
```

TIME OF CONCENTRATION FOR BMP-1

```
**** CONFLUENCE OF MAIN STREAMS ****
____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.562(Ac.)
Runoff from this stream =      0.944(CFS)
Time of concentration =    7.18 min.
Rainfall intensity =     1.617(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** INITIAL AREA EVALUATION ****
____________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Initial subarea data:
Initial area flow distance =    30.000(Ft.)
Top (of initial area) elevation =  1051.000(Ft.)
Bottom (of initial area) elevation =  1050.700(Ft.)
Difference in elevation =     0.300(Ft.)
Slope =    0.01000  s(%)=       1.00
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    2.977 min.
Rainfall intensity =      2.741(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff =      0.029(CFS)
Total initial stream area =        0.012(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.073(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
____________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.068(Ft.), Average velocity =   1.155(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
---------------------------------------------------------------------
Sub-Channel flow  =      0.270(CFS)
  '     '       flow top width =      6.841(Ft.)
  '     '    velocity=    1.155(Ft/s)
  '     '       area =      0.234(Sq.Ft)
  '     '       Froude number =     1.101

Upstream point elevation =  1050.700(Ft.)
Downstream point elevation =  1048.750(Ft.)
Flow length =   212.000(Ft.)
Travel time  =    3.06 min.
Time of concentration =    6.04 min.
Depth of flow =   0.068(Ft.)
Average velocity =   1.155(Ft/s)
Total irregular channel flow =     0.270(CFS)
Irregular channel normal depth above invert elev. =   0.068(Ft.)
Average velocity of channel(s) =   1.155(Ft/s)
```

TIME OF CONCENTRATION FOR BMP-2

```
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      1.793(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.863
Subarea runoff =      0.417(CFS) for    0.276(Ac.)
Total runoff =      0.446(CFS)
Effective area this stream =        0.29(Ac.)
Total Study Area (Main Stream No. 2) =        0.85(Ac.)
Area averaged Fm value =    0.073(In/Hr)
Depth of flow =   0.083(Ft.), Average velocity =   1.309(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Depth of flow =   0.101(Ft.), Average velocity =   0.867(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      0.446(CFS)
  '     '       flow top width =     10.139(Ft.)
  '     '    velocity=    0.867(Ft/s)
  '     '       area =      0.514(Sq.Ft)
  '     '       Froude number =     0.679

Upstream point elevation =  1048.750(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =   114.000(Ft.)
Travel time  =    2.19 min.
Time of concentration =    8.23 min.
Depth of flow =   0.101(Ft.)
Average velocity =   0.867(Ft/s)
Total irregular channel flow =     0.446(CFS)
Irregular channel normal depth above invert elev. =   0.101(Ft.)
Average velocity of channel(s) =   0.867(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.288(Ac.)
Runoff from this stream =      0.446(CFS)
Time of concentration =    8.23 min.
Rainfall intensity =     1.489(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      121.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
COMMERCIAL subarea type
```

```
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Initial subarea data:
Initial area flow distance =    17.000(Ft.)
Top (of initial area) elevation =  1051.290(Ft.)
Bottom (of initial area) elevation =  1050.940(Ft.)
Difference in elevation =     0.350(Ft.)
Slope =    0.02059  s(%)=       2.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    2.053 min.
Rainfall intensity =      3.425(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.881
Subarea runoff =      0.036(CFS)
Total initial stream area =        0.012(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.073(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      122.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.127(Ft.), Average velocity =   1.003(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              0.50
       2            25.00              0.00
       3            50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      0.810(CFS)
  '     '       flow top width =     12.710(Ft.)
  '     '    velocity=    1.003(Ft/s)
  '     '       area =      0.808(Sq.Ft)
  '     '       Froude number =     0.701

Upstream point elevation =  1050.940(Ft.)
Downstream point elevation =  1050.290(Ft.)
Flow length =   214.000(Ft.)
Travel time  =    3.56 min.
Time of concentration =    5.61 min.
Depth of flow =   0.127(Ft.)
Average velocity =   1.003(Ft/s)
Total irregular channel flow =     0.810(CFS)
Irregular channel normal depth above invert elev. =   0.127(Ft.)
Average velocity of channel(s) =   1.003(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      1.874(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.865
Subarea runoff =      1.492(CFS) for    0.931(Ac.)
Total runoff =      1.528(CFS)
Effective area this stream =        0.94(Ac.)
Total Study Area (Main Stream No. 3) =        1.79(Ac.)
Area averaged Fm value =    0.073(In/Hr)
Depth of flow =   0.161(Ft.), Average velocity =   1.176(Ft/s)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      122.000 to Point/Station      126.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1050.290(Ft.)
Downstream point/station elevation =  1050.260(Ft.)
Pipe length  =     8.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.528(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.528(CFS)
Normal flow depth in pipe =    7.40(In.)
Flow top width inside pipe =   11.67(In.)
Critical Depth =    6.29(In.)
Pipe flow velocity =      3.01(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     5.65 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      126.000 to Point/Station      126.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      0.943(Ac.)
Runoff from this stream =      1.528(CFS)
Time of concentration =    5.65 min.
Rainfall intensity =     1.865(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      123.000 to Point/Station      124.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Initial subarea data:
Initial area flow distance =    30.000(Ft.)
Top (of initial area) elevation =  1051.720(Ft.)
Bottom (of initial area) elevation =  1051.500(Ft.)
Difference in elevation =     0.220(Ft.)
Slope =    0.00733  s(%)=       0.73
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    3.167 min.
Rainfall intensity =      2.641(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.875
Subarea runoff =      0.042(CFS)
Total initial stream area =        0.018(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.073(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      124.000 to Point/Station      125.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.106(Ft.), Average velocity =   1.022(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              0.50
       2            25.00              0.00
```

```
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      0.579(CFS)
  '     '       flow top width =     10.646(Ft.)
  '     '    velocity=    1.022(Ft/s)
  '     '       area =      0.567(Sq.Ft)
  '     '       Froude number =     0.780

Upstream point elevation =  1051.500(Ft.)
Downstream point elevation =  1050.510(Ft.)
Flow length =   248.000(Ft.)
Travel time  =    4.05 min.
Time of concentration =    7.21 min.
Depth of flow =   0.106(Ft.)
Average velocity =   1.022(Ft/s)
Total irregular channel flow =     0.579(CFS)
Irregular channel normal depth above invert elev. =   0.106(Ft.)
Average velocity of channel(s) =   1.022(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      1.612(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.859
Subarea runoff =      1.020(CFS) for    0.749(Ac.)
Total runoff =      1.062(CFS)
Effective area this stream =        0.77(Ac.)
Total Study Area (Main Stream No. 3) =        2.56(Ac.)
Area averaged Fm value =    0.073(In/Hr)
Depth of flow =   0.134(Ft.), Average velocity =   1.189(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      125.000 to Point/Station      126.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1050.510(Ft.)
Downstream point/station elevation =  1050.260(Ft.)
Pipe length  =   308.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.062(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     1.062(CFS)
Normal flow depth in pipe =    8.17(In.)
Flow top width inside pipe =   14.94(In.)
Critical Depth =    4.86(In.)
Pipe flow velocity =      1.55(Ft/s)
Travel time through pipe =    3.31 min.
Time of concentration (TC) =    10.52 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      126.000 to Point/Station      126.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      0.767(Ac.)
Runoff from this stream =      1.062(CFS)
Time of concentration =   10.52 min.
Rainfall intensity =     1.285(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      1.53     0.943      5.65    0.073      1.865
2      1.06     0.767     10.52    0.073      1.285
Qmax(1) =
          1.000 *    1.000 *     1.528) +
          1.479 *    0.537 *     1.062) + =       2.372
Qmax(2) =
          0.676 *    1.000 *     1.528) +
          1.000 *    1.000 *     1.062) + =       2.095

Total of 2 streams to confluence:
Flow rates before confluence point:
       1.528       1.062
Maximum flow rates at confluence using above data:
        2.372        2.095
Area of streams before confluence:
        0.943        0.767
Effective area values after confluence:
        1.355        1.710
Results of confluence:
Total flow rate =      2.372(CFS)
Time of concentration =     5.653 min.
Effective stream area after confluence =      1.355(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.073(In/Hr)
Study area total (this main stream) =       1.71(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      126.000 to Point/Station      130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Depth of flow =   0.169(Ft.), Average velocity =   1.662(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      2.372(CFS)
  '     '       flow top width =     16.895(Ft.)
  '     '    velocity=    1.662(Ft/s)
  '     '       area =      1.427(Sq.Ft)
  '     '       Froude number =     1.008

Upstream point elevation =  1050.260(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =   326.000(Ft.)
Travel time  =    3.27 min.
Time of concentration =    8.92 min.
Depth of flow =   0.169(Ft.)
Average velocity =   1.662(Ft/s)
Total irregular channel flow =     2.372(CFS)
Irregular channel normal depth above invert elev. =   0.169(Ft.)
Average velocity of channel(s) =   1.662(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      1.355(Ac.)
Runoff from this stream =      2.372(CFS)
Time of concentration =    8.92 min.
Rainfall intensity =     1.418(In/Hr)
```

TIME OF CONCENTRATION FOR BMP-3

```
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1      0.94     0.562      7.18    0.073      1.617
2      0.45     0.288      8.23    0.073      1.489
3      2.37     1.355      8.92    0.073      1.418
Qmax(1) =
          1.000 *    1.000 *     0.944) +
          1.090 *    0.872 *     0.446) +
          1.147 *    0.804 *     2.372) + =       3.556
Qmax(2) =
          0.918 *    1.000 *     0.944) +
          1.000 *    1.000 *     0.446) +
          1.053 *    0.922 *     2.372) + =       3.614
Qmax(3) =
          0.872 *    1.000 *     0.944) +
          0.950 *    1.000 *     0.446) +
          1.000 *    1.000 *     2.372) + =       3.618

Total of 3 main streams to confluence:
Flow rates before confluence point:
       1.944       1.446       3.372
Maximum flow rates at confluence using above data:
        3.556        3.614        3.618
Area of streams before confluence:
        0.562        0.288        1.355
Effective area values after confluence:
        1.903        2.100        2.205


Results of confluence:
Total flow rate =      3.618(CFS)
Time of concentration =     8.922 min.
Effective stream area after confluence  =      2.205(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.073(In/Hr)
Study area total =       2.21(Ac.)
End of computations, Total Study Area =            2.56 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  56.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

POST DEVELOPMENT - POC 2 UNMITIGATED
2 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:POC2Q2.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.452 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.073(In/Hr)
Initial subarea data:
Initial area flow distance = 50.000(Ft.)
Top (of initial area) elevation = 1051.500(Ft.)
Bottom (of initial area) elevation = 1051.000(Ft.)
Difference in elevation = 0.500(Ft.)
Slope = 0.01000 s(%)= 1.00
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 3.651 min.
Rainfall intensity = 2.424(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff = 0.023(CFS)
Total initial stream area = 0.011(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.073(In/Hr)

++
Process from Point/Station 201.000 to Point/Station 202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.097(Ft.), Average velocity = 1.059(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00
3	50.00	0.50

```
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      0.498(CFS)
  '     '       flow top width =      9.700(Ft.)
  '     '    velocity=    1.059(Ft/s)
  '     '       area =      0.470(Sq.Ft)
  '     '       Froude number =     0.847

Upstream point elevation =  1051.000(Ft.)
Downstream point elevation =  1049.510(Ft.)
Flow length =   307.000(Ft.)
Travel time  =    4.83 min.
Time of concentration =    8.48 min.
Depth of flow =   0.097(Ft.)
Average velocity =   1.059(Ft/s)
Total irregular channel flow =     0.498(CFS)
Irregular channel normal depth above invert elev. =   0.097(Ft.)
Average velocity of channel(s) =   1.059(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      1.462(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.855
Subarea runoff =      0.862(CFS) for    0.697(Ac.)
Total runoff =      0.885(CFS)
Effective area this stream =        0.71(Ac.)
Total Study Area (Main Stream No. 1) =        0.71(Ac.)
Area averaged Fm value =    0.073(In/Hr)
Depth of flow =   0.120(Ft.), Average velocity =   1.222(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      220.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Depth of flow =   0.125(Ft.), Average velocity =   1.129(Ft/s)
       ******* Irregular Channel Data ***********
-----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      0.885(CFS)
  '     '       flow top width =     12.518(Ft.)
  '     '    velocity=    1.129(Ft/s)
  '     '       area =      0.784(Sq.Ft)
  '     '       Froude number =     0.795

Upstream point elevation =  1049.510(Ft.)
Downstream point elevation =  1049.400(Ft.)
Flow length =    28.000(Ft.)
Travel time  =    0.41 min.
Time of concentration =    8.90 min.
Depth of flow =   0.125(Ft.)
Average velocity =   1.129(Ft/s)
Total irregular channel flow =     0.885(CFS)
Irregular channel normal depth above invert elev. =   0.125(Ft.)
Average velocity of channel(s) =   1.129(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      220.000
```

TIME OF CONCENTRATION FOR BMP-4

```
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.708(Ac.)
Runoff from this stream =      0.885(CFS)
Time of concentration =    8.90 min.
Rainfall intensity =     1.421(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Initial subarea data:
Initial area flow distance =    50.000(Ft.)
Top (of initial area) elevation =  1051.500(Ft.)
Bottom (of initial area) elevation =  1051.000(Ft.)
Difference in elevation =     0.500(Ft.)
Slope =    0.01000  s(%)=       1.00
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    3.651 min.
Rainfall intensity =      2.424(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff =      0.023(CFS)
Total initial stream area =        0.011(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.073(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      212.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
_____________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.500(Ft.), Average velocity =   0.005(Ft/s)
       ******* Irregular Channel Data ***********
-------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00             0.50
       2            25.00             0.00
       3            50.00             0.50
Manning's 'N' friction factor =   0.013
-------------------------------------------------------------------
Sub-Channel flow  =     -1.#IO(CFS)
  '     '       flow top width =     50.000(Ft.)
  '     '    velocity=   -1.#IO(Ft/s)
  '     '       area =     12.500(Sq.Ft)
  '     '       Froude number =    -1.#IO

Upstream point elevation =  1051.000(Ft.)
Downstream point elevation =  1051.110(Ft.)
Flow length =   258.000(Ft.)
Travel time  =  782.29 min.
Time of concentration =  785.94 min.
Depth of flow =   0.500(Ft.)
Average velocity =   0.005(Ft/s)
Total irregular channel flow =     0.069(CFS)
Irregular channel normal depth above invert elev. =   0.500(Ft.)
Average velocity of channel(s) =   0.005(Ft/s)
```

TIME OF CONCENTRATION FOR BMP-5

```
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      0.097(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.810
Subarea runoff =      0.018(CFS) for    0.521(Ac.)
Total runoff =      0.042(CFS)
Effective area this stream =        0.53(Ac.)
Total Study Area (Main Stream No. 2) =        1.24(Ac.)
Area averaged Fm value =    0.073(In/Hr)
Depth of flow =   0.500(Ft.), Average velocity =   0.003(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      220.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Depth of flow =   0.037(Ft.), Average velocity =   0.618(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      0.042(CFS)
  '     '       flow top width =      3.670(Ft.)
  '     '    velocity=    0.618(Ft/s)
  '     '       area =      0.067(Sq.Ft)
  '     '       Froude number =     0.804

Upstream point elevation =  1051.110(Ft.)
Downstream point elevation =  1049.400(Ft.)
Flow length =   283.000(Ft.)
Travel time  =    7.63 min.
Time of concentration =  793.57 min.
Depth of flow =   0.037(Ft.)
Average velocity =   0.618(Ft/s)
Total irregular channel flow =     0.042(CFS)
Irregular channel normal depth above invert elev. =   0.037(Ft.)
Average velocity of channel(s) =   0.618(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.532(Ac.)
Runoff from this stream =      0.042(CFS)
Time of concentration =  793.57 min.
Rainfall intensity =     0.096(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1      0.88     0.708      8.90    0.073      1.421
2      0.04     0.532    793.57    0.073      0.096
```

```
Qmax(1) =
          1.000 *    1.000 *     0.885) +
         59.567 *    0.011 *     0.042) + =       0.913
Qmax(2) =
          0.017 *    1.000 *     0.885) +
          1.000 *    1.000 *     0.042) + =       0.056

Total of 2 main streams to confluence:
Flow rates before confluence point:
       1.885       1.042
Maximum flow rates at confluence using above data:
        0.913        0.056
Area of streams before confluence:
        0.708        0.532
Effective area values after confluence:
        0.714        1.240


Results of confluence:
Total flow rate =       0.913(CFS)
Time of concentration =     8.897 min.
Effective stream area after confluence  =      0.714(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.073(In/Hr)
Study area total =       1.24(Ac.)
End of computations, Total Study Area =            1.24 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  56.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

POST DEVELOPMENT - POC 3 UNMITIGATED
2 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:POC3Q2.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.452 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 300.000 to Point/Station 301.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.073(In/Hr)
Initial subarea data:
Initial area flow distance = 30.000(Ft.)
Top (of initial area) elevation = 1054.290(Ft.)
Bottom (of initial area) elevation = 1053.900(Ft.)
Difference in elevation = 0.390(Ft.)
Slope = 0.01300 s(%)= 1.30
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 2.824 min.
Rainfall intensity = 2.828(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.877
Subarea runoff = 0.055(CFS)
Total initial stream area = 0.022(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.073(In/Hr)

++
Process from Point/Station 301.000 to Point/Station 302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.100(Ft.), Average velocity = 1.651(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00
3	50.00	0.50

```
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      0.832(CFS)
  '     '       flow top width =     10.041(Ft.)
  '     '    velocity=    1.651(Ft/s)
  '     '       area =      0.504(Sq.Ft)
  '     '       Froude number =     1.299

Upstream point elevation =  1053.900(Ft.)
Downstream point elevation =  1051.420(Ft.)
Flow length =   220.000(Ft.)
Travel time  =    2.22 min.
Time of concentration =    5.04 min.
Depth of flow =   0.100(Ft.)
Average velocity =   1.651(Ft/s)
Total irregular channel flow =     0.832(CFS)
Irregular channel normal depth above invert elev. =   0.100(Ft.)
Average velocity of channel(s) =   1.651(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      1.997(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.867
Subarea runoff =      1.464(CFS) for    0.855(Ac.)
Total runoff =      1.518(CFS)
Effective area this stream =        0.88(Ac.)
Total Study Area (Main Stream No. 1) =        0.88(Ac.)
Area averaged Fm value =    0.073(In/Hr)
Depth of flow =   0.126(Ft.), Average velocity =   1.919(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1051.420(Ft.)
Downstream point/station elevation =  1051.060(Ft.)
Pipe length  =    62.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.518(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.518(CFS)
Normal flow depth in pipe =    6.42(In.)
Flow top width inside pipe =   11.97(In.)
Critical Depth =    6.27(In.)
Pipe flow velocity =      3.55(Ft/s)
Travel time through pipe =    0.29 min.
Time of concentration (TC) =     5.34 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      320.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.877(Ac.)
Runoff from this stream =      1.518(CFS)
Time of concentration =    5.34 min.
Rainfall intensity =     1.931(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
Process from Point/Station      303.000 to Point/Station      304.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Initial subarea data:
Initial area flow distance =    30.000(Ft.)
Top (of initial area) elevation =  1054.310(Ft.)
Bottom (of initial area) elevation =  1053.870(Ft.)
Difference in elevation =     0.440(Ft.)
Slope =    0.01467  s(%)=       1.47
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    2.757 min.
Rainfall intensity =      2.870(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.877
Subarea runoff =      0.048(CFS)
Total initial stream area =        0.019(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.073(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      305.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
_____________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.118(Ft.), Average velocity =   1.192(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
---------------------------------------------------------------------
Sub-Channel flow  =      0.826(CFS)
  '     '       flow top width =     11.769(Ft.)
  '     '    velocity=    1.192(Ft/s)
  '     '       area =      0.693(Sq.Ft)
  '     '       Froude number =     0.866

Upstream point elevation =  1053.870(Ft.)
Downstream point elevation =  1051.940(Ft.)
Flow length =   406.000(Ft.)
Travel time  =    5.68 min.
Time of concentration =    8.43 min.
Depth of flow =   0.118(Ft.)
Average velocity =   1.192(Ft/s)
Total irregular channel flow =     0.826(CFS)
Irregular channel normal depth above invert elev. =   0.118(Ft.)
Average velocity of channel(s) =   1.192(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.073(In/Hr)
Rainfall intensity =      1.467(In/Hr) for a     2.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.855
Subarea runoff =      1.489(CFS) for    1.206(Ac.)
Total runoff =      1.537(CFS)
Effective area this stream =        1.22(Ac.)
```

```
Total Study Area (Main Stream No. 2) =        2.10(Ac.)
Area averaged Fm value =    0.073(In/Hr)
Depth of flow =   0.149(Ft.), Average velocity =   1.392(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1051.940(Ft.)
Downstream point/station elevation =  1051.060(Ft.)
Pipe length  =   339.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.537(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     1.537(CFS)
Normal flow depth in pipe =    8.47(In.)
Flow top width inside pipe =   10.93(In.)
Critical Depth =    6.31(In.)
Pipe flow velocity =      2.59(Ft/s)
Travel time through pipe =    2.18 min.
Time of concentration (TC) =    10.61 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      320.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.225(Ac.)
Runoff from this stream =      1.537(CFS)
Time of concentration =   10.61 min.
Rainfall intensity =     1.278(In/Hr)
Area averaged loss rate (Fm) =    0.0734(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC      Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min)  (In/Hr)     (In/Hr)


1      1.52     0.877      5.34    0.073      1.931
2      1.54     1.225     10.61    0.073      1.278
Qmax(1) =
          1.000 *    1.000 *     1.518) +
          1.542 *    0.503 *     1.537) + =       2.710
Qmax(2) =
          0.649 *    1.000 *     1.518) +
          1.000 *    1.000 *     1.537) + =       2.521

Total of 2 main streams to confluence:
Flow rates before confluence point:
       2.518       2.537
Maximum flow rates at confluence using above data:
        2.710        2.521
Area of streams before confluence:
        0.877        1.225
Effective area values after confluence:
        1.493        2.102


Results of confluence:
Total flow rate =      2.710(CFS)
Time of concentration =     5.336 min.
Effective stream area after confluence  =      1.493(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.073(In/Hr)
Study area total =       2.10(Ac.)
End of computations, Total Study Area =            2.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
```

TIME OF CONCENTRATION FOR BMP-6

Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

POST DEVELOPMENT - POC 1 MITIGATED
100 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:POC1Q100MIT.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.220 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 102.000 to Point/Station 102.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Rainfall intensity = 3.682(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 9.52 min. Rain intensity = 3.68(In/Hr)
Total area this stream = 0.56(Ac.)
Total Study Area (Main Stream No. 1) = 0.56(Ac.)
Total runoff = 1.33(CFS)

++
Process from Point/Station 102.000 to Point/Station 130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.182(Ft.), Average velocity = 0.802(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00
3	50.00	0.50

Manning's 'N' friction factor = 0.013

Sub-Channel flow = 1.326(CFS)
' ' flow top width = 18.183(Ft.)
' ' velocity= 0.802(Ft/s)
' ' area = 1.653(Sq.Ft)
' ' Froude number = 0.469

```
Upstream point elevation =  1048.500(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =    83.000(Ft.)
Travel time  =    1.72 min.
Time of concentration =   11.24 min.
Depth of flow =   0.182(Ft.)
Average velocity =   0.802(Ft/s)
Total irregular channel flow =     1.326(CFS)
Irregular channel normal depth above invert elev. =   0.182(Ft.)
Average velocity of channel(s) =   0.802(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.562(Ac.)
Runoff from this stream =      1.326(CFS)
Time of concentration =   11.24 min.
Rainfall intensity =     3.332(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      112.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      2.764(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =  15.35 min.  Rain intensity =       2.76(In/Hr)
Total area this stream =         0.29(Ac.)
Total Study Area (Main Stream No. 2) =        0.85(Ac.)
Total runoff =      0.29(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Depth of flow =   0.087(Ft.), Average velocity =   0.782(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      0.295(CFS)
  '     '       flow top width =      8.684(Ft.)
  '     '    velocity=    0.782(Ft/s)
  '     '       area =      0.377(Sq.Ft)
  '     '       Froude number =     0.662

Upstream point elevation =  1048.750(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =   114.000(Ft.)
Travel time  =    2.43 min.
```

```
Time of concentration =   17.78 min.
Depth of flow =   0.087(Ft.)
Average velocity =   0.782(Ft/s)
Total irregular channel flow =     0.295(CFS)
Irregular channel normal depth above invert elev. =   0.087(Ft.)
Average velocity of channel(s) =   0.782(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.288(Ac.)
Runoff from this stream =      0.295(CFS)
Time of concentration =   17.78 min.
Rainfall intensity =     2.531(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      126.000 to Point/Station      126.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      1.692(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =  34.79 min.  Rain intensity =       1.69(In/Hr)
Total area this stream =         1.71(Ac.)
Total Study Area (Main Stream No. 3) =        2.56(Ac.)
Total runoff =      0.69(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      126.000 to Point/Station      130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Depth of flow =   0.106(Ft.), Average velocity =   1.220(Ft/s)
       ******* Irregular Channel Data **********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              0.50
       2            25.00              0.00
       3            50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      0.689(CFS)
  '     '       flow top width =     10.627(Ft.)
  '     '    velocity=    1.220(Ft/s)
  '     '       area =      0.565(Sq.Ft)
  '     '       Froude number =     0.933

Upstream point elevation =  1050.260(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =   326.000(Ft.)
Travel time  =    4.45 min.
Time of concentration =   39.24 min.
Depth of flow =   0.106(Ft.)
Average velocity =   1.220(Ft/s)
Total irregular channel flow =     0.689(CFS)
```

```
Irregular channel normal depth above invert elev. =   0.106(Ft.)
Average velocity of channel(s) =   1.220(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      1.710(Ac.)
Runoff from this stream =      0.689(CFS)
Time of concentration =   39.24 min.
Rainfall intensity =     1.574(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1      1.33     0.562     11.24    0.044      3.332
2      0.29     0.288     17.78    0.044      2.531
3      0.69     1.710     39.24    0.044      1.574
Qmax(1) =
          1.000 *    1.000 *     1.326) +
          1.322 *    0.632 *     0.295) +
          2.149 *    0.287 *     0.689) + =       1.997
Qmax(2) =
          0.756 *    1.000 *     1.326) +
          1.000 *    1.000 *     0.295) +
          1.626 *    0.453 *     0.689) + =       1.806
Qmax(3) =
          0.465 *    1.000 *     1.326) +
          0.615 *    1.000 *     0.295) +
          1.000 *    1.000 *     0.689) + =       1.488

Total of 3 main streams to confluence:
Flow rates before confluence point:
       2.326       1.295       1.689
Maximum flow rates at confluence using above data:
        1.997        1.806        1.488
Area of streams before confluence:
        0.562        0.288        1.710
Effective area values after confluence:
        1.234        1.625        2.560


Results of confluence:
Total flow rate =      1.997(CFS)
Time of concentration =    11.245 min.
Effective stream area after confluence  =      1.234(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.044(In/Hr)
Study area total =       2.56(Ac.)
End of computations, Total Study Area =            2.56 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  56.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

POST DEVELOPMENT - POC 2 MITIGATED
100 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:POC2Q100MIT.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.220 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 202.000 to Point/Station 202.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Rainfall intensity = 3.147(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 12.37 min. Rain intensity = 3.15(In/Hr)
Total area this stream = 0.71(Ac.)
Total Study Area (Main Stream No. 1) = 0.71(Ac.)
Total runoff = 1.25(CFS)

++
Process from Point/Station 202.000 to Point/Station 220.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Depth of flow = 0.142(Ft.), Average velocity = 1.230(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00
3	50.00	0.50

Manning's 'N' friction factor = 0.013

Sub-Channel flow = 1.246(CFS)
' ' flow top width = 14.233(Ft.)
' ' velocity= 1.230(Ft/s)
' ' area = 1.013(Sq.Ft)
' ' Froude number = 0.813

```
Upstream point elevation =  1049.510(Ft.)
Downstream point elevation =  1049.400(Ft.)
Flow length =    28.000(Ft.)
Travel time  =    0.38 min.
Time of concentration =   12.75 min.
Depth of flow =   0.142(Ft.)
Average velocity =   1.230(Ft/s)
Total irregular channel flow =     1.246(CFS)
Irregular channel normal depth above invert elev. =   0.142(Ft.)
Average velocity of channel(s) =   1.230(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.708(Ac.)
Runoff from this stream =      1.246(CFS)
Time of concentration =   12.75 min.
Rainfall intensity =     3.090(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      212.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      3.134(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =  12.45 min.  Rain intensity =       3.13(In/Hr)
Total area this stream =         0.53(Ac.)
Total Study Area (Main Stream No. 2) =        1.24(Ac.)
Total runoff =      0.74(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      220.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Depth of flow =   0.108(Ft.), Average velocity =   1.269(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      0.739(CFS)
  '     '       flow top width =     10.793(Ft.)
  '     '    velocity=    1.269(Ft/s)
  '     '       area =      0.582(Sq.Ft)
  '     '       Froude number =     0.962

Upstream point elevation =  1051.110(Ft.)
Downstream point elevation =  1049.400(Ft.)
Flow length =   283.000(Ft.)
Travel time  =    3.72 min.
```

```
Time of concentration =   16.17 min.
Depth of flow =   0.108(Ft.)
Average velocity =   1.269(Ft/s)
Total irregular channel flow =     0.739(CFS)
Irregular channel normal depth above invert elev. =   0.108(Ft.)
Average velocity of channel(s) =   1.269(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.532(Ac.)
Runoff from this stream =      0.739(CFS)
Time of concentration =   16.17 min.
Rainfall intensity =     2.680(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min)  (In/Hr)     (In/Hr)


1      1.25     0.708     12.75    0.044      3.090
2      0.74     0.532     16.17    0.044      2.680
Qmax(1) =
          1.000 *    1.000 *     1.246) +
          1.156 *    0.789 *     0.739) + =       1.920
Qmax(2) =
          0.865 *    1.000 *     1.246) +
          1.000 *    1.000 *     0.739) + =       1.817

Total of 2 main streams to confluence:
Flow rates before confluence point:
       2.246       1.739
Maximum flow rates at confluence using above data:
        1.920        1.817
Area of streams before confluence:
        0.708        0.532
Effective area values after confluence:
        1.128        1.240


Results of confluence:
Total flow rate =      1.920(CFS)
Time of concentration =    12.749 min.
Effective stream area after confluence  =      1.128(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.044(In/Hr)
Study area total =       1.24(Ac.)
End of computations, Total Study Area =            1.24 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  56.0
```

MITIGATED POC-3 HAS ONE (1) BMP AND DOES NOT REQUIRE CONFLUENCING. NO CIVILD IS REQUIRED FOR POC-3. MITIGATED RUNOFF FOR POC-3 IS THE FOLLOWING:

Tc = 12.45 MIN

Q = 0.739 CFS

REFER TO THE HYDRAFLOW HYDROGRAPH ANALYSIS IN APPENDIX D.

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

POST DEVELOPMENT - POC 1 UNMITIGATED
100 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:POC1Q100.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.220 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Initial subarea data:
Initial area flow distance = 17.000(Ft.)
Top (of initial area) elevation = 1051.290(Ft.)
Bottom (of initial area) elevation = 1050.920(Ft.)
Difference in elevation = 0.370(Ft.)
Slope = 0.02176 s(%)= 2.18
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 2.030 min.
Rainfall intensity = 9.306(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.896
Subarea runoff = 0.058(CFS)
Total initial stream area = 0.007(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.044(In/Hr)

++
Process from Point/Station 101.000 to Point/Station 102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.131(Ft.), Average velocity = 1.771(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00

```
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      1.510(CFS)
  '     '       flow top width =     13.059(Ft.)
  '     '    velocity=    1.771(Ft/s)
  '     '       area =      0.853(Sq.Ft)
  '     '       Froude number =     1.221

Upstream point elevation =  1050.920(Ft.)
Downstream point elevation =  1048.500(Ft.)
Flow length =   265.000(Ft.)
Travel time  =    2.49 min.
Time of concentration =    4.52 min.
Depth of flow =   0.131(Ft.)
Average velocity =   1.771(Ft/s)
Total irregular channel flow =     1.510(CFS)
Irregular channel normal depth above invert elev. =   0.131(Ft.)
Average velocity of channel(s) =   1.771(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      5.754(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.893
Subarea runoff =      2.830(CFS) for    0.555(Ac.)
Total runoff =      2.888(CFS)
Effective area this stream =        0.56(Ac.)
Total Study Area (Main Stream No. 1) =        0.56(Ac.)
Area averaged Fm value =    0.044(In/Hr)
Depth of flow =   0.167(Ft.), Average velocity =   2.083(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
_________________________________________________________________________
Depth of flow =   0.243(Ft.), Average velocity =   0.974(Ft/s)
       ******* Irregular Channel Data ***********
-----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      2.888(CFS)
  '     '       flow top width =     24.346(Ft.)
  '     '    velocity=    0.974(Ft/s)
  '     '       area =      2.964(Sq.Ft)
  '     '       Froude number =     0.492

Upstream point elevation =  1048.500(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =    83.000(Ft.)
Travel time  =    1.42 min.
Time of concentration =    5.94 min.
Depth of flow =   0.243(Ft.)
Average velocity =   0.974(Ft/s)
Total irregular channel flow =     2.888(CFS)
Irregular channel normal depth above invert elev. =   0.243(Ft.)
Average velocity of channel(s) =   0.974(Ft/s)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.562(Ac.)
Runoff from this stream =      2.888(CFS)
Time of concentration =    5.94 min.
Rainfall intensity =     4.885(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      111.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Initial subarea data:
Initial area flow distance =    30.000(Ft.)
Top (of initial area) elevation =  1051.000(Ft.)
Bottom (of initial area) elevation =  1050.700(Ft.)
Difference in elevation =     0.300(Ft.)
Slope =    0.01000  s(%)=       1.00
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    2.977 min.
Rainfall intensity =      7.396(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.895
Subarea runoff =      0.079(CFS)
Total initial stream area =        0.012(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.044(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.100(Ft.), Average velocity =   1.490(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      0.748(CFS)
  '     '       flow top width =     10.022(Ft.)
  '     '    velocity=    1.490(Ft/s)
  '     '       area =      0.502(Sq.Ft)
  '     '       Froude number =     1.173

Upstream point elevation =  1050.700(Ft.)
Downstream point elevation =  1048.750(Ft.)
Flow length =   212.000(Ft.)
Travel time  =    2.37 min.
Time of concentration =    5.35 min.
Depth of flow =   0.100(Ft.)
Average velocity =   1.490(Ft/s)
```

```
Total irregular channel flow =     0.748(CFS)
Irregular channel normal depth above invert elev. =   0.100(Ft.)
Average velocity of channel(s) =   1.490(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      5.204(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.892
Subarea runoff =      1.258(CFS) for    0.276(Ac.)
Total runoff =      1.337(CFS)
Effective area this stream =        0.29(Ac.)
Total Study Area (Main Stream No. 2) =        0.85(Ac.)
Area averaged Fm value =    0.044(In/Hr)
Depth of flow =   0.125(Ft.), Average velocity =   1.723(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Depth of flow =   0.153(Ft.), Average velocity =   1.142(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      1.337(CFS)
  '     '       flow top width =     15.307(Ft.)
  '     '    velocity=    1.142(Ft/s)
  '     '       area =      1.172(Sq.Ft)
  '     '       Froude number =     0.727

Upstream point elevation =  1048.750(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =   114.000(Ft.)
Travel time  =    1.66 min.
Time of concentration =    7.01 min.
Depth of flow =   0.153(Ft.)
Average velocity =   1.142(Ft/s)
Total irregular channel flow =     1.337(CFS)
Irregular channel normal depth above invert elev. =   0.153(Ft.)
Average velocity of channel(s) =   1.142(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.288(Ac.)
Runoff from this stream =      1.337(CFS)
Time of concentration =    7.01 min.
Rainfall intensity =     4.423(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 3


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Process from Point/Station      120.000 to Point/Station      121.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Initial subarea data:
Initial area flow distance =    17.000(Ft.)
Top (of initial area) elevation =  1051.290(Ft.)
Bottom (of initial area) elevation =  1050.940(Ft.)
Difference in elevation =     0.350(Ft.)
Slope =    0.02059  s(%)=       2.06
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    2.053 min.
Rainfall intensity =      9.244(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.896
Subarea runoff =      0.099(CFS)
Total initial stream area =        0.012(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.044(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      122.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
_____________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.192(Ft.), Average velocity =   1.321(Ft/s)
       ******* Irregular Channel Data ***********
---------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
---------------------------------------------------------------------
Sub-Channel flow  =      2.436(CFS)
  '     '       flow top width =     19.205(Ft.)
  '     '    velocity=    1.321(Ft/s)
  '     '       area =      1.844(Sq.Ft)
  '     '       Froude number =     0.751

Upstream point elevation =  1050.940(Ft.)
Downstream point elevation =  1050.290(Ft.)
Flow length =   214.000(Ft.)
Travel time  =    2.70 min.
Time of concentration =    4.75 min.
Depth of flow =   0.192(Ft.)
Average velocity =   1.321(Ft/s)
Total irregular channel flow =     2.436(CFS)
Irregular channel normal depth above invert elev. =   0.192(Ft.)
Average velocity of channel(s) =   1.321(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      5.586(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.893
Subarea runoff =      4.604(CFS) for    0.931(Ac.)
```

```
Total runoff =      4.703(CFS)
Effective area this stream =        0.94(Ac.)
Total Study Area (Main Stream No. 3) =        1.79(Ac.)
Area averaged Fm value =    0.044(In/Hr)
Depth of flow =   0.246(Ft.), Average velocity =   1.557(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      122.000 to Point/Station      126.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1050.290(Ft.)
Downstream point/station elevation =  1050.260(Ft.)
Pipe length  =     8.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.703(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     4.703(CFS)
Normal flow depth in pipe =   11.43(In.)
Flow top width inside pipe =   17.33(In.)
Critical Depth =   10.00(In.)
Pipe flow velocity =      3.97(Ft/s)
Travel time through pipe =    0.03 min.
Time of concentration (TC) =     4.79 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      126.000 to Point/Station      126.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =      0.943(Ac.)
Runoff from this stream =      4.703(CFS)
Time of concentration =    4.79 min.
Rainfall intensity =     5.562(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      123.000 to Point/Station      124.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Initial subarea data:
Initial area flow distance =    30.000(Ft.)
Top (of initial area) elevation =  1051.720(Ft.)
Bottom (of initial area) elevation =  1051.500(Ft.)
Difference in elevation =     0.220(Ft.)
Slope =    0.00733  s(%)=       0.73
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    3.167 min.
Rainfall intensity =      7.126(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.894
Subarea runoff =      0.115(CFS)
Total initial stream area =        0.018(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.044(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      124.000 to Point/Station      125.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
```

```
Depth of flow =   0.160(Ft.), Average velocity =   1.345(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      1.713(CFS)
  '     '       flow top width =     15.957(Ft.)
  '     '    velocity=    1.345(Ft/s)
  '     '       area =      1.273(Sq.Ft)
  '     '       Froude number =     0.839

Upstream point elevation =  1051.500(Ft.)
Downstream point elevation =  1050.500(Ft.)
Flow length =   248.000(Ft.)
Travel time  =    3.07 min.
Time of concentration =    6.24 min.
Depth of flow =   0.160(Ft.)
Average velocity =   1.345(Ft/s)
Total irregular channel flow =     1.712(CFS)
Irregular channel normal depth above invert elev. =   0.160(Ft.)
Average velocity of channel(s) =   1.345(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      4.744(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.892
Subarea runoff =      3.130(CFS) for    0.749(Ac.)
Total runoff =      3.244(CFS)
Effective area this stream =        0.77(Ac.)
Total Study Area (Main Stream No. 3) =        2.56(Ac.)
Area averaged Fm value =    0.044(In/Hr)
Depth of flow =   0.203(Ft.), Average velocity =   1.578(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      125.000 to Point/Station      126.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1050.510(Ft.)
Downstream point/station elevation =  1050.260(Ft.)
Pipe length  =   308.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.244(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     3.244(CFS)
Normal flow depth in pipe =   13.17(In.)
Flow top width inside pipe =   20.31(In.)
Critical Depth =    7.86(In.)
Pipe flow velocity =      2.04(Ft/s)
Travel time through pipe =    2.51 min.
Time of concentration (TC) =     8.75 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      126.000 to Point/Station      126.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 2
Stream flow area =      0.767(Ac.)
Runoff from this stream =      3.244(CFS)
```

```
Time of concentration =    8.75 min.
Rainfall intensity =     3.872(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1      4.70     0.943      4.79    0.044      5.562
2      3.24     0.767      8.75    0.044      3.872
Qmax(1) =
          1.000 *    1.000 *     4.703) +
          1.442 *    0.547 *     3.244) + =       7.260
Qmax(2) =
          0.694 *    1.000 *     4.703) +
          1.000 *    1.000 *     3.244) + =       6.507

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.703       3.244
Maximum flow rates at confluence using above data:
        7.260        6.507
Area of streams before confluence:
        0.943        0.767
Effective area values after confluence:
        1.362        1.710
Results of confluence:
Total flow rate =      7.260(CFS)
Time of concentration =     4.787 min.
Effective stream area after confluence =      1.362(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.044(In/Hr)
Study area total (this main stream) =       1.71(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      126.000 to Point/Station      130.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Depth of flow =   0.257(Ft.), Average velocity =   2.198(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      7.260(CFS)
  '     '       flow top width =     25.701(Ft.)
  '     '    velocity=    2.198(Ft/s)
  '     '       area =      3.303(Sq.Ft)
  '     '       Froude number =     1.081

Upstream point elevation =  1050.260(Ft.)
Downstream point elevation =  1048.400(Ft.)
Flow length =   326.000(Ft.)
Travel time  =    2.47 min.
Time of concentration =    7.26 min.
Depth of flow =   0.257(Ft.)
Average velocity =   2.198(Ft/s)
Total irregular channel flow =     7.260(CFS)
Irregular channel normal depth above invert elev. =   0.257(Ft.)
Average velocity of channel(s) =   2.198(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      130.000 to Point/Station      130.000
```

```
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      1.362(Ac.)
Runoff from this stream =      7.260(CFS)
Time of concentration =    7.26 min.
Rainfall intensity =     4.333(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area     TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)


1      2.89     0.562      5.94    0.044      4.885
2      1.34     0.288      7.01    0.044      4.423
3      7.26     1.362      7.26    0.044      4.333
Qmax(1) =
           1.000 *    1.000 *     2.888) +
           1.105 *    0.848 *     1.337) +
           1.129 *    0.819 *     7.260) + =      10.851
Qmax(2) =
           0.905 *    1.000 *     2.888) +
           1.000 *    1.000 *     1.337) +
           1.021 *    0.966 *     7.260) + =      11.113
Qmax(3) =
           0.886 *    1.000 *     2.888) +
           0.979 *    1.000 *     1.337) +
           1.000 *    1.000 *     7.260) + =      11.129

Total of 3 main streams to confluence:
Flow rates before confluence point:
       3.888       2.337       8.260
Maximum flow rates at confluence using above data:
       10.851       11.113       11.129
Area of streams before confluence:
        0.562        0.288        1.362
Effective area values after confluence:
        1.922        2.166        2.212


Results of confluence:
Total flow rate =     11.129(CFS)
Time of concentration =     7.258 min.
Effective stream area after confluence  =      2.212(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.044(In/Hr)
Study area total =       2.21(Ac.)
End of computations, Total Study Area =            2.56 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  56.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

POST DEVELOPMENT - POC 2 UNMITIGATED
100 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:POC2Q100.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.220 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Initial subarea data:
Initial area flow distance = 50.000(Ft.)
Top (of initial area) elevation = 1051.500(Ft.)
Bottom (of initial area) elevation = 1051.000(Ft.)
Difference in elevation = 0.500(Ft.)
Slope = 0.01000 s(%)= 1.00
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 3.651 min.
Rainfall intensity = 6.543(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.894
Subarea runoff = 0.064(CFS)
Total initial stream area = 0.011(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.044(In/Hr)

++
Process from Point/Station 201.000 to Point/Station 202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.143(Ft.), Average velocity = 1.375(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00

```
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      1.414(CFS)
  '     '       flow top width =     14.346(Ft.)
  '     '    velocity=    1.375(Ft/s)
  '     '       area =      1.029(Sq.Ft)
  '     '       Froude number =     0.904

Upstream point elevation =  1051.000(Ft.)
Downstream point elevation =  1049.510(Ft.)
Flow length =   307.000(Ft.)
Travel time  =    3.72 min.
Time of concentration =    7.37 min.
Depth of flow =   0.143(Ft.)
Average velocity =   1.375(Ft/s)
Total irregular channel flow =     1.414(CFS)
Irregular channel normal depth above invert elev. =   0.143(Ft.)
Average velocity of channel(s) =   1.375(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      4.292(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.891
Subarea runoff =      2.642(CFS) for    0.697(Ac.)
Total runoff =      2.707(CFS)
Effective area this stream =        0.71(Ac.)
Total Study Area (Main Stream No. 1) =        0.71(Ac.)
Area averaged Fm value =    0.044(In/Hr)
Depth of flow =   0.183(Ft.), Average velocity =   1.617(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      220.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
_________________________________________________________________________
Depth of flow =   0.190(Ft.), Average velocity =   1.493(Ft/s)
       ******* Irregular Channel Data ***********
-----------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      2.707(CFS)
  '     '       flow top width =     19.039(Ft.)
  '     '    velocity=    1.493(Ft/s)
  '     '       area =      1.812(Sq.Ft)
  '     '       Froude number =     0.853

Upstream point elevation =  1049.510(Ft.)
Downstream point elevation =  1049.400(Ft.)
Flow length =    28.000(Ft.)
Travel time  =    0.31 min.
Time of concentration =    7.69 min.
Depth of flow =   0.190(Ft.)
Average velocity =   1.493(Ft/s)
Total irregular channel flow =     2.707(CFS)
Irregular channel normal depth above invert elev. =   0.190(Ft.)
Average velocity of channel(s) =   1.493(Ft/s)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.708(Ac.)
Runoff from this stream =      2.707(CFS)
Time of concentration =    7.69 min.
Rainfall intensity =     4.186(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Initial subarea data:
Initial area flow distance =    50.000(Ft.)
Top (of initial area) elevation =  1051.500(Ft.)
Bottom (of initial area) elevation =  1051.000(Ft.)
Difference in elevation =     0.500(Ft.)
Slope =    0.01000  s(%)=       1.00
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    3.651 min.
Rainfall intensity =      6.543(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.894
Subarea runoff =      0.064(CFS)
Total initial stream area =        0.011(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.044(In/Hr)


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Process from Point/Station      211.000 to Point/Station      212.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.138(Ft.), Average velocity =   1.132(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              0.50
       2            25.00              0.00
       3            50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      1.084(CFS)
  '     '       flow top width =     13.841(Ft.)
  '     '    velocity=    1.132(Ft/s)
  '     '       area =      0.958(Sq.Ft)
  '     '       Froude number =     0.758

Upstream point elevation =  1051.000(Ft.)
Downstream point elevation =  1050.110(Ft.)
Flow length =   258.000(Ft.)
Travel time  =    3.80 min.
Time of concentration =    7.45 min.
Depth of flow =   0.138(Ft.)
Average velocity =   1.132(Ft/s)
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Total irregular channel flow =     1.084(CFS)
Irregular channel normal depth above invert elev. =   0.138(Ft.)
Average velocity of channel(s) =   1.132(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      4.265(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.891
Subarea runoff =      1.957(CFS) for    0.521(Ac.)
Total runoff =      2.021(CFS)
Effective area this stream =        0.53(Ac.)
Total Study Area (Main Stream No. 2) =        1.24(Ac.)
Area averaged Fm value =    0.044(In/Hr)
Depth of flow =   0.175(Ft.), Average velocity =   1.322(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      220.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Depth of flow =   0.186(Ft.), Average velocity =   1.173(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1              0.00              0.50
       2             25.00              0.00
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
------------------------------------------------------------------
Sub-Channel flow  =      2.021(CFS)
  '     '       flow top width =     18.560(Ft.)
  '     '    velocity=    1.173(Ft/s)
  '     '       area =      1.722(Sq.Ft)
  '     '       Froude number =     0.679

Upstream point elevation =  1050.110(Ft.)
Downstream point elevation =  1049.400(Ft.)
Flow length =   283.000(Ft.)
Travel time  =    4.02 min.
Time of concentration =   11.47 min.
Depth of flow =   0.186(Ft.)
Average velocity =   1.173(Ft/s)
Total irregular channel flow =     2.021(CFS)
Irregular channel normal depth above invert elev. =   0.186(Ft.)
Average velocity of channel(s) =   1.173(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.532(Ac.)
Runoff from this stream =      2.021(CFS)
Time of concentration =   11.47 min.
Rainfall intensity =     3.292(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min) (In/Hr)     (In/Hr)
```

```
1      2.71     0.708      7.69    0.044      4.186
2      2.02     0.532     11.47    0.044      3.292
Qmax(1) =
          1.000 *    1.000 *     2.707) +
          1.275 *    0.670 *     2.021) + =       4.433
Qmax(2) =
          0.784 *    1.000 *     2.707) +
          1.000 *    1.000 *     2.021) + =       4.143

Total of 2 main streams to confluence:
Flow rates before confluence point:
       3.707       3.021
Maximum flow rates at confluence using above data:
        4.433        4.143
Area of streams before confluence:
        0.708        0.532
Effective area values after confluence:
        1.064        1.240


Results of confluence:
Total flow rate =       4.433(CFS)
Time of concentration =     7.686 min.
Effective stream area after confluence  =      1.064(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.044(In/Hr)
Study area total =       1.24(Ac.)
End of computations, Total Study Area =            1.24 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  56.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2019 Version 9.1
Rational Hydrology Study Date: 10/01/21

POST DEVELOPMENT - POC 3 UNMITIGATED
100 YEAR - RATIONAL METHOD ANALYSIS
BY WARE MALCOMB
FILE:POC3Q100.RSD3

Program License Serial Number 6491

********* Hydrology Study Control Information **********

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.768(In.)
100 Year storm 1 hour rainfall = 1.220(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.220 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 300.000 to Point/Station 301.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.044(In/Hr)
Initial subarea data:
Initial area flow distance = 30.000(Ft.)
Top (of initial area) elevation = 1054.290(Ft.)
Bottom (of initial area) elevation = 1053.900(Ft.)
Difference in elevation = 0.390(Ft.)
Slope = 0.01300 s(%)= 1.30
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 2.824 min.
Rainfall intensity = 7.633(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.895
Subarea runoff = 0.150(CFS)
Total initial stream area = 0.022(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.044(In/Hr)

++
Process from Point/Station 301.000 to Point/Station 302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 0.000(CFS)
Depth of flow = 0.148(Ft.), Average velocity = 2.141(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.50
2	25.00	0.00

```
       3             50.00              0.50
Manning's 'N' friction factor =   0.013
-----------------------------------------------------------------
Sub-Channel flow  =      2.353(CFS)
  '     '       flow top width =     14.825(Ft.)
  '     '    velocity=    2.141(Ft/s)
  '     '       area =      1.099(Sq.Ft)
  '     '       Froude number =     1.386

Upstream point elevation =  1053.900(Ft.)
Downstream point elevation =  1051.420(Ft.)
Flow length =   220.000(Ft.)
Travel time  =    1.71 min.
Time of concentration =    4.54 min.
Depth of flow =   0.148(Ft.)
Average velocity =   2.141(Ft/s)
Total irregular channel flow =     2.353(CFS)
Irregular channel normal depth above invert elev. =   0.148(Ft.)
Average velocity of channel(s) =   2.141(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      5.744(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.893
Subarea runoff =      4.349(CFS) for    0.855(Ac.)
Total runoff =      4.499(CFS)
Effective area this stream =        0.88(Ac.)
Total Study Area (Main Stream No. 1) =        0.88(Ac.)
Area averaged Fm value =    0.044(In/Hr)
Depth of flow =   0.189(Ft.), Average velocity =   2.518(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      302.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1051.420(Ft.)
Downstream point/station elevation =  1051.060(Ft.)
Pipe length  =    62.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.499(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     4.499(CFS)
Normal flow depth in pipe =   11.27(In.)
Flow top width inside pipe =   12.96(In.)
Critical Depth =   10.31(In.)
Pipe flow velocity =      4.55(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =     4.76 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      320.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      0.877(Ac.)
Runoff from this stream =      4.499(CFS)
Time of concentration =    4.76 min.
Rainfall intensity =     5.578(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Program is now starting with Main Stream No. 2
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      303.000 to Point/Station      304.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Initial subarea data:
Initial area flow distance =    30.000(Ft.)
Top (of initial area) elevation =  1054.310(Ft.)
Bottom (of initial area) elevation =  1053.870(Ft.)
Difference in elevation =     0.440(Ft.)
Slope =    0.01467  s(%)=       1.47
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    2.757 min.
Rainfall intensity =      7.744(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.895
Subarea runoff =      0.132(CFS)
Total initial stream area =        0.019(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.044(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      304.000 to Point/Station      305.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
_____________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.000(CFS)
Depth of flow =   0.179(Ft.), Average velocity =   1.575(Ft/s)
       ******* Irregular Channel Data ***********
-------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
       1             0.00              0.50
       2            25.00              0.00
       3            50.00              0.50
Manning's 'N' friction factor =   0.013
-------------------------------------------------------------------
Sub-Channel flow  =      2.513(CFS)
  '     '       flow top width =     17.866(Ft.)
  '     '    velocity=    1.575(Ft/s)
  '     '       area =      1.596(Sq.Ft)
  '     '       Froude number =     0.928

Upstream point elevation =  1053.870(Ft.)
Downstream point elevation =  1051.940(Ft.)
Flow length =   406.000(Ft.)
Travel time  =    4.30 min.
Time of concentration =    7.05 min.
Depth of flow =   0.179(Ft.)
Average velocity =   1.575(Ft/s)
Total irregular channel flow =     2.513(CFS)
Irregular channel normal depth above invert elev. =   0.179(Ft.)
Average velocity of channel(s) =   1.575(Ft/s)
 Adding area flow to channel
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 56.00
Adjusted SCS curve number for AMC 3 = 75.80
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.044(In/Hr)
Rainfall intensity =      4.407(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
```

```
rational method)(Q=KCIA) is C = 0.891
Subarea runoff =      4.679(CFS) for    1.206(Ac.)
Total runoff =      4.811(CFS)
Effective area this stream =        1.22(Ac.)
Total Study Area (Main Stream No. 2) =        2.10(Ac.)
Area averaged Fm value =    0.044(In/Hr)
Depth of flow =   0.228(Ft.), Average velocity =   1.852(Ft/s)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      305.000 to Point/Station      320.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1051.940(Ft.)
Downstream point/station elevation =  1051.060(Ft.)
Pipe length  =   339.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.811(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     4.811(CFS)
Normal flow depth in pipe =   13.34(In.)
Flow top width inside pipe =   15.77(In.)
Critical Depth =   10.11(In.)
Pipe flow velocity =      3.43(Ft/s)
Travel time through pipe =    1.65 min.
Time of concentration (TC) =     8.70 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      320.000 to Point/Station      320.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      1.225(Ac.)
Runoff from this stream =      4.811(CFS)
Time of concentration =    8.70 min.
Rainfall intensity =     3.885(In/Hr)
Area averaged loss rate (Fm) =    0.0440(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream Flow rate    Area    TC     Fm       Rainfall Intensity
 No.    (CFS)    (Ac.)       (min)  (In/Hr)     (In/Hr)


1      4.50     0.877      4.76    0.044      5.578
2      4.81     1.225      8.70    0.044      3.885
Qmax(1) =
          1.000 *    1.000 *     4.499) +
          1.441 *    0.547 *     4.811) + =       8.292
Qmax(2) =
          0.694 *    1.000 *     4.499) +
          1.000 *    1.000 *     4.811) + =       7.934

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.499       5.811
Maximum flow rates at confluence using above data:
        8.292        7.934
Area of streams before confluence:
        0.877        1.225
Effective area values after confluence:
        1.548        2.102


Results of confluence:
Total flow rate =      8.292(CFS)
Time of concentration =     4.764 min.
Effective stream area after confluence  =      1.548(Ac.)
Study area average Pervious fraction(Ap) =  0.100
Study area average soil loss rate(Fm) =    0.044(In/Hr)
```

```
Study area total =       2.10(Ac.)
End of computations, Total Study Area =            2.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged SCS curve number =  56.0
```

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

Study date 09/30/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 1A (POC 1)
2 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA1AQ2.HCU

Storm Event Year = 2

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
0.56	1	0.77
Rainfall data for year 2		
0.56	6	1.16
Rainfall data for year 2		
0.56	24	2.07
Rainfall data for year 100		
0.56	1	1.22
Rainfall data for year 100		
0.56	6	2.67
Rainfall data for year 100		
0.56	24	4.89

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	56.0	0.56	1.000	0.734	0.100	0.073

Area-averaged adjusted loss rate Fm (In/Hr) = 0.073

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.06	0.100	56.0	56.0	7.86	0.014
0.50	0.900	98.0	98.0	0.20	0.891

Area-averaged catchment yield fraction, Y = 0.803
Area-averaged low loss fraction, Yb = 0.197
User entry of time of concentration = 0.088 (hours)
++
Watershed area = 0.56(Ac.)
Catchment Lag time = 0.070 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 118.3712
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.073(In/Hr)
Average low loss rate fraction (Yb) = 0.197 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.167(In)
Computed peak 30-minute rainfall = 0.343(In)
Specified peak 1-hour rainfall = 0.452(In)
Computed peak 3-hour rainfall = 0.806(In)
Specified peak 6-hour rainfall = 1.160(In)
Specified peak 24-hour rainfall = 2.070(In)

Rainfall depth area reduction factors:
Using a total area of 0.56(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.167(In)
30-minute factor = 1.000 Adjusted rainfall = 0.343(In)
1-hour factor = 1.000 Adjusted rainfall = 0.452(In)
3-hour factor = 1.000 Adjusted rainfall = 0.806(In)
6-hour factor = 1.000 Adjusted rainfall = 1.160(In)
24-hour factor = 1.000 Adjusted rainfall = 2.070(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 6.77 (CFS))	
1	23.492	1.591
2	88.061	4.373
3	100.000	0.809

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1673	0.1673
2	0.2208	0.0535
3	0.2596	0.0389
4	0.2913	0.0317
5	0.3185	0.0272
6	0.3426	0.0241
7	0.3644	0.0218
8	0.3844	0.0200
9	0.4029	0.0185
10	0.4203	0.0173
11	0.4366	0.0163
12	0.4521	0.0155
13	0.4715	0.0194
14	0.4902	0.0187
15	0.5083	0.0181
16	0.5259	0.0176
17	0.5429	0.0170
18	0.5595	0.0166
19	0.5756	0.0161
20	0.5914	0.0157
21	0.6068	0.0154
22	0.6218	0.0150

23	0.6365	0.0147
24	0.6509	0.0144
25	0.6650	0.0141
26	0.6789	0.0139
27	0.6925	0.0136
28	0.7059	0.0134
29	0.7190	0.0131
30	0.7320	0.0129
31	0.7447	0.0127
32	0.7572	0.0125
33	0.7696	0.0124
34	0.7818	0.0122
35	0.7938	0.0120
36	0.8056	0.0118
37	0.8173	0.0117
38	0.8289	0.0115
39	0.8403	0.0114
40	0.8515	0.0113
41	0.8627	0.0111
42	0.8737	0.0110
43	0.8845	0.0109
44	0.8953	0.0108
45	0.9059	0.0106
46	0.9165	0.0105
47	0.9269	0.0104
48	0.9372	0.0103
49	0.9474	0.0102
50	0.9576	0.0101
51	0.9676	0.0100
52	0.9775	0.0099
53	0.9874	0.0098
54	0.9971	0.0098
55	1.0068	0.0097
56	1.0164	0.0096
57	1.0259	0.0095
58	1.0353	0.0094
59	1.0447	0.0093
60	1.0539	0.0093
61	1.0631	0.0092
62	1.0723	0.0091
63	1.0813	0.0091
64	1.0903	0.0090
65	1.0992	0.0089
66	1.1081	0.0089
67	1.1169	0.0088
68	1.1256	0.0087
69	1.1343	0.0087
70	1.1429	0.0086
71	1.1515	0.0086
72	1.1600	0.0085
73	1.1667	0.0067
74	1.1734	0.0067
75	1.1799	0.0066
76	1.1865	0.0065
77	1.1930	0.0065
78	1.1994	0.0064
79	1.2058	0.0064
80	1.2122	0.0064
81	1.2185	0.0063
82	1.2248	0.0063
83	1.2310	0.0062
84	1.2372	0.0062
85	1.2433	0.0061
86	1.2494	0.0061
87	1.2554	0.0060
88	1.2614	0.0060
89	1.2674	0.0060
90	1.2733	0.0059
91	1.2792	0.0059
92	1.2851	0.0059
93	1.2909	0.0058

94	1.2967	0.0058
95	1.3024	0.0057
96	1.3081	0.0057
97	1.3138	0.0057
98	1.3194	0.0056
99	1.3251	0.0056
100	1.3306	0.0056
101	1.3362	0.0055
102	1.3417	0.0055
103	1.3472	0.0055
104	1.3526	0.0054
105	1.3580	0.0054
106	1.3634	0.0054
107	1.3688	0.0054
108	1.3741	0.0053
109	1.3794	0.0053
110	1.3847	0.0053
111	1.3899	0.0052
112	1.3951	0.0052
113	1.4003	0.0052
114	1.4055	0.0052
115	1.4106	0.0051
116	1.4157	0.0051
117	1.4208	0.0051
118	1.4259	0.0051
119	1.4309	0.0050
120	1.4359	0.0050
121	1.4409	0.0050
122	1.4459	0.0050
123	1.4508	0.0049
124	1.4557	0.0049
125	1.4606	0.0049
126	1.4655	0.0049
127	1.4704	0.0048
128	1.4752	0.0048
129	1.4800	0.0048
130	1.4848	0.0048
131	1.4895	0.0048
132	1.4943	0.0047
133	1.4990	0.0047
134	1.5037	0.0047
135	1.5084	0.0047
136	1.5130	0.0047
137	1.5177	0.0046
138	1.5223	0.0046
139	1.5269	0.0046
140	1.5314	0.0046
141	1.5360	0.0046
142	1.5406	0.0045
143	1.5451	0.0045
144	1.5496	0.0045
145	1.5541	0.0045
146	1.5585	0.0045
147	1.5630	0.0045
148	1.5674	0.0044
149	1.5718	0.0044
150	1.5762	0.0044
151	1.5806	0.0044
152	1.5850	0.0044
153	1.5893	0.0043
154	1.5937	0.0043
155	1.5980	0.0043
156	1.6023	0.0043
157	1.6066	0.0043
158	1.6108	0.0043
159	1.6151	0.0043
160	1.6193	0.0042
161	1.6235	0.0042
162	1.6277	0.0042
163	1.6319	0.0042
164	1.6361	0.0042

165	1.6403	0.0042
166	1.6444	0.0041
167	1.6485	0.0041
168	1.6527	0.0041
169	1.6568	0.0041
170	1.6608	0.0041
171	1.6649	0.0041
172	1.6690	0.0041
173	1.6730	0.0040
174	1.6771	0.0040
175	1.6811	0.0040
176	1.6851	0.0040
177	1.6891	0.0040
178	1.6931	0.0040
179	1.6970	0.0040
180	1.7010	0.0040
181	1.7049	0.0039
182	1.7088	0.0039
183	1.7128	0.0039
184	1.7167	0.0039
185	1.7206	0.0039
186	1.7244	0.0039
187	1.7283	0.0039
188	1.7322	0.0039
189	1.7360	0.0038
190	1.7398	0.0038
191	1.7437	0.0038
192	1.7475	0.0038
193	1.7513	0.0038
194	1.7550	0.0038
195	1.7588	0.0038
196	1.7626	0.0038
197	1.7663	0.0038
198	1.7701	0.0037
199	1.7738	0.0037
200	1.7775	0.0037
201	1.7812	0.0037
202	1.7849	0.0037
203	1.7886	0.0037
204	1.7923	0.0037
205	1.7959	0.0037
206	1.7996	0.0037
207	1.8032	0.0036
208	1.8069	0.0036
209	1.8105	0.0036
210	1.8141	0.0036
211	1.8177	0.0036
212	1.8213	0.0036
213	1.8249	0.0036
214	1.8285	0.0036
215	1.8320	0.0036
216	1.8356	0.0036
217	1.8391	0.0035
218	1.8427	0.0035
219	1.8462	0.0035
220	1.8497	0.0035
221	1.8532	0.0035
222	1.8567	0.0035
223	1.8602	0.0035
224	1.8637	0.0035
225	1.8672	0.0035
226	1.8706	0.0035
227	1.8741	0.0035
228	1.8775	0.0034
229	1.8810	0.0034
230	1.8844	0.0034
231	1.8878	0.0034
232	1.8912	0.0034
233	1.8946	0.0034
234	1.8980	0.0034
235	1.9014	0.0034

236	1.9048	0.0034
237	1.9081	0.0034
238	1.9115	0.0034
239	1.9148	0.0034
240	1.9182	0.0033
241	1.9215	0.0033
242	1.9249	0.0033
243	1.9282	0.0033
244	1.9315	0.0033
245	1.9348	0.0033
246	1.9381	0.0033
247	1.9414	0.0033
248	1.9446	0.0033
249	1.9479	0.0033
250	1.9512	0.0033
251	1.9544	0.0033
252	1.9577	0.0032
253	1.9609	0.0032
254	1.9642	0.0032
255	1.9674	0.0032
256	1.9706	0.0032
257	1.9738	0.0032
258	1.9770	0.0032
259	1.9802	0.0032
260	1.9834	0.0032
261	1.9866	0.0032
262	1.9898	0.0032
263	1.9929	0.0032
264	1.9961	0.0032
265	1.9993	0.0032
266	2.0024	0.0031
267	2.0056	0.0031
268	2.0087	0.0031
269	2.0118	0.0031
270	2.0149	0.0031
271	2.0180	0.0031
272	2.0212	0.0031
273	2.0243	0.0031
274	2.0274	0.0031
275	2.0304	0.0031
276	2.0335	0.0031
277	2.0366	0.0031
278	2.0397	0.0031
279	2.0427	0.0031
280	2.0458	0.0031
281	2.0488	0.0030
282	2.0519	0.0030
283	2.0549	0.0030
284	2.0579	0.0030
285	2.0610	0.0030
286	2.0640	0.0030
287	2.0670	0.0030
288	2.0700	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0024
4	0.0030	0.0006	0.0024
5	0.0030	0.0006	0.0024
6	0.0030	0.0006	0.0024
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025

14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0025
16	0.0031	0.0006	0.0025
17	0.0032	0.0006	0.0025
18	0.0032	0.0006	0.0025
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0033	0.0006	0.0026
27	0.0033	0.0006	0.0026
28	0.0033	0.0006	0.0026
29	0.0033	0.0006	0.0026
30	0.0033	0.0007	0.0027
31	0.0033	0.0007	0.0027
32	0.0033	0.0007	0.0027
33	0.0033	0.0007	0.0027
34	0.0034	0.0007	0.0027
35	0.0034	0.0007	0.0027
36	0.0034	0.0007	0.0027
37	0.0034	0.0007	0.0027
38	0.0034	0.0007	0.0027
39	0.0034	0.0007	0.0027
40	0.0034	0.0007	0.0028
41	0.0034	0.0007	0.0028
42	0.0035	0.0007	0.0028
43	0.0035	0.0007	0.0028
44	0.0035	0.0007	0.0028
45	0.0035	0.0007	0.0028
46	0.0035	0.0007	0.0028
47	0.0035	0.0007	0.0028
48	0.0035	0.0007	0.0028
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0029
55	0.0036	0.0007	0.0029
56	0.0037	0.0007	0.0029
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0038	0.0007	0.0030
63	0.0038	0.0007	0.0030
64	0.0038	0.0007	0.0030
65	0.0038	0.0007	0.0031
66	0.0038	0.0008	0.0031
67	0.0038	0.0008	0.0031
68	0.0039	0.0008	0.0031
69	0.0039	0.0008	0.0031
70	0.0039	0.0008	0.0031
71	0.0039	0.0008	0.0031
72	0.0039	0.0008	0.0032
73	0.0040	0.0008	0.0032
74	0.0040	0.0008	0.0032
75	0.0040	0.0008	0.0032
76	0.0040	0.0008	0.0032
77	0.0040	0.0008	0.0032
78	0.0040	0.0008	0.0032
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0033
82	0.0041	0.0008	0.0033
83	0.0042	0.0008	0.0033
84	0.0042	0.0008	0.0034

85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0034
88	0.0043	0.0008	0.0034
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0043	0.0009	0.0035
92	0.0044	0.0009	0.0035
93	0.0044	0.0009	0.0035
94	0.0044	0.0009	0.0035
95	0.0045	0.0009	0.0036
96	0.0045	0.0009	0.0036
97	0.0045	0.0009	0.0036
98	0.0045	0.0009	0.0036
99	0.0046	0.0009	0.0037
100	0.0046	0.0009	0.0037
101	0.0046	0.0009	0.0037
102	0.0046	0.0009	0.0037
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0047	0.0009	0.0038
106	0.0048	0.0009	0.0038
107	0.0048	0.0009	0.0039
108	0.0048	0.0010	0.0039
109	0.0049	0.0010	0.0039
110	0.0049	0.0010	0.0039
111	0.0049	0.0010	0.0040
112	0.0050	0.0010	0.0040
113	0.0050	0.0010	0.0040
114	0.0050	0.0010	0.0040
115	0.0051	0.0010	0.0041
116	0.0051	0.0010	0.0041
117	0.0052	0.0010	0.0041
118	0.0052	0.0010	0.0042
119	0.0052	0.0010	0.0042
120	0.0053	0.0010	0.0042
121	0.0053	0.0010	0.0043
122	0.0054	0.0011	0.0043
123	0.0054	0.0011	0.0044
124	0.0054	0.0011	0.0044
125	0.0055	0.0011	0.0044
126	0.0055	0.0011	0.0045
127	0.0056	0.0011	0.0045
128	0.0056	0.0011	0.0045
129	0.0057	0.0011	0.0046
130	0.0057	0.0011	0.0046
131	0.0058	0.0011	0.0047
132	0.0059	0.0012	0.0047
133	0.0059	0.0012	0.0048
134	0.0060	0.0012	0.0048
135	0.0060	0.0012	0.0049
136	0.0061	0.0012	0.0049
137	0.0062	0.0012	0.0050
138	0.0062	0.0012	0.0050
139	0.0063	0.0012	0.0051
140	0.0064	0.0013	0.0051
141	0.0064	0.0013	0.0052
142	0.0065	0.0013	0.0052
143	0.0066	0.0013	0.0053
144	0.0067	0.0013	0.0053
145	0.0085	0.0017	0.0068
146	0.0086	0.0017	0.0069
147	0.0087	0.0017	0.0070
148	0.0087	0.0017	0.0070
149	0.0089	0.0017	0.0071
150	0.0089	0.0018	0.0072
151	0.0091	0.0018	0.0073
152	0.0091	0.0018	0.0073
153	0.0093	0.0018	0.0074
154	0.0093	0.0018	0.0075
155	0.0095	0.0019	0.0076

156	0.0096	0.0019	0.0077
157	0.0098	0.0019	0.0078
158	0.0098	0.0019	0.0079
159	0.0100	0.0020	0.0081
160	0.0101	0.0020	0.0081
161	0.0103	0.0020	0.0083
162	0.0104	0.0021	0.0084
163	0.0106	0.0021	0.0085
164	0.0108	0.0021	0.0086
165	0.0110	0.0022	0.0088
166	0.0111	0.0022	0.0089
167	0.0114	0.0022	0.0092
168	0.0115	0.0023	0.0093
169	0.0118	0.0023	0.0095
170	0.0120	0.0024	0.0096
171	0.0124	0.0024	0.0099
172	0.0125	0.0025	0.0101
173	0.0129	0.0025	0.0104
174	0.0131	0.0026	0.0106
175	0.0136	0.0027	0.0109
176	0.0139	0.0027	0.0111
177	0.0144	0.0028	0.0116
178	0.0147	0.0029	0.0118
179	0.0154	0.0030	0.0123
180	0.0157	0.0031	0.0126
181	0.0166	0.0033	0.0133
182	0.0170	0.0034	0.0137
183	0.0181	0.0036	0.0145
184	0.0187	0.0037	0.0150
185	0.0155	0.0030	0.0124
186	0.0163	0.0032	0.0131
187	0.0185	0.0037	0.0149
188	0.0200	0.0039	0.0161
189	0.0241	0.0047	0.0194
190	0.0272	0.0054	0.0218
191	0.0389	0.0061	0.0328
192	0.0535	0.0061	0.0473
193	0.1673	0.0061	0.1612
194	0.0317	0.0061	0.0255
195	0.0218	0.0043	0.0175
196	0.0173	0.0034	0.0139
197	0.0194	0.0038	0.0156
198	0.0176	0.0035	0.0141
199	0.0161	0.0032	0.0130
200	0.0150	0.0030	0.0121
201	0.0141	0.0028	0.0113
202	0.0134	0.0026	0.0107
203	0.0127	0.0025	0.0102
204	0.0122	0.0024	0.0098
205	0.0117	0.0023	0.0094
206	0.0113	0.0022	0.0090
207	0.0109	0.0021	0.0087
208	0.0105	0.0021	0.0085
209	0.0102	0.0020	0.0082
210	0.0099	0.0020	0.0080
211	0.0097	0.0019	0.0078
212	0.0094	0.0019	0.0076
213	0.0092	0.0018	0.0074
214	0.0090	0.0018	0.0072
215	0.0088	0.0017	0.0071
216	0.0086	0.0017	0.0069
217	0.0067	0.0013	0.0054
218	0.0065	0.0013	0.0053
219	0.0064	0.0013	0.0051
220	0.0063	0.0012	0.0050
221	0.0061	0.0012	0.0049
222	0.0060	0.0012	0.0048
223	0.0059	0.0012	0.0047
224	0.0058	0.0011	0.0046
225	0.0057	0.0011	0.0046
226	0.0056	0.0011	0.0045

227	0.0055	0.0011	0.0044
228	0.0054	0.0011	0.0043
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0042
231	0.0051	0.0010	0.0041
232	0.0051	0.0010	0.0041
233	0.0050	0.0010	0.0040
234	0.0049	0.0010	0.0039
235	0.0048	0.0010	0.0039
236	0.0048	0.0009	0.0038
237	0.0047	0.0009	0.0038
238	0.0047	0.0009	0.0037
239	0.0046	0.0009	0.0037
240	0.0045	0.0009	0.0036
241	0.0045	0.0009	0.0036
242	0.0044	0.0009	0.0036
243	0.0044	0.0009	0.0035
244	0.0043	0.0009	0.0035
245	0.0043	0.0008	0.0034
246	0.0042	0.0008	0.0034
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0033
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0008	0.0032
252	0.0040	0.0008	0.0032
253	0.0039	0.0008	0.0032
254	0.0039	0.0008	0.0031
255	0.0039	0.0008	0.0031
256	0.0038	0.0008	0.0031
257	0.0038	0.0007	0.0030
258	0.0038	0.0007	0.0030
259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0029
262	0.0036	0.0007	0.0029
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0028
266	0.0035	0.0007	0.0028
267	0.0035	0.0007	0.0028
268	0.0035	0.0007	0.0028
269	0.0034	0.0007	0.0028
270	0.0034	0.0007	0.0027
271	0.0034	0.0007	0.0027
272	0.0034	0.0007	0.0027
273	0.0033	0.0007	0.0027
274	0.0033	0.0007	0.0027
275	0.0033	0.0006	0.0026
276	0.0033	0.0006	0.0026
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0032	0.0006	0.0025
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0031	0.0006	0.0025
287	0.0030	0.0006	0.0024
288	0.0030	0.0006	0.0024

Total soil rain loss = 0.37(In)
Total effective rainfall = 1.70(In)
Peak flow rate in flood hydrograph = 0.78(CFS)

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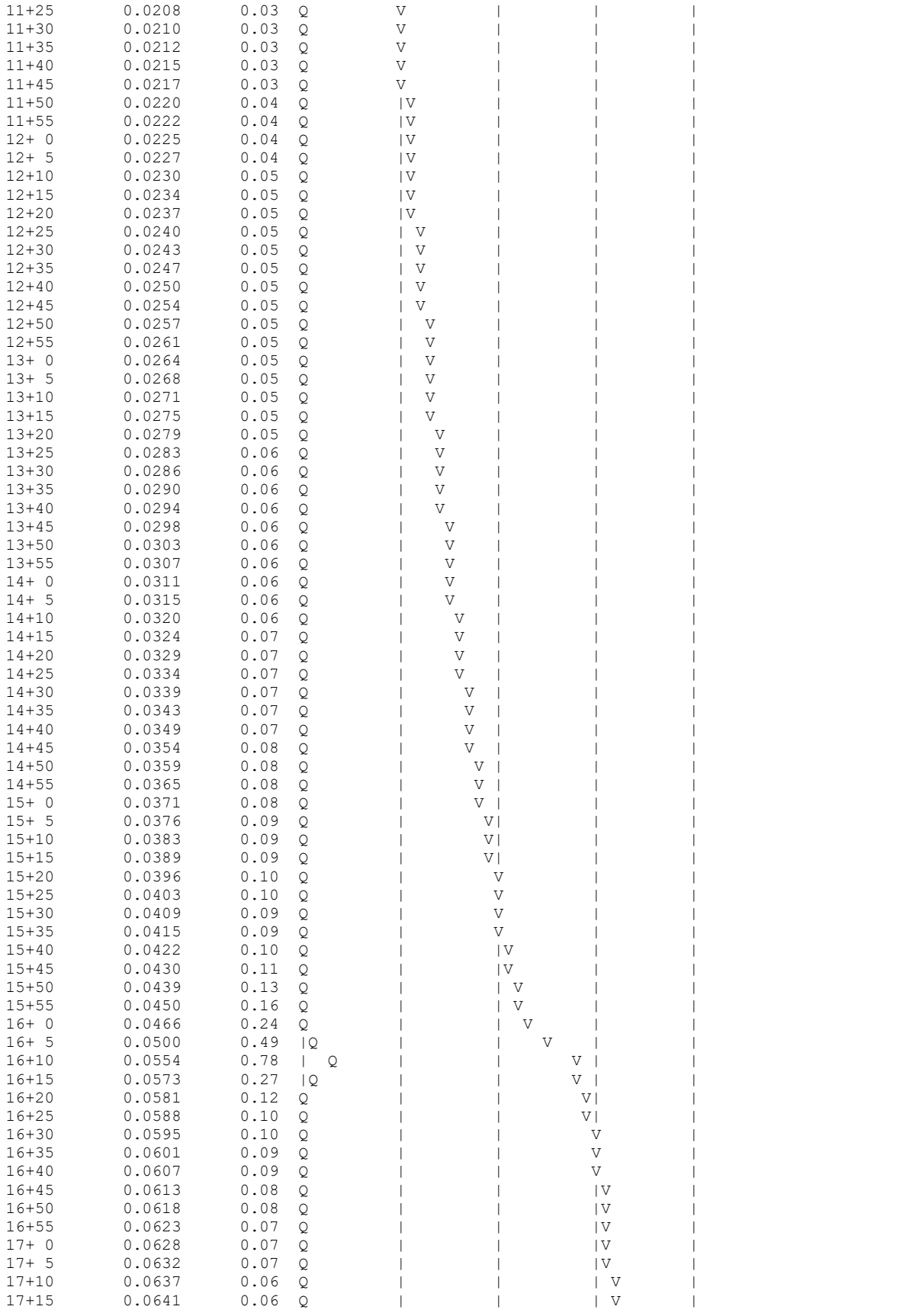
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0000	0.00	Q				
0+10	0.0001	0.01	Q				
0+15	0.0002	0.02	Q				
0+20	0.0004	0.02	Q				
0+25	0.0005	0.02	Q				
0+30	0.0006	0.02	Q				
0+35	0.0007	0.02	Q				
0+40	0.0008	0.02	Q				
0+45	0.0009	0.02	Q				
0+50	0.0010	0.02	Q				
0+55	0.0012	0.02	Q				
1+ 0	0.0013	0.02	Q				
1+ 5	0.0014	0.02	Q				
1+10	0.0015	0.02	Q				
1+15	0.0016	0.02	Q				
1+20	0.0017	0.02	Q				
1+25	0.0019	0.02	Q				
1+30	0.0020	0.02	Q				
1+35	0.0021	0.02	QV				
1+40	0.0022	0.02	QV				
1+45	0.0023	0.02	QV				
1+50	0.0025	0.02	QV				
1+55	0.0026	0.02	QV				
2+ 0	0.0027	0.02	QV				
2+ 5	0.0028	0.02	QV				
2+10	0.0029	0.02	QV				
2+15	0.0031	0.02	QV				
2+20	0.0032	0.02	QV				
2+25	0.0033	0.02	QV				
2+30	0.0034	0.02	QV				
2+35	0.0036	0.02	QV				
2+40	0.0037	0.02	QV				
2+45	0.0038	0.02	QV				
2+50	0.0039	0.02	QV				
2+55	0.0041	0.02	Q V				
3+ 0	0.0042	0.02	Q V				
3+ 5	0.0043	0.02	Q V				
3+10	0.0044	0.02	Q V				
3+15	0.0046	0.02	Q V				
3+20	0.0047	0.02	Q V				
3+25	0.0048	0.02	Q V				
3+30	0.0049	0.02	Q V				
3+35	0.0051	0.02	Q V				
3+40	0.0052	0.02	Q V				
3+45	0.0053	0.02	Q V				
3+50	0.0055	0.02	Q V				
3+55	0.0056	0.02	Q V				
4+ 0	0.0057	0.02	Q V				
4+ 5	0.0059	0.02	Q V				
4+10	0.0060	0.02	Q V				
4+15	0.0061	0.02	Q V				
4+20	0.0063	0.02	Q V				
4+25	0.0064	0.02	Q V				
4+30	0.0065	0.02	Q V				
4+35	0.0067	0.02	Q V				
4+40	0.0068	0.02	Q V				
4+45	0.0069	0.02	Q V				
4+50	0.0071	0.02	Q V				
4+55	0.0072	0.02	Q V				
5+ 0	0.0074	0.02	Q V				
5+ 5	0.0075	0.02	Q V				
5+10	0.0076	0.02	Q V				
5+15	0.0078	0.02	Q V				
5+20	0.0079	0.02	Q V				
5+25	0.0081	0.02	Q V				

5+30	0.0082	0.02	Q	V				
5+35	0.0083	0.02	Q	V				
5+40	0.0085	0.02	Q	V				
5+45	0.0086	0.02	Q	V				
5+50	0.0088	0.02	Q	V				
5+55	0.0089	0.02	Q	V				
6+ 0	0.0091	0.02	Q	V				
6+ 5	0.0092	0.02	Q	V				
6+10	0.0094	0.02	Q	V				
6+15	0.0095	0.02	Q	V				
6+20	0.0097	0.02	Q	V				
6+25	0.0098	0.02	Q	V				
6+30	0.0100	0.02	Q	V				
6+35	0.0101	0.02	Q	V				
6+40	0.0103	0.02	Q	V				
6+45	0.0104	0.02	Q	V				
6+50	0.0106	0.02	Q	V				
6+55	0.0107	0.02	Q	V				
7+ 0	0.0109	0.02	Q	V				
7+ 5	0.0110	0.02	Q	V				
7+10	0.0112	0.02	Q	V				
7+15	0.0114	0.02	Q	V				
7+20	0.0115	0.02	Q	V				
7+25	0.0117	0.02	Q	V				
7+30	0.0118	0.02	Q	V				
7+35	0.0120	0.02	Q	V				
7+40	0.0122	0.02	Q	V				
7+45	0.0123	0.02	Q	V				
7+50	0.0125	0.02	Q	V				
7+55	0.0127	0.02	Q	V				
8+ 0	0.0128	0.02	Q	V				
8+ 5	0.0130	0.02	Q	V				
8+10	0.0132	0.02	Q	V				
8+15	0.0133	0.02	Q	V				
8+20	0.0135	0.02	Q	V				
8+25	0.0137	0.02	Q	V				
8+30	0.0139	0.03	Q	V				
8+35	0.0140	0.03	Q	V				
8+40	0.0142	0.03	Q	V				
8+45	0.0144	0.03	Q	V				
8+50	0.0146	0.03	Q	V				
8+55	0.0147	0.03	Q	V				
9+ 0	0.0149	0.03	Q	V				
9+ 5	0.0151	0.03	Q	V				
9+10	0.0153	0.03	Q	V				
9+15	0.0155	0.03	Q	V				
9+20	0.0156	0.03	Q	V				
9+25	0.0158	0.03	Q	V				
9+30	0.0160	0.03	Q	V				
9+35	0.0162	0.03	Q	V				
9+40	0.0164	0.03	Q	V				
9+45	0.0166	0.03	Q	V				
9+50	0.0168	0.03	Q	V				
9+55	0.0170	0.03	Q	V				
10+ 0	0.0172	0.03	Q	V				
10+ 5	0.0174	0.03	Q	V				
10+10	0.0176	0.03	Q	V				
10+15	0.0178	0.03	Q	V				
10+20	0.0180	0.03	Q	V				
10+25	0.0182	0.03	Q	V				
10+30	0.0184	0.03	Q	V				
10+35	0.0186	0.03	Q	V				
10+40	0.0188	0.03	Q	V				
10+45	0.0190	0.03	Q	V				
10+50	0.0192	0.03	Q	V				
10+55	0.0194	0.03	Q	V				
11+ 0	0.0197	0.03	Q	V				
11+ 5	0.0199	0.03	Q	V				
11+10	0.0201	0.03	Q	V				
11+15	0.0203	0.03	Q	V				
11+20	0.0206	0.03	Q	V				



11+25	0.0208	0.03	Q	V				
11+30	0.0210	0.03	Q	V				
11+35	0.0212	0.03	Q	V				
11+40	0.0215	0.03	Q	V				
11+45	0.0217	0.03	Q	V				
11+50	0.0220	0.04	Q	|V				
11+55	0.0222	0.04	Q	|V				
12+ 0	0.0225	0.04	Q	|V				
12+ 5	0.0227	0.04	Q	|V				
12+10	0.0230	0.05	Q	|V				
12+15	0.0234	0.05	Q	|V				
12+20	0.0237	0.05	Q	|V				
12+25	0.0240	0.05	Q	| V				
12+30	0.0243	0.05	Q	| V				
12+35	0.0247	0.05	Q	| V				
12+40	0.0250	0.05	Q	| V				
12+45	0.0254	0.05	Q	| V				
12+50	0.0257	0.05	Q	| V				
12+55	0.0261	0.05	Q	| V				
13+ 0	0.0264	0.05	Q	| V				
13+ 5	0.0268	0.05	Q	| V				
13+10	0.0271	0.05	Q	| V				
13+15	0.0275	0.05	Q	| V				
13+20	0.0279	0.05	Q	| V				
13+25	0.0283	0.06	Q	| V				
13+30	0.0286	0.06	Q	| V				
13+35	0.0290	0.06	Q	| V				
13+40	0.0294	0.06	Q	| V				
13+45	0.0298	0.06	Q	| V				
13+50	0.0303	0.06	Q	| V				
13+55	0.0307	0.06	Q	| V				
14+ 0	0.0311	0.06	Q	| V				
14+ 5	0.0315	0.06	Q	| V				
14+10	0.0320	0.06	Q	| V				
14+15	0.0324	0.07	Q	| V				
14+20	0.0329	0.07	Q	| V				
14+25	0.0334	0.07	Q	| V				
14+30	0.0339	0.07	Q	| V				
14+35	0.0343	0.07	Q	| V				
14+40	0.0349	0.07	Q	| V				
14+45	0.0354	0.08	Q	| V				
14+50	0.0359	0.08	Q	| V				
14+55	0.0365	0.08	Q	| V				
15+ 0	0.0371	0.08	Q	| V				
15+ 5	0.0376	0.09	Q	| V				
15+10	0.0383	0.09	Q	| V				
15+15	0.0389	0.09	Q	| V				
15+20	0.0396	0.10	Q	| V				
15+25	0.0403	0.10	Q	| V				
15+30	0.0409	0.09	Q	| V				
15+35	0.0415	0.09	Q	| V				
15+40	0.0422	0.10	Q	| V				
15+45	0.0430	0.11	Q	| V				
15+50	0.0439	0.13	Q	| V				
15+55	0.0450	0.16	Q	| V				
16+ 0	0.0466	0.24	Q	| V				
16+ 5	0.0500	0.49	|Q	| V				
16+10	0.0554	0.78	| Q	| V				
16+15	0.0573	0.27	|Q	| V				
16+20	0.0581	0.12	Q	| V				
16+25	0.0588	0.10	Q	| V				
16+30	0.0595	0.10	Q	| V				
16+35	0.0601	0.09	Q	| V				
16+40	0.0607	0.09	Q	| V				
16+45	0.0613	0.08	Q	| V				
16+50	0.0618	0.08	Q	| V				
16+55	0.0623	0.07	Q	| V				
17+ 0	0.0628	0.07	Q	| V				
17+ 5	0.0632	0.07	Q	| V				
17+10	0.0637	0.06	Q	| V				
17+15	0.0641	0.06	Q	| V				

17+20	0.0645	0.06	Q	|	|	| V	|
17+25	0.0649	0.06	Q	|	|	| V	|
17+30	0.0653	0.06	Q	|	|	| V	|
17+35	0.0657	0.05	Q	|	|	| V	|
17+40	0.0660	0.05	Q	|	|	| V	|
17+45	0.0664	0.05	Q	|	|	| V	|
17+50	0.0667	0.05	Q	|	|	| V	|
17+55	0.0670	0.05	Q	|	|	| V	|
18+ 0	0.0674	0.05	Q	|	|	| V	|
18+ 5	0.0677	0.04	Q	|	|	| V	|
18+10	0.0679	0.04	Q	|	|	| V	|
18+15	0.0682	0.04	Q	|	|	| V	|
18+20	0.0684	0.03	Q	|	|	| V	|
18+25	0.0687	0.03	Q	|	|	| V	|
18+30	0.0689	0.03	Q	|	|	| V	|
18+35	0.0691	0.03	Q	|	|	| V	|
18+40	0.0693	0.03	Q	|	|	| V	|
18+45	0.0695	0.03	Q	|	|	| V	|
18+50	0.0698	0.03	Q	|	|	| V	|
18+55	0.0700	0.03	Q	|	|	| V	|
19+ 0	0.0702	0.03	Q	|	|	| V	|
19+ 5	0.0704	0.03	Q	|	|	| V	|
19+10	0.0706	0.03	Q	|	|	| V	|
19+15	0.0708	0.03	Q	|	|	| V	|
19+20	0.0710	0.03	Q	|	|	| V	|
19+25	0.0712	0.03	Q	|	|	| V	|
19+30	0.0713	0.03	Q	|	|	| V	|
19+35	0.0715	0.03	Q	|	|	| V	|
19+40	0.0717	0.03	Q	|	|	| V	|
19+45	0.0719	0.03	Q	|	|	| V	|
19+50	0.0721	0.03	Q	|	|	| V	|
19+55	0.0722	0.03	Q	|	|	| V	|
20+ 0	0.0724	0.02	Q	|	|	| V	|
20+ 5	0.0726	0.02	Q	|	|	| V	|
20+10	0.0727	0.02	Q	|	|	| V	|
20+15	0.0729	0.02	Q	|	|	| V	|
20+20	0.0731	0.02	Q	|	|	| V	|
20+25	0.0732	0.02	Q	|	|	| V	|
20+30	0.0734	0.02	Q	|	|	| V	|
20+35	0.0736	0.02	Q	|	|	| V	|
20+40	0.0737	0.02	Q	|	|	| V	|
20+45	0.0739	0.02	Q	|	|	| V	|
20+50	0.0740	0.02	Q	|	|	| V	|
20+55	0.0742	0.02	Q	|	|	| V	|
21+ 0	0.0743	0.02	Q	|	|	| V	|
21+ 5	0.0745	0.02	Q	|	|	| V	|
21+10	0.0746	0.02	Q	|	|	| V	|
21+15	0.0748	0.02	Q	|	|	| V	|
21+20	0.0749	0.02	Q	|	|	| V	|
21+25	0.0751	0.02	Q	|	|	| V	|
21+30	0.0752	0.02	Q	|	|	| V	|
21+35	0.0753	0.02	Q	|	|	| V	|
21+40	0.0755	0.02	Q	|	|	| V	|
21+45	0.0756	0.02	Q	|	|	| V	|
21+50	0.0757	0.02	Q	|	|	| V	|
21+55	0.0759	0.02	Q	|	|	| V	|
22+ 0	0.0760	0.02	Q	|	|	| V	|
22+ 5	0.0762	0.02	Q	|	|	| V	|
22+10	0.0763	0.02	Q	|	|	| V	|
22+15	0.0764	0.02	Q	|	|	| V	|
22+20	0.0765	0.02	Q	|	|	| V	|
22+25	0.0767	0.02	Q	|	|	| V	|
22+30	0.0768	0.02	Q	|	|	| V	|
22+35	0.0769	0.02	Q	|	|	| V	|
22+40	0.0771	0.02	Q	|	|	| V	|
22+45	0.0772	0.02	Q	|	|	| V	|
22+50	0.0773	0.02	Q	|	|	| V	|
22+55	0.0774	0.02	Q	|	|	| V	|
23+ 0	0.0776	0.02	Q	|	|	| V	|
23+ 5	0.0777	0.02	Q	|	|	| V	|
23+10	0.0778	0.02	Q	|	|	| V	|

23+15	0.0779	0.02	Q	|	|	|	V|
23+20	0.0780	0.02	Q	|	|	|	V|
23+25	0.0782	0.02	Q	|	|	|	V|
23+30	0.0783	0.02	Q	|	|	|	V|
23+35	0.0784	0.02	Q	|	|	|	V|
23+40	0.0785	0.02	Q	|	|	|	V|
23+45	0.0786	0.02	Q	|	|	|	V|
23+50	0.0787	0.02	Q	|	|	|	V|
23+55	0.0789	0.02	Q	|	|	|	V|
24+ 0	0.0790	0.02	Q	|	|	|	V|

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

Study date 09/30/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 1B (POC 1)
2 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA1BQ2.HCU

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	0.29	1	0.77
Rainfall data for year 2	0.29	6	1.16
Rainfall data for year 2	0.29	24	2.07
Rainfall data for year 100	0.29	1	1.22
Rainfall data for year 100	0.29	6	2.67
Rainfall data for year 100	0.29	24	4.89

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******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	36.0	0.29	1.000	0.951	0.100	0.095

Area-averaged adjusted loss rate Fm (In/Hr) = 0.095

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
0.03	0.100	56.0	36.0	10.35	0.000
0.26	0.900	98.0	98.0	0.20	0.891

Area-averaged catchment yield fraction, Y = 0.802
Area-averaged low loss fraction, Yb = 0.198
User entry of time of concentration = 0.101 (hours)
++
Watershed area = 0.29(Ac.)
Catchment Lag time = 0.081 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 103.1353
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.095(In/Hr)
Average low loss rate fraction (Yb) = 0.198 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.167(In)
Computed peak 30-minute rainfall = 0.343(In)
Specified peak 1-hour rainfall = 0.452(In)
Computed peak 3-hour rainfall = 0.806(In)
Specified peak 6-hour rainfall = 1.160(In)
Specified peak 24-hour rainfall = 2.070(In)

Rainfall depth area reduction factors:
Using a total area of 0.29(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.167(In)
30-minute factor = 1.000 Adjusted rainfall = 0.343(In)
1-hour factor = 1.000 Adjusted rainfall = 0.452(In)
3-hour factor = 1.000 Adjusted rainfall = 0.806(In)
6-hour factor = 1.000 Adjusted rainfall = 1.160(In)
24-hour factor = 1.000 Adjusted rainfall = 2.070(In)

U n i t H y d r o g r a p h
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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K =	3.51 (CFS))	
1	18.221	0.639
2	81.184	2.208
3	98.175	0.596
4	100.000	0.064

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1673	0.1673
2	0.2208	0.0535
3	0.2596	0.0389
4	0.2913	0.0317
5	0.3185	0.0272
6	0.3426	0.0241
7	0.3644	0.0218
8	0.3844	0.0200
9	0.4029	0.0185
10	0.4203	0.0173
11	0.4366	0.0163
12	0.4521	0.0155
13	0.4715	0.0194
14	0.4902	0.0187
15	0.5084	0.0181
16	0.5259	0.0176
17	0.5429	0.0170
18	0.5595	0.0166
19	0.5757	0.0161
20	0.5914	0.0157
21	0.6068	0.0154

22	0.6218	0.0150
23	0.6365	0.0147
24	0.6509	0.0144
25	0.6650	0.0141
26	0.6789	0.0139
27	0.6925	0.0136
28	0.7059	0.0134
29	0.7190	0.0131
30	0.7320	0.0129
31	0.7447	0.0127
32	0.7572	0.0125
33	0.7696	0.0124
34	0.7818	0.0122
35	0.7938	0.0120
36	0.8056	0.0118
37	0.8173	0.0117
38	0.8289	0.0115
39	0.8403	0.0114
40	0.8515	0.0113
41	0.8627	0.0111
42	0.8737	0.0110
43	0.8845	0.0109
44	0.8953	0.0108
45	0.9059	0.0106
46	0.9165	0.0105
47	0.9269	0.0104
48	0.9372	0.0103
49	0.9474	0.0102
50	0.9576	0.0101
51	0.9676	0.0100
52	0.9775	0.0099
53	0.9874	0.0098
54	0.9971	0.0098
55	1.0068	0.0097
56	1.0164	0.0096
57	1.0259	0.0095
58	1.0353	0.0094
59	1.0447	0.0093
60	1.0539	0.0093
61	1.0631	0.0092
62	1.0723	0.0091
63	1.0813	0.0091
64	1.0903	0.0090
65	1.0992	0.0089
66	1.1081	0.0089
67	1.1169	0.0088
68	1.1256	0.0087
69	1.1343	0.0087
70	1.1429	0.0086
71	1.1515	0.0086
72	1.1600	0.0085
73	1.1667	0.0067
74	1.1734	0.0067
75	1.1800	0.0066
76	1.1865	0.0065
77	1.1930	0.0065
78	1.1994	0.0064
79	1.2058	0.0064
80	1.2122	0.0064
81	1.2185	0.0063
82	1.2248	0.0063
83	1.2310	0.0062
84	1.2372	0.0062
85	1.2433	0.0061
86	1.2494	0.0061
87	1.2554	0.0060
88	1.2614	0.0060
89	1.2674	0.0060
90	1.2733	0.0059
91	1.2792	0.0059
92	1.2851	0.0059

93	1.2909	0.0058
94	1.2967	0.0058
95	1.3024	0.0057
96	1.3081	0.0057
97	1.3138	0.0057
98	1.3194	0.0056
99	1.3251	0.0056
100	1.3306	0.0056
101	1.3362	0.0055
102	1.3417	0.0055
103	1.3472	0.0055
104	1.3526	0.0054
105	1.3580	0.0054
106	1.3634	0.0054
107	1.3688	0.0054
108	1.3741	0.0053
109	1.3794	0.0053
110	1.3847	0.0053
111	1.3899	0.0052
112	1.3951	0.0052
113	1.4003	0.0052
114	1.4055	0.0052
115	1.4106	0.0051
116	1.4157	0.0051
117	1.4208	0.0051
118	1.4259	0.0051
119	1.4309	0.0050
120	1.4359	0.0050
121	1.4409	0.0050
122	1.4459	0.0050
123	1.4508	0.0049
124	1.4557	0.0049
125	1.4606	0.0049
126	1.4655	0.0049
127	1.4704	0.0048
128	1.4752	0.0048
129	1.4800	0.0048
130	1.4848	0.0048
131	1.4895	0.0048
132	1.4943	0.0047
133	1.4990	0.0047
134	1.5037	0.0047
135	1.5084	0.0047
136	1.5130	0.0047
137	1.5177	0.0046
138	1.5223	0.0046
139	1.5269	0.0046
140	1.5315	0.0046
141	1.5360	0.0046
142	1.5406	0.0045
143	1.5451	0.0045
144	1.5496	0.0045
145	1.5541	0.0045
146	1.5585	0.0045
147	1.5630	0.0045
148	1.5674	0.0044
149	1.5718	0.0044
150	1.5762	0.0044
151	1.5806	0.0044
152	1.5850	0.0044
153	1.5893	0.0043
154	1.5937	0.0043
155	1.5980	0.0043
156	1.6023	0.0043
157	1.6066	0.0043
158	1.6108	0.0043
159	1.6151	0.0043
160	1.6193	0.0042
161	1.6235	0.0042
162	1.6277	0.0042
163	1.6319	0.0042

164	1.6361	0.0042
165	1.6403	0.0042
166	1.6444	0.0041
167	1.6485	0.0041
168	1.6527	0.0041
169	1.6568	0.0041
170	1.6608	0.0041
171	1.6649	0.0041
172	1.6690	0.0041
173	1.6730	0.0040
174	1.6771	0.0040
175	1.6811	0.0040
176	1.6851	0.0040
177	1.6891	0.0040
178	1.6931	0.0040
179	1.6970	0.0040
180	1.7010	0.0040
181	1.7049	0.0039
182	1.7088	0.0039
183	1.7128	0.0039
184	1.7167	0.0039
185	1.7206	0.0039
186	1.7244	0.0039
187	1.7283	0.0039
188	1.7322	0.0039
189	1.7360	0.0038
190	1.7398	0.0038
191	1.7437	0.0038
192	1.7475	0.0038
193	1.7513	0.0038
194	1.7550	0.0038
195	1.7588	0.0038
196	1.7626	0.0038
197	1.7663	0.0038
198	1.7701	0.0037
199	1.7738	0.0037
200	1.7775	0.0037
201	1.7812	0.0037
202	1.7849	0.0037
203	1.7886	0.0037
204	1.7923	0.0037
205	1.7959	0.0037
206	1.7996	0.0037
207	1.8032	0.0036
208	1.8069	0.0036
209	1.8105	0.0036
210	1.8141	0.0036
211	1.8177	0.0036
212	1.8213	0.0036
213	1.8249	0.0036
214	1.8285	0.0036
215	1.8320	0.0036
216	1.8356	0.0036
217	1.8391	0.0035
218	1.8427	0.0035
219	1.8462	0.0035
220	1.8497	0.0035
221	1.8532	0.0035
222	1.8567	0.0035
223	1.8602	0.0035
224	1.8637	0.0035
225	1.8672	0.0035
226	1.8706	0.0035
227	1.8741	0.0035
228	1.8775	0.0034
229	1.8810	0.0034
230	1.8844	0.0034
231	1.8878	0.0034
232	1.8912	0.0034
233	1.8946	0.0034
234	1.8980	0.0034

235	1.9014	0.0034
236	1.9048	0.0034
237	1.9081	0.0034
238	1.9115	0.0034
239	1.9148	0.0034
240	1.9182	0.0033
241	1.9215	0.0033
242	1.9249	0.0033
243	1.9282	0.0033
244	1.9315	0.0033
245	1.9348	0.0033
246	1.9381	0.0033
247	1.9414	0.0033
248	1.9446	0.0033
249	1.9479	0.0033
250	1.9512	0.0033
251	1.9544	0.0033
252	1.9577	0.0032
253	1.9609	0.0032
254	1.9642	0.0032
255	1.9674	0.0032
256	1.9706	0.0032
257	1.9738	0.0032
258	1.9770	0.0032
259	1.9802	0.0032
260	1.9834	0.0032
261	1.9866	0.0032
262	1.9898	0.0032
263	1.9929	0.0032
264	1.9961	0.0032
265	1.9993	0.0032
266	2.0024	0.0031
267	2.0056	0.0031
268	2.0087	0.0031
269	2.0118	0.0031
270	2.0149	0.0031
271	2.0180	0.0031
272	2.0212	0.0031
273	2.0243	0.0031
274	2.0274	0.0031
275	2.0304	0.0031
276	2.0335	0.0031
277	2.0366	0.0031
278	2.0397	0.0031
279	2.0427	0.0031
280	2.0458	0.0031
281	2.0488	0.0030
282	2.0519	0.0030
283	2.0549	0.0030
284	2.0579	0.0030
285	2.0610	0.0030
286	2.0640	0.0030
287	2.0670	0.0030
288	2.0700	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0024
4	0.0030	0.0006	0.0024
5	0.0030	0.0006	0.0024
6	0.0030	0.0006	0.0024
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025

13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0025
16	0.0031	0.0006	0.0025
17	0.0032	0.0006	0.0025
18	0.0032	0.0006	0.0025
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0033	0.0006	0.0026
27	0.0033	0.0006	0.0026
28	0.0033	0.0007	0.0026
29	0.0033	0.0007	0.0026
30	0.0033	0.0007	0.0026
31	0.0033	0.0007	0.0027
32	0.0033	0.0007	0.0027
33	0.0033	0.0007	0.0027
34	0.0034	0.0007	0.0027
35	0.0034	0.0007	0.0027
36	0.0034	0.0007	0.0027
37	0.0034	0.0007	0.0027
38	0.0034	0.0007	0.0027
39	0.0034	0.0007	0.0027
40	0.0034	0.0007	0.0027
41	0.0034	0.0007	0.0028
42	0.0035	0.0007	0.0028
43	0.0035	0.0007	0.0028
44	0.0035	0.0007	0.0028
45	0.0035	0.0007	0.0028
46	0.0035	0.0007	0.0028
47	0.0035	0.0007	0.0028
48	0.0035	0.0007	0.0028
49	0.0036	0.0007	0.0028
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0029
55	0.0036	0.0007	0.0029
56	0.0037	0.0007	0.0029
57	0.0037	0.0007	0.0029
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0038	0.0007	0.0030
63	0.0038	0.0007	0.0030
64	0.0038	0.0008	0.0030
65	0.0038	0.0008	0.0031
66	0.0038	0.0008	0.0031
67	0.0038	0.0008	0.0031
68	0.0039	0.0008	0.0031
69	0.0039	0.0008	0.0031
70	0.0039	0.0008	0.0031
71	0.0039	0.0008	0.0031
72	0.0039	0.0008	0.0031
73	0.0040	0.0008	0.0032
74	0.0040	0.0008	0.0032
75	0.0040	0.0008	0.0032
76	0.0040	0.0008	0.0032
77	0.0040	0.0008	0.0032
78	0.0040	0.0008	0.0032
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0033
82	0.0041	0.0008	0.0033
83	0.0042	0.0008	0.0033

84	0.0042	0.0008	0.0033
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0034
88	0.0043	0.0008	0.0034
89	0.0043	0.0009	0.0034
90	0.0043	0.0009	0.0035
91	0.0043	0.0009	0.0035
92	0.0044	0.0009	0.0035
93	0.0044	0.0009	0.0035
94	0.0044	0.0009	0.0035
95	0.0045	0.0009	0.0036
96	0.0045	0.0009	0.0036
97	0.0045	0.0009	0.0036
98	0.0045	0.0009	0.0036
99	0.0046	0.0009	0.0037
100	0.0046	0.0009	0.0037
101	0.0046	0.0009	0.0037
102	0.0046	0.0009	0.0037
103	0.0047	0.0009	0.0037
104	0.0047	0.0009	0.0038
105	0.0047	0.0009	0.0038
106	0.0048	0.0009	0.0038
107	0.0048	0.0010	0.0039
108	0.0048	0.0010	0.0039
109	0.0049	0.0010	0.0039
110	0.0049	0.0010	0.0039
111	0.0049	0.0010	0.0040
112	0.0050	0.0010	0.0040
113	0.0050	0.0010	0.0040
114	0.0050	0.0010	0.0040
115	0.0051	0.0010	0.0041
116	0.0051	0.0010	0.0041
117	0.0052	0.0010	0.0041
118	0.0052	0.0010	0.0042
119	0.0052	0.0010	0.0042
120	0.0053	0.0010	0.0042
121	0.0053	0.0011	0.0043
122	0.0054	0.0011	0.0043
123	0.0054	0.0011	0.0043
124	0.0054	0.0011	0.0044
125	0.0055	0.0011	0.0044
126	0.0055	0.0011	0.0044
127	0.0056	0.0011	0.0045
128	0.0056	0.0011	0.0045
129	0.0057	0.0011	0.0046
130	0.0057	0.0011	0.0046
131	0.0058	0.0012	0.0047
132	0.0059	0.0012	0.0047
133	0.0059	0.0012	0.0048
134	0.0060	0.0012	0.0048
135	0.0060	0.0012	0.0048
136	0.0061	0.0012	0.0049
137	0.0062	0.0012	0.0049
138	0.0062	0.0012	0.0050
139	0.0063	0.0013	0.0051
140	0.0064	0.0013	0.0051
141	0.0064	0.0013	0.0052
142	0.0065	0.0013	0.0052
143	0.0066	0.0013	0.0053
144	0.0067	0.0013	0.0053
145	0.0085	0.0017	0.0068
146	0.0086	0.0017	0.0069
147	0.0087	0.0017	0.0070
148	0.0087	0.0017	0.0070
149	0.0089	0.0018	0.0071
150	0.0089	0.0018	0.0072
151	0.0091	0.0018	0.0073
152	0.0091	0.0018	0.0073
153	0.0093	0.0018	0.0074
154	0.0093	0.0019	0.0075

155	0.0095	0.0019	0.0076
156	0.0096	0.0019	0.0077
157	0.0098	0.0019	0.0078
158	0.0098	0.0020	0.0079
159	0.0100	0.0020	0.0080
160	0.0101	0.0020	0.0081
161	0.0103	0.0020	0.0083
162	0.0104	0.0021	0.0084
163	0.0106	0.0021	0.0085
164	0.0108	0.0021	0.0086
165	0.0110	0.0022	0.0088
166	0.0111	0.0022	0.0089
167	0.0114	0.0023	0.0091
168	0.0115	0.0023	0.0093
169	0.0118	0.0024	0.0095
170	0.0120	0.0024	0.0096
171	0.0124	0.0025	0.0099
172	0.0125	0.0025	0.0101
173	0.0129	0.0026	0.0104
174	0.0131	0.0026	0.0105
175	0.0136	0.0027	0.0109
176	0.0139	0.0027	0.0111
177	0.0144	0.0029	0.0116
178	0.0147	0.0029	0.0118
179	0.0154	0.0030	0.0123
180	0.0157	0.0031	0.0126
181	0.0166	0.0033	0.0133
182	0.0170	0.0034	0.0137
183	0.0181	0.0036	0.0145
184	0.0187	0.0037	0.0150
185	0.0155	0.0031	0.0124
186	0.0163	0.0032	0.0131
187	0.0185	0.0037	0.0149
188	0.0200	0.0040	0.0160
189	0.0241	0.0048	0.0193
190	0.0272	0.0054	0.0218
191	0.0389	0.0077	0.0312
192	0.0535	0.0079	0.0455
193	0.1673	0.0079	0.1594
194	0.0317	0.0063	0.0254
195	0.0218	0.0043	0.0175
196	0.0173	0.0034	0.0139
197	0.0194	0.0039	0.0156
198	0.0176	0.0035	0.0141
199	0.0161	0.0032	0.0129
200	0.0150	0.0030	0.0120
201	0.0141	0.0028	0.0113
202	0.0134	0.0027	0.0107
203	0.0127	0.0025	0.0102
204	0.0122	0.0024	0.0098
205	0.0117	0.0023	0.0094
206	0.0113	0.0022	0.0090
207	0.0109	0.0022	0.0087
208	0.0105	0.0021	0.0084
209	0.0102	0.0020	0.0082
210	0.0099	0.0020	0.0080
211	0.0097	0.0019	0.0078
212	0.0094	0.0019	0.0076
213	0.0092	0.0018	0.0074
214	0.0090	0.0018	0.0072
215	0.0088	0.0017	0.0071
216	0.0086	0.0017	0.0069
217	0.0067	0.0013	0.0054
218	0.0065	0.0013	0.0052
219	0.0064	0.0013	0.0051
220	0.0063	0.0012	0.0050
221	0.0061	0.0012	0.0049
222	0.0060	0.0012	0.0048
223	0.0059	0.0012	0.0047
224	0.0058	0.0011	0.0046
225	0.0057	0.0011	0.0045

226	0.0056	0.0011	0.0045
227	0.0055	0.0011	0.0044
228	0.0054	0.0011	0.0043
229	0.0053	0.0011	0.0042
230	0.0052	0.0010	0.0042
231	0.0051	0.0010	0.0041
232	0.0051	0.0010	0.0041
233	0.0050	0.0010	0.0040
234	0.0049	0.0010	0.0039
235	0.0048	0.0010	0.0039
236	0.0048	0.0009	0.0038
237	0.0047	0.0009	0.0038
238	0.0047	0.0009	0.0037
239	0.0046	0.0009	0.0037
240	0.0045	0.0009	0.0036
241	0.0045	0.0009	0.0036
242	0.0044	0.0009	0.0036
243	0.0044	0.0009	0.0035
244	0.0043	0.0009	0.0035
245	0.0043	0.0008	0.0034
246	0.0042	0.0008	0.0034
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0033
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0008	0.0032
252	0.0040	0.0008	0.0032
253	0.0039	0.0008	0.0032
254	0.0039	0.0008	0.0031
255	0.0039	0.0008	0.0031
256	0.0038	0.0008	0.0031
257	0.0038	0.0008	0.0030
258	0.0038	0.0007	0.0030
259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0029
262	0.0036	0.0007	0.0029
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0028
266	0.0035	0.0007	0.0028
267	0.0035	0.0007	0.0028
268	0.0035	0.0007	0.0028
269	0.0034	0.0007	0.0028
270	0.0034	0.0007	0.0027
271	0.0034	0.0007	0.0027
272	0.0034	0.0007	0.0027
273	0.0033	0.0007	0.0027
274	0.0033	0.0007	0.0027
275	0.0033	0.0007	0.0026
276	0.0033	0.0006	0.0026
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0025
281	0.0032	0.0006	0.0025
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0031	0.0006	0.0024
287	0.0030	0.0006	0.0024
288	0.0030	0.0006	0.0024

Total soil rain loss = 0.38(In)
Total effective rainfall = 1.69(In)
Peak flow rate in flood hydrograph = 0.40(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

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	0.0000	0.00	Q				
0+10	0.0001	0.01	Q				
0+15	0.0001	0.01	Q				
0+20	0.0002	0.01	Q				
0+25	0.0002	0.01	Q				
0+30	0.0003	0.01	Q				
0+35	0.0004	0.01	Q				
0+40	0.0004	0.01	Q				
0+45	0.0005	0.01	Q				
0+50	0.0005	0.01	Q				
0+55	0.0006	0.01	Q				
1+ 0	0.0006	0.01	Q				
1+ 5	0.0007	0.01	Q				
1+10	0.0008	0.01	Q				
1+15	0.0008	0.01	Q				
1+20	0.0009	0.01	Q				
1+25	0.0010	0.01	Q				
1+30	0.0010	0.01	Q				
1+35	0.0011	0.01	QV				
1+40	0.0011	0.01	QV				
1+45	0.0012	0.01	QV				
1+50	0.0013	0.01	QV				
1+55	0.0013	0.01	QV				
2+ 0	0.0014	0.01	QV				
2+ 5	0.0014	0.01	QV				
2+10	0.0015	0.01	QV				
2+15	0.0016	0.01	QV				
2+20	0.0016	0.01	QV				
2+25	0.0017	0.01	QV				
2+30	0.0018	0.01	QV				
2+35	0.0018	0.01	QV				
2+40	0.0019	0.01	QV				
2+45	0.0020	0.01	QV				
2+50	0.0020	0.01	QV				
2+55	0.0021	0.01	Q V				
3+ 0	0.0022	0.01	Q V				
3+ 5	0.0022	0.01	Q V				
3+10	0.0023	0.01	Q V				
3+15	0.0023	0.01	Q V				
3+20	0.0024	0.01	Q V				
3+25	0.0025	0.01	Q V				
3+30	0.0025	0.01	Q V				
3+35	0.0026	0.01	Q V				
3+40	0.0027	0.01	Q V				
3+45	0.0027	0.01	Q V				
3+50	0.0028	0.01	Q V				
3+55	0.0029	0.01	Q V				
4+ 0	0.0030	0.01	Q V				
4+ 5	0.0030	0.01	Q V				
4+10	0.0031	0.01	Q V				
4+15	0.0032	0.01	Q V				
4+20	0.0032	0.01	Q V				
4+25	0.0033	0.01	Q V				
4+30	0.0034	0.01	Q V				
4+35	0.0034	0.01	Q V				
4+40	0.0035	0.01	Q V				
4+45	0.0036	0.01	Q V				
4+50	0.0037	0.01	Q V				
4+55	0.0037	0.01	Q V				
5+ 0	0.0038	0.01	Q V				
5+ 5	0.0039	0.01	Q V				
5+10	0.0039	0.01	Q V				
5+15	0.0040	0.01	Q V				
5+20	0.0041	0.01	Q V				

5+25	0.0042	0.01	Q	V				
5+30	0.0042	0.01	Q	V				
5+35	0.0043	0.01	Q	V				
5+40	0.0044	0.01	Q	V				
5+45	0.0045	0.01	Q	V				
5+50	0.0045	0.01	Q	V				
5+55	0.0046	0.01	Q	V				
6+ 0	0.0047	0.01	Q	V				
6+ 5	0.0048	0.01	Q	V				
6+10	0.0048	0.01	Q	V				
6+15	0.0049	0.01	Q	V				
6+20	0.0050	0.01	Q	V				
6+25	0.0051	0.01	Q	V				
6+30	0.0051	0.01	Q	V				
6+35	0.0052	0.01	Q	V				
6+40	0.0053	0.01	Q	V				
6+45	0.0054	0.01	Q	V				
6+50	0.0055	0.01	Q	V				
6+55	0.0055	0.01	Q	V				
7+ 0	0.0056	0.01	Q	V				
7+ 5	0.0057	0.01	Q	V				
7+10	0.0058	0.01	Q	V				
7+15	0.0059	0.01	Q	V				
7+20	0.0059	0.01	Q	V				
7+25	0.0060	0.01	Q	V				
7+30	0.0061	0.01	Q	V				
7+35	0.0062	0.01	Q	V				
7+40	0.0063	0.01	Q	V				
7+45	0.0064	0.01	Q	V				
7+50	0.0064	0.01	Q	V				
7+55	0.0065	0.01	Q	V				
8+ 0	0.0066	0.01	Q	V				
8+ 5	0.0067	0.01	Q	V				
8+10	0.0068	0.01	Q	V				
8+15	0.0069	0.01	Q	V				
8+20	0.0070	0.01	Q	V				
8+25	0.0071	0.01	Q	V				
8+30	0.0071	0.01	Q	V				
8+35	0.0072	0.01	Q	V				
8+40	0.0073	0.01	Q	V				
8+45	0.0074	0.01	Q	V				
8+50	0.0075	0.01	Q	V				
8+55	0.0076	0.01	Q	V				
9+ 0	0.0077	0.01	Q	V				
9+ 5	0.0078	0.01	Q	V				
9+10	0.0079	0.01	Q	V				
9+15	0.0080	0.01	Q	V				
9+20	0.0081	0.01	Q	V				
9+25	0.0082	0.01	Q	V				
9+30	0.0083	0.01	Q	V				
9+35	0.0084	0.01	Q	V				
9+40	0.0085	0.01	Q	V				
9+45	0.0086	0.01	Q	V				
9+50	0.0087	0.01	Q	V				
9+55	0.0088	0.01	Q	V				
10+ 0	0.0089	0.01	Q	V				
10+ 5	0.0090	0.01	Q	V				
10+10	0.0091	0.01	Q	V				
10+15	0.0092	0.02	Q	V				
10+20	0.0093	0.02	Q	V				
10+25	0.0094	0.02	Q	V				
10+30	0.0095	0.02	Q	V				
10+35	0.0096	0.02	Q	V				
10+40	0.0097	0.02	Q	V				
10+45	0.0098	0.02	Q	V				
10+50	0.0099	0.02	Q	V				
10+55	0.0100	0.02	Q	V				
11+ 0	0.0101	0.02	Q	V				
11+ 5	0.0103	0.02	Q	V				
11+10	0.0104	0.02	Q	V				
11+15	0.0105	0.02	Q	V				

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11+20       0.0106      0.02  Q         V         |         |         |
11+25       0.0107      0.02  Q         V         |         |         |
11+30       0.0108      0.02  Q         V         |         |         |
11+35       0.0110      0.02  Q         V         |         |         |
11+40       0.0111      0.02  Q         V         |         |         |
11+45       0.0112      0.02  Q         |V        |         |         |
11+50       0.0113      0.02  Q         |V        |         |         |
11+55       0.0115      0.02  Q         |V        |         |         |
12+ 0       0.0116      0.02  Q         |V        |         |         |
12+ 5       0.0117      0.02  Q         |V        |         |         |
12+10       0.0119      0.02  Q         |V        |         |         |
12+15       0.0120      0.02  Q         |V        |         |         |
12+20       0.0122      0.02  Q         |V        |         |         |
12+25       0.0124      0.02  Q         | V       |         |         |
12+30       0.0126      0.02  Q         | V       |         |         |
12+35       0.0127      0.03  Q         | V       |         |         |
12+40       0.0129      0.03  Q         | V       |         |         |
12+45       0.0131      0.03  Q         | V       |         |         |
12+50       0.0133      0.03  Q         |  V      |         |         |
12+55       0.0134      0.03  Q         |  V      |         |         |
13+ 0       0.0136      0.03  Q         |  V      |         |         |
13+ 5       0.0138      0.03  Q         |  V      |         |         |
13+10       0.0140      0.03  Q         |  V      |         |         |
13+15       0.0142      0.03  Q         |  V      |         |         |
13+20       0.0144      0.03  Q         |   V     |         |         |
13+25       0.0146      0.03  Q         |   V     |         |         |
13+30       0.0148      0.03  Q         |   V     |         |         |
13+35       0.0150      0.03  Q         |   V     |         |         |
13+40       0.0152      0.03  Q         |   V     |         |         |
13+45       0.0154      0.03  Q         |    V    |         |         |
13+50       0.0156      0.03  Q         |    V    |         |         |
13+55       0.0158      0.03  Q         |    V    |         |         |
14+ 0       0.0160      0.03  Q         |    V    |         |         |
14+ 5       0.0163      0.03  Q         |    V    |         |         |
14+10       0.0165      0.03  Q         |     V   |         |         |
14+15       0.0167      0.03  Q         |     V   |         |         |
14+20       0.0170      0.03  Q         |     V   |         |         |
14+25       0.0172      0.04  Q         |     V   |         |         |
14+30       0.0175      0.04  Q         |      V  |         |         |
14+35       0.0177      0.04  Q         |      V  |         |         |
14+40       0.0180      0.04  Q         |      V  |         |         |
14+45       0.0183      0.04  Q         |      V  |         |         |
14+50       0.0185      0.04  Q         |       V |         |         |
14+55       0.0188      0.04  Q         |       V |         |         |
15+ 0       0.0191      0.04  Q         |       V |         |         |
15+ 5       0.0194      0.04  Q         |        V|         |         |
15+10       0.0197      0.05  Q         |        V|         |         |
15+15       0.0201      0.05  Q         |        V|         |         |
15+20       0.0204      0.05  Q         |         V         |         |
15+25       0.0208      0.05  Q         |         V         |         |
15+30       0.0211      0.05  Q         |         V         |         |
15+35       0.0214      0.05  Q         |         |V        |         |
15+40       0.0218      0.05  Q         |         |V        |         |
15+45       0.0222      0.06  Q         |         |V        |         |
15+50       0.0226      0.07  Q         |         | V       |         |
15+55       0.0232      0.08  Q         |         | V       |         |
16+ 0       0.0239      0.11  Q         |         |  V      |         |
16+ 5       0.0255      0.22  Q         |         |    V    |         |
16+10       0.0282      0.40  |Q        |         |      V  |         |
16+15       0.0293      0.17  Q         |         |       V |         |
16+20       0.0299      0.07  Q         |         |        V|         |
16+25       0.0302      0.05  Q         |         |        V|         |
16+30       0.0306      0.05  Q         |         |         V         |
16+35       0.0309      0.05  Q         |         |         V         |
16+40       0.0312      0.05  Q         |         |         V         |
16+45       0.0315      0.04  Q         |         |         V         |
16+50       0.0318      0.04  Q         |         |         |V        |
16+55       0.0321      0.04  Q         |         |         |V        |
17+ 0       0.0323      0.04  Q         |         |         |V        |
17+ 5       0.0325      0.03  Q         |         |         |V        |
17+10       0.0328      0.03  Q         |         |         | V       |
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17+15       0.0330      0.03  Q         |          |          | V        |
17+20       0.0332      0.03  Q         |          |          | V        |
17+25       0.0334      0.03  Q         |          |          | V        |
17+30       0.0336      0.03  Q         |          |          | V        |
17+35       0.0338      0.03  Q         |          |          |  V       |
17+40       0.0340      0.03  Q         |          |          |  V       |
17+45       0.0342      0.03  Q         |          |          |  V       |
17+50       0.0343      0.03  Q         |          |          |  V       |
17+55       0.0345      0.03  Q         |          |          |  V       |
18+ 0       0.0347      0.02  Q         |          |          |   V      |
18+ 5       0.0348      0.02  Q         |          |          |   V      |
18+10       0.0350      0.02  Q         |          |          |   V      |
18+15       0.0351      0.02  Q         |          |          |   V      |
18+20       0.0352      0.02  Q         |          |          |   V      |
18+25       0.0354      0.02  Q         |          |          |   V      |
18+30       0.0355      0.02  Q         |          |          |   V      |
18+35       0.0356      0.02  Q         |          |          |   V      |
18+40       0.0357      0.02  Q         |          |          |    V     |
18+45       0.0358      0.02  Q         |          |          |    V     |
18+50       0.0359      0.02  Q         |          |          |    V     |
18+55       0.0360      0.02  Q         |          |          |    V     |
19+ 0       0.0361      0.02  Q         |          |          |    V     |
19+ 5       0.0362      0.02  Q         |          |          |    V     |
19+10       0.0363      0.01  Q         |          |          |    V     |
19+15       0.0365      0.01  Q         |          |          |    V     |
19+20       0.0365      0.01  Q         |          |          |    V     |
19+25       0.0366      0.01  Q         |          |          |    V     |
19+30       0.0367      0.01  Q         |          |          |     V    |
19+35       0.0368      0.01  Q         |          |          |     V    |
19+40       0.0369      0.01  Q         |          |          |     V    |
19+45       0.0370      0.01  Q         |          |          |     V    |
19+50       0.0371      0.01  Q         |          |          |     V    |
19+55       0.0372      0.01  Q         |          |          |     V    |
20+ 0       0.0373      0.01  Q         |          |          |     V    |
20+ 5       0.0374      0.01  Q         |          |          |     V    |
20+10       0.0375      0.01  Q         |          |          |     V    |
20+15       0.0376      0.01  Q         |          |          |     V    |
20+20       0.0376      0.01  Q         |          |          |     V    |
20+25       0.0377      0.01  Q         |          |          |      V   |
20+30       0.0378      0.01  Q         |          |          |      V   |
20+35       0.0379      0.01  Q         |          |          |      V   |
20+40       0.0380      0.01  Q         |          |          |      V   |
20+45       0.0381      0.01  Q         |          |          |      V   |
20+50       0.0381      0.01  Q         |          |          |      V   |
20+55       0.0382      0.01  Q         |          |          |      V   |
21+ 0       0.0383      0.01  Q         |          |          |      V   |
21+ 5       0.0384      0.01  Q         |          |          |      V   |
21+10       0.0384      0.01  Q         |          |          |      V   |
21+15       0.0385      0.01  Q         |          |          |      V   |
21+20       0.0386      0.01  Q         |          |          |      V   |
21+25       0.0387      0.01  Q         |          |          |      V   |
21+30       0.0387      0.01  Q         |          |          |       V  |
21+35       0.0388      0.01  Q         |          |          |       V  |
21+40       0.0389      0.01  Q         |          |          |       V  |
21+45       0.0390      0.01  Q         |          |          |       V  |
21+50       0.0390      0.01  Q         |          |          |       V  |
21+55       0.0391      0.01  Q         |          |          |       V  |
22+ 0       0.0392      0.01  Q         |          |          |       V  |
22+ 5       0.0392      0.01  Q         |          |          |       V  |
22+10       0.0393      0.01  Q         |          |          |       V  |
22+15       0.0394      0.01  Q         |          |          |       V  |
22+20       0.0394      0.01  Q         |          |          |       V  |
22+25       0.0395      0.01  Q         |          |          |       V  |
22+30       0.0396      0.01  Q         |          |          |       V  |
22+35       0.0396      0.01  Q         |          |          |       V  |
22+40       0.0397      0.01  Q         |          |          |       V  |
22+45       0.0398      0.01  Q         |          |          |        V |
22+50       0.0398      0.01  Q         |          |          |        V |
22+55       0.0399      0.01  Q         |          |          |        V |
23+ 0       0.0400      0.01  Q         |          |          |        V |
23+ 5       0.0400      0.01  Q         |          |          |        V |
```

23+10	0.0401	0.01	Q	|	|	|	V|
23+15	0.0402	0.01	Q	|	|	|	V|
23+20	0.0402	0.01	Q	|	|	|	V|
23+25	0.0403	0.01	Q	|	|	|	V|
23+30	0.0403	0.01	Q	|	|	|	V|
23+35	0.0404	0.01	Q	|	|	|	V|
23+40	0.0405	0.01	Q	|	|	|	V|
23+45	0.0405	0.01	Q	|	|	|	V|
23+50	0.0406	0.01	Q	|	|	|	V|
23+55	0.0406	0.01	Q	|	|	|	V|
24+ 0	0.0407	0.01	Q	|	|	|	V|

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

Study date 09/30/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 1C (POC 1)
2 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA1CQ2.HCU

Storm Event Year = 2

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1.71	1	0.77
Rainfall data for year 2		
1.71	6	1.16
Rainfall data for year 2		
1.71	24	2.07
Rainfall data for year 100		
1.71	1	1.22
Rainfall data for year 100		
1.71	6	2.67
Rainfall data for year 100		
1.71	24	4.89

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	56.0	1.71	1.000	0.734	0.100	0.073

Area-averaged adjusted loss rate Fm (In/Hr) = 0.073

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.17	0.100	56.0	56.0	7.86	0.014
1.54	0.900	98.0	98.0	0.20	0.891

Area-averaged catchment yield fraction, Y = 0.803
Area-averaged low loss fraction, Yb = 0.197
User entry of time of concentration = 0.094 (hours)
++
Watershed area = 1.71(Ac.)
Catchment Lag time = 0.075 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 110.8156
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.073(In/Hr)
Average low loss rate fraction (Yb) = 0.197 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.167(In)
Computed peak 30-minute rainfall = 0.343(In)
Specified peak 1-hour rainfall = 0.452(In)
Computed peak 3-hour rainfall = 0.806(In)
Specified peak 6-hour rainfall = 1.160(In)
Specified peak 24-hour rainfall = 2.070(In)

Rainfall depth area reduction factors:
Using a total area of 1.71(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.167(In)
30-minute factor = 1.000 Adjusted rainfall = 0.343(In)
1-hour factor = 1.000 Adjusted rainfall = 0.452(In)
3-hour factor = 1.000 Adjusted rainfall = 0.806(In)
6-hour factor = 1.000 Adjusted rainfall = 1.160(In)
24-hour factor = 1.000 Adjusted rainfall = 2.070(In)

U n i t H y d r o g r a p h
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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 20.68 (CFS))	
1	20.805	4.303
2	85.060	13.288
3	98.725	2.826
4	100.000	0.264

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1673	0.1673
2	0.2208	0.0535
3	0.2596	0.0389
4	0.2913	0.0317
5	0.3185	0.0272
6	0.3426	0.0241
7	0.3644	0.0218
8	0.3844	0.0200
9	0.4029	0.0185
10	0.4202	0.0173
11	0.4366	0.0163
12	0.4520	0.0155
13	0.4715	0.0194
14	0.4902	0.0187
15	0.5083	0.0181
16	0.5259	0.0176
17	0.5429	0.0170
18	0.5595	0.0166
19	0.5756	0.0161
20	0.5914	0.0157
21	0.6067	0.0154

22	0.6218	0.0150
23	0.6365	0.0147
24	0.6509	0.0144
25	0.6650	0.0141
26	0.6789	0.0139
27	0.6925	0.0136
28	0.7059	0.0134
29	0.7190	0.0131
30	0.7320	0.0129
31	0.7447	0.0127
32	0.7572	0.0125
33	0.7696	0.0124
34	0.7818	0.0122
35	0.7938	0.0120
36	0.8056	0.0118
37	0.8173	0.0117
38	0.8289	0.0115
39	0.8403	0.0114
40	0.8515	0.0113
41	0.8627	0.0111
42	0.8737	0.0110
43	0.8845	0.0109
44	0.8953	0.0108
45	0.9059	0.0106
46	0.9165	0.0105
47	0.9269	0.0104
48	0.9372	0.0103
49	0.9474	0.0102
50	0.9576	0.0101
51	0.9676	0.0100
52	0.9775	0.0099
53	0.9874	0.0098
54	0.9971	0.0098
55	1.0068	0.0097
56	1.0164	0.0096
57	1.0259	0.0095
58	1.0353	0.0094
59	1.0447	0.0094
60	1.0539	0.0093
61	1.0631	0.0092
62	1.0723	0.0091
63	1.0813	0.0091
64	1.0903	0.0090
65	1.0992	0.0089
66	1.1081	0.0089
67	1.1169	0.0088
68	1.1256	0.0087
69	1.1343	0.0087
70	1.1429	0.0086
71	1.1515	0.0086
72	1.1600	0.0085
73	1.1667	0.0067
74	1.1733	0.0067
75	1.1799	0.0066
76	1.1865	0.0065
77	1.1930	0.0065
78	1.1994	0.0064
79	1.2058	0.0064
80	1.2122	0.0064
81	1.2185	0.0063
82	1.2248	0.0063
83	1.2310	0.0062
84	1.2372	0.0062
85	1.2433	0.0061
86	1.2494	0.0061
87	1.2554	0.0060
88	1.2614	0.0060
89	1.2674	0.0060
90	1.2733	0.0059
91	1.2792	0.0059
92	1.2851	0.0059

93	1.2909	0.0058
94	1.2967	0.0058
95	1.3024	0.0057
96	1.3081	0.0057
97	1.3138	0.0057
98	1.3194	0.0056
99	1.3251	0.0056
100	1.3306	0.0056
101	1.3362	0.0055
102	1.3417	0.0055
103	1.3472	0.0055
104	1.3526	0.0054
105	1.3580	0.0054
106	1.3634	0.0054
107	1.3688	0.0054
108	1.3741	0.0053
109	1.3794	0.0053
110	1.3847	0.0053
111	1.3899	0.0052
112	1.3951	0.0052
113	1.4003	0.0052
114	1.4055	0.0052
115	1.4106	0.0051
116	1.4157	0.0051
117	1.4208	0.0051
118	1.4259	0.0051
119	1.4309	0.0050
120	1.4359	0.0050
121	1.4409	0.0050
122	1.4459	0.0050
123	1.4508	0.0049
124	1.4557	0.0049
125	1.4606	0.0049
126	1.4655	0.0049
127	1.4703	0.0048
128	1.4752	0.0048
129	1.4800	0.0048
130	1.4848	0.0048
131	1.4895	0.0048
132	1.4943	0.0047
133	1.4990	0.0047
134	1.5037	0.0047
135	1.5084	0.0047
136	1.5130	0.0047
137	1.5176	0.0046
138	1.5223	0.0046
139	1.5269	0.0046
140	1.5314	0.0046
141	1.5360	0.0046
142	1.5405	0.0045
143	1.5451	0.0045
144	1.5496	0.0045
145	1.5541	0.0045
146	1.5585	0.0045
147	1.5630	0.0045
148	1.5674	0.0044
149	1.5718	0.0044
150	1.5762	0.0044
151	1.5806	0.0044
152	1.5850	0.0044
153	1.5893	0.0043
154	1.5937	0.0043
155	1.5980	0.0043
156	1.6023	0.0043
157	1.6065	0.0043
158	1.6108	0.0043
159	1.6151	0.0043
160	1.6193	0.0042
161	1.6235	0.0042
162	1.6277	0.0042
163	1.6319	0.0042

164	1.6361	0.0042
165	1.6403	0.0042
166	1.6444	0.0041
167	1.6485	0.0041
168	1.6526	0.0041
169	1.6567	0.0041
170	1.6608	0.0041
171	1.6649	0.0041
172	1.6690	0.0041
173	1.6730	0.0040
174	1.6771	0.0040
175	1.6811	0.0040
176	1.6851	0.0040
177	1.6891	0.0040
178	1.6931	0.0040
179	1.6970	0.0040
180	1.7010	0.0040
181	1.7049	0.0039
182	1.7088	0.0039
183	1.7128	0.0039
184	1.7167	0.0039
185	1.7206	0.0039
186	1.7244	0.0039
187	1.7283	0.0039
188	1.7322	0.0039
189	1.7360	0.0038
190	1.7398	0.0038
191	1.7436	0.0038
192	1.7475	0.0038
193	1.7513	0.0038
194	1.7550	0.0038
195	1.7588	0.0038
196	1.7626	0.0038
197	1.7663	0.0038
198	1.7701	0.0037
199	1.7738	0.0037
200	1.7775	0.0037
201	1.7812	0.0037
202	1.7849	0.0037
203	1.7886	0.0037
204	1.7923	0.0037
205	1.7959	0.0037
206	1.7996	0.0037
207	1.8032	0.0036
208	1.8069	0.0036
209	1.8105	0.0036
210	1.8141	0.0036
211	1.8177	0.0036
212	1.8213	0.0036
213	1.8249	0.0036
214	1.8285	0.0036
215	1.8320	0.0036
216	1.8356	0.0036
217	1.8391	0.0035
218	1.8427	0.0035
219	1.8462	0.0035
220	1.8497	0.0035
221	1.8532	0.0035
222	1.8567	0.0035
223	1.8602	0.0035
224	1.8637	0.0035
225	1.8672	0.0035
226	1.8706	0.0035
227	1.8741	0.0035
228	1.8775	0.0034
229	1.8810	0.0034
230	1.8844	0.0034
231	1.8878	0.0034
232	1.8912	0.0034
233	1.8946	0.0034
234	1.8980	0.0034

235	1.9014	0.0034
236	1.9048	0.0034
237	1.9081	0.0034
238	1.9115	0.0034
239	1.9148	0.0034
240	1.9182	0.0033
241	1.9215	0.0033
242	1.9248	0.0033
243	1.9282	0.0033
244	1.9315	0.0033
245	1.9348	0.0033
246	1.9381	0.0033
247	1.9414	0.0033
248	1.9446	0.0033
249	1.9479	0.0033
250	1.9512	0.0033
251	1.9544	0.0033
252	1.9577	0.0032
253	1.9609	0.0032
254	1.9642	0.0032
255	1.9674	0.0032
256	1.9706	0.0032
257	1.9738	0.0032
258	1.9770	0.0032
259	1.9802	0.0032
260	1.9834	0.0032
261	1.9866	0.0032
262	1.9898	0.0032
263	1.9929	0.0032
264	1.9961	0.0032
265	1.9993	0.0032
266	2.0024	0.0031
267	2.0055	0.0031
268	2.0087	0.0031
269	2.0118	0.0031
270	2.0149	0.0031
271	2.0180	0.0031
272	2.0212	0.0031
273	2.0243	0.0031
274	2.0273	0.0031
275	2.0304	0.0031
276	2.0335	0.0031
277	2.0366	0.0031
278	2.0397	0.0031
279	2.0427	0.0031
280	2.0458	0.0031
281	2.0488	0.0030
282	2.0519	0.0030
283	2.0549	0.0030
284	2.0579	0.0030
285	2.0610	0.0030
286	2.0640	0.0030
287	2.0670	0.0030
288	2.0700	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0024
4	0.0030	0.0006	0.0024
5	0.0030	0.0006	0.0024
6	0.0030	0.0006	0.0024
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025

13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0025
16	0.0031	0.0006	0.0025
17	0.0032	0.0006	0.0025
18	0.0032	0.0006	0.0025
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0033	0.0006	0.0026
27	0.0033	0.0006	0.0026
28	0.0033	0.0006	0.0026
29	0.0033	0.0006	0.0026
30	0.0033	0.0007	0.0027
31	0.0033	0.0007	0.0027
32	0.0033	0.0007	0.0027
33	0.0033	0.0007	0.0027
34	0.0034	0.0007	0.0027
35	0.0034	0.0007	0.0027
36	0.0034	0.0007	0.0027
37	0.0034	0.0007	0.0027
38	0.0034	0.0007	0.0027
39	0.0034	0.0007	0.0027
40	0.0034	0.0007	0.0028
41	0.0034	0.0007	0.0028
42	0.0035	0.0007	0.0028
43	0.0035	0.0007	0.0028
44	0.0035	0.0007	0.0028
45	0.0035	0.0007	0.0028
46	0.0035	0.0007	0.0028
47	0.0035	0.0007	0.0028
48	0.0035	0.0007	0.0028
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0029
55	0.0036	0.0007	0.0029
56	0.0037	0.0007	0.0029
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0038	0.0007	0.0030
63	0.0038	0.0007	0.0030
64	0.0038	0.0007	0.0030
65	0.0038	0.0007	0.0031
66	0.0038	0.0008	0.0031
67	0.0038	0.0008	0.0031
68	0.0039	0.0008	0.0031
69	0.0039	0.0008	0.0031
70	0.0039	0.0008	0.0031
71	0.0039	0.0008	0.0031
72	0.0039	0.0008	0.0032
73	0.0040	0.0008	0.0032
74	0.0040	0.0008	0.0032
75	0.0040	0.0008	0.0032
76	0.0040	0.0008	0.0032
77	0.0040	0.0008	0.0032
78	0.0040	0.0008	0.0032
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0033
82	0.0041	0.0008	0.0033
83	0.0042	0.0008	0.0033

84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0034
88	0.0043	0.0008	0.0034
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0043	0.0009	0.0035
92	0.0044	0.0009	0.0035
93	0.0044	0.0009	0.0035
94	0.0044	0.0009	0.0035
95	0.0045	0.0009	0.0036
96	0.0045	0.0009	0.0036
97	0.0045	0.0009	0.0036
98	0.0045	0.0009	0.0036
99	0.0046	0.0009	0.0037
100	0.0046	0.0009	0.0037
101	0.0046	0.0009	0.0037
102	0.0046	0.0009	0.0037
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0047	0.0009	0.0038
106	0.0048	0.0009	0.0038
107	0.0048	0.0009	0.0039
108	0.0048	0.0010	0.0039
109	0.0049	0.0010	0.0039
110	0.0049	0.0010	0.0039
111	0.0049	0.0010	0.0040
112	0.0050	0.0010	0.0040
113	0.0050	0.0010	0.0040
114	0.0050	0.0010	0.0040
115	0.0051	0.0010	0.0041
116	0.0051	0.0010	0.0041
117	0.0052	0.0010	0.0041
118	0.0052	0.0010	0.0042
119	0.0052	0.0010	0.0042
120	0.0053	0.0010	0.0042
121	0.0053	0.0010	0.0043
122	0.0054	0.0011	0.0043
123	0.0054	0.0011	0.0044
124	0.0054	0.0011	0.0044
125	0.0055	0.0011	0.0044
126	0.0055	0.0011	0.0045
127	0.0056	0.0011	0.0045
128	0.0056	0.0011	0.0045
129	0.0057	0.0011	0.0046
130	0.0057	0.0011	0.0046
131	0.0058	0.0011	0.0047
132	0.0059	0.0012	0.0047
133	0.0059	0.0012	0.0048
134	0.0060	0.0012	0.0048
135	0.0060	0.0012	0.0049
136	0.0061	0.0012	0.0049
137	0.0062	0.0012	0.0050
138	0.0062	0.0012	0.0050
139	0.0063	0.0012	0.0051
140	0.0064	0.0013	0.0051
141	0.0064	0.0013	0.0052
142	0.0065	0.0013	0.0052
143	0.0066	0.0013	0.0053
144	0.0067	0.0013	0.0053
145	0.0085	0.0017	0.0068
146	0.0086	0.0017	0.0069
147	0.0087	0.0017	0.0070
148	0.0087	0.0017	0.0070
149	0.0089	0.0017	0.0071
150	0.0089	0.0018	0.0072
151	0.0091	0.0018	0.0073
152	0.0091	0.0018	0.0073
153	0.0093	0.0018	0.0074
154	0.0094	0.0018	0.0075

155	0.0095	0.0019	0.0076
156	0.0096	0.0019	0.0077
157	0.0098	0.0019	0.0078
158	0.0098	0.0019	0.0079
159	0.0100	0.0020	0.0081
160	0.0101	0.0020	0.0081
161	0.0103	0.0020	0.0083
162	0.0104	0.0021	0.0084
163	0.0106	0.0021	0.0085
164	0.0108	0.0021	0.0086
165	0.0110	0.0022	0.0088
166	0.0111	0.0022	0.0089
167	0.0114	0.0022	0.0092
168	0.0115	0.0023	0.0093
169	0.0118	0.0023	0.0095
170	0.0120	0.0024	0.0096
171	0.0124	0.0024	0.0099
172	0.0125	0.0025	0.0101
173	0.0129	0.0025	0.0104
174	0.0131	0.0026	0.0106
175	0.0136	0.0027	0.0109
176	0.0139	0.0027	0.0111
177	0.0144	0.0028	0.0116
178	0.0147	0.0029	0.0118
179	0.0154	0.0030	0.0123
180	0.0157	0.0031	0.0126
181	0.0166	0.0033	0.0133
182	0.0170	0.0034	0.0137
183	0.0181	0.0036	0.0145
184	0.0187	0.0037	0.0151
185	0.0155	0.0030	0.0124
186	0.0163	0.0032	0.0131
187	0.0185	0.0037	0.0149
188	0.0200	0.0039	0.0161
189	0.0241	0.0047	0.0193
190	0.0272	0.0054	0.0218
191	0.0389	0.0061	0.0328
192	0.0535	0.0061	0.0473
193	0.1673	0.0061	0.1612
194	0.0317	0.0061	0.0255
195	0.0218	0.0043	0.0175
196	0.0173	0.0034	0.0139
197	0.0194	0.0038	0.0156
198	0.0176	0.0035	0.0141
199	0.0161	0.0032	0.0130
200	0.0150	0.0030	0.0121
201	0.0141	0.0028	0.0113
202	0.0134	0.0026	0.0107
203	0.0127	0.0025	0.0102
204	0.0122	0.0024	0.0098
205	0.0117	0.0023	0.0094
206	0.0113	0.0022	0.0090
207	0.0109	0.0021	0.0087
208	0.0105	0.0021	0.0085
209	0.0102	0.0020	0.0082
210	0.0099	0.0020	0.0080
211	0.0097	0.0019	0.0078
212	0.0094	0.0019	0.0076
213	0.0092	0.0018	0.0074
214	0.0090	0.0018	0.0072
215	0.0088	0.0017	0.0071
216	0.0086	0.0017	0.0069
217	0.0067	0.0013	0.0054
218	0.0065	0.0013	0.0053
219	0.0064	0.0013	0.0051
220	0.0063	0.0012	0.0050
221	0.0061	0.0012	0.0049
222	0.0060	0.0012	0.0048
223	0.0059	0.0012	0.0047
224	0.0058	0.0011	0.0046
225	0.0057	0.0011	0.0046

226	0.0056	0.0011	0.0045
227	0.0055	0.0011	0.0044
228	0.0054	0.0011	0.0043
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0042
231	0.0051	0.0010	0.0041
232	0.0051	0.0010	0.0041
233	0.0050	0.0010	0.0040
234	0.0049	0.0010	0.0039
235	0.0048	0.0010	0.0039
236	0.0048	0.0009	0.0038
237	0.0047	0.0009	0.0038
238	0.0047	0.0009	0.0037
239	0.0046	0.0009	0.0037
240	0.0045	0.0009	0.0036
241	0.0045	0.0009	0.0036
242	0.0044	0.0009	0.0036
243	0.0044	0.0009	0.0035
244	0.0043	0.0009	0.0035
245	0.0043	0.0008	0.0034
246	0.0042	0.0008	0.0034
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0033
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0008	0.0032
252	0.0040	0.0008	0.0032
253	0.0039	0.0008	0.0032
254	0.0039	0.0008	0.0031
255	0.0039	0.0008	0.0031
256	0.0038	0.0008	0.0031
257	0.0038	0.0007	0.0030
258	0.0038	0.0007	0.0030
259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0029
262	0.0036	0.0007	0.0029
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0028
266	0.0035	0.0007	0.0028
267	0.0035	0.0007	0.0028
268	0.0035	0.0007	0.0028
269	0.0034	0.0007	0.0028
270	0.0034	0.0007	0.0027
271	0.0034	0.0007	0.0027
272	0.0034	0.0007	0.0027
273	0.0033	0.0007	0.0027
274	0.0033	0.0007	0.0027
275	0.0033	0.0006	0.0026
276	0.0033	0.0006	0.0026
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0032	0.0006	0.0025
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0031	0.0006	0.0025
287	0.0030	0.0006	0.0024
288	0.0030	0.0006	0.0024

Total soil rain loss = 0.37(In)
Total effective rainfall = 1.70(In)
Peak flow rate in flood hydrograph = 2.39(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

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	0.0001	0.01	Q
0+10	0.0004	0.04	Q
0+15	0.0007	0.05	Q
0+20	0.0011	0.05	Q
0+25	0.0014	0.05	Q
0+30	0.0017	0.05	Q
0+35	0.0021	0.05	Q
0+40	0.0024	0.05	Q
0+45	0.0028	0.05	Q
0+50	0.0031	0.05	Q
0+55	0.0035	0.05	Q
1+ 0	0.0039	0.05	Q
1+ 5	0.0042	0.05	Q
1+10	0.0046	0.05	Q
1+15	0.0049	0.05	Q
1+20	0.0053	0.05	Q
1+25	0.0056	0.05	Q
1+30	0.0060	0.05	Q
1+35	0.0064	0.05	QV
1+40	0.0067	0.05	QV
1+45	0.0071	0.05	QV
1+50	0.0075	0.05	QV
1+55	0.0078	0.05	QV
2+ 0	0.0082	0.05	QV
2+ 5	0.0086	0.05	QV
2+10	0.0089	0.05	QV
2+15	0.0093	0.05	QV
2+20	0.0097	0.05	QV
2+25	0.0101	0.05	QV
2+30	0.0104	0.05	QV
2+35	0.0108	0.05	QV
2+40	0.0112	0.06	QV
2+45	0.0116	0.06	QV
2+50	0.0120	0.06	QV
2+55	0.0123	0.06	Q V
3+ 0	0.0127	0.06	Q V
3+ 5	0.0131	0.06	Q V
3+10	0.0135	0.06	Q V
3+15	0.0139	0.06	Q V
3+20	0.0143	0.06	Q V
3+25	0.0147	0.06	Q V
3+30	0.0151	0.06	Q V
3+35	0.0155	0.06	Q V
3+40	0.0159	0.06	Q V
3+45	0.0163	0.06	Q V
3+50	0.0167	0.06	Q V
3+55	0.0171	0.06	Q V
4+ 0	0.0175	0.06	Q V
4+ 5	0.0179	0.06	Q V
4+10	0.0183	0.06	Q V
4+15	0.0187	0.06	Q V
4+20	0.0191	0.06	Q V
4+25	0.0195	0.06	Q V
4+30	0.0199	0.06	Q V
4+35	0.0203	0.06	Q V
4+40	0.0208	0.06	Q V
4+45	0.0212	0.06	Q V
4+50	0.0216	0.06	Q V
4+55	0.0220	0.06	Q V
5+ 0	0.0224	0.06	Q V
5+ 5	0.0229	0.06	Q V
5+10	0.0233	0.06	Q V
5+15	0.0237	0.06	Q V
5+20	0.0242	0.06	Q V

5+25	0.0246	0.06	Q	V				
5+30	0.0250	0.06	Q	V				
5+35	0.0255	0.06	Q	V				
5+40	0.0259	0.06	Q	V				
5+45	0.0263	0.06	Q	V				
5+50	0.0268	0.06	Q	V				
5+55	0.0272	0.06	Q	V				
6+ 0	0.0277	0.07	Q	V				
6+ 5	0.0281	0.07	Q	V				
6+10	0.0286	0.07	Q	V				
6+15	0.0290	0.07	Q	V				
6+20	0.0295	0.07	Q	V				
6+25	0.0299	0.07	Q	V				
6+30	0.0304	0.07	Q	V				
6+35	0.0309	0.07	Q	V				
6+40	0.0313	0.07	Q	V				
6+45	0.0318	0.07	Q	V				
6+50	0.0323	0.07	Q	V				
6+55	0.0327	0.07	Q	V				
7+ 0	0.0332	0.07	Q	V				
7+ 5	0.0337	0.07	Q	V				
7+10	0.0342	0.07	Q	V				
7+15	0.0347	0.07	Q	V				
7+20	0.0352	0.07	Q	V				
7+25	0.0356	0.07	Q	V				
7+30	0.0361	0.07	Q	V				
7+35	0.0366	0.07	Q	V				
7+40	0.0371	0.07	Q	V				
7+45	0.0376	0.07	Q	V				
7+50	0.0381	0.07	Q	V				
7+55	0.0386	0.07	Q	V				
8+ 0	0.0391	0.07	Q	V				
8+ 5	0.0397	0.07	Q	V				
8+10	0.0402	0.07	Q	V				
8+15	0.0407	0.08	Q	V				
8+20	0.0412	0.08	Q	V				
8+25	0.0417	0.08	Q	V				
8+30	0.0423	0.08	Q	V				
8+35	0.0428	0.08	Q	V				
8+40	0.0433	0.08	Q	V				
8+45	0.0439	0.08	Q	V				
8+50	0.0444	0.08	Q	V				
8+55	0.0449	0.08	Q	V				
9+ 0	0.0455	0.08	Q	V				
9+ 5	0.0460	0.08	Q	V				
9+10	0.0466	0.08	Q	V				
9+15	0.0472	0.08	Q	V				
9+20	0.0477	0.08	Q	V				
9+25	0.0483	0.08	Q	V				
9+30	0.0489	0.08	Q	V				
9+35	0.0494	0.08	Q	V				
9+40	0.0500	0.08	Q	V				
9+45	0.0506	0.08	Q	V				
9+50	0.0512	0.09	Q	V				
9+55	0.0518	0.09	Q	V				
10+ 0	0.0524	0.09	Q	V				
10+ 5	0.0530	0.09	Q	V				
10+10	0.0536	0.09	Q	V				
10+15	0.0542	0.09	Q	V				
10+20	0.0548	0.09	Q	V				
10+25	0.0555	0.09	Q	V				
10+30	0.0561	0.09	Q	V				
10+35	0.0567	0.09	Q	V				
10+40	0.0574	0.09	Q	V				
10+45	0.0580	0.09	Q	V				
10+50	0.0587	0.09	Q	V				
10+55	0.0593	0.10	Q	V				
11+ 0	0.0600	0.10	Q	V				
11+ 5	0.0607	0.10	Q	V				
11+10	0.0613	0.10	Q	V				
11+15	0.0620	0.10	Q	V				

11+20	0.0627	0.10	Q	V	|	|	|
11+25	0.0634	0.10	Q	V	|	|	|
11+30	0.0641	0.10	Q	V	|	|	|
11+35	0.0648	0.10	Q	V	|	|	|
11+40	0.0656	0.10	Q	V	|	|	|
11+45	0.0663	0.11	Q	V	|	|	|
11+50	0.0670	0.11	Q	|V	|	|	|
11+55	0.0678	0.11	Q	|V	|	|	|
12+ 0	0.0685	0.11	Q	|V	|	|	|
12+ 5	0.0693	0.12	Q	|V	|	|	|
12+10	0.0703	0.14	Q	|V	|	|	|
12+15	0.0712	0.14	Q	|V	|	|	|
12+20	0.0722	0.14	Q	|V	|	|	|
12+25	0.0732	0.15	Q	| V	|	|	|
12+30	0.0743	0.15	Q	| V	|	|	|
12+35	0.0753	0.15	Q	| V	|	|	|
12+40	0.0763	0.15	Q	| V	|	|	|
12+45	0.0774	0.15	Q	| V	|	|	|
12+50	0.0784	0.15	Q	| V	|	|	|
12+55	0.0795	0.16	Q	| V	|	|	|
13+ 0	0.0806	0.16	Q	| V	|	|	|
13+ 5	0.0817	0.16	Q	| V	|	|	|
13+10	0.0828	0.16	Q	| V	|	|	|
13+15	0.0839	0.16	Q	| V	|	|	|
13+20	0.0851	0.17	Q	| V	|	|	|
13+25	0.0862	0.17	Q	| V	|	|	|
13+30	0.0874	0.17	Q	| V	|	|	|
13+35	0.0886	0.17	Q	| V	|	|	|
13+40	0.0898	0.18	Q	| V	|	|	|
13+45	0.0910	0.18	Q	| V	|	|	|
13+50	0.0923	0.18	Q	| V	|	|	|
13+55	0.0936	0.19	Q	| V	|	|	|
14+ 0	0.0949	0.19	Q	| V	|	|	|
14+ 5	0.0962	0.19	Q	| V	|	|	|
14+10	0.0976	0.20	Q	| V	|	|	|
14+15	0.0989	0.20	Q	| V	|	|	|
14+20	0.1004	0.20	Q	| V	|	|	|
14+25	0.1018	0.21	Q	| V	|	|	|
14+30	0.1033	0.21	Q	| V	|	|	|
14+35	0.1048	0.22	Q	| V	|	|	|
14+40	0.1063	0.23	Q	| V	|	|	|
14+45	0.1079	0.23	Q	| V	|	|	|
14+50	0.1096	0.24	Q	| V	|	|	|
14+55	0.1113	0.25	Q	| V	|	|	|
15+ 0	0.1130	0.25	|Q	| V	|	|	|
15+ 5	0.1148	0.26	|Q	| V|	|	|
15+10	0.1167	0.27	|Q	| V|	|	|
15+15	0.1187	0.29	|Q	| V|	|	|
15+20	0.1208	0.30	|Q	| V	|	|	|
15+25	0.1228	0.30	|Q	| V	|	|	|
15+30	0.1247	0.27	|Q	| V	|	|	|
15+35	0.1266	0.28	|Q	| V	|	|	|
15+40	0.1287	0.31	|Q	| |V	|	|	|
15+45	0.1310	0.34	|Q	| |V	|	|	|
15+50	0.1338	0.40	|Q	| | V	|	|	|
15+55	0.1372	0.49	|Q	| | V	|	|	|
16+ 0	0.1420	0.71	| Q	| | V	|	|	|
16+ 5	0.1518	1.42	| Q	| | V	|	|	|
16+10	0.1683	2.39	| Q|	| | V |	|	|
16+15	0.1744	0.88	| Q	| | V |	|	|
16+20	0.1772	0.41	|Q	| | V|	|	|
16+25	0.1793	0.31	|Q	| | V|	|	|
16+30	0.1815	0.31	|Q	| | V	|	|	|
16+35	0.1835	0.29	|Q	| | V	|	|	|
16+40	0.1853	0.27	|Q	| | V	|	|	|
16+45	0.1870	0.25	Q	| | V	|	|	|
16+50	0.1886	0.23	Q	| | |V	|	|	|
16+55	0.1902	0.22	Q	| | |V	|	|	|
17+ 0	0.1916	0.21	Q	| | |V	|	|	|
17+ 5	0.1930	0.20	Q	| | |V	|	|	|
17+10	0.1944	0.19	Q	| | | V	|	|	|

17+15	0.1956	0.19	Q	|	|	| V	|
17+20	0.1969	0.18	Q	|	|	| V	|
17+25	0.1981	0.17	Q	|	|	| V	|
17+30	0.1993	0.17	Q	|	|	| V	|
17+35	0.2004	0.16	Q	|	|	| V	|
17+40	0.2015	0.16	Q	|	|	| V	|
17+45	0.2026	0.16	Q	|	|	| V	|
17+50	0.2036	0.15	Q	|	|	| V	|
17+55	0.2047	0.15	Q	|	|	| V	|
18+ 0	0.2057	0.15	Q	|	|	| V	|
18+ 5	0.2066	0.14	Q	|	|	| V	|
18+10	0.2074	0.12	Q	|	|	| V	|
18+15	0.2082	0.11	Q	|	|	| V	|
18+20	0.2089	0.11	Q	|	|	| V	|
18+25	0.2096	0.10	Q	|	|	| V	|
18+30	0.2103	0.10	Q	|	|	| V	|
18+35	0.2110	0.10	Q	|	|	| V	|
18+40	0.2117	0.10	Q	|	|	| V	|
18+45	0.2123	0.10	Q	|	|	| V	|
18+50	0.2130	0.09	Q	|	|	| V	|
18+55	0.2136	0.09	Q	|	|	| V	|
19+ 0	0.2142	0.09	Q	|	|	| V	|
19+ 5	0.2149	0.09	Q	|	|	| V	|
19+10	0.2155	0.09	Q	|	|	| V	|
19+15	0.2161	0.09	Q	|	|	| V	|
19+20	0.2166	0.09	Q	|	|	| V	|
19+25	0.2172	0.08	Q	|	|	| V	|
19+30	0.2178	0.08	Q	|	|	| V	|
19+35	0.2184	0.08	Q	|	|	| V	|
19+40	0.2189	0.08	Q	|	|	| V	|
19+45	0.2195	0.08	Q	|	|	| V	|
19+50	0.2200	0.08	Q	|	|	| V	|
19+55	0.2205	0.08	Q	|	|	| V	|
20+ 0	0.2211	0.08	Q	|	|	| V	|
20+ 5	0.2216	0.08	Q	|	|	| V	|
20+10	0.2221	0.07	Q	|	|	| V	|
20+15	0.2226	0.07	Q	|	|	| V	|
20+20	0.2231	0.07	Q	|	|	| V	|
20+25	0.2236	0.07	Q	|	|	| V	|
20+30	0.2241	0.07	Q	|	|	| V	|
20+35	0.2246	0.07	Q	|	|	| V	|
20+40	0.2250	0.07	Q	|	|	| V	|
20+45	0.2255	0.07	Q	|	|	| V	|
20+50	0.2260	0.07	Q	|	|	| V	|
20+55	0.2264	0.07	Q	|	|	| V	|
21+ 0	0.2269	0.07	Q	|	|	| V	|
21+ 5	0.2274	0.07	Q	|	|	| V	|
21+10	0.2278	0.07	Q	|	|	| V	|
21+15	0.2283	0.06	Q	|	|	| V	|
21+20	0.2287	0.06	Q	|	|	| V	|
21+25	0.2291	0.06	Q	|	|	| V	|
21+30	0.2296	0.06	Q	|	|	| V	|
21+35	0.2300	0.06	Q	|	|	| V	|
21+40	0.2304	0.06	Q	|	|	| V	|
21+45	0.2309	0.06	Q	|	|	| V	|
21+50	0.2313	0.06	Q	|	|	| V	|
21+55	0.2317	0.06	Q	|	|	| V	|
22+ 0	0.2321	0.06	Q	|	|	| V	|
22+ 5	0.2325	0.06	Q	|	|	| V	|
22+10	0.2329	0.06	Q	|	|	| V	|
22+15	0.2333	0.06	Q	|	|	| V	|
22+20	0.2337	0.06	Q	|	|	| V	|
22+25	0.2341	0.06	Q	|	|	| V	|
22+30	0.2345	0.06	Q	|	|	| V	|
22+35	0.2349	0.06	Q	|	|	| V	|
22+40	0.2353	0.06	Q	|	|	| V	|
22+45	0.2357	0.06	Q	|	|	| V	|
22+50	0.2360	0.06	Q	|	|	| V	|
22+55	0.2364	0.05	Q	|	|	| V	|
23+ 0	0.2368	0.05	Q	|	|	| V	|
23+ 5	0.2372	0.05	Q	|	|	| V	|

23+10	0.2375	0.05	Q	|	|	|	V|
23+15	0.2379	0.05	Q	|	|	|	V|
23+20	0.2383	0.05	Q	|	|	|	V|
23+25	0.2386	0.05	Q	|	|	|	V|
23+30	0.2390	0.05	Q	|	|	|	V|
23+35	0.2394	0.05	Q	|	|	|	V|
23+40	0.2397	0.05	Q	|	|	|	V|
23+45	0.2401	0.05	Q	|	|	|	V|
23+50	0.2404	0.05	Q	|	|	|	V|
23+55	0.2408	0.05	Q	|	|	|	V|
24+ 0	0.2411	0.05	Q	|	|	|	V|

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

Study date 09/30/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 2A (POC 2)
2 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA2AQ2.HCU

Storm Event Year = 2

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
0.71	1	0.77
Rainfall data for year 2		
0.71	6	1.16
Rainfall data for year 2		
0.71	24	2.07
Rainfall data for year 100		
0.71	1	1.22
Rainfall data for year 100		
0.71	6	2.67
Rainfall data for year 100		
0.71	24	4.89

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******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	56.0	0.71	1.000	0.734	0.100	0.073

Area-averaged adjusted loss rate Fm (In/Hr) = 0.073

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.07	0.100	56.0	56.0	7.86	0.014
0.64	0.900	98.0	98.0	0.20	0.891

Area-averaged catchment yield fraction, Y = 0.803
Area-averaged low loss fraction, Yb = 0.197
User entry of time of concentration = 0.247 (hours)
++
Watershed area = 0.71(Ac.)
Catchment Lag time = 0.198 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 42.1727
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.073(In/Hr)
Average low loss rate fraction (Yb) = 0.197 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.167(In)
Computed peak 30-minute rainfall = 0.343(In)
Specified peak 1-hour rainfall = 0.452(In)
Computed peak 3-hour rainfall = 0.806(In)
Specified peak 6-hour rainfall = 1.160(In)
Specified peak 24-hour rainfall = 2.070(In)

Rainfall depth area reduction factors:
Using a total area of 0.71(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.167(In)
30-minute factor = 1.000 Adjusted rainfall = 0.343(In)
1-hour factor = 1.000 Adjusted rainfall = 0.452(In)
3-hour factor = 1.000 Adjusted rainfall = 0.806(In)
6-hour factor = 1.000 Adjusted rainfall = 1.160(In)
24-hour factor = 1.000 Adjusted rainfall = 2.070(In)

U n i t H y d r o g r a p h
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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 8.59 (CFS))	
1	3.331	0.286
2	21.640	1.572
3	54.326	2.807
4	81.317	2.318
5	92.920	0.996
6	97.515	0.395
7	98.734	0.105
8	99.493	0.065
9	100.000	0.044

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1673	0.1673
2	0.2208	0.0535
3	0.2596	0.0389
4	0.2913	0.0317
5	0.3185	0.0272
6	0.3426	0.0241
7	0.3644	0.0218
8	0.3844	0.0200
9	0.4029	0.0185
10	0.4203	0.0173
11	0.4366	0.0163
12	0.4521	0.0155
13	0.4715	0.0194
14	0.4902	0.0187
15	0.5083	0.0181
16	0.5259	0.0176

17	0.5429	0.0170
18	0.5595	0.0166
19	0.5756	0.0161
20	0.5914	0.0157
21	0.6068	0.0154
22	0.6218	0.0150
23	0.6365	0.0147
24	0.6509	0.0144
25	0.6650	0.0141
26	0.6789	0.0139
27	0.6925	0.0136
28	0.7059	0.0134
29	0.7190	0.0131
30	0.7320	0.0129
31	0.7447	0.0127
32	0.7572	0.0125
33	0.7696	0.0124
34	0.7818	0.0122
35	0.7938	0.0120
36	0.8056	0.0118
37	0.8173	0.0117
38	0.8289	0.0115
39	0.8403	0.0114
40	0.8515	0.0113
41	0.8627	0.0111
42	0.8737	0.0110
43	0.8845	0.0109
44	0.8953	0.0108
45	0.9059	0.0106
46	0.9165	0.0105
47	0.9269	0.0104
48	0.9372	0.0103
49	0.9474	0.0102
50	0.9576	0.0101
51	0.9676	0.0100
52	0.9775	0.0099
53	0.9874	0.0098
54	0.9971	0.0098
55	1.0068	0.0097
56	1.0164	0.0096
57	1.0259	0.0095
58	1.0353	0.0094
59	1.0447	0.0094
60	1.0539	0.0093
61	1.0631	0.0092
62	1.0723	0.0091
63	1.0813	0.0091
64	1.0903	0.0090
65	1.0992	0.0089
66	1.1081	0.0089
67	1.1169	0.0088
68	1.1256	0.0087
69	1.1343	0.0087
70	1.1429	0.0086
71	1.1515	0.0086
72	1.1600	0.0085
73	1.1667	0.0067
74	1.1734	0.0067
75	1.1799	0.0066
76	1.1865	0.0065
77	1.1930	0.0065
78	1.1994	0.0064
79	1.2058	0.0064
80	1.2122	0.0064
81	1.2185	0.0063
82	1.2248	0.0063
83	1.2310	0.0062
84	1.2372	0.0062
85	1.2433	0.0061
86	1.2494	0.0061
87	1.2554	0.0060

88	1.2614	0.0060
89	1.2674	0.0060
90	1.2733	0.0059
91	1.2792	0.0059
92	1.2851	0.0059
93	1.2909	0.0058
94	1.2967	0.0058
95	1.3024	0.0057
96	1.3081	0.0057
97	1.3138	0.0057
98	1.3194	0.0056
99	1.3251	0.0056
100	1.3306	0.0056
101	1.3362	0.0055
102	1.3417	0.0055
103	1.3472	0.0055
104	1.3526	0.0054
105	1.3580	0.0054
106	1.3634	0.0054
107	1.3688	0.0054
108	1.3741	0.0053
109	1.3794	0.0053
110	1.3847	0.0053
111	1.3899	0.0052
112	1.3951	0.0052
113	1.4003	0.0052
114	1.4055	0.0052
115	1.4106	0.0051
116	1.4157	0.0051
117	1.4208	0.0051
118	1.4259	0.0051
119	1.4309	0.0050
120	1.4359	0.0050
121	1.4409	0.0050
122	1.4459	0.0050
123	1.4508	0.0049
124	1.4557	0.0049
125	1.4606	0.0049
126	1.4655	0.0049
127	1.4704	0.0048
128	1.4752	0.0048
129	1.4800	0.0048
130	1.4848	0.0048
131	1.4895	0.0048
132	1.4943	0.0047
133	1.4990	0.0047
134	1.5037	0.0047
135	1.5084	0.0047
136	1.5130	0.0047
137	1.5177	0.0046
138	1.5223	0.0046
139	1.5269	0.0046
140	1.5314	0.0046
141	1.5360	0.0046
142	1.5406	0.0045
143	1.5451	0.0045
144	1.5496	0.0045
145	1.5541	0.0045
146	1.5585	0.0045
147	1.5630	0.0045
148	1.5674	0.0044
149	1.5718	0.0044
150	1.5762	0.0044
151	1.5806	0.0044
152	1.5850	0.0044
153	1.5893	0.0043
154	1.5937	0.0043
155	1.5980	0.0043
156	1.6023	0.0043
157	1.6066	0.0043
158	1.6108	0.0043

159	1.6151	0.0043
160	1.6193	0.0042
161	1.6235	0.0042
162	1.6277	0.0042
163	1.6319	0.0042
164	1.6361	0.0042
165	1.6403	0.0042
166	1.6444	0.0041
167	1.6485	0.0041
168	1.6526	0.0041
169	1.6568	0.0041
170	1.6608	0.0041
171	1.6649	0.0041
172	1.6690	0.0041
173	1.6730	0.0040
174	1.6771	0.0040
175	1.6811	0.0040
176	1.6851	0.0040
177	1.6891	0.0040
178	1.6931	0.0040
179	1.6970	0.0040
180	1.7010	0.0040
181	1.7049	0.0039
182	1.7088	0.0039
183	1.7128	0.0039
184	1.7167	0.0039
185	1.7206	0.0039
186	1.7244	0.0039
187	1.7283	0.0039
188	1.7322	0.0039
189	1.7360	0.0038
190	1.7398	0.0038
191	1.7437	0.0038
192	1.7475	0.0038
193	1.7513	0.0038
194	1.7550	0.0038
195	1.7588	0.0038
196	1.7626	0.0038
197	1.7663	0.0038
198	1.7701	0.0037
199	1.7738	0.0037
200	1.7775	0.0037
201	1.7812	0.0037
202	1.7849	0.0037
203	1.7886	0.0037
204	1.7923	0.0037
205	1.7959	0.0037
206	1.7996	0.0037
207	1.8032	0.0036
208	1.8069	0.0036
209	1.8105	0.0036
210	1.8141	0.0036
211	1.8177	0.0036
212	1.8213	0.0036
213	1.8249	0.0036
214	1.8285	0.0036
215	1.8320	0.0036
216	1.8356	0.0036
217	1.8391	0.0035
218	1.8427	0.0035
219	1.8462	0.0035
220	1.8497	0.0035
221	1.8532	0.0035
222	1.8567	0.0035
223	1.8602	0.0035
224	1.8637	0.0035
225	1.8672	0.0035
226	1.8706	0.0035
227	1.8741	0.0035
228	1.8775	0.0034
229	1.8810	0.0034

230	1.8844	0.0034
231	1.8878	0.0034
232	1.8912	0.0034
233	1.8946	0.0034
234	1.8980	0.0034
235	1.9014	0.0034
236	1.9048	0.0034
237	1.9081	0.0034
238	1.9115	0.0034
239	1.9148	0.0034
240	1.9182	0.0033
241	1.9215	0.0033
242	1.9249	0.0033
243	1.9282	0.0033
244	1.9315	0.0033
245	1.9348	0.0033
246	1.9381	0.0033
247	1.9414	0.0033
248	1.9446	0.0033
249	1.9479	0.0033
250	1.9512	0.0033
251	1.9544	0.0033
252	1.9577	0.0032
253	1.9609	0.0032
254	1.9642	0.0032
255	1.9674	0.0032
256	1.9706	0.0032
257	1.9738	0.0032
258	1.9770	0.0032
259	1.9802	0.0032
260	1.9834	0.0032
261	1.9866	0.0032
262	1.9898	0.0032
263	1.9929	0.0032
264	1.9961	0.0032
265	1.9993	0.0032
266	2.0024	0.0031
267	2.0056	0.0031
268	2.0087	0.0031
269	2.0118	0.0031
270	2.0149	0.0031
271	2.0180	0.0031
272	2.0212	0.0031
273	2.0243	0.0031
274	2.0274	0.0031
275	2.0304	0.0031
276	2.0335	0.0031
277	2.0366	0.0031
278	2.0397	0.0031
279	2.0427	0.0031
280	2.0458	0.0031
281	2.0488	0.0030
282	2.0519	0.0030
283	2.0549	0.0030
284	2.0579	0.0030
285	2.0610	0.0030
286	2.0640	0.0030
287	2.0670	0.0030
288	2.0700	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0024
4	0.0030	0.0006	0.0024
5	0.0030	0.0006	0.0024
6	0.0030	0.0006	0.0024
7	0.0031	0.0006	0.0025

8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0025
16	0.0031	0.0006	0.0025
17	0.0032	0.0006	0.0025
18	0.0032	0.0006	0.0025
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0033	0.0006	0.0026
27	0.0033	0.0006	0.0026
28	0.0033	0.0006	0.0026
29	0.0033	0.0006	0.0026
30	0.0033	0.0007	0.0027
31	0.0033	0.0007	0.0027
32	0.0033	0.0007	0.0027
33	0.0033	0.0007	0.0027
34	0.0034	0.0007	0.0027
35	0.0034	0.0007	0.0027
36	0.0034	0.0007	0.0027
37	0.0034	0.0007	0.0027
38	0.0034	0.0007	0.0027
39	0.0034	0.0007	0.0027
40	0.0034	0.0007	0.0028
41	0.0034	0.0007	0.0028
42	0.0035	0.0007	0.0028
43	0.0035	0.0007	0.0028
44	0.0035	0.0007	0.0028
45	0.0035	0.0007	0.0028
46	0.0035	0.0007	0.0028
47	0.0035	0.0007	0.0028
48	0.0035	0.0007	0.0028
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0029
55	0.0036	0.0007	0.0029
56	0.0037	0.0007	0.0029
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0038	0.0007	0.0030
63	0.0038	0.0007	0.0030
64	0.0038	0.0007	0.0030
65	0.0038	0.0007	0.0031
66	0.0038	0.0008	0.0031
67	0.0038	0.0008	0.0031
68	0.0039	0.0008	0.0031
69	0.0039	0.0008	0.0031
70	0.0039	0.0008	0.0031
71	0.0039	0.0008	0.0031
72	0.0039	0.0008	0.0032
73	0.0040	0.0008	0.0032
74	0.0040	0.0008	0.0032
75	0.0040	0.0008	0.0032
76	0.0040	0.0008	0.0032
77	0.0040	0.0008	0.0032
78	0.0040	0.0008	0.0032

79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0033
82	0.0041	0.0008	0.0033
83	0.0042	0.0008	0.0033
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0034
88	0.0043	0.0008	0.0034
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0043	0.0009	0.0035
92	0.0044	0.0009	0.0035
93	0.0044	0.0009	0.0035
94	0.0044	0.0009	0.0035
95	0.0045	0.0009	0.0036
96	0.0045	0.0009	0.0036
97	0.0045	0.0009	0.0036
98	0.0045	0.0009	0.0036
99	0.0046	0.0009	0.0037
100	0.0046	0.0009	0.0037
101	0.0046	0.0009	0.0037
102	0.0046	0.0009	0.0037
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0047	0.0009	0.0038
106	0.0048	0.0009	0.0038
107	0.0048	0.0009	0.0039
108	0.0048	0.0010	0.0039
109	0.0049	0.0010	0.0039
110	0.0049	0.0010	0.0039
111	0.0049	0.0010	0.0040
112	0.0050	0.0010	0.0040
113	0.0050	0.0010	0.0040
114	0.0050	0.0010	0.0040
115	0.0051	0.0010	0.0041
116	0.0051	0.0010	0.0041
117	0.0052	0.0010	0.0041
118	0.0052	0.0010	0.0042
119	0.0052	0.0010	0.0042
120	0.0053	0.0010	0.0042
121	0.0053	0.0010	0.0043
122	0.0054	0.0011	0.0043
123	0.0054	0.0011	0.0044
124	0.0054	0.0011	0.0044
125	0.0055	0.0011	0.0044
126	0.0055	0.0011	0.0045
127	0.0056	0.0011	0.0045
128	0.0056	0.0011	0.0045
129	0.0057	0.0011	0.0046
130	0.0057	0.0011	0.0046
131	0.0058	0.0011	0.0047
132	0.0059	0.0012	0.0047
133	0.0059	0.0012	0.0048
134	0.0060	0.0012	0.0048
135	0.0060	0.0012	0.0049
136	0.0061	0.0012	0.0049
137	0.0062	0.0012	0.0050
138	0.0062	0.0012	0.0050
139	0.0063	0.0012	0.0051
140	0.0064	0.0013	0.0051
141	0.0064	0.0013	0.0052
142	0.0065	0.0013	0.0052
143	0.0066	0.0013	0.0053
144	0.0067	0.0013	0.0053
145	0.0085	0.0017	0.0068
146	0.0086	0.0017	0.0069
147	0.0087	0.0017	0.0070
148	0.0087	0.0017	0.0070
149	0.0089	0.0017	0.0071

150	0.0089	0.0018	0.0072
151	0.0091	0.0018	0.0073
152	0.0091	0.0018	0.0073
153	0.0093	0.0018	0.0074
154	0.0094	0.0018	0.0075
155	0.0095	0.0019	0.0076
156	0.0096	0.0019	0.0077
157	0.0098	0.0019	0.0078
158	0.0098	0.0019	0.0079
159	0.0100	0.0020	0.0081
160	0.0101	0.0020	0.0081
161	0.0103	0.0020	0.0083
162	0.0104	0.0021	0.0084
163	0.0106	0.0021	0.0085
164	0.0108	0.0021	0.0086
165	0.0110	0.0022	0.0088
166	0.0111	0.0022	0.0089
167	0.0114	0.0022	0.0092
168	0.0115	0.0023	0.0093
169	0.0118	0.0023	0.0095
170	0.0120	0.0024	0.0096
171	0.0124	0.0024	0.0099
172	0.0125	0.0025	0.0101
173	0.0129	0.0025	0.0104
174	0.0131	0.0026	0.0106
175	0.0136	0.0027	0.0109
176	0.0139	0.0027	0.0111
177	0.0144	0.0028	0.0116
178	0.0147	0.0029	0.0118
179	0.0154	0.0030	0.0123
180	0.0157	0.0031	0.0126
181	0.0166	0.0033	0.0133
182	0.0170	0.0034	0.0137
183	0.0181	0.0036	0.0145
184	0.0187	0.0037	0.0150
185	0.0155	0.0030	0.0124
186	0.0163	0.0032	0.0131
187	0.0185	0.0037	0.0149
188	0.0200	0.0039	0.0161
189	0.0241	0.0047	0.0194
190	0.0272	0.0054	0.0218
191	0.0389	0.0061	0.0328
192	0.0535	0.0061	0.0473
193	0.1673	0.0061	0.1612
194	0.0317	0.0061	0.0255
195	0.0218	0.0043	0.0175
196	0.0173	0.0034	0.0139
197	0.0194	0.0038	0.0156
198	0.0176	0.0035	0.0141
199	0.0161	0.0032	0.0130
200	0.0150	0.0030	0.0121
201	0.0141	0.0028	0.0113
202	0.0134	0.0026	0.0107
203	0.0127	0.0025	0.0102
204	0.0122	0.0024	0.0098
205	0.0117	0.0023	0.0094
206	0.0113	0.0022	0.0090
207	0.0109	0.0021	0.0087
208	0.0105	0.0021	0.0085
209	0.0102	0.0020	0.0082
210	0.0099	0.0020	0.0080
211	0.0097	0.0019	0.0078
212	0.0094	0.0019	0.0076
213	0.0092	0.0018	0.0074
214	0.0090	0.0018	0.0072
215	0.0088	0.0017	0.0071
216	0.0086	0.0017	0.0069
217	0.0067	0.0013	0.0054
218	0.0065	0.0013	0.0053
219	0.0064	0.0013	0.0051
220	0.0063	0.0012	0.0050

221	0.0061	0.0012	0.0049
222	0.0060	0.0012	0.0048
223	0.0059	0.0012	0.0047
224	0.0058	0.0011	0.0046
225	0.0057	0.0011	0.0046
226	0.0056	0.0011	0.0045
227	0.0055	0.0011	0.0044
228	0.0054	0.0011	0.0043
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0042
231	0.0051	0.0010	0.0041
232	0.0051	0.0010	0.0041
233	0.0050	0.0010	0.0040
234	0.0049	0.0010	0.0039
235	0.0048	0.0010	0.0039
236	0.0048	0.0009	0.0038
237	0.0047	0.0009	0.0038
238	0.0047	0.0009	0.0037
239	0.0046	0.0009	0.0037
240	0.0045	0.0009	0.0036
241	0.0045	0.0009	0.0036
242	0.0044	0.0009	0.0036
243	0.0044	0.0009	0.0035
244	0.0043	0.0009	0.0035
245	0.0043	0.0008	0.0034
246	0.0042	0.0008	0.0034
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0033
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0008	0.0032
252	0.0040	0.0008	0.0032
253	0.0039	0.0008	0.0032
254	0.0039	0.0008	0.0031
255	0.0039	0.0008	0.0031
256	0.0038	0.0008	0.0031
257	0.0038	0.0007	0.0030
258	0.0038	0.0007	0.0030
259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0029
262	0.0036	0.0007	0.0029
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0028
266	0.0035	0.0007	0.0028
267	0.0035	0.0007	0.0028
268	0.0035	0.0007	0.0028
269	0.0034	0.0007	0.0028
270	0.0034	0.0007	0.0027
271	0.0034	0.0007	0.0027
272	0.0034	0.0007	0.0027
273	0.0033	0.0007	0.0027
274	0.0033	0.0007	0.0027
275	0.0033	0.0006	0.0026
276	0.0033	0.0006	0.0026
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0032	0.0006	0.0025
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0031	0.0006	0.0025
287	0.0030	0.0006	0.0024
288	0.0030	0.0006	0.0024

Total soil rain loss = 0.37(In)

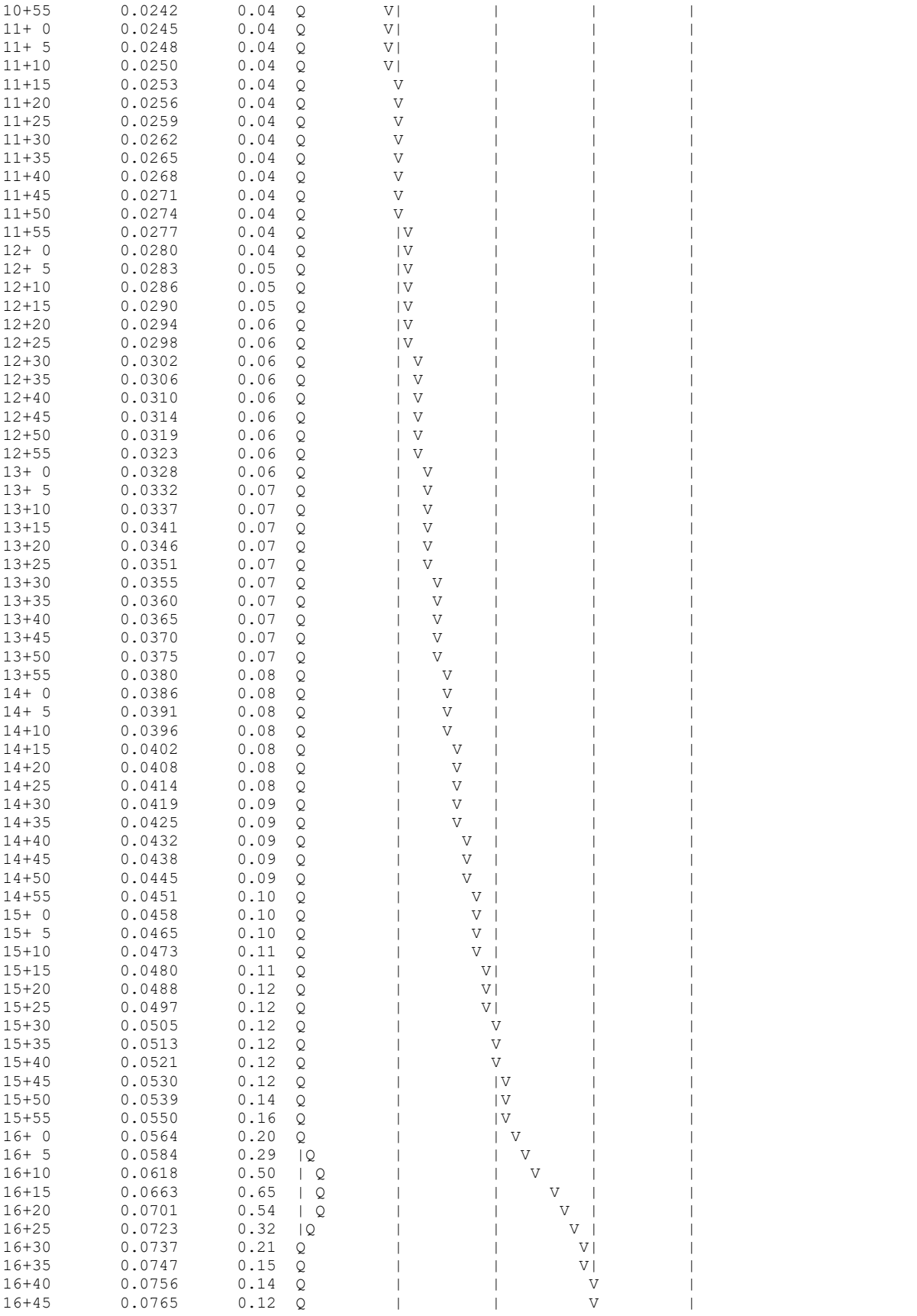
Total effective rainfall = 1.70(In)
Peak flow rate in flood hydrograph = 0.65(CFS)

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

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	0.0000	0.00	Q				
0+10	0.0000	0.00	Q				
0+15	0.0001	0.01	Q				
0+20	0.0002	0.02	Q				
0+25	0.0004	0.02	Q				
0+30	0.0005	0.02	Q				
0+35	0.0006	0.02	Q				
0+40	0.0008	0.02	Q				
0+45	0.0009	0.02	Q				
0+50	0.0011	0.02	Q				
0+55	0.0012	0.02	Q				
1+ 0	0.0014	0.02	Q				
1+ 5	0.0015	0.02	Q				
1+10	0.0017	0.02	Q				
1+15	0.0018	0.02	Q				
1+20	0.0020	0.02	Q				
1+25	0.0021	0.02	Q				
1+30	0.0023	0.02	Q				
1+35	0.0024	0.02	Q				
1+40	0.0026	0.02	QV				
1+45	0.0027	0.02	QV				
1+50	0.0029	0.02	QV				
1+55	0.0030	0.02	QV				
2+ 0	0.0032	0.02	QV				
2+ 5	0.0033	0.02	QV				
2+10	0.0035	0.02	QV				
2+15	0.0036	0.02	QV				
2+20	0.0038	0.02	QV				
2+25	0.0039	0.02	QV				
2+30	0.0041	0.02	QV				
2+35	0.0042	0.02	QV				
2+40	0.0044	0.02	QV				
2+45	0.0046	0.02	QV				
2+50	0.0047	0.02	QV				
2+55	0.0049	0.02	QV				
3+ 0	0.0050	0.02	Q V				
3+ 5	0.0052	0.02	Q V				
3+10	0.0054	0.02	Q V				
3+15	0.0055	0.02	Q V				
3+20	0.0057	0.02	Q V				
3+25	0.0058	0.02	Q V				
3+30	0.0060	0.02	Q V				
3+35	0.0062	0.02	Q V				
3+40	0.0063	0.02	Q V				
3+45	0.0065	0.02	Q V				
3+50	0.0067	0.02	Q V				
3+55	0.0068	0.02	Q V				
4+ 0	0.0070	0.02	Q V				
4+ 5	0.0072	0.02	Q V				
4+10	0.0073	0.02	Q V				
4+15	0.0075	0.02	Q V				
4+20	0.0077	0.02	Q V				
4+25	0.0078	0.02	Q V				
4+30	0.0080	0.02	Q V				
4+35	0.0082	0.02	Q V				
4+40	0.0083	0.02	Q V				
4+45	0.0085	0.03	Q V				
4+50	0.0087	0.03	Q V				
4+55	0.0089	0.03	Q V				

5+ 0	0.0090	0.03	Q	V				
5+ 5	0.0092	0.03	Q	V				
5+10	0.0094	0.03	Q	V				
5+15	0.0096	0.03	Q	V				
5+20	0.0098	0.03	Q	V				
5+25	0.0099	0.03	Q	V				
5+30	0.0101	0.03	Q	V				
5+35	0.0103	0.03	Q	V				
5+40	0.0105	0.03	Q	V				
5+45	0.0107	0.03	Q	V				
5+50	0.0108	0.03	Q	V				
5+55	0.0110	0.03	Q	V				
6+ 0	0.0112	0.03	Q	V				
6+ 5	0.0114	0.03	Q	V				
6+10	0.0116	0.03	Q	V				
6+15	0.0118	0.03	Q	V				
6+20	0.0119	0.03	Q	V				
6+25	0.0121	0.03	Q	V				
6+30	0.0123	0.03	Q	V				
6+35	0.0125	0.03	Q	V				
6+40	0.0127	0.03	Q	V				
6+45	0.0129	0.03	Q	V				
6+50	0.0131	0.03	Q	V				
6+55	0.0133	0.03	Q	V				
7+ 0	0.0135	0.03	Q	V				
7+ 5	0.0137	0.03	Q	V				
7+10	0.0139	0.03	Q	V				
7+15	0.0141	0.03	Q	V				
7+20	0.0143	0.03	Q	V				
7+25	0.0145	0.03	Q	V				
7+30	0.0147	0.03	Q	V				
7+35	0.0149	0.03	Q	V				
7+40	0.0151	0.03	Q	V				
7+45	0.0153	0.03	Q	V				
7+50	0.0155	0.03	Q	V				
7+55	0.0157	0.03	Q	V				
8+ 0	0.0159	0.03	Q	V				
8+ 5	0.0161	0.03	Q	V				
8+10	0.0163	0.03	Q	V				
8+15	0.0166	0.03	Q	V				
8+20	0.0168	0.03	Q	V				
8+25	0.0170	0.03	Q	V				
8+30	0.0172	0.03	Q	V				
8+35	0.0174	0.03	Q	V				
8+40	0.0176	0.03	Q	V				
8+45	0.0179	0.03	Q	V				
8+50	0.0181	0.03	Q	V				
8+55	0.0183	0.03	Q	V				
9+ 0	0.0185	0.03	Q	V				
9+ 5	0.0188	0.03	Q	V				
9+10	0.0190	0.03	Q	V				
9+15	0.0192	0.03	Q	V				
9+20	0.0195	0.03	Q	V				
9+25	0.0197	0.03	Q	V				
9+30	0.0199	0.03	Q	V				
9+35	0.0202	0.03	Q	V				
9+40	0.0204	0.03	Q	V				
9+45	0.0206	0.03	Q	V				
9+50	0.0209	0.04	Q	V				
9+55	0.0211	0.04	Q	V				
10+ 0	0.0214	0.04	Q	V				
10+ 5	0.0216	0.04	Q	V				
10+10	0.0219	0.04	Q	V				
10+15	0.0221	0.04	Q	V				
10+20	0.0224	0.04	Q	V				
10+25	0.0226	0.04	Q	V				
10+30	0.0229	0.04	Q	V				
10+35	0.0231	0.04	Q	V				
10+40	0.0234	0.04	Q	V				
10+45	0.0237	0.04	Q	V				
10+50	0.0239	0.04	Q	V				


10+55 0.0242 0.04
11+ 0 0.0245 0.04
11+ 5 0.0248 0.04
11+10 0.0250 0.04
11+15 0.0253 0.04
11+20 0.0256 0.04
11+25 0.0259 0.04
11+30 0.0262 0.04
11+35 0.0265 0.04
11+40 0.0268 0.04
11+45 0.0271 0.04
11+50 0.0274 0.04
11+55 0.0277 0.04
12+ 0 0.0280 0.04
12+ 5 0.0283 0.05
12+10 0.0286 0.05
12+15 0.0290 0.05
12+20 0.0294 0.06
12+25 0.0298 0.06
12+30 0.0302 0.06
12+35 0.0306 0.06
12+40 0.0310 0.06
12+45 0.0314 0.06
12+50 0.0319 0.06
12+55 0.0323 0.06
13+ 0 0.0328 0.06
13+ 5 0.0332 0.07
13+10 0.0337 0.07
13+15 0.0341 0.07
13+20 0.0346 0.07
13+25 0.0351 0.07
13+30 0.0355 0.07
13+35 0.0360 0.07
13+40 0.0365 0.07
13+45 0.0370 0.07
13+50 0.0375 0.07
13+55 0.0380 0.08
14+ 0 0.0386 0.08
14+ 5 0.0391 0.08
14+10 0.0396 0.08
14+15 0.0402 0.08
14+20 0.0408 0.08
14+25 0.0414 0.08
14+30 0.0419 0.09
14+35 0.0425 0.09
14+40 0.0432 0.09
14+45 0.0438 0.09
14+50 0.0445 0.09
14+55 0.0451 0.10
15+ 0 0.0458 0.10
15+ 5 0.0465 0.10
15+10 0.0473 0.11
15+15 0.0480 0.11
15+20 0.0488 0.12
15+25 0.0497 0.12
15+30 0.0505 0.12
15+35 0.0513 0.12
15+40 0.0521 0.12
15+45 0.0530 0.12
15+50 0.0539 0.14
15+55 0.0550 0.16
16+ 0 0.0564 0.20
16+ 5 0.0584 0.29
16+10 0.0618 0.50
16+15 0.0663 0.65
16+20 0.0701 0.54
16+25 0.0723 0.32
16+30 0.0737 0.21
16+35 0.0747 0.15
16+40 0.0756 0.14
16+45 0.0765 0.12

16+50	0.0772	0.11	Q	|	|	V |
16+55	0.0779	0.10	Q	|	|	|V |
17+ 0	0.0786	0.10	Q	|	|	|V |
17+ 5	0.0792	0.09	Q	|	|	|V |
17+10	0.0798	0.09	Q	|	|	|V |
17+15	0.0804	0.08	Q	|	|	| V |
17+20	0.0809	0.08	Q	|	|	| V |
17+25	0.0815	0.08	Q	|	|	| V |
17+30	0.0820	0.07	Q	|	|	| V |
17+35	0.0825	0.07	Q	|	|	| V |
17+40	0.0829	0.07	Q	|	|	| V |
17+45	0.0834	0.07	Q	|	|	| V |
17+50	0.0839	0.07	Q	|	|	| V |
17+55	0.0843	0.06	Q	|	|	| V |
18+ 0	0.0847	0.06	Q	|	|	| V |
18+ 5	0.0852	0.06	Q	|	|	| V |
18+10	0.0856	0.06	Q	|	|	| V |
18+15	0.0859	0.05	Q	|	|	| V |
18+20	0.0862	0.05	Q	|	|	| V |
18+25	0.0866	0.05	Q	|	|	| V |
18+30	0.0869	0.04	Q	|	|	| V |
18+35	0.0872	0.04	Q	|	|	| V |
18+40	0.0874	0.04	Q	|	|	| V |
18+45	0.0877	0.04	Q	|	|	| V |
18+50	0.0880	0.04	Q	|	|	| V |
18+55	0.0883	0.04	Q	|	|	| V |
19+ 0	0.0885	0.04	Q	|	|	| V |
19+ 5	0.0888	0.04	Q	|	|	| V |
19+10	0.0891	0.04	Q	|	|	| V |
19+15	0.0893	0.04	Q	|	|	| V |
19+20	0.0896	0.04	Q	|	|	| V |
19+25	0.0898	0.04	Q	|	|	| V |
19+30	0.0901	0.04	Q	|	|	| V |
19+35	0.0903	0.03	Q	|	|	| V |
19+40	0.0905	0.03	Q	|	|	| V |
19+45	0.0908	0.03	Q	|	|	| V |
19+50	0.0910	0.03	Q	|	|	| V |
19+55	0.0912	0.03	Q	|	|	| V |
20+ 0	0.0914	0.03	Q	|	|	| V |
20+ 5	0.0917	0.03	Q	|	|	| V |
20+10	0.0919	0.03	Q	|	|	| V |
20+15	0.0921	0.03	Q	|	|	| V |
20+20	0.0923	0.03	Q	|	|	| V |
20+25	0.0925	0.03	Q	|	|	| V |
20+30	0.0927	0.03	Q	|	|	| V |
20+35	0.0929	0.03	Q	|	|	| V |
20+40	0.0931	0.03	Q	|	|	| V |
20+45	0.0933	0.03	Q	|	|	| V |
20+50	0.0935	0.03	Q	|	|	| V |
20+55	0.0937	0.03	Q	|	|	| V |
21+ 0	0.0939	0.03	Q	|	|	| V |
21+ 5	0.0941	0.03	Q	|	|	| V |
21+10	0.0943	0.03	Q	|	|	| V |
21+15	0.0945	0.03	Q	|	|	| V |
21+20	0.0947	0.03	Q	|	|	| V |
21+25	0.0949	0.03	Q	|	|	| V |
21+30	0.0950	0.03	Q	|	|	| V |
21+35	0.0952	0.03	Q	|	|	| V |
21+40	0.0954	0.03	Q	|	|	| V |
21+45	0.0956	0.03	Q	|	|	| V |
21+50	0.0958	0.03	Q	|	|	| V |
21+55	0.0959	0.03	Q	|	|	| V |
22+ 0	0.0961	0.03	Q	|	|	| V |
22+ 5	0.0963	0.02	Q	|	|	| V |
22+10	0.0964	0.02	Q	|	|	| V |
22+15	0.0966	0.02	Q	|	|	| V |
22+20	0.0968	0.02	Q	|	|	| V |
22+25	0.0969	0.02	Q	|	|	| V |
22+30	0.0971	0.02	Q	|	|	| V |
22+35	0.0973	0.02	Q	|	|	| V |
22+40	0.0974	0.02	Q	|	|	| V |

22+45	0.0976	0.02	Q				V
22+50	0.0978	0.02	Q				V
22+55	0.0979	0.02	Q				V
23+ 0	0.0981	0.02	Q				V
23+ 5	0.0982	0.02	Q				V
23+10	0.0984	0.02	Q				V
23+15	0.0985	0.02	Q				V
23+20	0.0987	0.02	Q				V
23+25	0.0988	0.02	Q				V
23+30	0.0990	0.02	Q				V
23+35	0.0992	0.02	Q				V
23+40	0.0993	0.02	Q				V
23+45	0.0994	0.02	Q				V
23+50	0.0996	0.02	Q				V
23+55	0.0997	0.02	Q				V
24+ 0	0.0999	0.02	Q				V

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

Study date 09/30/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 2B (POC 2)
2 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA2BQ2.HCU

Storm Event Year = 2

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
0.53	1	0.77
Rainfall data for year 2		
0.53	6	1.16
Rainfall data for year 2		
0.53	24	2.07
Rainfall data for year 100		
0.53	1	1.22
Rainfall data for year 100		
0.53	6	2.67
Rainfall data for year 100		
0.53	24	4.89

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	56.0	0.53	1.000	0.734	0.100	0.073

Area-averaged adjusted loss rate Fm (In/Hr) = 0.073

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.05	0.100	56.0	56.0	7.86	0.014
0.48	0.900	98.0	98.0	0.20	0.891

Area-averaged catchment yield fraction, Y = 0.803
Area-averaged low loss fraction, Yb = 0.197
User entry of time of concentration = 0.165 (hours)
++
Watershed area = 0.53(Ac.)
Catchment Lag time = 0.132 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 63.1313
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.073(In/Hr)
Average low loss rate fraction (Yb) = 0.197 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.167(In)
Computed peak 30-minute rainfall = 0.343(In)
Specified peak 1-hour rainfall = 0.452(In)
Computed peak 3-hour rainfall = 0.806(In)
Specified peak 6-hour rainfall = 1.160(In)
Specified peak 24-hour rainfall = 2.070(In)

Rainfall depth area reduction factors:
Using a total area of 0.53(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.167(In)
30-minute factor = 1.000 Adjusted rainfall = 0.343(In)
1-hour factor = 1.000 Adjusted rainfall = 0.452(In)
3-hour factor = 1.000 Adjusted rainfall = 0.806(In)
6-hour factor = 1.000 Adjusted rainfall = 1.160(In)
24-hour factor = 1.000 Adjusted rainfall = 2.070(In)

U n i t H y d r o g r a p h
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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 6.41 (CFS))	
1	7.193	0.461
2	45.488	2.455
3	84.473	2.499
4	96.556	0.775
5	98.914	0.151
6	100.000	0.070

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1673	0.1673
2	0.2208	0.0535
3	0.2596	0.0389
4	0.2913	0.0317
5	0.3185	0.0272
6	0.3426	0.0241
7	0.3644	0.0218
8	0.3844	0.0200
9	0.4029	0.0185
10	0.4203	0.0173
11	0.4366	0.0163
12	0.4521	0.0155
13	0.4715	0.0194
14	0.4902	0.0187
15	0.5083	0.0181
16	0.5259	0.0176
17	0.5429	0.0170
18	0.5595	0.0166
19	0.5756	0.0161

20	0.5914	0.0157
21	0.6068	0.0154
22	0.6218	0.0150
23	0.6365	0.0147
24	0.6509	0.0144
25	0.6650	0.0141
26	0.6789	0.0139
27	0.6925	0.0136
28	0.7059	0.0134
29	0.7190	0.0131
30	0.7320	0.0129
31	0.7447	0.0127
32	0.7572	0.0125
33	0.7696	0.0124
34	0.7818	0.0122
35	0.7938	0.0120
36	0.8056	0.0118
37	0.8173	0.0117
38	0.8289	0.0115
39	0.8403	0.0114
40	0.8515	0.0113
41	0.8627	0.0111
42	0.8737	0.0110
43	0.8845	0.0109
44	0.8953	0.0108
45	0.9059	0.0106
46	0.9165	0.0105
47	0.9269	0.0104
48	0.9372	0.0103
49	0.9474	0.0102
50	0.9576	0.0101
51	0.9676	0.0100
52	0.9775	0.0099
53	0.9874	0.0098
54	0.9971	0.0098
55	1.0068	0.0097
56	1.0164	0.0096
57	1.0259	0.0095
58	1.0353	0.0094
59	1.0447	0.0093
60	1.0539	0.0093
61	1.0631	0.0092
62	1.0723	0.0091
63	1.0813	0.0091
64	1.0903	0.0090
65	1.0992	0.0089
66	1.1081	0.0089
67	1.1169	0.0088
68	1.1256	0.0087
69	1.1343	0.0087
70	1.1429	0.0086
71	1.1515	0.0086
72	1.1600	0.0085
73	1.1667	0.0067
74	1.1734	0.0067
75	1.1799	0.0066
76	1.1865	0.0065
77	1.1930	0.0065
78	1.1994	0.0064
79	1.2058	0.0064
80	1.2122	0.0064
81	1.2185	0.0063
82	1.2248	0.0063
83	1.2310	0.0062
84	1.2372	0.0062
85	1.2433	0.0061
86	1.2494	0.0061
87	1.2554	0.0060
88	1.2614	0.0060
89	1.2674	0.0060
90	1.2733	0.0059

91	1.2792	0.0059
92	1.2851	0.0059
93	1.2909	0.0058
94	1.2967	0.0058
95	1.3024	0.0057
96	1.3081	0.0057
97	1.3138	0.0057
98	1.3194	0.0056
99	1.3251	0.0056
100	1.3306	0.0056
101	1.3362	0.0055
102	1.3417	0.0055
103	1.3472	0.0055
104	1.3526	0.0054
105	1.3580	0.0054
106	1.3634	0.0054
107	1.3688	0.0054
108	1.3741	0.0053
109	1.3794	0.0053
110	1.3847	0.0053
111	1.3899	0.0052
112	1.3951	0.0052
113	1.4003	0.0052
114	1.4055	0.0052
115	1.4106	0.0051
116	1.4157	0.0051
117	1.4208	0.0051
118	1.4259	0.0051
119	1.4309	0.0050
120	1.4359	0.0050
121	1.4409	0.0050
122	1.4459	0.0050
123	1.4508	0.0049
124	1.4557	0.0049
125	1.4606	0.0049
126	1.4655	0.0049
127	1.4704	0.0048
128	1.4752	0.0048
129	1.4800	0.0048
130	1.4848	0.0048
131	1.4895	0.0048
132	1.4943	0.0047
133	1.4990	0.0047
134	1.5037	0.0047
135	1.5084	0.0047
136	1.5130	0.0047
137	1.5177	0.0046
138	1.5223	0.0046
139	1.5269	0.0046
140	1.5314	0.0046
141	1.5360	0.0046
142	1.5406	0.0045
143	1.5451	0.0045
144	1.5496	0.0045
145	1.5541	0.0045
146	1.5585	0.0045
147	1.5630	0.0045
148	1.5674	0.0044
149	1.5718	0.0044
150	1.5762	0.0044
151	1.5806	0.0044
152	1.5850	0.0044
153	1.5893	0.0043
154	1.5937	0.0043
155	1.5980	0.0043
156	1.6023	0.0043
157	1.6066	0.0043
158	1.6108	0.0043
159	1.6151	0.0043
160	1.6193	0.0042
161	1.6235	0.0042

162	1.6277	0.0042
163	1.6319	0.0042
164	1.6361	0.0042
165	1.6403	0.0042
166	1.6444	0.0041
167	1.6485	0.0041
168	1.6527	0.0041
169	1.6568	0.0041
170	1.6608	0.0041
171	1.6649	0.0041
172	1.6690	0.0041
173	1.6730	0.0040
174	1.6771	0.0040
175	1.6811	0.0040
176	1.6851	0.0040
177	1.6891	0.0040
178	1.6931	0.0040
179	1.6970	0.0040
180	1.7010	0.0040
181	1.7049	0.0039
182	1.7088	0.0039
183	1.7128	0.0039
184	1.7167	0.0039
185	1.7206	0.0039
186	1.7244	0.0039
187	1.7283	0.0039
188	1.7322	0.0039
189	1.7360	0.0038
190	1.7398	0.0038
191	1.7437	0.0038
192	1.7475	0.0038
193	1.7513	0.0038
194	1.7550	0.0038
195	1.7588	0.0038
196	1.7626	0.0038
197	1.7663	0.0038
198	1.7701	0.0037
199	1.7738	0.0037
200	1.7775	0.0037
201	1.7812	0.0037
202	1.7849	0.0037
203	1.7886	0.0037
204	1.7923	0.0037
205	1.7959	0.0037
206	1.7996	0.0037
207	1.8032	0.0036
208	1.8069	0.0036
209	1.8105	0.0036
210	1.8141	0.0036
211	1.8177	0.0036
212	1.8213	0.0036
213	1.8249	0.0036
214	1.8285	0.0036
215	1.8320	0.0036
216	1.8356	0.0036
217	1.8391	0.0035
218	1.8427	0.0035
219	1.8462	0.0035
220	1.8497	0.0035
221	1.8532	0.0035
222	1.8567	0.0035
223	1.8602	0.0035
224	1.8637	0.0035
225	1.8672	0.0035
226	1.8706	0.0035
227	1.8741	0.0035
228	1.8775	0.0034
229	1.8810	0.0034
230	1.8844	0.0034
231	1.8878	0.0034
232	1.8912	0.0034

233	1.8946	0.0034
234	1.8980	0.0034
235	1.9014	0.0034
236	1.9048	0.0034
237	1.9081	0.0034
238	1.9115	0.0034
239	1.9148	0.0034
240	1.9182	0.0033
241	1.9215	0.0033
242	1.9249	0.0033
243	1.9282	0.0033
244	1.9315	0.0033
245	1.9348	0.0033
246	1.9381	0.0033
247	1.9414	0.0033
248	1.9446	0.0033
249	1.9479	0.0033
250	1.9512	0.0033
251	1.9544	0.0033
252	1.9577	0.0032
253	1.9609	0.0032
254	1.9642	0.0032
255	1.9674	0.0032
256	1.9706	0.0032
257	1.9738	0.0032
258	1.9770	0.0032
259	1.9802	0.0032
260	1.9834	0.0032
261	1.9866	0.0032
262	1.9898	0.0032
263	1.9929	0.0032
264	1.9961	0.0032
265	1.9993	0.0032
266	2.0024	0.0031
267	2.0056	0.0031
268	2.0087	0.0031
269	2.0118	0.0031
270	2.0149	0.0031
271	2.0180	0.0031
272	2.0212	0.0031
273	2.0243	0.0031
274	2.0274	0.0031
275	2.0304	0.0031
276	2.0335	0.0031
277	2.0366	0.0031
278	2.0397	0.0031
279	2.0427	0.0031
280	2.0458	0.0031
281	2.0488	0.0030
282	2.0519	0.0030
283	2.0549	0.0030
284	2.0579	0.0030
285	2.0610	0.0030
286	2.0640	0.0030
287	2.0670	0.0030
288	2.0700	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0024
4	0.0030	0.0006	0.0024
5	0.0030	0.0006	0.0024
6	0.0030	0.0006	0.0024
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025

11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025
14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0025
16	0.0031	0.0006	0.0025
17	0.0032	0.0006	0.0025
18	0.0032	0.0006	0.0025
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0033	0.0006	0.0026
27	0.0033	0.0006	0.0026
28	0.0033	0.0006	0.0026
29	0.0033	0.0006	0.0026
30	0.0033	0.0007	0.0027
31	0.0033	0.0007	0.0027
32	0.0033	0.0007	0.0027
33	0.0033	0.0007	0.0027
34	0.0034	0.0007	0.0027
35	0.0034	0.0007	0.0027
36	0.0034	0.0007	0.0027
37	0.0034	0.0007	0.0027
38	0.0034	0.0007	0.0027
39	0.0034	0.0007	0.0027
40	0.0034	0.0007	0.0028
41	0.0034	0.0007	0.0028
42	0.0035	0.0007	0.0028
43	0.0035	0.0007	0.0028
44	0.0035	0.0007	0.0028
45	0.0035	0.0007	0.0028
46	0.0035	0.0007	0.0028
47	0.0035	0.0007	0.0028
48	0.0035	0.0007	0.0028
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0029
55	0.0036	0.0007	0.0029
56	0.0037	0.0007	0.0029
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0038	0.0007	0.0030
63	0.0038	0.0007	0.0030
64	0.0038	0.0007	0.0030
65	0.0038	0.0007	0.0031
66	0.0038	0.0008	0.0031
67	0.0038	0.0008	0.0031
68	0.0039	0.0008	0.0031
69	0.0039	0.0008	0.0031
70	0.0039	0.0008	0.0031
71	0.0039	0.0008	0.0031
72	0.0039	0.0008	0.0032
73	0.0040	0.0008	0.0032
74	0.0040	0.0008	0.0032
75	0.0040	0.0008	0.0032
76	0.0040	0.0008	0.0032
77	0.0040	0.0008	0.0032
78	0.0040	0.0008	0.0032
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0033

82	0.0041	0.0008	0.0033
83	0.0042	0.0008	0.0033
84	0.0042	0.0008	0.0034
85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0034
88	0.0043	0.0008	0.0034
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0043	0.0009	0.0035
92	0.0044	0.0009	0.0035
93	0.0044	0.0009	0.0035
94	0.0044	0.0009	0.0035
95	0.0045	0.0009	0.0036
96	0.0045	0.0009	0.0036
97	0.0045	0.0009	0.0036
98	0.0045	0.0009	0.0036
99	0.0046	0.0009	0.0037
100	0.0046	0.0009	0.0037
101	0.0046	0.0009	0.0037
102	0.0046	0.0009	0.0037
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0047	0.0009	0.0038
106	0.0048	0.0009	0.0038
107	0.0048	0.0009	0.0039
108	0.0048	0.0010	0.0039
109	0.0049	0.0010	0.0039
110	0.0049	0.0010	0.0039
111	0.0049	0.0010	0.0040
112	0.0050	0.0010	0.0040
113	0.0050	0.0010	0.0040
114	0.0050	0.0010	0.0040
115	0.0051	0.0010	0.0041
116	0.0051	0.0010	0.0041
117	0.0052	0.0010	0.0041
118	0.0052	0.0010	0.0042
119	0.0052	0.0010	0.0042
120	0.0053	0.0010	0.0042
121	0.0053	0.0010	0.0043
122	0.0054	0.0011	0.0043
123	0.0054	0.0011	0.0044
124	0.0054	0.0011	0.0044
125	0.0055	0.0011	0.0044
126	0.0055	0.0011	0.0045
127	0.0056	0.0011	0.0045
128	0.0056	0.0011	0.0045
129	0.0057	0.0011	0.0046
130	0.0057	0.0011	0.0046
131	0.0058	0.0011	0.0047
132	0.0059	0.0012	0.0047
133	0.0059	0.0012	0.0048
134	0.0060	0.0012	0.0048
135	0.0060	0.0012	0.0049
136	0.0061	0.0012	0.0049
137	0.0062	0.0012	0.0050
138	0.0062	0.0012	0.0050
139	0.0063	0.0012	0.0051
140	0.0064	0.0013	0.0051
141	0.0064	0.0013	0.0052
142	0.0065	0.0013	0.0052
143	0.0066	0.0013	0.0053
144	0.0067	0.0013	0.0053
145	0.0085	0.0017	0.0068
146	0.0086	0.0017	0.0069
147	0.0087	0.0017	0.0070
148	0.0087	0.0017	0.0070
149	0.0089	0.0017	0.0071
150	0.0089	0.0018	0.0072
151	0.0091	0.0018	0.0073
152	0.0091	0.0018	0.0073

153	0.0093	0.0018	0.0074
154	0.0093	0.0018	0.0075
155	0.0095	0.0019	0.0076
156	0.0096	0.0019	0.0077
157	0.0098	0.0019	0.0078
158	0.0098	0.0019	0.0079
159	0.0100	0.0020	0.0081
160	0.0101	0.0020	0.0081
161	0.0103	0.0020	0.0083
162	0.0104	0.0021	0.0084
163	0.0106	0.0021	0.0085
164	0.0108	0.0021	0.0086
165	0.0110	0.0022	0.0088
166	0.0111	0.0022	0.0089
167	0.0114	0.0022	0.0092
168	0.0115	0.0023	0.0093
169	0.0118	0.0023	0.0095
170	0.0120	0.0024	0.0096
171	0.0124	0.0024	0.0099
172	0.0125	0.0025	0.0101
173	0.0129	0.0025	0.0104
174	0.0131	0.0026	0.0106
175	0.0136	0.0027	0.0109
176	0.0139	0.0027	0.0111
177	0.0144	0.0028	0.0116
178	0.0147	0.0029	0.0118
179	0.0154	0.0030	0.0123
180	0.0157	0.0031	0.0126
181	0.0166	0.0033	0.0133
182	0.0170	0.0034	0.0137
183	0.0181	0.0036	0.0145
184	0.0187	0.0037	0.0150
185	0.0155	0.0030	0.0124
186	0.0163	0.0032	0.0131
187	0.0185	0.0037	0.0149
188	0.0200	0.0039	0.0161
189	0.0241	0.0047	0.0194
190	0.0272	0.0054	0.0218
191	0.0389	0.0061	0.0328
192	0.0535	0.0061	0.0473
193	0.1673	0.0061	0.1612
194	0.0317	0.0061	0.0255
195	0.0218	0.0043	0.0175
196	0.0173	0.0034	0.0139
197	0.0194	0.0038	0.0156
198	0.0176	0.0035	0.0141
199	0.0161	0.0032	0.0130
200	0.0150	0.0030	0.0121
201	0.0141	0.0028	0.0113
202	0.0134	0.0026	0.0107
203	0.0127	0.0025	0.0102
204	0.0122	0.0024	0.0098
205	0.0117	0.0023	0.0094
206	0.0113	0.0022	0.0090
207	0.0109	0.0021	0.0087
208	0.0105	0.0021	0.0085
209	0.0102	0.0020	0.0082
210	0.0099	0.0020	0.0080
211	0.0097	0.0019	0.0078
212	0.0094	0.0019	0.0076
213	0.0092	0.0018	0.0074
214	0.0090	0.0018	0.0072
215	0.0088	0.0017	0.0071
216	0.0086	0.0017	0.0069
217	0.0067	0.0013	0.0054
218	0.0065	0.0013	0.0053
219	0.0064	0.0013	0.0051
220	0.0063	0.0012	0.0050
221	0.0061	0.0012	0.0049
222	0.0060	0.0012	0.0048
223	0.0059	0.0012	0.0047

224	0.0058	0.0011	0.0046
225	0.0057	0.0011	0.0046
226	0.0056	0.0011	0.0045
227	0.0055	0.0011	0.0044
228	0.0054	0.0011	0.0043
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0042
231	0.0051	0.0010	0.0041
232	0.0051	0.0010	0.0041
233	0.0050	0.0010	0.0040
234	0.0049	0.0010	0.0039
235	0.0048	0.0010	0.0039
236	0.0048	0.0009	0.0038
237	0.0047	0.0009	0.0038
238	0.0047	0.0009	0.0037
239	0.0046	0.0009	0.0037
240	0.0045	0.0009	0.0036
241	0.0045	0.0009	0.0036
242	0.0044	0.0009	0.0036
243	0.0044	0.0009	0.0035
244	0.0043	0.0009	0.0035
245	0.0043	0.0008	0.0034
246	0.0042	0.0008	0.0034
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0033
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0008	0.0032
252	0.0040	0.0008	0.0032
253	0.0039	0.0008	0.0032
254	0.0039	0.0008	0.0031
255	0.0039	0.0008	0.0031
256	0.0038	0.0008	0.0031
257	0.0038	0.0007	0.0030
258	0.0038	0.0007	0.0030
259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0029
262	0.0036	0.0007	0.0029
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0028
266	0.0035	0.0007	0.0028
267	0.0035	0.0007	0.0028
268	0.0035	0.0007	0.0028
269	0.0034	0.0007	0.0028
270	0.0034	0.0007	0.0027
271	0.0034	0.0007	0.0027
272	0.0034	0.0007	0.0027
273	0.0033	0.0007	0.0027
274	0.0033	0.0007	0.0027
275	0.0033	0.0006	0.0026
276	0.0033	0.0006	0.0026
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0032	0.0006	0.0025
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0031	0.0006	0.0025
287	0.0030	0.0006	0.0024
288	0.0030	0.0006	0.0024

Total soil rain loss = 0.37(In)
Total effective rainfall = 1.70(In)
Peak flow rate in flood hydrograph = 0.56(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

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	0.0000	0.00	Q				
0+10	0.0001	0.01	Q				
0+15	0.0001	0.01	Q				
0+20	0.0002	0.01	Q				
0+25	0.0004	0.02	Q				
0+30	0.0005	0.02	Q				
0+35	0.0006	0.02	Q				
0+40	0.0007	0.02	Q				
0+45	0.0008	0.02	Q				
0+50	0.0009	0.02	Q				
0+55	0.0010	0.02	Q				
1+ 0	0.0011	0.02	Q				
1+ 5	0.0012	0.02	Q				
1+10	0.0013	0.02	Q				
1+15	0.0014	0.02	Q				
1+20	0.0016	0.02	Q				
1+25	0.0017	0.02	Q				
1+30	0.0018	0.02	Q				
1+35	0.0019	0.02	QV				
1+40	0.0020	0.02	QV				
1+45	0.0021	0.02	QV				
1+50	0.0022	0.02	QV				
1+55	0.0023	0.02	QV				
2+ 0	0.0025	0.02	QV				
2+ 5	0.0026	0.02	QV				
2+10	0.0027	0.02	QV				
2+15	0.0028	0.02	QV				
2+20	0.0029	0.02	QV				
2+25	0.0030	0.02	QV				
2+30	0.0032	0.02	QV				
2+35	0.0033	0.02	QV				
2+40	0.0034	0.02	QV				
2+45	0.0035	0.02	QV				
2+50	0.0036	0.02	QV				
2+55	0.0037	0.02	QV				
3+ 0	0.0039	0.02	Q V				
3+ 5	0.0040	0.02	Q V				
3+10	0.0041	0.02	Q V				
3+15	0.0042	0.02	Q V				
3+20	0.0043	0.02	Q V				
3+25	0.0045	0.02	Q V				
3+30	0.0046	0.02	Q V				
3+35	0.0047	0.02	Q V				
3+40	0.0048	0.02	Q V				
3+45	0.0050	0.02	Q V				
3+50	0.0051	0.02	Q V				
3+55	0.0052	0.02	Q V				
4+ 0	0.0053	0.02	Q V				
4+ 5	0.0054	0.02	Q V				
4+10	0.0056	0.02	Q V				
4+15	0.0057	0.02	Q V				
4+20	0.0058	0.02	Q V				
4+25	0.0060	0.02	Q V				
4+30	0.0061	0.02	Q V				
4+35	0.0062	0.02	Q V				
4+40	0.0063	0.02	Q V				
4+45	0.0065	0.02	Q V				
4+50	0.0066	0.02	Q V				
4+55	0.0067	0.02	Q V				
5+ 0	0.0069	0.02	Q V				
5+ 5	0.0070	0.02	Q V				
5+10	0.0071	0.02	Q V				

5+15	0.0073	0.02	Q V	|	|	|	|
5+20	0.0074	0.02	Q V	|	|	|	|
5+25	0.0075	0.02	Q V	|	|	|	|
5+30	0.0077	0.02	Q V	|	|	|	|
5+35	0.0078	0.02	Q V	|	|	|	|
5+40	0.0079	0.02	Q V	|	|	|	|
5+45	0.0081	0.02	Q V	|	|	|	|
5+50	0.0082	0.02	Q V	|	|	|	|
5+55	0.0083	0.02	Q V	|	|	|	|
6+ 0	0.0085	0.02	Q V	|	|	|	|
6+ 5	0.0086	0.02	Q V	|	|	|	|
6+10	0.0088	0.02	Q V	|	|	|	|
6+15	0.0089	0.02	Q V	|	|	|	|
6+20	0.0090	0.02	Q V	|	|	|	|
6+25	0.0092	0.02	Q V	|	|	|	|
6+30	0.0093	0.02	Q V	|	|	|	|
6+35	0.0095	0.02	Q V	|	|	|	|
6+40	0.0096	0.02	Q V	|	|	|	|
6+45	0.0098	0.02	Q V	|	|	|	|
6+50	0.0099	0.02	Q V	|	|	|	|
6+55	0.0100	0.02	Q V	|	|	|	|
7+ 0	0.0102	0.02	Q V	|	|	|	|
7+ 5	0.0103	0.02	Q V	|	|	|	|
7+10	0.0105	0.02	Q V	|	|	|	|
7+15	0.0106	0.02	Q V	|	|	|	|
7+20	0.0108	0.02	Q V	|	|	|	|
7+25	0.0109	0.02	Q V	|	|	|	|
7+30	0.0111	0.02	Q V	|	|	|	|
7+35	0.0112	0.02	Q V	|	|	|	|
7+40	0.0114	0.02	Q V	|	|	|	|
7+45	0.0115	0.02	Q V	|	|	|	|
7+50	0.0117	0.02	Q V	|	|	|	|
7+55	0.0119	0.02	Q V	|	|	|	|
8+ 0	0.0120	0.02	Q V	|	|	|	|
8+ 5	0.0122	0.02	Q V	|	|	|	|
8+10	0.0123	0.02	Q V	|	|	|	|
8+15	0.0125	0.02	Q V	|	|	|	|
8+20	0.0127	0.02	Q V	|	|	|	|
8+25	0.0128	0.02	Q V	|	|	|	|
8+30	0.0130	0.02	Q V	|	|	|	|
8+35	0.0131	0.02	Q V	|	|	|	|
8+40	0.0133	0.02	Q V	|	|	|	|
8+45	0.0135	0.02	Q V	|	|	|	|
8+50	0.0136	0.02	Q V	|	|	|	|
8+55	0.0138	0.02	Q V	|	|	|	|
9+ 0	0.0140	0.02	Q V	|	|	|	|
9+ 5	0.0141	0.02	Q V	|	|	|	|
9+10	0.0143	0.02	Q V	|	|	|	|
9+15	0.0145	0.03	Q V	|	|	|	|
9+20	0.0147	0.03	Q V	|	|	|	|
9+25	0.0148	0.03	Q V	|	|	|	|
9+30	0.0150	0.03	Q V	|	|	|	|
9+35	0.0152	0.03	Q V	|	|	|	|
9+40	0.0154	0.03	Q V	|	|	|	|
9+45	0.0156	0.03	Q V	|	|	|	|
9+50	0.0157	0.03	Q V	|	|	|	|
9+55	0.0159	0.03	Q V	|	|	|	|
10+ 0	0.0161	0.03	Q V	|	|	|	|
10+ 5	0.0163	0.03	Q V	|	|	|	|
10+10	0.0165	0.03	Q V	|	|	|	|
10+15	0.0167	0.03	Q V	|	|	|	|
10+20	0.0169	0.03	Q V	|	|	|	|
10+25	0.0171	0.03	Q V	|	|	|	|
10+30	0.0172	0.03	Q V	|	|	|	|
10+35	0.0174	0.03	Q V	|	|	|	|
10+40	0.0176	0.03	Q V	|	|	|	|
10+45	0.0178	0.03	Q V	|	|	|	|
10+50	0.0180	0.03	Q V	|	|	|	|
10+55	0.0182	0.03	Q V	|	|	|	|
11+ 0	0.0184	0.03	Q V	|	|	|	|
11+ 5	0.0187	0.03	Q V	|	|	|	|

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11+10       0.0189      0.03  Q         V         |         |         |
11+15       0.0191      0.03  Q         V         |         |         |
11+20       0.0193      0.03  Q         V         |         |         |
11+25       0.0195      0.03  Q         V         |         |         |
11+30       0.0197      0.03  Q         V         |         |         |
11+35       0.0199      0.03  Q         V         |         |         |
11+40       0.0202      0.03  Q         V         |         |         |
11+45       0.0204      0.03  Q         V         |         |         |
11+50       0.0206      0.03  Q         |V        |         |         |
11+55       0.0208      0.03  Q         |V        |         |         |
12+ 0       0.0211      0.03  Q         |V        |         |         |
12+ 5       0.0213      0.03  Q         |V        |         |         |
12+10       0.0216      0.04  Q         |V        |         |         |
12+15       0.0219      0.04  Q         |V        |         |         |
12+20       0.0222      0.04  Q         |V        |         |         |
12+25       0.0225      0.04  Q         | V       |         |         |
12+30       0.0228      0.05  Q         | V       |         |         |
12+35       0.0231      0.05  Q         | V       |         |         |
12+40       0.0234      0.05  Q         | V       |         |         |
12+45       0.0237      0.05  Q         | V       |         |         |
12+50       0.0241      0.05  Q         | V       |         |         |
12+55       0.0244      0.05  Q         |  V      |         |         |
13+ 0       0.0247      0.05  Q         |  V      |         |         |
13+ 5       0.0251      0.05  Q         |  V      |         |         |
13+10       0.0254      0.05  Q         |  V      |         |         |
13+15       0.0258      0.05  Q         |  V      |         |         |
13+20       0.0261      0.05  Q         |  V      |         |         |
13+25       0.0265      0.05  Q         |   V     |         |         |
13+30       0.0268      0.05  Q         |   V     |         |         |
13+35       0.0272      0.05  Q         |   V     |         |         |
13+40       0.0276      0.05  Q         |   V     |         |         |
13+45       0.0279      0.05  Q         |   V     |         |         |
13+50       0.0283      0.06  Q         |    V    |         |         |
13+55       0.0287      0.06  Q         |    V    |         |         |
14+ 0       0.0291      0.06  Q         |    V    |         |         |
14+ 5       0.0295      0.06  Q         |    V    |         |         |
14+10       0.0299      0.06  Q         |     V   |         |         |
14+15       0.0304      0.06  Q         |     V   |         |         |
14+20       0.0308      0.06  Q         |     V   |         |         |
14+25       0.0312      0.06  Q         |     V   |         |         |
14+30       0.0317      0.07  Q         |     V   |         |         |
14+35       0.0321      0.07  Q         |      V  |         |         |
14+40       0.0326      0.07  Q         |      V  |         |         |
14+45       0.0331      0.07  Q         |      V  |         |         |
14+50       0.0336      0.07  Q         |      V  |         |         |
14+55       0.0341      0.07  Q         |       V |         |         |
15+ 0       0.0346      0.08  Q         |       V |         |         |
15+ 5       0.0352      0.08  Q         |       V |         |         |
15+10       0.0358      0.08  Q         |        V|         |         |
15+15       0.0364      0.09  Q         |        V|         |         |
15+20       0.0370      0.09  Q         |        V|         |         |
15+25       0.0376      0.09  Q         |         V         |         |
15+30       0.0382      0.09  Q         |         V         |         |
15+35       0.0388      0.08  Q         |         V         |         |
15+40       0.0394      0.09  Q         |         |V        |         |
15+45       0.0401      0.10  Q         |         |V        |         |
15+50       0.0409      0.11  Q         |         |V        |         |
15+55       0.0418      0.13  Q         |         | V       |         |
16+ 0       0.0430      0.18  Q         |         | V       |         |
16+ 5       0.0450      0.29  |Q        |         |   V     |         |
16+10       0.0488      0.56  | Q       |         |     V   |         |
16+15       0.0524      0.52  | Q       |         |       V |         |
16+20       0.0541      0.25  Q         |         |       V |         |
16+25       0.0550      0.13  Q         |         |        V|         |
16+30       0.0558      0.11  Q         |         |        V|         |
16+35       0.0564      0.09  Q         |         |         V         |
16+40       0.0570      0.09  Q         |         |         V         |
16+45       0.0576      0.08  Q         |         |         V         |
16+50       0.0581      0.08  Q         |         |         |V        |
16+55       0.0586      0.07  Q         |         |         |V        |
17+ 0       0.0591      0.07  Q         |         |         |V        |
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17+ 5	0.0595	0.06	Q	|	|	|	V |
17+10	0.0599	0.06	Q	|	|	|	V |
17+15	0.0604	0.06	Q	|	|	|	V |
17+20	0.0607	0.06	Q	|	|	|	V |
17+25	0.0611	0.06	Q	|	|	|	V |
17+30	0.0615	0.05	Q	|	|	|	V |
17+35	0.0619	0.05	Q	|	|	|	V |
17+40	0.0622	0.05	Q	|	|	|	V |
17+45	0.0625	0.05	Q	|	|	|	V |
17+50	0.0629	0.05	Q	|	|	|	V |
17+55	0.0632	0.05	Q	|	|	|	V |
18+ 0	0.0635	0.05	Q	|	|	|	V |
18+ 5	0.0638	0.04	Q	|	|	|	V |
18+10	0.0641	0.04	Q	|	|	|	V |
18+15	0.0643	0.04	Q	|	|	|	V |
18+20	0.0646	0.03	Q	|	|	|	V |
18+25	0.0648	0.03	Q	|	|	|	V |
18+30	0.0650	0.03	Q	|	|	|	V |
18+35	0.0652	0.03	Q	|	|	|	V |
18+40	0.0655	0.03	Q	|	|	|	V |
18+45	0.0657	0.03	Q	|	|	|	V |
18+50	0.0659	0.03	Q	|	|	|	V |
18+55	0.0661	0.03	Q	|	|	|	V |
19+ 0	0.0663	0.03	Q	|	|	|	V |
19+ 5	0.0665	0.03	Q	|	|	|	V |
19+10	0.0666	0.03	Q	|	|	|	V |
19+15	0.0668	0.03	Q	|	|	|	V |
19+20	0.0670	0.03	Q	|	|	|	V |
19+25	0.0672	0.03	Q	|	|	|	V |
19+30	0.0674	0.03	Q	|	|	|	V |
19+35	0.0676	0.03	Q	|	|	|	V |
19+40	0.0677	0.03	Q	|	|	|	V |
19+45	0.0679	0.02	Q	|	|	|	V |
19+50	0.0681	0.02	Q	|	|	|	V |
19+55	0.0682	0.02	Q	|	|	|	V |
20+ 0	0.0684	0.02	Q	|	|	|	V |
20+ 5	0.0686	0.02	Q	|	|	|	V |
20+10	0.0687	0.02	Q	|	|	|	V |
20+15	0.0689	0.02	Q	|	|	|	V |
20+20	0.0690	0.02	Q	|	|	|	V |
20+25	0.0692	0.02	Q	|	|	|	V |
20+30	0.0693	0.02	Q	|	|	|	V |
20+35	0.0695	0.02	Q	|	|	|	V |
20+40	0.0696	0.02	Q	|	|	|	V |
20+45	0.0698	0.02	Q	|	|	|	V |
20+50	0.0699	0.02	Q	|	|	|	V |
20+55	0.0701	0.02	Q	|	|	|	V |
21+ 0	0.0702	0.02	Q	|	|	|	V |
21+ 5	0.0704	0.02	Q	|	|	|	V |
21+10	0.0705	0.02	Q	|	|	|	V |
21+15	0.0706	0.02	Q	|	|	|	V |
21+20	0.0708	0.02	Q	|	|	|	V |
21+25	0.0709	0.02	Q	|	|	|	V |
21+30	0.0711	0.02	Q	|	|	|	V |
21+35	0.0712	0.02	Q	|	|	|	V |
21+40	0.0713	0.02	Q	|	|	|	V |
21+45	0.0715	0.02	Q	|	|	|	V |
21+50	0.0716	0.02	Q	|	|	|	V |
21+55	0.0717	0.02	Q	|	|	|	V |
22+ 0	0.0718	0.02	Q	|	|	|	V |
22+ 5	0.0720	0.02	Q	|	|	|	V |
22+10	0.0721	0.02	Q	|	|	|	V |
22+15	0.0722	0.02	Q	|	|	|	V |
22+20	0.0723	0.02	Q	|	|	|	V |
22+25	0.0725	0.02	Q	|	|	|	V |
22+30	0.0726	0.02	Q	|	|	|	V |
22+35	0.0727	0.02	Q	|	|	|	V |
22+40	0.0728	0.02	Q	|	|	|	V |
22+45	0.0730	0.02	Q	|	|	|	V |
22+50	0.0731	0.02	Q	|	|	|	V |
22+55	0.0732	0.02	Q	|	|	|	V |

23+ 0	0.0733	0.02	Q				V|
23+ 5	0.0734	0.02	Q				V|
23+10	0.0735	0.02	Q				V|
23+15	0.0737	0.02	Q				V|
23+20	0.0738	0.02	Q				V|
23+25	0.0739	0.02	Q				V|
23+30	0.0740	0.02	Q				V|
23+35	0.0741	0.02	Q				V|
23+40	0.0742	0.02	Q				V|
23+45	0.0743	0.02	Q				V|
23+50	0.0744	0.02	Q				V|
23+55	0.0745	0.02	Q				V|
24+ 0	0.0747	0.02	Q				V|

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

Study date 09/30/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 3 (POC 3)
2 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA3Q2.HCU

Storm Event Year = 2

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
2.10	1	0.77
Rainfall data for year 2		
2.10	6	1.16
Rainfall data for year 2		
2.10	24	2.07
Rainfall data for year 100		
2.10	1	1.22
Rainfall data for year 100		
2.10	6	2.67
Rainfall data for year 100		
2.10	24	4.89

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	56.0	2.10	1.000	0.734	0.100	0.073

Area-averaged adjusted loss rate Fm (In/Hr) = 0.073

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
0.21	0.100	56.0	56.0	7.86	0.014
1.89	0.900	98.0	98.0	0.20	0.891

Area-averaged catchment yield fraction, Y = 0.803
Area-averaged low loss fraction, Yb = 0.197
User entry of time of concentration = 0.084 (hours)
++
Watershed area = 2.10(Ac.)
Catchment Lag time = 0.067 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 124.0079
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.073(In/Hr)
Average low loss rate fraction (Yb) = 0.197 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.167(In)
Computed peak 30-minute rainfall = 0.343(In)
Specified peak 1-hour rainfall = 0.452(In)
Computed peak 3-hour rainfall = 0.806(In)
Specified peak 6-hour rainfall = 1.160(In)
Specified peak 24-hour rainfall = 2.070(In)

Rainfall depth area reduction factors:
Using a total area of 2.10(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.167(In)
30-minute factor = 1.000 Adjusted rainfall = 0.343(In)
1-hour factor = 1.000 Adjusted rainfall = 0.452(In)
3-hour factor = 1.000 Adjusted rainfall = 0.806(In)
6-hour factor = 1.000 Adjusted rainfall = 1.160(In)
24-hour factor = 1.000 Adjusted rainfall = 2.070(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 25.40 (CFS))	
1	25.526	6.483
2	89.878	16.343
3	100.000	2.571

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1673	0.1673
2	0.2207	0.0535
3	0.2596	0.0389
4	0.2913	0.0317
5	0.3185	0.0272
6	0.3426	0.0241
7	0.3644	0.0218
8	0.3843	0.0200
9	0.4029	0.0185
10	0.4202	0.0173
11	0.4366	0.0163
12	0.4520	0.0155
13	0.4715	0.0194
14	0.4902	0.0187
15	0.5083	0.0181
16	0.5259	0.0176
17	0.5429	0.0170
18	0.5595	0.0166
19	0.5756	0.0161
20	0.5914	0.0157
21	0.6067	0.0154
22	0.6218	0.0150

23	0.6365	0.0147
24	0.6509	0.0144
25	0.6650	0.0141
26	0.6789	0.0139
27	0.6925	0.0136
28	0.7059	0.0134
29	0.7190	0.0132
30	0.7319	0.0129
31	0.7447	0.0127
32	0.7572	0.0125
33	0.7696	0.0124
34	0.7818	0.0122
35	0.7938	0.0120
36	0.8056	0.0118
37	0.8173	0.0117
38	0.8289	0.0115
39	0.8403	0.0114
40	0.8515	0.0113
41	0.8627	0.0111
42	0.8737	0.0110
43	0.8845	0.0109
44	0.8953	0.0108
45	0.9059	0.0106
46	0.9165	0.0105
47	0.9269	0.0104
48	0.9372	0.0103
49	0.9474	0.0102
50	0.9576	0.0101
51	0.9676	0.0100
52	0.9775	0.0099
53	0.9874	0.0098
54	0.9971	0.0098
55	1.0068	0.0097
56	1.0164	0.0096
57	1.0259	0.0095
58	1.0353	0.0094
59	1.0447	0.0094
60	1.0539	0.0093
61	1.0631	0.0092
62	1.0723	0.0091
63	1.0813	0.0091
64	1.0903	0.0090
65	1.0992	0.0089
66	1.1081	0.0089
67	1.1169	0.0088
68	1.1256	0.0087
69	1.1343	0.0087
70	1.1429	0.0086
71	1.1515	0.0086
72	1.1600	0.0085
73	1.1667	0.0067
74	1.1733	0.0067
75	1.1799	0.0066
76	1.1865	0.0065
77	1.1930	0.0065
78	1.1994	0.0064
79	1.2058	0.0064
80	1.2122	0.0064
81	1.2185	0.0063
82	1.2248	0.0063
83	1.2310	0.0062
84	1.2372	0.0062
85	1.2433	0.0061
86	1.2494	0.0061
87	1.2554	0.0060
88	1.2614	0.0060
89	1.2674	0.0060
90	1.2733	0.0059
91	1.2792	0.0059
92	1.2851	0.0059
93	1.2909	0.0058

94	1.2967	0.0058
95	1.3024	0.0057
96	1.3081	0.0057
97	1.3138	0.0057
98	1.3194	0.0056
99	1.3250	0.0056
100	1.3306	0.0056
101	1.3362	0.0055
102	1.3417	0.0055
103	1.3472	0.0055
104	1.3526	0.0054
105	1.3580	0.0054
106	1.3634	0.0054
107	1.3688	0.0054
108	1.3741	0.0053
109	1.3794	0.0053
110	1.3847	0.0053
111	1.3899	0.0052
112	1.3951	0.0052
113	1.4003	0.0052
114	1.4055	0.0052
115	1.4106	0.0051
116	1.4157	0.0051
117	1.4208	0.0051
118	1.4259	0.0051
119	1.4309	0.0050
120	1.4359	0.0050
121	1.4409	0.0050
122	1.4459	0.0050
123	1.4508	0.0049
124	1.4557	0.0049
125	1.4606	0.0049
126	1.4655	0.0049
127	1.4703	0.0048
128	1.4752	0.0048
129	1.4800	0.0048
130	1.4848	0.0048
131	1.4895	0.0048
132	1.4943	0.0047
133	1.4990	0.0047
134	1.5037	0.0047
135	1.5084	0.0047
136	1.5130	0.0047
137	1.5176	0.0046
138	1.5223	0.0046
139	1.5269	0.0046
140	1.5314	0.0046
141	1.5360	0.0046
142	1.5405	0.0045
143	1.5451	0.0045
144	1.5496	0.0045
145	1.5541	0.0045
146	1.5585	0.0045
147	1.5630	0.0045
148	1.5674	0.0044
149	1.5718	0.0044
150	1.5762	0.0044
151	1.5806	0.0044
152	1.5850	0.0044
153	1.5893	0.0043
154	1.5937	0.0043
155	1.5980	0.0043
156	1.6023	0.0043
157	1.6065	0.0043
158	1.6108	0.0043
159	1.6151	0.0043
160	1.6193	0.0042
161	1.6235	0.0042
162	1.6277	0.0042
163	1.6319	0.0042
164	1.6361	0.0042

165	1.6403	0.0042
166	1.6444	0.0041
167	1.6485	0.0041
168	1.6526	0.0041
169	1.6567	0.0041
170	1.6608	0.0041
171	1.6649	0.0041
172	1.6690	0.0041
173	1.6730	0.0040
174	1.6771	0.0040
175	1.6811	0.0040
176	1.6851	0.0040
177	1.6891	0.0040
178	1.6930	0.0040
179	1.6970	0.0040
180	1.7010	0.0040
181	1.7049	0.0039
182	1.7088	0.0039
183	1.7128	0.0039
184	1.7167	0.0039
185	1.7206	0.0039
186	1.7244	0.0039
187	1.7283	0.0039
188	1.7322	0.0039
189	1.7360	0.0038
190	1.7398	0.0038
191	1.7436	0.0038
192	1.7475	0.0038
193	1.7513	0.0038
194	1.7550	0.0038
195	1.7588	0.0038
196	1.7626	0.0038
197	1.7663	0.0038
198	1.7701	0.0037
199	1.7738	0.0037
200	1.7775	0.0037
201	1.7812	0.0037
202	1.7849	0.0037
203	1.7886	0.0037
204	1.7923	0.0037
205	1.7959	0.0037
206	1.7996	0.0037
207	1.8032	0.0036
208	1.8069	0.0036
209	1.8105	0.0036
210	1.8141	0.0036
211	1.8177	0.0036
212	1.8213	0.0036
213	1.8249	0.0036
214	1.8285	0.0036
215	1.8320	0.0036
216	1.8356	0.0036
217	1.8391	0.0035
218	1.8427	0.0035
219	1.8462	0.0035
220	1.8497	0.0035
221	1.8532	0.0035
222	1.8567	0.0035
223	1.8602	0.0035
224	1.8637	0.0035
225	1.8672	0.0035
226	1.8706	0.0035
227	1.8741	0.0035
228	1.8775	0.0034
229	1.8810	0.0034
230	1.8844	0.0034
231	1.8878	0.0034
232	1.8912	0.0034
233	1.8946	0.0034
234	1.8980	0.0034
235	1.9014	0.0034

236	1.9048	0.0034
237	1.9081	0.0034
238	1.9115	0.0034
239	1.9148	0.0034
240	1.9182	0.0033
241	1.9215	0.0033
242	1.9248	0.0033
243	1.9282	0.0033
244	1.9315	0.0033
245	1.9348	0.0033
246	1.9381	0.0033
247	1.9414	0.0033
248	1.9446	0.0033
249	1.9479	0.0033
250	1.9512	0.0033
251	1.9544	0.0033
252	1.9577	0.0032
253	1.9609	0.0032
254	1.9642	0.0032
255	1.9674	0.0032
256	1.9706	0.0032
257	1.9738	0.0032
258	1.9770	0.0032
259	1.9802	0.0032
260	1.9834	0.0032
261	1.9866	0.0032
262	1.9898	0.0032
263	1.9929	0.0032
264	1.9961	0.0032
265	1.9993	0.0032
266	2.0024	0.0031
267	2.0055	0.0031
268	2.0087	0.0031
269	2.0118	0.0031
270	2.0149	0.0031
271	2.0180	0.0031
272	2.0212	0.0031
273	2.0243	0.0031
274	2.0273	0.0031
275	2.0304	0.0031
276	2.0335	0.0031
277	2.0366	0.0031
278	2.0397	0.0031
279	2.0427	0.0031
280	2.0458	0.0031
281	2.0488	0.0030
282	2.0519	0.0030
283	2.0549	0.0030
284	2.0579	0.0030
285	2.0610	0.0030
286	2.0640	0.0030
287	2.0670	0.0030
288	2.0700	0.0030

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0030	0.0006	0.0024
2	0.0030	0.0006	0.0024
3	0.0030	0.0006	0.0024
4	0.0030	0.0006	0.0024
5	0.0030	0.0006	0.0024
6	0.0030	0.0006	0.0024
7	0.0031	0.0006	0.0025
8	0.0031	0.0006	0.0025
9	0.0031	0.0006	0.0025
10	0.0031	0.0006	0.0025
11	0.0031	0.0006	0.0025
12	0.0031	0.0006	0.0025
13	0.0031	0.0006	0.0025

14	0.0031	0.0006	0.0025
15	0.0031	0.0006	0.0025
16	0.0031	0.0006	0.0025
17	0.0032	0.0006	0.0025
18	0.0032	0.0006	0.0025
19	0.0032	0.0006	0.0026
20	0.0032	0.0006	0.0026
21	0.0032	0.0006	0.0026
22	0.0032	0.0006	0.0026
23	0.0032	0.0006	0.0026
24	0.0032	0.0006	0.0026
25	0.0032	0.0006	0.0026
26	0.0033	0.0006	0.0026
27	0.0033	0.0006	0.0026
28	0.0033	0.0006	0.0026
29	0.0033	0.0006	0.0026
30	0.0033	0.0007	0.0027
31	0.0033	0.0007	0.0027
32	0.0033	0.0007	0.0027
33	0.0033	0.0007	0.0027
34	0.0034	0.0007	0.0027
35	0.0034	0.0007	0.0027
36	0.0034	0.0007	0.0027
37	0.0034	0.0007	0.0027
38	0.0034	0.0007	0.0027
39	0.0034	0.0007	0.0027
40	0.0034	0.0007	0.0028
41	0.0034	0.0007	0.0028
42	0.0035	0.0007	0.0028
43	0.0035	0.0007	0.0028
44	0.0035	0.0007	0.0028
45	0.0035	0.0007	0.0028
46	0.0035	0.0007	0.0028
47	0.0035	0.0007	0.0028
48	0.0035	0.0007	0.0028
49	0.0036	0.0007	0.0029
50	0.0036	0.0007	0.0029
51	0.0036	0.0007	0.0029
52	0.0036	0.0007	0.0029
53	0.0036	0.0007	0.0029
54	0.0036	0.0007	0.0029
55	0.0036	0.0007	0.0029
56	0.0037	0.0007	0.0029
57	0.0037	0.0007	0.0030
58	0.0037	0.0007	0.0030
59	0.0037	0.0007	0.0030
60	0.0037	0.0007	0.0030
61	0.0037	0.0007	0.0030
62	0.0038	0.0007	0.0030
63	0.0038	0.0007	0.0030
64	0.0038	0.0007	0.0030
65	0.0038	0.0007	0.0031
66	0.0038	0.0008	0.0031
67	0.0038	0.0008	0.0031
68	0.0039	0.0008	0.0031
69	0.0039	0.0008	0.0031
70	0.0039	0.0008	0.0031
71	0.0039	0.0008	0.0031
72	0.0039	0.0008	0.0032
73	0.0040	0.0008	0.0032
74	0.0040	0.0008	0.0032
75	0.0040	0.0008	0.0032
76	0.0040	0.0008	0.0032
77	0.0040	0.0008	0.0032
78	0.0040	0.0008	0.0032
79	0.0041	0.0008	0.0033
80	0.0041	0.0008	0.0033
81	0.0041	0.0008	0.0033
82	0.0041	0.0008	0.0033
83	0.0042	0.0008	0.0033
84	0.0042	0.0008	0.0034

85	0.0042	0.0008	0.0034
86	0.0042	0.0008	0.0034
87	0.0043	0.0008	0.0034
88	0.0043	0.0008	0.0034
89	0.0043	0.0008	0.0035
90	0.0043	0.0008	0.0035
91	0.0043	0.0009	0.0035
92	0.0044	0.0009	0.0035
93	0.0044	0.0009	0.0035
94	0.0044	0.0009	0.0035
95	0.0045	0.0009	0.0036
96	0.0045	0.0009	0.0036
97	0.0045	0.0009	0.0036
98	0.0045	0.0009	0.0036
99	0.0046	0.0009	0.0037
100	0.0046	0.0009	0.0037
101	0.0046	0.0009	0.0037
102	0.0046	0.0009	0.0037
103	0.0047	0.0009	0.0038
104	0.0047	0.0009	0.0038
105	0.0047	0.0009	0.0038
106	0.0048	0.0009	0.0038
107	0.0048	0.0009	0.0039
108	0.0048	0.0010	0.0039
109	0.0049	0.0010	0.0039
110	0.0049	0.0010	0.0039
111	0.0049	0.0010	0.0040
112	0.0050	0.0010	0.0040
113	0.0050	0.0010	0.0040
114	0.0050	0.0010	0.0040
115	0.0051	0.0010	0.0041
116	0.0051	0.0010	0.0041
117	0.0052	0.0010	0.0041
118	0.0052	0.0010	0.0042
119	0.0052	0.0010	0.0042
120	0.0053	0.0010	0.0042
121	0.0053	0.0010	0.0043
122	0.0054	0.0011	0.0043
123	0.0054	0.0011	0.0044
124	0.0054	0.0011	0.0044
125	0.0055	0.0011	0.0044
126	0.0055	0.0011	0.0045
127	0.0056	0.0011	0.0045
128	0.0056	0.0011	0.0045
129	0.0057	0.0011	0.0046
130	0.0057	0.0011	0.0046
131	0.0058	0.0011	0.0047
132	0.0059	0.0012	0.0047
133	0.0059	0.0012	0.0048
134	0.0060	0.0012	0.0048
135	0.0060	0.0012	0.0049
136	0.0061	0.0012	0.0049
137	0.0062	0.0012	0.0050
138	0.0062	0.0012	0.0050
139	0.0063	0.0012	0.0051
140	0.0064	0.0013	0.0051
141	0.0064	0.0013	0.0052
142	0.0065	0.0013	0.0052
143	0.0066	0.0013	0.0053
144	0.0067	0.0013	0.0053
145	0.0085	0.0017	0.0068
146	0.0086	0.0017	0.0069
147	0.0087	0.0017	0.0070
148	0.0087	0.0017	0.0070
149	0.0089	0.0017	0.0071
150	0.0089	0.0018	0.0072
151	0.0091	0.0018	0.0073
152	0.0091	0.0018	0.0073
153	0.0093	0.0018	0.0074
154	0.0094	0.0018	0.0075
155	0.0095	0.0019	0.0076

156	0.0096	0.0019	0.0077
157	0.0098	0.0019	0.0078
158	0.0098	0.0019	0.0079
159	0.0100	0.0020	0.0081
160	0.0101	0.0020	0.0081
161	0.0103	0.0020	0.0083
162	0.0104	0.0021	0.0084
163	0.0106	0.0021	0.0085
164	0.0108	0.0021	0.0086
165	0.0110	0.0022	0.0088
166	0.0111	0.0022	0.0089
167	0.0114	0.0022	0.0092
168	0.0115	0.0023	0.0093
169	0.0118	0.0023	0.0095
170	0.0120	0.0024	0.0096
171	0.0124	0.0024	0.0099
172	0.0125	0.0025	0.0101
173	0.0129	0.0025	0.0104
174	0.0132	0.0026	0.0106
175	0.0136	0.0027	0.0109
176	0.0139	0.0027	0.0111
177	0.0144	0.0028	0.0116
178	0.0147	0.0029	0.0118
179	0.0154	0.0030	0.0123
180	0.0157	0.0031	0.0126
181	0.0166	0.0033	0.0133
182	0.0170	0.0034	0.0137
183	0.0181	0.0036	0.0145
184	0.0187	0.0037	0.0151
185	0.0155	0.0030	0.0124
186	0.0163	0.0032	0.0131
187	0.0185	0.0037	0.0149
188	0.0200	0.0039	0.0161
189	0.0241	0.0047	0.0193
190	0.0272	0.0054	0.0218
191	0.0389	0.0061	0.0328
192	0.0535	0.0061	0.0473
193	0.1673	0.0061	0.1612
194	0.0317	0.0061	0.0255
195	0.0218	0.0043	0.0175
196	0.0173	0.0034	0.0139
197	0.0194	0.0038	0.0156
198	0.0176	0.0035	0.0141
199	0.0161	0.0032	0.0130
200	0.0150	0.0030	0.0121
201	0.0141	0.0028	0.0113
202	0.0134	0.0026	0.0107
203	0.0127	0.0025	0.0102
204	0.0122	0.0024	0.0098
205	0.0117	0.0023	0.0094
206	0.0113	0.0022	0.0090
207	0.0109	0.0021	0.0087
208	0.0105	0.0021	0.0085
209	0.0102	0.0020	0.0082
210	0.0099	0.0020	0.0080
211	0.0097	0.0019	0.0078
212	0.0094	0.0019	0.0076
213	0.0092	0.0018	0.0074
214	0.0090	0.0018	0.0072
215	0.0088	0.0017	0.0071
216	0.0086	0.0017	0.0069
217	0.0067	0.0013	0.0054
218	0.0065	0.0013	0.0053
219	0.0064	0.0013	0.0051
220	0.0063	0.0012	0.0050
221	0.0061	0.0012	0.0049
222	0.0060	0.0012	0.0048
223	0.0059	0.0012	0.0047
224	0.0058	0.0011	0.0046
225	0.0057	0.0011	0.0046
226	0.0056	0.0011	0.0045

227	0.0055	0.0011	0.0044
228	0.0054	0.0011	0.0043
229	0.0053	0.0010	0.0043
230	0.0052	0.0010	0.0042
231	0.0051	0.0010	0.0041
232	0.0051	0.0010	0.0041
233	0.0050	0.0010	0.0040
234	0.0049	0.0010	0.0039
235	0.0048	0.0010	0.0039
236	0.0048	0.0009	0.0038
237	0.0047	0.0009	0.0038
238	0.0047	0.0009	0.0037
239	0.0046	0.0009	0.0037
240	0.0045	0.0009	0.0036
241	0.0045	0.0009	0.0036
242	0.0044	0.0009	0.0036
243	0.0044	0.0009	0.0035
244	0.0043	0.0009	0.0035
245	0.0043	0.0008	0.0034
246	0.0042	0.0008	0.0034
247	0.0042	0.0008	0.0034
248	0.0041	0.0008	0.0033
249	0.0041	0.0008	0.0033
250	0.0041	0.0008	0.0033
251	0.0040	0.0008	0.0032
252	0.0040	0.0008	0.0032
253	0.0039	0.0008	0.0032
254	0.0039	0.0008	0.0031
255	0.0039	0.0008	0.0031
256	0.0038	0.0008	0.0031
257	0.0038	0.0007	0.0030
258	0.0038	0.0007	0.0030
259	0.0037	0.0007	0.0030
260	0.0037	0.0007	0.0030
261	0.0037	0.0007	0.0029
262	0.0036	0.0007	0.0029
263	0.0036	0.0007	0.0029
264	0.0036	0.0007	0.0029
265	0.0035	0.0007	0.0028
266	0.0035	0.0007	0.0028
267	0.0035	0.0007	0.0028
268	0.0035	0.0007	0.0028
269	0.0034	0.0007	0.0028
270	0.0034	0.0007	0.0027
271	0.0034	0.0007	0.0027
272	0.0034	0.0007	0.0027
273	0.0033	0.0007	0.0027
274	0.0033	0.0007	0.0027
275	0.0033	0.0006	0.0026
276	0.0033	0.0006	0.0026
277	0.0032	0.0006	0.0026
278	0.0032	0.0006	0.0026
279	0.0032	0.0006	0.0026
280	0.0032	0.0006	0.0026
281	0.0032	0.0006	0.0025
282	0.0031	0.0006	0.0025
283	0.0031	0.0006	0.0025
284	0.0031	0.0006	0.0025
285	0.0031	0.0006	0.0025
286	0.0031	0.0006	0.0025
287	0.0030	0.0006	0.0024
288	0.0030	0.0006	0.0024

Total soil rain loss = 0.37(In)
Total effective rainfall = 1.70(In)
Peak flow rate in flood hydrograph = 2.92(CFS)

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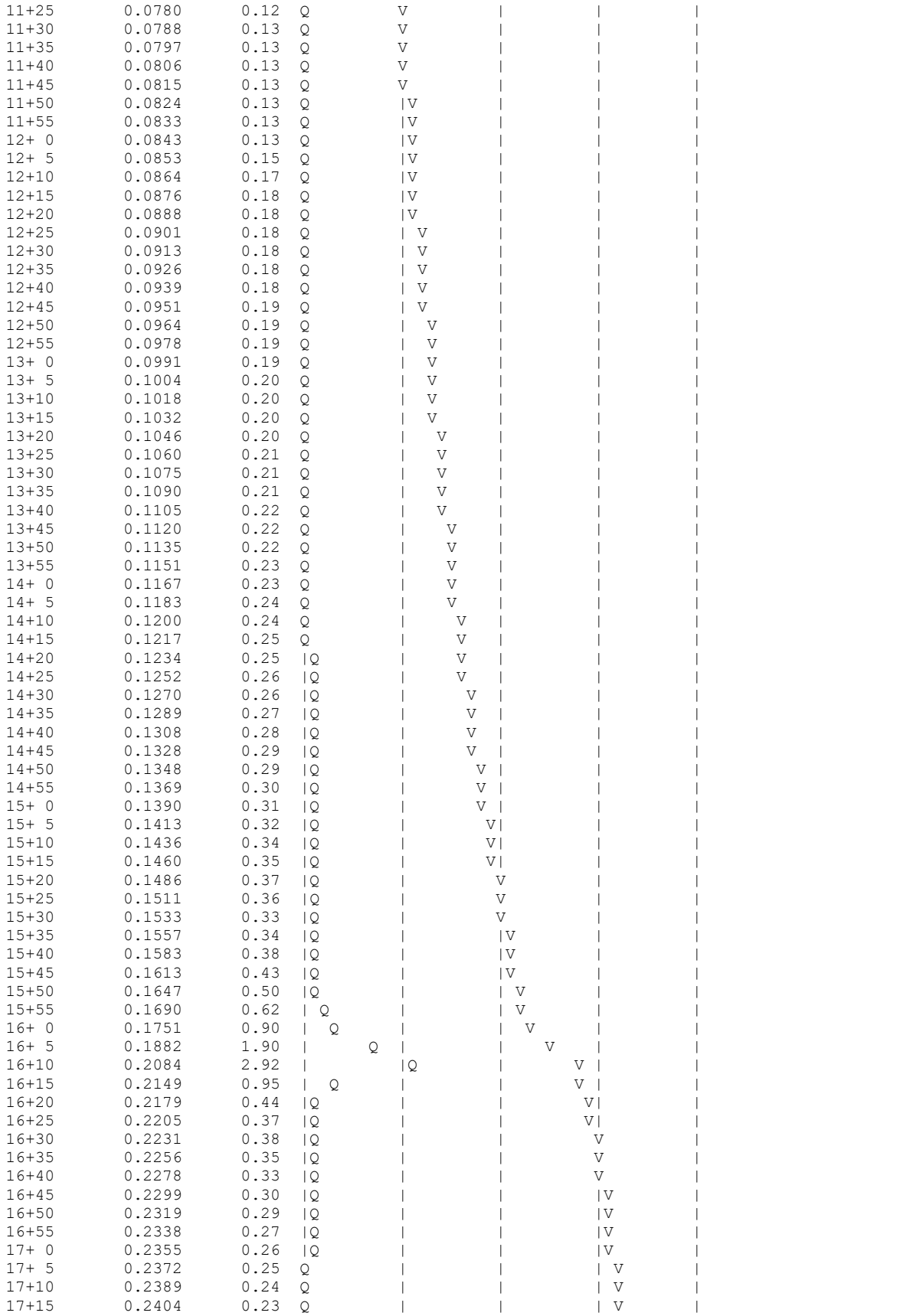
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0001	0.02	Q				
0+10	0.0005	0.06	Q				
0+15	0.0009	0.06	Q				
0+20	0.0013	0.06	Q				
0+25	0.0018	0.06	Q				
0+30	0.0022	0.06	Q				
0+35	0.0026	0.06	Q				
0+40	0.0030	0.06	Q				
0+45	0.0035	0.06	Q				
0+50	0.0039	0.06	Q				
0+55	0.0043	0.06	Q				
1+ 0	0.0048	0.06	Q				
1+ 5	0.0052	0.06	Q				
1+10	0.0057	0.06	Q				
1+15	0.0061	0.06	Q				
1+20	0.0065	0.06	Q				
1+25	0.0070	0.06	Q				
1+30	0.0074	0.06	QV				
1+35	0.0079	0.06	QV				
1+40	0.0083	0.06	QV				
1+45	0.0088	0.07	QV				
1+50	0.0092	0.07	QV				
1+55	0.0097	0.07	QV				
2+ 0	0.0101	0.07	QV				
2+ 5	0.0106	0.07	QV				
2+10	0.0110	0.07	QV				
2+15	0.0115	0.07	QV				
2+20	0.0120	0.07	QV				
2+25	0.0124	0.07	QV				
2+30	0.0129	0.07	QV				
2+35	0.0133	0.07	QV				
2+40	0.0138	0.07	QV				
2+45	0.0143	0.07	QV				
2+50	0.0147	0.07	QV				
2+55	0.0152	0.07	Q V				
3+ 0	0.0157	0.07	Q V				
3+ 5	0.0162	0.07	Q V				
3+10	0.0166	0.07	Q V				
3+15	0.0171	0.07	Q V				
3+20	0.0176	0.07	Q V				
3+25	0.0181	0.07	Q V				
3+30	0.0186	0.07	Q V				
3+35	0.0190	0.07	Q V				
3+40	0.0195	0.07	Q V				
3+45	0.0200	0.07	Q V				
3+50	0.0205	0.07	Q V				
3+55	0.0210	0.07	Q V				
4+ 0	0.0215	0.07	Q V				
4+ 5	0.0220	0.07	Q V				
4+10	0.0225	0.07	Q V				
4+15	0.0230	0.07	Q V				
4+20	0.0235	0.07	Q V				
4+25	0.0240	0.07	Q V				
4+30	0.0245	0.07	Q V				
4+35	0.0250	0.07	Q V				
4+40	0.0255	0.07	Q V				
4+45	0.0261	0.07	Q V				
4+50	0.0266	0.07	Q V				
4+55	0.0271	0.08	Q V				
5+ 0	0.0276	0.08	Q V				
5+ 5	0.0281	0.08	Q V				
5+10	0.0287	0.08	Q V				
5+15	0.0292	0.08	Q V				
5+20	0.0297	0.08	Q V				
5+25	0.0302	0.08	Q V				

5+30	0.0308	0.08	Q	V	|	|	|	|
5+35	0.0313	0.08	Q	V	|	|	|	|
5+40	0.0319	0.08	Q	V	|	|	|	|
5+45	0.0324	0.08	Q	V	|	|	|	|
5+50	0.0329	0.08	Q	V	|	|	|	|
5+55	0.0335	0.08	Q	V	|	|	|	|
6+ 0	0.0340	0.08	Q	V	|	|	|	|
6+ 5	0.0346	0.08	Q	V	|	|	|	|
6+10	0.0352	0.08	Q	V	|	|	|	|
6+15	0.0357	0.08	Q	V	|	|	|	|
6+20	0.0363	0.08	Q	V	|	|	|	|
6+25	0.0368	0.08	Q	V	|	|	|	|
6+30	0.0374	0.08	Q	V	|	|	|	|
6+35	0.0380	0.08	Q	V	|	|	|	|
6+40	0.0385	0.08	Q	V	|	|	|	|
6+45	0.0391	0.08	Q	V	|	|	|	|
6+50	0.0397	0.08	Q	V	|	|	|	|
6+55	0.0403	0.08	Q	V	|	|	|	|
7+ 0	0.0409	0.08	Q	V	|	|	|	|
7+ 5	0.0415	0.09	Q	V	|	|	|	|
7+10	0.0420	0.09	Q	V	|	|	|	|
7+15	0.0426	0.09	Q	V	|	|	|	|
7+20	0.0432	0.09	Q	V	|	|	|	|
7+25	0.0438	0.09	Q	V	|	|	|	|
7+30	0.0444	0.09	Q	V	|	|	|	|
7+35	0.0450	0.09	Q	V	|	|	|	|
7+40	0.0457	0.09	Q	V	|	|	|	|
7+45	0.0463	0.09	Q	V	|	|	|	|
7+50	0.0469	0.09	Q	V	|	|	|	|
7+55	0.0475	0.09	Q	V	|	|	|	|
8+ 0	0.0481	0.09	Q	V	|	|	|	|
8+ 5	0.0488	0.09	Q	V	|	|	|	|
8+10	0.0494	0.09	Q	V	|	|	|	|
8+15	0.0500	0.09	Q	V	|	|	|	|
8+20	0.0507	0.09	Q	V	|	|	|	|
8+25	0.0513	0.09	Q	V	|	|	|	|
8+30	0.0520	0.09	Q	V	|	|	|	|
8+35	0.0526	0.09	Q	V	|	|	|	|
8+40	0.0533	0.10	Q	V	|	|	|	|
8+45	0.0539	0.10	Q	V	|	|	|	|
8+50	0.0546	0.10	Q	V	|	|	|	|
8+55	0.0553	0.10	Q	V	|	|	|	|
9+ 0	0.0559	0.10	Q	V	|	|	|	|
9+ 5	0.0566	0.10	Q	V	|	|	|	|
9+10	0.0573	0.10	Q	V	|	|	|	|
9+15	0.0580	0.10	Q	V	|	|	|	|
9+20	0.0587	0.10	Q	V	|	|	|	|
9+25	0.0594	0.10	Q	V	|	|	|	|
9+30	0.0601	0.10	Q	V	|	|	|	|
9+35	0.0608	0.10	Q	V	|	|	|	|
9+40	0.0615	0.10	Q	V	|	|	|	|
9+45	0.0622	0.10	Q	V	|	|	|	|
9+50	0.0630	0.11	Q	V	|	|	|	|
9+55	0.0637	0.11	Q	V	|	|	|	|
10+ 0	0.0644	0.11	Q	V	|	|	|	|
10+ 5	0.0652	0.11	Q	V	|	|	|	|
10+10	0.0659	0.11	Q	V	|	|	|	|
10+15	0.0667	0.11	Q	V	|	|	|	|
10+20	0.0674	0.11	Q	V	|	|	|	|
10+25	0.0682	0.11	Q	V	|	|	|	|
10+30	0.0690	0.11	Q	V	|	|	|	|
10+35	0.0698	0.11	Q	V	|	|	|	|
10+40	0.0705	0.11	Q	V	|	|	|	|
10+45	0.0713	0.12	Q	V	|	|	|	|
10+50	0.0721	0.12	Q	V	|	|	|	|
10+55	0.0730	0.12	Q	V	|	|	|	|
11+ 0	0.0738	0.12	Q	V	|	|	|	|
11+ 5	0.0746	0.12	Q	V	|	|	|	|
11+10	0.0754	0.12	Q	V	|	|	|	|
11+15	0.0763	0.12	Q	V	|	|	|	|
11+20	0.0771	0.12	Q	V	|	|	|	|



11+25	0.0780	0.12	Q	V			
11+30	0.0788	0.13	Q	V			
11+35	0.0797	0.13	Q	V			
11+40	0.0806	0.13	Q	V			
11+45	0.0815	0.13	Q	V			
11+50	0.0824	0.13	Q	|V			
11+55	0.0833	0.13	Q	|V			
12+ 0	0.0843	0.13	Q	|V			
12+ 5	0.0853	0.15	Q	|V			
12+10	0.0864	0.17	Q	|V			
12+15	0.0876	0.18	Q	|V			
12+20	0.0888	0.18	Q	|V			
12+25	0.0901	0.18	Q	| V			
12+30	0.0913	0.18	Q	| V			
12+35	0.0926	0.18	Q	| V			
12+40	0.0939	0.18	Q	| V			
12+45	0.0951	0.19	Q	| V			
12+50	0.0964	0.19	Q	| V			
12+55	0.0978	0.19	Q	| V			
13+ 0	0.0991	0.19	Q	| V			
13+ 5	0.1004	0.20	Q	| V			
13+10	0.1018	0.20	Q	| V			
13+15	0.1032	0.20	Q	| V			
13+20	0.1046	0.20	Q	| V			
13+25	0.1060	0.21	Q	| V			
13+30	0.1075	0.21	Q	| V			
13+35	0.1090	0.21	Q	| V			
13+40	0.1105	0.22	Q	| V			
13+45	0.1120	0.22	Q	| V			
13+50	0.1135	0.22	Q	| V			
13+55	0.1151	0.23	Q	| V			
14+ 0	0.1167	0.23	Q	| V			
14+ 5	0.1183	0.24	Q	| V			
14+10	0.1200	0.24	Q	| V			
14+15	0.1217	0.25	Q	| V			
14+20	0.1234	0.25	|Q	| V			
14+25	0.1252	0.26	|Q	| V			
14+30	0.1270	0.26	|Q	| V			
14+35	0.1289	0.27	|Q	| V			
14+40	0.1308	0.28	|Q	| V			
14+45	0.1328	0.29	|Q	| V			
14+50	0.1348	0.29	|Q	| V			
14+55	0.1369	0.30	|Q	| V			
15+ 0	0.1390	0.31	|Q	| V			
15+ 5	0.1413	0.32	|Q	| V			
15+10	0.1436	0.34	|Q	| V			
15+15	0.1460	0.35	|Q	| V			
15+20	0.1486	0.37	|Q	| V			
15+25	0.1511	0.36	|Q	| V			
15+30	0.1533	0.33	|Q	| V			
15+35	0.1557	0.34	|Q	| V			
15+40	0.1583	0.38	|Q	| V			
15+45	0.1613	0.43	|Q	| V			
15+50	0.1647	0.50	|Q	| V			
15+55	0.1690	0.62	| Q	| V			
16+ 0	0.1751	0.90	| Q	| V			
16+ 5	0.1882	1.90	| Q	| V			
16+10	0.2084	2.92	| |Q	| V			
16+15	0.2149	0.95	| Q	| V			
16+20	0.2179	0.44	|Q	| V			
16+25	0.2205	0.37	|Q	| V			
16+30	0.2231	0.38	|Q	| V			
16+35	0.2256	0.35	|Q	| V			
16+40	0.2278	0.33	|Q	| V			
16+45	0.2299	0.30	|Q	| V			
16+50	0.2319	0.29	|Q	| V			
16+55	0.2338	0.27	|Q	| V			
17+ 0	0.2355	0.26	|Q	| V			
17+ 5	0.2372	0.25	Q	| V			
17+10	0.2389	0.24	Q	| V			
17+15	0.2404	0.23	Q	| V			

17+20	0.2420	0.22	Q	|	|	| V	|
17+25	0.2434	0.21	Q	|	|	| V	|
17+30	0.2449	0.21	Q	|	|	| V	|
17+35	0.2463	0.20	Q	|	|	| V	|
17+40	0.2476	0.20	Q	|	|	| V	|
17+45	0.2489	0.19	Q	|	|	| V	|
17+50	0.2502	0.19	Q	|	|	| V	|
17+55	0.2515	0.18	Q	|	|	| V	|
18+ 0	0.2527	0.18	Q	|	|	| V	|
18+ 5	0.2538	0.17	Q	|	|	| V	|
18+10	0.2548	0.14	Q	|	|	| V	|
18+15	0.2557	0.13	Q	|	|	| V	|
18+20	0.2566	0.13	Q	|	|	| V	|
18+25	0.2575	0.13	Q	|	|	| V	|
18+30	0.2584	0.12	Q	|	|	| V	|
18+35	0.2592	0.12	Q	|	|	| V	|
18+40	0.2600	0.12	Q	|	|	| V	|
18+45	0.2608	0.12	Q	|	|	| V	|
18+50	0.2616	0.12	Q	|	|	| V	|
18+55	0.2624	0.11	Q	|	|	| V	|
19+ 0	0.2632	0.11	Q	|	|	| V	|
19+ 5	0.2639	0.11	Q	|	|	| V	|
19+10	0.2647	0.11	Q	|	|	| V	|
19+15	0.2654	0.11	Q	|	|	| V	|
19+20	0.2661	0.10	Q	|	|	| V	|
19+25	0.2668	0.10	Q	|	|	| V	|
19+30	0.2675	0.10	Q	|	|	| V	|
19+35	0.2682	0.10	Q	|	|	| V	|
19+40	0.2689	0.10	Q	|	|	| V	|
19+45	0.2696	0.10	Q	|	|	| V	|
19+50	0.2702	0.10	Q	|	|	| V	|
19+55	0.2709	0.09	Q	|	|	| V	|
20+ 0	0.2715	0.09	Q	|	|	| V	|
20+ 5	0.2722	0.09	Q	|	|	| V	|
20+10	0.2728	0.09	Q	|	|	| V	|
20+15	0.2734	0.09	Q	|	|	| V	|
20+20	0.2740	0.09	Q	|	|	| V	|
20+25	0.2746	0.09	Q	|	|	| V	|
20+30	0.2752	0.09	Q	|	|	| V	|
20+35	0.2758	0.09	Q	|	|	| V	|
20+40	0.2764	0.09	Q	|	|	| V	|
20+45	0.2770	0.08	Q	|	|	| V	|
20+50	0.2776	0.08	Q	|	|	| V	|
20+55	0.2782	0.08	Q	|	|	| V	|
21+ 0	0.2787	0.08	Q	|	|	| V	|
21+ 5	0.2793	0.08	Q	|	|	| V	|
21+10	0.2798	0.08	Q	|	|	| V	|
21+15	0.2804	0.08	Q	|	|	| V	|
21+20	0.2809	0.08	Q	|	|	| V	|
21+25	0.2815	0.08	Q	|	|	| V	|
21+30	0.2820	0.08	Q	|	|	| V	|
21+35	0.2825	0.08	Q	|	|	| V	|
21+40	0.2830	0.08	Q	|	|	| V	|
21+45	0.2836	0.08	Q	|	|	| V	|
21+50	0.2841	0.07	Q	|	|	| V	|
21+55	0.2846	0.07	Q	|	|	| V	|
22+ 0	0.2851	0.07	Q	|	|	| V	|
22+ 5	0.2856	0.07	Q	|	|	| V	|
22+10	0.2861	0.07	Q	|	|	| V	|
22+15	0.2866	0.07	Q	|	|	| V	|
22+20	0.2871	0.07	Q	|	|	| V	|
22+25	0.2876	0.07	Q	|	|	| V	|
22+30	0.2880	0.07	Q	|	|	| V	|
22+35	0.2885	0.07	Q	|	|	| V	|
22+40	0.2890	0.07	Q	|	|	| V	|
22+45	0.2895	0.07	Q	|	|	| V	|
22+50	0.2899	0.07	Q	|	|	| V	|
22+55	0.2904	0.07	Q	|	|	| V	|
23+ 0	0.2909	0.07	Q	|	|	| V	|
23+ 5	0.2913	0.07	Q	|	|	| V	|
23+10	0.2918	0.07	Q	|	|	| V	|

23+15	0.2922	0.07	Q	|	|	|	V|
23+20	0.2927	0.07	Q	|	|	|	V|
23+25	0.2931	0.06	Q	|	|	|	V|
23+30	0.2936	0.06	Q	|	|	|	V|
23+35	0.2940	0.06	Q	|	|	|	V|
23+40	0.2944	0.06	Q	|	|	|	V|
23+45	0.2949	0.06	Q	|	|	|	V|
23+50	0.2953	0.06	Q	|	|	|	V|
23+55	0.2957	0.06	Q	|	|	|	V|
24+ 0	0.2962	0.06	Q	|	|	|	V|

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

Study date 09/29/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 1A (POC 1)
100 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA1AQ100.HCU

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
0.56	1	0.77
Rainfall data for year 2		
0.56	6	1.16
Rainfall data for year 2		
0.56	24	2.07
Rainfall data for year 100		
0.56	1	1.22
Rainfall data for year 100		
0.56	6	2.67
Rainfall data for year 100		
0.56	24	4.89

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	0.56	1.000	0.440	0.100	0.044

Area-averaged adjusted loss rate Fm (In/Hr) = 0.044

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.06	0.100	56.0	75.8	3.19	0.497
0.50	0.900	98.0	98.0	0.20	0.952

Area-averaged catchment yield fraction, Y = 0.906
Area-averaged low loss fraction, Yb = 0.094
User entry of time of concentration = 0.075 (hours)
++
Watershed area = 0.56(Ac.)
Catchment Lag time = 0.060 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 138.8889
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.044(In/Hr)
Average low loss rate fraction (Yb) = 0.094 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.452(In)
Computed peak 30-minute rainfall = 0.925(In)
Specified peak 1-hour rainfall = 1.220(In)
Computed peak 3-hour rainfall = 1.972(In)
Specified peak 6-hour rainfall = 2.670(In)
Specified peak 24-hour rainfall = 4.890(In)

Rainfall depth area reduction factors:
Using a total area of 0.56(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.452(In)
30-minute factor = 1.000 Adjusted rainfall = 0.925(In)
1-hour factor = 1.000 Adjusted rainfall = 1.220(In)
3-hour factor = 1.000 Adjusted rainfall = 1.972(In)
6-hour factor = 1.000 Adjusted rainfall = 2.670(In)
24-hour factor = 1.000 Adjusted rainfall = 4.890(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 6.77 (CFS))	
1	30.752	2.083
2	93.402	4.243
3	100.000	0.447

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.4515	0.4515
2	0.5958	0.1443
3	0.7007	0.1049
4	0.7861	0.0855
5	0.8595	0.0734
6	0.9246	0.0650
7	0.9834	0.0588
8	1.0373	0.0540
9	1.0874	0.0500
10	1.1342	0.0468
11	1.1782	0.0441
12	1.2200	0.0417
13	1.2634	0.0434
14	1.3050	0.0416
15	1.3450	0.0400
16	1.3835	0.0385
17	1.4206	0.0372
18	1.4566	0.0359
19	1.4914	0.0348
20	1.5252	0.0338
21	1.5581	0.0329
22	1.5901	0.0320

23	1.6213	0.0312
24	1.6517	0.0304
25	1.6815	0.0297
26	1.7106	0.0291
27	1.7390	0.0285
28	1.7669	0.0279
29	1.7942	0.0273
30	1.8210	0.0268
31	1.8473	0.0263
32	1.8731	0.0258
33	1.8985	0.0254
34	1.9234	0.0249
35	1.9479	0.0245
36	1.9721	0.0241
37	1.9958	0.0238
38	2.0192	0.0234
39	2.0423	0.0231
40	2.0650	0.0227
41	2.0874	0.0224
42	2.1095	0.0221
43	2.1313	0.0218
44	2.1529	0.0215
45	2.1741	0.0213
46	2.1951	0.0210
47	2.2158	0.0207
48	2.2363	0.0205
49	2.2566	0.0202
50	2.2766	0.0200
51	2.2964	0.0198
52	2.3160	0.0196
53	2.3353	0.0194
54	2.3545	0.0192
55	2.3734	0.0190
56	2.3922	0.0188
57	2.4108	0.0186
58	2.4292	0.0184
59	2.4474	0.0182
60	2.4655	0.0180
61	2.4833	0.0179
62	2.5011	0.0177
63	2.5186	0.0176
64	2.5360	0.0174
65	2.5533	0.0172
66	2.5703	0.0171
67	2.5873	0.0170
68	2.6041	0.0168
69	2.6208	0.0167
70	2.6373	0.0165
71	2.6537	0.0164
72	2.6700	0.0163
73	2.6861	0.0161
74	2.7021	0.0160
75	2.7180	0.0159
76	2.7338	0.0158
77	2.7494	0.0156
78	2.7649	0.0155
79	2.7803	0.0154
80	2.7957	0.0153
81	2.8109	0.0152
82	2.8260	0.0151
83	2.8409	0.0150
84	2.8558	0.0149
85	2.8706	0.0148
86	2.8853	0.0147
87	2.8999	0.0146
88	2.9144	0.0145
89	2.9288	0.0144
90	2.9431	0.0143
91	2.9574	0.0142
92	2.9715	0.0141
93	2.9856	0.0141

94	2.9995	0.0140
95	3.0134	0.0139
96	3.0272	0.0138
97	3.0410	0.0137
98	3.0546	0.0136
99	3.0682	0.0136
100	3.0817	0.0135
101	3.0951	0.0134
102	3.1084	0.0133
103	3.1217	0.0133
104	3.1349	0.0132
105	3.1480	0.0131
106	3.1610	0.0131
107	3.1740	0.0130
108	3.1869	0.0129
109	3.1998	0.0128
110	3.2126	0.0128
111	3.2253	0.0127
112	3.2379	0.0127
113	3.2505	0.0126
114	3.2630	0.0125
115	3.2755	0.0125
116	3.2879	0.0124
117	3.3003	0.0123
118	3.3125	0.0123
119	3.3248	0.0122
120	3.3369	0.0122
121	3.3490	0.0121
122	3.3611	0.0121
123	3.3731	0.0120
124	3.3850	0.0119
125	3.3969	0.0119
126	3.4088	0.0118
127	3.4205	0.0118
128	3.4323	0.0117
129	3.4439	0.0117
130	3.4556	0.0116
131	3.4672	0.0116
132	3.4787	0.0115
133	3.4902	0.0115
134	3.5016	0.0114
135	3.5130	0.0114
136	3.5243	0.0113
137	3.5356	0.0113
138	3.5468	0.0112
139	3.5580	0.0112
140	3.5692	0.0112
141	3.5803	0.0111
142	3.5914	0.0111
143	3.6024	0.0110
144	3.6133	0.0110
145	3.6243	0.0109
146	3.6352	0.0109
147	3.6460	0.0108
148	3.6568	0.0108
149	3.6676	0.0108
150	3.6783	0.0107
151	3.6890	0.0107
152	3.6996	0.0106
153	3.7102	0.0106
154	3.7208	0.0106
155	3.7313	0.0105
156	3.7418	0.0105
157	3.7523	0.0105
158	3.7627	0.0104
159	3.7731	0.0104
160	3.7834	0.0103
161	3.7937	0.0103
162	3.8040	0.0103
163	3.8142	0.0102
164	3.8244	0.0102

165	3.8346	0.0102
166	3.8447	0.0101
167	3.8548	0.0101
168	3.8648	0.0101
169	3.8749	0.0100
170	3.8849	0.0100
171	3.8948	0.0100
172	3.9047	0.0099
173	3.9146	0.0099
174	3.9245	0.0099
175	3.9343	0.0098
176	3.9441	0.0098
177	3.9539	0.0098
178	3.9636	0.0097
179	3.9733	0.0097
180	3.9830	0.0097
181	3.9926	0.0096
182	4.0023	0.0096
183	4.0118	0.0096
184	4.0214	0.0096
185	4.0309	0.0095
186	4.0404	0.0095
187	4.0499	0.0095
188	4.0593	0.0094
189	4.0687	0.0094
190	4.0781	0.0094
191	4.0875	0.0094
192	4.0968	0.0093
193	4.1061	0.0093
194	4.1154	0.0093
195	4.1246	0.0092
196	4.1338	0.0092
197	4.1430	0.0092
198	4.1522	0.0092
199	4.1613	0.0091
200	4.1705	0.0091
201	4.1795	0.0091
202	4.1886	0.0091
203	4.1976	0.0090
204	4.2067	0.0090
205	4.2157	0.0090
206	4.2246	0.0090
207	4.2336	0.0089
208	4.2425	0.0089
209	4.2514	0.0089
210	4.2602	0.0089
211	4.2691	0.0088
212	4.2779	0.0088
213	4.2867	0.0088
214	4.2955	0.0088
215	4.3042	0.0087
216	4.3129	0.0087
217	4.3216	0.0087
218	4.3303	0.0087
219	4.3390	0.0087
220	4.3476	0.0086
221	4.3562	0.0086
222	4.3648	0.0086
223	4.3734	0.0086
224	4.3819	0.0085
225	4.3905	0.0085
226	4.3990	0.0085
227	4.4075	0.0085
228	4.4159	0.0085
229	4.4244	0.0084
230	4.4328	0.0084
231	4.4412	0.0084
232	4.4496	0.0084
233	4.4579	0.0084
234	4.4663	0.0083
235	4.4746	0.0083

236	4.4829	0.0083
237	4.4912	0.0083
238	4.4995	0.0083
239	4.5077	0.0082
240	4.5159	0.0082
241	4.5241	0.0082
242	4.5323	0.0082
243	4.5405	0.0082
244	4.5486	0.0081
245	4.5567	0.0081
246	4.5649	0.0081
247	4.5729	0.0081
248	4.5810	0.0081
249	4.5891	0.0081
250	4.5971	0.0080
251	4.6051	0.0080
252	4.6131	0.0080
253	4.6211	0.0080
254	4.6291	0.0080
255	4.6370	0.0079
256	4.6449	0.0079
257	4.6529	0.0079
258	4.6608	0.0079
259	4.6686	0.0079
260	4.6765	0.0079
261	4.6843	0.0078
262	4.6922	0.0078
263	4.7000	0.0078
264	4.7078	0.0078
265	4.7155	0.0078
266	4.7233	0.0078
267	4.7310	0.0077
268	4.7388	0.0077
269	4.7465	0.0077
270	4.7542	0.0077
271	4.7618	0.0077
272	4.7695	0.0077
273	4.7771	0.0076
274	4.7848	0.0076
275	4.7924	0.0076
276	4.8000	0.0076
277	4.8076	0.0076
278	4.8151	0.0076
279	4.8227	0.0076
280	4.8302	0.0075
281	4.8378	0.0075
282	4.8453	0.0075
283	4.8528	0.0075
284	4.8602	0.0075
285	4.8677	0.0075
286	4.8751	0.0074
287	4.8826	0.0074
288	4.8900	0.0074

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0074	0.0007	0.0067
2	0.0074	0.0007	0.0067
3	0.0075	0.0007	0.0068
4	0.0075	0.0007	0.0068
5	0.0075	0.0007	0.0068
6	0.0075	0.0007	0.0068
7	0.0076	0.0007	0.0068
8	0.0076	0.0007	0.0069
9	0.0076	0.0007	0.0069
10	0.0076	0.0007	0.0069
11	0.0076	0.0007	0.0069
12	0.0077	0.0007	0.0069
13	0.0077	0.0007	0.0070

14	0.0077	0.0007	0.0070
15	0.0077	0.0007	0.0070
16	0.0078	0.0007	0.0070
17	0.0078	0.0007	0.0071
18	0.0078	0.0007	0.0071
19	0.0078	0.0007	0.0071
20	0.0079	0.0007	0.0071
21	0.0079	0.0007	0.0072
22	0.0079	0.0007	0.0072
23	0.0079	0.0007	0.0072
24	0.0080	0.0007	0.0072
25	0.0080	0.0008	0.0072
26	0.0080	0.0008	0.0073
27	0.0081	0.0008	0.0073
28	0.0081	0.0008	0.0073
29	0.0081	0.0008	0.0073
30	0.0081	0.0008	0.0074
31	0.0082	0.0008	0.0074
32	0.0082	0.0008	0.0074
33	0.0082	0.0008	0.0075
34	0.0082	0.0008	0.0075
35	0.0083	0.0008	0.0075
36	0.0083	0.0008	0.0075
37	0.0083	0.0008	0.0076
38	0.0084	0.0008	0.0076
39	0.0084	0.0008	0.0076
40	0.0084	0.0008	0.0076
41	0.0085	0.0008	0.0077
42	0.0085	0.0008	0.0077
43	0.0085	0.0008	0.0077
44	0.0085	0.0008	0.0077
45	0.0086	0.0008	0.0078
46	0.0086	0.0008	0.0078
47	0.0087	0.0008	0.0078
48	0.0087	0.0008	0.0079
49	0.0087	0.0008	0.0079
50	0.0087	0.0008	0.0079
51	0.0088	0.0008	0.0080
52	0.0088	0.0008	0.0080
53	0.0089	0.0008	0.0080
54	0.0089	0.0008	0.0081
55	0.0089	0.0008	0.0081
56	0.0090	0.0008	0.0081
57	0.0090	0.0008	0.0082
58	0.0090	0.0008	0.0082
59	0.0091	0.0009	0.0082
60	0.0091	0.0009	0.0083
61	0.0092	0.0009	0.0083
62	0.0092	0.0009	0.0083
63	0.0092	0.0009	0.0084
64	0.0093	0.0009	0.0084
65	0.0093	0.0009	0.0085
66	0.0094	0.0009	0.0085
67	0.0094	0.0009	0.0085
68	0.0094	0.0009	0.0086
69	0.0095	0.0009	0.0086
70	0.0095	0.0009	0.0086
71	0.0096	0.0009	0.0087
72	0.0096	0.0009	0.0087
73	0.0097	0.0009	0.0088
74	0.0097	0.0009	0.0088
75	0.0098	0.0009	0.0088
76	0.0098	0.0009	0.0089
77	0.0099	0.0009	0.0089
78	0.0099	0.0009	0.0090
79	0.0100	0.0009	0.0090
80	0.0100	0.0009	0.0091
81	0.0101	0.0009	0.0091
82	0.0101	0.0009	0.0091
83	0.0102	0.0010	0.0092
84	0.0102	0.0010	0.0092

85	0.0103	0.0010	0.0093
86	0.0103	0.0010	0.0093
87	0.0104	0.0010	0.0094
88	0.0104	0.0010	0.0094
89	0.0105	0.0010	0.0095
90	0.0105	0.0010	0.0095
91	0.0106	0.0010	0.0096
92	0.0106	0.0010	0.0096
93	0.0107	0.0010	0.0097
94	0.0108	0.0010	0.0098
95	0.0108	0.0010	0.0098
96	0.0109	0.0010	0.0099
97	0.0110	0.0010	0.0099
98	0.0110	0.0010	0.0100
99	0.0111	0.0010	0.0101
100	0.0112	0.0010	0.0101
101	0.0112	0.0011	0.0102
102	0.0113	0.0011	0.0102
103	0.0114	0.0011	0.0103
104	0.0114	0.0011	0.0104
105	0.0115	0.0011	0.0104
106	0.0116	0.0011	0.0105
107	0.0117	0.0011	0.0106
108	0.0117	0.0011	0.0106
109	0.0118	0.0011	0.0107
110	0.0119	0.0011	0.0108
111	0.0120	0.0011	0.0109
112	0.0121	0.0011	0.0109
113	0.0122	0.0011	0.0110
114	0.0122	0.0011	0.0111
115	0.0123	0.0012	0.0112
116	0.0124	0.0012	0.0112
117	0.0125	0.0012	0.0113
118	0.0126	0.0012	0.0114
119	0.0127	0.0012	0.0115
120	0.0128	0.0012	0.0116
121	0.0129	0.0012	0.0117
122	0.0130	0.0012	0.0118
123	0.0131	0.0012	0.0119
124	0.0132	0.0012	0.0120
125	0.0133	0.0013	0.0121
126	0.0134	0.0013	0.0122
127	0.0136	0.0013	0.0123
128	0.0136	0.0013	0.0124
129	0.0138	0.0013	0.0125
130	0.0139	0.0013	0.0126
131	0.0141	0.0013	0.0127
132	0.0141	0.0013	0.0128
133	0.0143	0.0013	0.0130
134	0.0144	0.0014	0.0131
135	0.0146	0.0014	0.0132
136	0.0147	0.0014	0.0133
137	0.0149	0.0014	0.0135
138	0.0150	0.0014	0.0136
139	0.0152	0.0014	0.0138
140	0.0153	0.0014	0.0139
141	0.0155	0.0015	0.0141
142	0.0156	0.0015	0.0142
143	0.0159	0.0015	0.0144
144	0.0160	0.0015	0.0145
145	0.0163	0.0015	0.0147
146	0.0164	0.0015	0.0149
147	0.0167	0.0016	0.0151
148	0.0168	0.0016	0.0152
149	0.0171	0.0016	0.0155
150	0.0172	0.0016	0.0156
151	0.0176	0.0016	0.0159
152	0.0177	0.0017	0.0161
153	0.0180	0.0017	0.0164
154	0.0182	0.0017	0.0165
155	0.0186	0.0017	0.0168

156	0.0188	0.0018	0.0170
157	0.0192	0.0018	0.0174
158	0.0194	0.0018	0.0175
159	0.0198	0.0019	0.0179
160	0.0200	0.0019	0.0181
161	0.0205	0.0019	0.0186
162	0.0207	0.0019	0.0188
163	0.0213	0.0020	0.0193
164	0.0215	0.0020	0.0195
165	0.0221	0.0021	0.0200
166	0.0224	0.0021	0.0203
167	0.0231	0.0022	0.0209
168	0.0234	0.0022	0.0212
169	0.0241	0.0023	0.0219
170	0.0245	0.0023	0.0222
171	0.0254	0.0024	0.0230
172	0.0258	0.0024	0.0234
173	0.0268	0.0025	0.0243
174	0.0273	0.0026	0.0247
175	0.0285	0.0027	0.0258
176	0.0291	0.0027	0.0263
177	0.0304	0.0029	0.0276
178	0.0312	0.0029	0.0283
179	0.0329	0.0031	0.0298
180	0.0338	0.0032	0.0306
181	0.0359	0.0034	0.0326
182	0.0372	0.0035	0.0337
183	0.0400	0.0037	0.0363
184	0.0416	0.0037	0.0379
185	0.0417	0.0037	0.0381
186	0.0441	0.0037	0.0404
187	0.0500	0.0037	0.0464
188	0.0540	0.0037	0.0503
189	0.0650	0.0037	0.0614
190	0.0734	0.0037	0.0697
191	0.1049	0.0037	0.1012
192	0.1443	0.0037	0.1406
193	0.4515	0.0037	0.4479
194	0.0855	0.0037	0.0818
195	0.0588	0.0037	0.0551
196	0.0468	0.0037	0.0431
197	0.0434	0.0037	0.0398
198	0.0385	0.0036	0.0349
199	0.0348	0.0033	0.0316
200	0.0320	0.0030	0.0290
201	0.0297	0.0028	0.0269
202	0.0279	0.0026	0.0253
203	0.0263	0.0025	0.0238
204	0.0249	0.0023	0.0226
205	0.0238	0.0022	0.0215
206	0.0227	0.0021	0.0206
207	0.0218	0.0020	0.0198
208	0.0210	0.0020	0.0190
209	0.0202	0.0019	0.0183
210	0.0196	0.0018	0.0177
211	0.0190	0.0018	0.0172
212	0.0184	0.0017	0.0167
213	0.0179	0.0017	0.0162
214	0.0174	0.0016	0.0158
215	0.0170	0.0016	0.0154
216	0.0165	0.0016	0.0150
217	0.0161	0.0015	0.0146
218	0.0158	0.0015	0.0143
219	0.0154	0.0014	0.0140
220	0.0151	0.0014	0.0137
221	0.0148	0.0014	0.0134
222	0.0145	0.0014	0.0131
223	0.0142	0.0013	0.0129
224	0.0140	0.0013	0.0127
225	0.0137	0.0013	0.0124
226	0.0135	0.0013	0.0122

227	0.0133	0.0012	0.0120
228	0.0131	0.0012	0.0118
229	0.0128	0.0012	0.0116
230	0.0127	0.0012	0.0115
231	0.0125	0.0012	0.0113
232	0.0123	0.0012	0.0111
233	0.0121	0.0011	0.0110
234	0.0119	0.0011	0.0108
235	0.0118	0.0011	0.0107
236	0.0116	0.0011	0.0105
237	0.0115	0.0011	0.0104
238	0.0113	0.0011	0.0103
239	0.0112	0.0011	0.0101
240	0.0111	0.0010	0.0100
241	0.0109	0.0010	0.0099
242	0.0108	0.0010	0.0098
243	0.0107	0.0010	0.0097
244	0.0106	0.0010	0.0096
245	0.0105	0.0010	0.0095
246	0.0103	0.0010	0.0094
247	0.0102	0.0010	0.0093
248	0.0101	0.0010	0.0092
249	0.0100	0.0009	0.0091
250	0.0099	0.0009	0.0090
251	0.0098	0.0009	0.0089
252	0.0097	0.0009	0.0088
253	0.0096	0.0009	0.0087
254	0.0096	0.0009	0.0087
255	0.0095	0.0009	0.0086
256	0.0094	0.0009	0.0085
257	0.0093	0.0009	0.0084
258	0.0092	0.0009	0.0084
259	0.0091	0.0009	0.0083
260	0.0091	0.0009	0.0082
261	0.0090	0.0008	0.0081
262	0.0089	0.0008	0.0081
263	0.0088	0.0008	0.0080
264	0.0088	0.0008	0.0079
265	0.0087	0.0008	0.0079
266	0.0086	0.0008	0.0078
267	0.0086	0.0008	0.0078
268	0.0085	0.0008	0.0077
269	0.0084	0.0008	0.0077
270	0.0084	0.0008	0.0076
271	0.0083	0.0008	0.0075
272	0.0083	0.0008	0.0075
273	0.0082	0.0008	0.0074
274	0.0081	0.0008	0.0074
275	0.0081	0.0008	0.0073
276	0.0080	0.0008	0.0073
277	0.0080	0.0007	0.0072
278	0.0079	0.0007	0.0072
279	0.0079	0.0007	0.0071
280	0.0078	0.0007	0.0071
281	0.0078	0.0007	0.0070
282	0.0077	0.0007	0.0070
283	0.0077	0.0007	0.0070
284	0.0076	0.0007	0.0069
285	0.0076	0.0007	0.0069
286	0.0075	0.0007	0.0068
287	0.0075	0.0007	0.0068
288	0.0074	0.0007	0.0067

Total soil rain loss = 0.39(In)
Total effective rainfall = 4.50(In)
Peak flow rate in flood hydrograph = 2.13(CFS)

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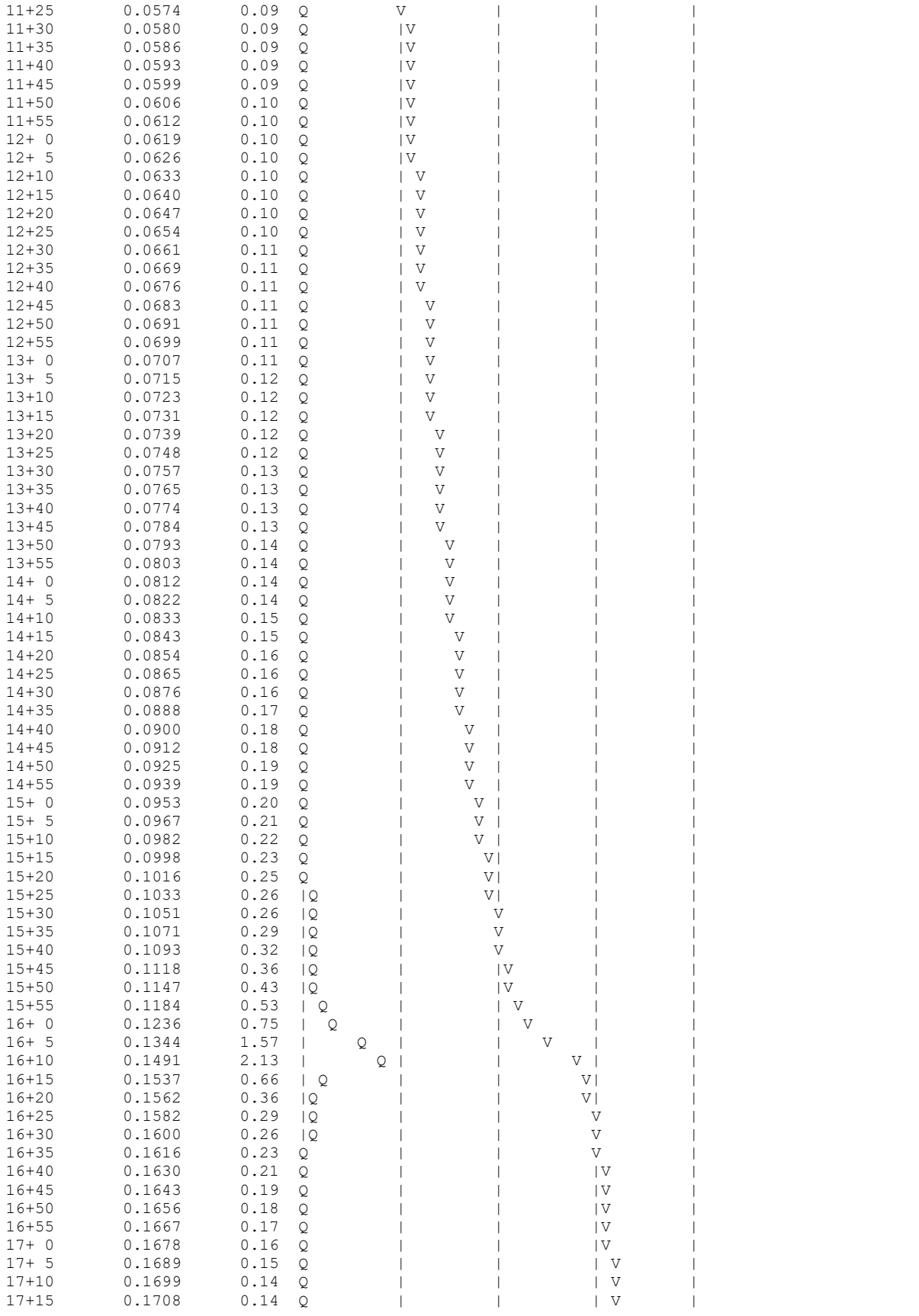
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0001	0.01	Q				
0+10	0.0004	0.04	Q				
0+15	0.0007	0.05	Q				
0+20	0.0010	0.05	Q				
0+25	0.0013	0.05	Q				
0+30	0.0017	0.05	Q				
0+35	0.0020	0.05	Q				
0+40	0.0023	0.05	Q				
0+45	0.0026	0.05	Q				
0+50	0.0029	0.05	Q				
0+55	0.0033	0.05	Q				
1+ 0	0.0036	0.05	Q				
1+ 5	0.0039	0.05	Q				
1+10	0.0042	0.05	Q				
1+15	0.0046	0.05	Q				
1+20	0.0049	0.05	Q				
1+25	0.0052	0.05	Q				
1+30	0.0055	0.05	QV				
1+35	0.0059	0.05	QV				
1+40	0.0062	0.05	QV				
1+45	0.0065	0.05	QV				
1+50	0.0069	0.05	QV				
1+55	0.0072	0.05	QV				
2+ 0	0.0075	0.05	QV				
2+ 5	0.0079	0.05	QV				
2+10	0.0082	0.05	QV				
2+15	0.0086	0.05	QV				
2+20	0.0089	0.05	QV				
2+25	0.0092	0.05	QV				
2+30	0.0096	0.05	QV				
2+35	0.0099	0.05	QV				
2+40	0.0103	0.05	QV				
2+45	0.0106	0.05	Q V				
2+50	0.0110	0.05	Q V				
2+55	0.0113	0.05	Q V				
3+ 0	0.0117	0.05	Q V				
3+ 5	0.0120	0.05	Q V				
3+10	0.0124	0.05	Q V				
3+15	0.0127	0.05	Q V				
3+20	0.0131	0.05	Q V				
3+25	0.0134	0.05	Q V				
3+30	0.0138	0.05	Q V				
3+35	0.0141	0.05	Q V				
3+40	0.0145	0.05	Q V				
3+45	0.0149	0.05	Q V				
3+50	0.0152	0.05	Q V				
3+55	0.0156	0.05	Q V				
4+ 0	0.0160	0.05	Q V				
4+ 5	0.0163	0.05	Q V				
4+10	0.0167	0.05	Q V				
4+15	0.0171	0.05	Q V				
4+20	0.0174	0.05	Q V				
4+25	0.0178	0.05	Q V				
4+30	0.0182	0.05	Q V				
4+35	0.0186	0.05	Q V				
4+40	0.0189	0.05	Q V				
4+45	0.0193	0.06	Q V				
4+50	0.0197	0.06	Q V				
4+55	0.0201	0.06	Q V				
5+ 0	0.0205	0.06	Q V				
5+ 5	0.0209	0.06	Q V				
5+10	0.0212	0.06	Q V				
5+15	0.0216	0.06	Q V				
5+20	0.0220	0.06	Q V				
5+25	0.0224	0.06	Q V				

5+30	0.0228	0.06	Q	V	|	|	|	|
5+35	0.0232	0.06	Q	V	|	|	|	|
5+40	0.0236	0.06	Q	V	|	|	|	|
5+45	0.0240	0.06	Q	V	|	|	|	|
5+50	0.0244	0.06	Q	V	|	|	|	|
5+55	0.0248	0.06	Q	V	|	|	|	|
6+ 0	0.0252	0.06	Q	V	|	|	|	|
6+ 5	0.0256	0.06	Q	V	|	|	|	|
6+10	0.0260	0.06	Q	V	|	|	|	|
6+15	0.0264	0.06	Q	V	|	|	|	|
6+20	0.0269	0.06	Q	V	|	|	|	|
6+25	0.0273	0.06	Q	V	|	|	|	|
6+30	0.0277	0.06	Q	V	|	|	|	|
6+35	0.0281	0.06	Q	V	|	|	|	|
6+40	0.0285	0.06	Q	V	|	|	|	|
6+45	0.0289	0.06	Q	V	|	|	|	|
6+50	0.0294	0.06	Q	V	|	|	|	|
6+55	0.0298	0.06	Q	V	|	|	|	|
7+ 0	0.0302	0.06	Q	V	|	|	|	|
7+ 5	0.0307	0.06	Q	V	|	|	|	|
7+10	0.0311	0.06	Q	V	|	|	|	|
7+15	0.0315	0.06	Q	V	|	|	|	|
7+20	0.0320	0.06	Q	V	|	|	|	|
7+25	0.0324	0.06	Q	V	|	|	|	|
7+30	0.0329	0.06	Q	V	|	|	|	|
7+35	0.0333	0.06	Q	V	|	|	|	|
7+40	0.0338	0.07	Q	V	|	|	|	|
7+45	0.0342	0.07	Q	V	|	|	|	|
7+50	0.0347	0.07	Q	V	|	|	|	|
7+55	0.0351	0.07	Q	V	|	|	|	|
8+ 0	0.0356	0.07	Q	V	|	|	|	|
8+ 5	0.0360	0.07	Q	V	|	|	|	|
8+10	0.0365	0.07	Q	V	|	|	|	|
8+15	0.0370	0.07	Q	V	|	|	|	|
8+20	0.0374	0.07	Q	V	|	|	|	|
8+25	0.0379	0.07	Q	V	|	|	|	|
8+30	0.0384	0.07	Q	V	|	|	|	|
8+35	0.0389	0.07	Q	V	|	|	|	|
8+40	0.0393	0.07	Q	V	|	|	|	|
8+45	0.0398	0.07	Q	V	|	|	|	|
8+50	0.0403	0.07	Q	V	|	|	|	|
8+55	0.0408	0.07	Q	V	|	|	|	|
9+ 0	0.0413	0.07	Q	V	|	|	|	|
9+ 5	0.0418	0.07	Q	V	|	|	|	|
9+10	0.0423	0.07	Q	V	|	|	|	|
9+15	0.0428	0.07	Q	V	|	|	|	|
9+20	0.0433	0.07	Q	V	|	|	|	|
9+25	0.0438	0.07	Q	V	|	|	|	|
9+30	0.0443	0.07	Q	V	|	|	|	|
9+35	0.0448	0.08	Q	V	|	|	|	|
9+40	0.0454	0.08	Q	V	|	|	|	|
9+45	0.0459	0.08	Q	V	|	|	|	|
9+50	0.0464	0.08	Q	V	|	|	|	|
9+55	0.0470	0.08	Q	V	|	|	|	|
10+ 0	0.0475	0.08	Q	V	|	|	|	|
10+ 5	0.0480	0.08	Q	V	|	|	|	|
10+10	0.0486	0.08	Q	V	|	|	|	|
10+15	0.0491	0.08	Q	V	|	|	|	|
10+20	0.0497	0.08	Q	V	|	|	|	|
10+25	0.0502	0.08	Q	V	|	|	|	|
10+30	0.0508	0.08	Q	V	|	|	|	|
10+35	0.0514	0.08	Q	V	|	|	|	|
10+40	0.0520	0.08	Q	V	|	|	|	|
10+45	0.0525	0.08	Q	V	|	|	|	|
10+50	0.0531	0.08	Q	V	|	|	|	|
10+55	0.0537	0.09	Q	V	|	|	|	|
11+ 0	0.0543	0.09	Q	V	|	|	|	|
11+ 5	0.0549	0.09	Q	V	|	|	|	|
11+10	0.0555	0.09	Q	V	|	|	|	|
11+15	0.0561	0.09	Q	V	|	|	|	|
11+20	0.0567	0.09	Q	V	|	|	|	|



11+25	0.0574	0.09	Q	V	|	|	|
11+30	0.0580	0.09	Q	|V	|	|	|
11+35	0.0586	0.09	Q	|V	|	|	|
11+40	0.0593	0.09	Q	|V	|	|	|
11+45	0.0599	0.09	Q	|V	|	|	|
11+50	0.0606	0.10	Q	|V	|	|	|
11+55	0.0612	0.10	Q	|V	|	|	|
12+ 0	0.0619	0.10	Q	|V	|	|	|
12+ 5	0.0626	0.10	Q	|V	|	|	|
12+10	0.0633	0.10	Q	| V	|	|	|
12+15	0.0640	0.10	Q	| V	|	|	|
12+20	0.0647	0.10	Q	| V	|	|	|
12+25	0.0654	0.10	Q	| V	|	|	|
12+30	0.0661	0.11	Q	| V	|	|	|
12+35	0.0669	0.11	Q	| V	|	|	|
12+40	0.0676	0.11	Q	| V	|	|	|
12+45	0.0683	0.11	Q	| V	|	|	|
12+50	0.0691	0.11	Q	| V	|	|	|
12+55	0.0699	0.11	Q	| V	|	|	|
13+ 0	0.0707	0.11	Q	| V	|	|	|
13+ 5	0.0715	0.12	Q	| V	|	|	|
13+10	0.0723	0.12	Q	| V	|	|	|
13+15	0.0731	0.12	Q	| V	|	|	|
13+20	0.0739	0.12	Q	| V	|	|	|
13+25	0.0748	0.12	Q	| V	|	|	|
13+30	0.0757	0.13	Q	| V	|	|	|
13+35	0.0765	0.13	Q	| V	|	|	|
13+40	0.0774	0.13	Q	| V	|	|	|
13+45	0.0784	0.13	Q	| V	|	|	|
13+50	0.0793	0.14	Q	| V	|	|	|
13+55	0.0803	0.14	Q	| V	|	|	|
14+ 0	0.0812	0.14	Q	| V	|	|	|
14+ 5	0.0822	0.14	Q	| V	|	|	|
14+10	0.0833	0.15	Q	| V	|	|	|
14+15	0.0843	0.15	Q	| V	|	|	|
14+20	0.0854	0.16	Q	| V	|	|	|
14+25	0.0865	0.16	Q	| V	|	|	|
14+30	0.0876	0.16	Q	| V	|	|	|
14+35	0.0888	0.17	Q	| V	|	|	|
14+40	0.0900	0.18	Q	| V	|	|	|
14+45	0.0912	0.18	Q	| V	|	|	|
14+50	0.0925	0.19	Q	| V	|	|	|
14+55	0.0939	0.19	Q	| V	|	|	|
15+ 0	0.0953	0.20	Q	| V	|	|	|
15+ 5	0.0967	0.21	Q	| V	|	|	|
15+10	0.0982	0.22	Q	| V	|	|	|
15+15	0.0998	0.23	Q	| V	|	|	|
15+20	0.1016	0.25	Q	| V	|	|	|
15+25	0.1033	0.26	|Q	| V	|	|	|
15+30	0.1051	0.26	|Q	| V	|	|	|
15+35	0.1071	0.29	|Q	| V	|	|	|
15+40	0.1093	0.32	|Q	| V	|	|	|
15+45	0.1118	0.36	|Q	| V	|	|	|
15+50	0.1147	0.43	|Q	| V	|	|	|
15+55	0.1184	0.53	| Q	| V	|	|	|
16+ 0	0.1236	0.75	| Q	| V	|	|	|
16+ 5	0.1344	1.57	| Q	| V	|	|	|
16+10	0.1491	2.13	| Q	| V	|	|	|
16+15	0.1537	0.66	| Q	| V	|	|	|
16+20	0.1562	0.36	|Q	| V	|	|	|
16+25	0.1582	0.29	|Q	| V	|	|	|
16+30	0.1600	0.26	|Q	| V	|	|	|
16+35	0.1616	0.23	Q	| V	|	|	|
16+40	0.1630	0.21	Q	| V	|	|	|
16+45	0.1643	0.19	Q	| V	|	|	|
16+50	0.1656	0.18	Q	| V	|	|	|
16+55	0.1667	0.17	Q	| V	|	|	|
17+ 0	0.1678	0.16	Q	| V	|	|	|
17+ 5	0.1689	0.15	Q	| V	|	|	|
17+10	0.1699	0.14	Q	| V	|	|	|
17+15	0.1708	0.14	Q	| V	|	|	|

17+20	0.1717	0.13	Q			V	
17+25	0.1726	0.13	Q			V	
17+30	0.1735	0.12	Q			V	
17+35	0.1743	0.12	Q			V	
17+40	0.1751	0.12	Q			V	
17+45	0.1759	0.11	Q			V	
17+50	0.1766	0.11	Q			V	
17+55	0.1773	0.11	Q			V	
18+ 0	0.1781	0.10	Q			V	
18+ 5	0.1788	0.10	Q			V	
18+10	0.1794	0.10	Q			V	
18+15	0.1801	0.10	Q			V	
18+20	0.1807	0.09	Q			V	
18+25	0.1814	0.09	Q			V	
18+30	0.1820	0.09	Q			V	
18+35	0.1826	0.09	Q			V	
18+40	0.1832	0.09	Q			V	
18+45	0.1838	0.09	Q			V	
18+50	0.1844	0.08	Q			V	
18+55	0.1849	0.08	Q			V	
19+ 0	0.1855	0.08	Q			V	
19+ 5	0.1861	0.08	Q			V	
19+10	0.1866	0.08	Q			V	
19+15	0.1871	0.08	Q			V	
19+20	0.1877	0.08	Q			V	
19+25	0.1882	0.08	Q			V	
19+30	0.1887	0.07	Q			V	
19+35	0.1892	0.07	Q			V	
19+40	0.1897	0.07	Q			V	
19+45	0.1902	0.07	Q			V	
19+50	0.1907	0.07	Q			V	
19+55	0.1911	0.07	Q			V	
20+ 0	0.1916	0.07	Q			V	
20+ 5	0.1921	0.07	Q			V	
20+10	0.1925	0.07	Q			V	
20+15	0.1930	0.07	Q			V	
20+20	0.1934	0.07	Q			V	
20+25	0.1939	0.06	Q			V	
20+30	0.1943	0.06	Q			V	
20+35	0.1948	0.06	Q			V	
20+40	0.1952	0.06	Q			V	
20+45	0.1956	0.06	Q			V	
20+50	0.1960	0.06	Q			V	
20+55	0.1965	0.06	Q			V	
21+ 0	0.1969	0.06	Q			V	
21+ 5	0.1973	0.06	Q			V	
21+10	0.1977	0.06	Q			V	
21+15	0.1981	0.06	Q			V	
21+20	0.1985	0.06	Q			V	
21+25	0.1989	0.06	Q			V	
21+30	0.1993	0.06	Q			V	
21+35	0.1997	0.06	Q			V	
21+40	0.2001	0.06	Q			V	
21+45	0.2004	0.06	Q			V	
21+50	0.2008	0.06	Q			V	
21+55	0.2012	0.05	Q			V	
22+ 0	0.2016	0.05	Q			V	
22+ 5	0.2019	0.05	Q			V	
22+10	0.2023	0.05	Q			V	
22+15	0.2027	0.05	Q			V	
22+20	0.2030	0.05	Q			V	
22+25	0.2034	0.05	Q			V	
22+30	0.2037	0.05	Q			V	
22+35	0.2041	0.05	Q			V	
22+40	0.2044	0.05	Q			V	
22+45	0.2048	0.05	Q			V	
22+50	0.2051	0.05	Q			V	
22+55	0.2055	0.05	Q			V	
23+ 0	0.2058	0.05	Q			V	
23+ 5	0.2062	0.05	Q			V	
23+10	0.2065	0.05	Q			V	

23+15	0.2068	0.05	Q	|	|	|	V|
23+20	0.2072	0.05	Q	|	|	|	V|
23+25	0.2075	0.05	Q	|	|	|	V|
23+30	0.2078	0.05	Q	|	|	|	V|
23+35	0.2082	0.05	Q	|	|	|	V|
23+40	0.2085	0.05	Q	|	|	|	V|
23+45	0.2088	0.05	Q	|	|	|	V|
23+50	0.2091	0.05	Q	|	|	|	V|
23+55	0.2094	0.05	Q	|	|	|	V|
24+ 0	0.2098	0.05	Q	|	|	|	V|

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

Study date 09/29/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 1B (POC 1)
100 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA1BQ100.HCU

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	0.29	1	0.77
Rainfall data for year 2	0.29	6	1.16
Rainfall data for year 2	0.29	24	2.07
Rainfall data for year 100	0.29	1	1.22
Rainfall data for year 100	0.29	6	2.67
Rainfall data for year 100	0.29	24	4.89

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	0.29	1.000	0.440	0.100	0.044

Area-averaged adjusted loss rate Fm (In/Hr) = 0.044

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.03	0.100	56.0	75.8	3.19	0.497
0.26	0.900	98.0	98.0	0.20	0.952

Area-averaged catchment yield fraction, Y = 0.906
Area-averaged low loss fraction, Yb = 0.094
User entry of time of concentration = 0.089 (hours)
++
Watershed area = 0.29(Ac.)
Catchment Lag time = 0.071 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 117.0412
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.044(In/Hr)
Average low loss rate fraction (Yb) = 0.094 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.452(In)
Computed peak 30-minute rainfall = 0.925(In)
Specified peak 1-hour rainfall = 1.220(In)
Computed peak 3-hour rainfall = 1.972(In)
Specified peak 6-hour rainfall = 2.670(In)
Specified peak 24-hour rainfall = 4.890(In)

Rainfall depth area reduction factors:
Using a total area of 0.29(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.452(In)
30-minute factor = 1.000 Adjusted rainfall = 0.925(In)
1-hour factor = 1.000 Adjusted rainfall = 1.220(In)
3-hour factor = 1.000 Adjusted rainfall = 1.972(In)
6-hour factor = 1.000 Adjusted rainfall = 2.670(In)
24-hour factor = 1.000 Adjusted rainfall = 4.890(In)

U n i t H y d r o g r a p h
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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 3.51 (CFS))	
1	23.012	0.807
2	87.584	2.265
3	100.000	0.435

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.4515	0.4515
2	0.5958	0.1443
3	0.7007	0.1049
4	0.7862	0.0855
5	0.8595	0.0734
6	0.9246	0.0650
7	0.9834	0.0588
8	1.0373	0.0540
9	1.0874	0.0500
10	1.1342	0.0468
11	1.1783	0.0441
12	1.2200	0.0417
13	1.2634	0.0434
14	1.3050	0.0416
15	1.3450	0.0400
16	1.3835	0.0385
17	1.4206	0.0372
18	1.4566	0.0359
19	1.4914	0.0348
20	1.5252	0.0338
21	1.5581	0.0329
22	1.5901	0.0320

23	1.6213	0.0312
24	1.6518	0.0304
25	1.6815	0.0297
26	1.7106	0.0291
27	1.7390	0.0285
28	1.7669	0.0279
29	1.7942	0.0273
30	1.8210	0.0268
31	1.8473	0.0263
32	1.8731	0.0258
33	1.8985	0.0254
34	1.9234	0.0249
35	1.9479	0.0245
36	1.9721	0.0241
37	1.9958	0.0238
38	2.0192	0.0234
39	2.0423	0.0231
40	2.0650	0.0227
41	2.0874	0.0224
42	2.1095	0.0221
43	2.1313	0.0218
44	2.1529	0.0215
45	2.1741	0.0213
46	2.1951	0.0210
47	2.2158	0.0207
48	2.2363	0.0205
49	2.2566	0.0202
50	2.2766	0.0200
51	2.2964	0.0198
52	2.3160	0.0196
53	2.3353	0.0194
54	2.3545	0.0192
55	2.3734	0.0190
56	2.3922	0.0188
57	2.4108	0.0186
58	2.4292	0.0184
59	2.4474	0.0182
60	2.4655	0.0180
61	2.4833	0.0179
62	2.5011	0.0177
63	2.5186	0.0176
64	2.5360	0.0174
65	2.5533	0.0172
66	2.5704	0.0171
67	2.5873	0.0170
68	2.6041	0.0168
69	2.6208	0.0167
70	2.6373	0.0165
71	2.6537	0.0164
72	2.6700	0.0163
73	2.6861	0.0161
74	2.7021	0.0160
75	2.7180	0.0159
76	2.7338	0.0158
77	2.7494	0.0156
78	2.7649	0.0155
79	2.7803	0.0154
80	2.7957	0.0153
81	2.8109	0.0152
82	2.8260	0.0151
83	2.8409	0.0150
84	2.8558	0.0149
85	2.8706	0.0148
86	2.8853	0.0147
87	2.8999	0.0146
88	2.9144	0.0145
89	2.9288	0.0144
90	2.9431	0.0143
91	2.9574	0.0142
92	2.9715	0.0141
93	2.9856	0.0141

94	2.9995	0.0140
95	3.0134	0.0139
96	3.0272	0.0138
97	3.0410	0.0137
98	3.0546	0.0136
99	3.0682	0.0136
100	3.0817	0.0135
101	3.0951	0.0134
102	3.1084	0.0133
103	3.1217	0.0133
104	3.1349	0.0132
105	3.1480	0.0131
106	3.1610	0.0131
107	3.1740	0.0130
108	3.1869	0.0129
109	3.1998	0.0128
110	3.2126	0.0128
111	3.2253	0.0127
112	3.2379	0.0127
113	3.2505	0.0126
114	3.2631	0.0125
115	3.2755	0.0125
116	3.2879	0.0124
117	3.3003	0.0123
118	3.3125	0.0123
119	3.3248	0.0122
120	3.3369	0.0122
121	3.3490	0.0121
122	3.3611	0.0121
123	3.3731	0.0120
124	3.3850	0.0119
125	3.3969	0.0119
126	3.4088	0.0118
127	3.4205	0.0118
128	3.4323	0.0117
129	3.4440	0.0117
130	3.4556	0.0116
131	3.4672	0.0116
132	3.4787	0.0115
133	3.4902	0.0115
134	3.5016	0.0114
135	3.5130	0.0114
136	3.5243	0.0113
137	3.5356	0.0113
138	3.5468	0.0112
139	3.5580	0.0112
140	3.5692	0.0112
141	3.5803	0.0111
142	3.5914	0.0111
143	3.6024	0.0110
144	3.6133	0.0110
145	3.6243	0.0109
146	3.6352	0.0109
147	3.6460	0.0108
148	3.6568	0.0108
149	3.6676	0.0108
150	3.6783	0.0107
151	3.6890	0.0107
152	3.6996	0.0106
153	3.7102	0.0106
154	3.7208	0.0106
155	3.7313	0.0105
156	3.7418	0.0105
157	3.7523	0.0105
158	3.7627	0.0104
159	3.7731	0.0104
160	3.7834	0.0103
161	3.7937	0.0103
162	3.8040	0.0103
163	3.8142	0.0102
164	3.8244	0.0102

165	3.8346	0.0102
166	3.8447	0.0101
167	3.8548	0.0101
168	3.8648	0.0101
169	3.8749	0.0100
170	3.8849	0.0100
171	3.8948	0.0100
172	3.9047	0.0099
173	3.9146	0.0099
174	3.9245	0.0099
175	3.9343	0.0098
176	3.9441	0.0098
177	3.9539	0.0098
178	3.9636	0.0097
179	3.9733	0.0097
180	3.9830	0.0097
181	3.9926	0.0096
182	4.0023	0.0096
183	4.0118	0.0096
184	4.0214	0.0096
185	4.0309	0.0095
186	4.0404	0.0095
187	4.0499	0.0095
188	4.0593	0.0094
189	4.0687	0.0094
190	4.0781	0.0094
191	4.0875	0.0094
192	4.0968	0.0093
193	4.1061	0.0093
194	4.1154	0.0093
195	4.1246	0.0092
196	4.1338	0.0092
197	4.1430	0.0092
198	4.1522	0.0092
199	4.1613	0.0091
200	4.1705	0.0091
201	4.1795	0.0091
202	4.1886	0.0091
203	4.1977	0.0090
204	4.2067	0.0090
205	4.2157	0.0090
206	4.2246	0.0090
207	4.2336	0.0089
208	4.2425	0.0089
209	4.2514	0.0089
210	4.2602	0.0089
211	4.2691	0.0088
212	4.2779	0.0088
213	4.2867	0.0088
214	4.2955	0.0088
215	4.3042	0.0087
216	4.3129	0.0087
217	4.3216	0.0087
218	4.3303	0.0087
219	4.3390	0.0087
220	4.3476	0.0086
221	4.3562	0.0086
222	4.3648	0.0086
223	4.3734	0.0086
224	4.3819	0.0085
225	4.3905	0.0085
226	4.3990	0.0085
227	4.4075	0.0085
228	4.4159	0.0085
229	4.4244	0.0084
230	4.4328	0.0084
231	4.4412	0.0084
232	4.4496	0.0084
233	4.4579	0.0084
234	4.4663	0.0083
235	4.4746	0.0083

236	4.4829	0.0083
237	4.4912	0.0083
238	4.4995	0.0083
239	4.5077	0.0082
240	4.5159	0.0082
241	4.5241	0.0082
242	4.5323	0.0082
243	4.5405	0.0082
244	4.5486	0.0081
245	4.5567	0.0081
246	4.5649	0.0081
247	4.5729	0.0081
248	4.5810	0.0081
249	4.5891	0.0081
250	4.5971	0.0080
251	4.6051	0.0080
252	4.6131	0.0080
253	4.6211	0.0080
254	4.6291	0.0080
255	4.6370	0.0079
256	4.6449	0.0079
257	4.6529	0.0079
258	4.6608	0.0079
259	4.6686	0.0079
260	4.6765	0.0079
261	4.6843	0.0078
262	4.6922	0.0078
263	4.7000	0.0078
264	4.7078	0.0078
265	4.7155	0.0078
266	4.7233	0.0078
267	4.7310	0.0077
268	4.7388	0.0077
269	4.7465	0.0077
270	4.7542	0.0077
271	4.7618	0.0077
272	4.7695	0.0077
273	4.7772	0.0076
274	4.7848	0.0076
275	4.7924	0.0076
276	4.8000	0.0076
277	4.8076	0.0076
278	4.8151	0.0076
279	4.8227	0.0076
280	4.8302	0.0075
281	4.8378	0.0075
282	4.8453	0.0075
283	4.8528	0.0075
284	4.8602	0.0075
285	4.8677	0.0075
286	4.8751	0.0074
287	4.8826	0.0074
288	4.8900	0.0074

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0074	0.0007	0.0067
2	0.0074	0.0007	0.0067
3	0.0075	0.0007	0.0068
4	0.0075	0.0007	0.0068
5	0.0075	0.0007	0.0068
6	0.0075	0.0007	0.0068
7	0.0076	0.0007	0.0068
8	0.0076	0.0007	0.0069
9	0.0076	0.0007	0.0069
10	0.0076	0.0007	0.0069
11	0.0076	0.0007	0.0069
12	0.0077	0.0007	0.0069
13	0.0077	0.0007	0.0070

14	0.0077	0.0007	0.0070
15	0.0077	0.0007	0.0070
16	0.0078	0.0007	0.0070
17	0.0078	0.0007	0.0071
18	0.0078	0.0007	0.0071
19	0.0078	0.0007	0.0071
20	0.0079	0.0007	0.0071
21	0.0079	0.0007	0.0072
22	0.0079	0.0007	0.0072
23	0.0079	0.0007	0.0072
24	0.0080	0.0007	0.0072
25	0.0080	0.0008	0.0072
26	0.0080	0.0008	0.0073
27	0.0081	0.0008	0.0073
28	0.0081	0.0008	0.0073
29	0.0081	0.0008	0.0073
30	0.0081	0.0008	0.0074
31	0.0082	0.0008	0.0074
32	0.0082	0.0008	0.0074
33	0.0082	0.0008	0.0075
34	0.0082	0.0008	0.0075
35	0.0083	0.0008	0.0075
36	0.0083	0.0008	0.0075
37	0.0083	0.0008	0.0076
38	0.0084	0.0008	0.0076
39	0.0084	0.0008	0.0076
40	0.0084	0.0008	0.0076
41	0.0085	0.0008	0.0077
42	0.0085	0.0008	0.0077
43	0.0085	0.0008	0.0077
44	0.0085	0.0008	0.0077
45	0.0086	0.0008	0.0078
46	0.0086	0.0008	0.0078
47	0.0087	0.0008	0.0078
48	0.0087	0.0008	0.0079
49	0.0087	0.0008	0.0079
50	0.0087	0.0008	0.0079
51	0.0088	0.0008	0.0080
52	0.0088	0.0008	0.0080
53	0.0089	0.0008	0.0080
54	0.0089	0.0008	0.0081
55	0.0089	0.0008	0.0081
56	0.0090	0.0008	0.0081
57	0.0090	0.0008	0.0082
58	0.0090	0.0008	0.0082
59	0.0091	0.0009	0.0082
60	0.0091	0.0009	0.0083
61	0.0092	0.0009	0.0083
62	0.0092	0.0009	0.0083
63	0.0092	0.0009	0.0084
64	0.0093	0.0009	0.0084
65	0.0093	0.0009	0.0085
66	0.0094	0.0009	0.0085
67	0.0094	0.0009	0.0085
68	0.0094	0.0009	0.0086
69	0.0095	0.0009	0.0086
70	0.0095	0.0009	0.0086
71	0.0096	0.0009	0.0087
72	0.0096	0.0009	0.0087
73	0.0097	0.0009	0.0088
74	0.0097	0.0009	0.0088
75	0.0098	0.0009	0.0088
76	0.0098	0.0009	0.0089
77	0.0099	0.0009	0.0089
78	0.0099	0.0009	0.0090
79	0.0100	0.0009	0.0090
80	0.0100	0.0009	0.0091
81	0.0101	0.0009	0.0091
82	0.0101	0.0009	0.0091
83	0.0102	0.0010	0.0092
84	0.0102	0.0010	0.0092

85	0.0103	0.0010	0.0093
86	0.0103	0.0010	0.0093
87	0.0104	0.0010	0.0094
88	0.0104	0.0010	0.0094
89	0.0105	0.0010	0.0095
90	0.0105	0.0010	0.0095
91	0.0106	0.0010	0.0096
92	0.0106	0.0010	0.0096
93	0.0107	0.0010	0.0097
94	0.0108	0.0010	0.0098
95	0.0108	0.0010	0.0098
96	0.0109	0.0010	0.0099
97	0.0110	0.0010	0.0099
98	0.0110	0.0010	0.0100
99	0.0111	0.0010	0.0101
100	0.0112	0.0010	0.0101
101	0.0112	0.0011	0.0102
102	0.0113	0.0011	0.0102
103	0.0114	0.0011	0.0103
104	0.0114	0.0011	0.0104
105	0.0115	0.0011	0.0104
106	0.0116	0.0011	0.0105
107	0.0117	0.0011	0.0106
108	0.0117	0.0011	0.0106
109	0.0118	0.0011	0.0107
110	0.0119	0.0011	0.0108
111	0.0120	0.0011	0.0109
112	0.0121	0.0011	0.0109
113	0.0122	0.0011	0.0110
114	0.0122	0.0011	0.0111
115	0.0123	0.0012	0.0112
116	0.0124	0.0012	0.0112
117	0.0125	0.0012	0.0113
118	0.0126	0.0012	0.0114
119	0.0127	0.0012	0.0115
120	0.0128	0.0012	0.0116
121	0.0129	0.0012	0.0117
122	0.0130	0.0012	0.0118
123	0.0131	0.0012	0.0119
124	0.0132	0.0012	0.0120
125	0.0133	0.0013	0.0121
126	0.0134	0.0013	0.0122
127	0.0136	0.0013	0.0123
128	0.0136	0.0013	0.0124
129	0.0138	0.0013	0.0125
130	0.0139	0.0013	0.0126
131	0.0141	0.0013	0.0127
132	0.0141	0.0013	0.0128
133	0.0143	0.0013	0.0130
134	0.0144	0.0014	0.0131
135	0.0146	0.0014	0.0132
136	0.0147	0.0014	0.0133
137	0.0149	0.0014	0.0135
138	0.0150	0.0014	0.0136
139	0.0152	0.0014	0.0138
140	0.0153	0.0014	0.0139
141	0.0155	0.0015	0.0141
142	0.0156	0.0015	0.0142
143	0.0159	0.0015	0.0144
144	0.0160	0.0015	0.0145
145	0.0163	0.0015	0.0147
146	0.0164	0.0015	0.0149
147	0.0167	0.0016	0.0151
148	0.0168	0.0016	0.0152
149	0.0171	0.0016	0.0155
150	0.0172	0.0016	0.0156
151	0.0176	0.0016	0.0159
152	0.0177	0.0017	0.0161
153	0.0180	0.0017	0.0164
154	0.0182	0.0017	0.0165
155	0.0186	0.0017	0.0168

156	0.0188	0.0018	0.0170
157	0.0192	0.0018	0.0174
158	0.0194	0.0018	0.0175
159	0.0198	0.0019	0.0179
160	0.0200	0.0019	0.0181
161	0.0205	0.0019	0.0186
162	0.0207	0.0019	0.0188
163	0.0213	0.0020	0.0193
164	0.0215	0.0020	0.0195
165	0.0221	0.0021	0.0200
166	0.0224	0.0021	0.0203
167	0.0231	0.0022	0.0209
168	0.0234	0.0022	0.0212
169	0.0241	0.0023	0.0219
170	0.0245	0.0023	0.0222
171	0.0254	0.0024	0.0230
172	0.0258	0.0024	0.0234
173	0.0268	0.0025	0.0243
174	0.0273	0.0026	0.0247
175	0.0285	0.0027	0.0258
176	0.0291	0.0027	0.0263
177	0.0304	0.0029	0.0276
178	0.0312	0.0029	0.0283
179	0.0329	0.0031	0.0298
180	0.0338	0.0032	0.0306
181	0.0359	0.0034	0.0326
182	0.0372	0.0035	0.0337
183	0.0400	0.0037	0.0363
184	0.0416	0.0037	0.0379
185	0.0417	0.0037	0.0381
186	0.0441	0.0037	0.0404
187	0.0500	0.0037	0.0464
188	0.0540	0.0037	0.0503
189	0.0650	0.0037	0.0614
190	0.0734	0.0037	0.0697
191	0.1049	0.0037	0.1012
192	0.1443	0.0037	0.1406
193	0.4515	0.0037	0.4479
194	0.0855	0.0037	0.0818
195	0.0588	0.0037	0.0551
196	0.0468	0.0037	0.0431
197	0.0434	0.0037	0.0398
198	0.0385	0.0036	0.0349
199	0.0348	0.0033	0.0316
200	0.0320	0.0030	0.0290
201	0.0297	0.0028	0.0269
202	0.0279	0.0026	0.0253
203	0.0263	0.0025	0.0238
204	0.0249	0.0023	0.0226
205	0.0238	0.0022	0.0215
206	0.0227	0.0021	0.0206
207	0.0218	0.0020	0.0198
208	0.0210	0.0020	0.0190
209	0.0202	0.0019	0.0183
210	0.0196	0.0018	0.0177
211	0.0190	0.0018	0.0172
212	0.0184	0.0017	0.0167
213	0.0179	0.0017	0.0162
214	0.0174	0.0016	0.0158
215	0.0170	0.0016	0.0154
216	0.0165	0.0016	0.0150
217	0.0161	0.0015	0.0146
218	0.0158	0.0015	0.0143
219	0.0154	0.0014	0.0140
220	0.0151	0.0014	0.0137
221	0.0148	0.0014	0.0134
222	0.0145	0.0014	0.0131
223	0.0142	0.0013	0.0129
224	0.0140	0.0013	0.0127
225	0.0137	0.0013	0.0124
226	0.0135	0.0013	0.0122

227	0.0133	0.0012	0.0120
228	0.0131	0.0012	0.0118
229	0.0128	0.0012	0.0116
230	0.0127	0.0012	0.0115
231	0.0125	0.0012	0.0113
232	0.0123	0.0012	0.0111
233	0.0121	0.0011	0.0110
234	0.0119	0.0011	0.0108
235	0.0118	0.0011	0.0107
236	0.0116	0.0011	0.0105
237	0.0115	0.0011	0.0104
238	0.0113	0.0011	0.0103
239	0.0112	0.0011	0.0101
240	0.0111	0.0010	0.0100
241	0.0109	0.0010	0.0099
242	0.0108	0.0010	0.0098
243	0.0107	0.0010	0.0097
244	0.0106	0.0010	0.0096
245	0.0105	0.0010	0.0095
246	0.0103	0.0010	0.0094
247	0.0102	0.0010	0.0093
248	0.0101	0.0010	0.0092
249	0.0100	0.0009	0.0091
250	0.0099	0.0009	0.0090
251	0.0098	0.0009	0.0089
252	0.0097	0.0009	0.0088
253	0.0096	0.0009	0.0087
254	0.0096	0.0009	0.0087
255	0.0095	0.0009	0.0086
256	0.0094	0.0009	0.0085
257	0.0093	0.0009	0.0084
258	0.0092	0.0009	0.0084
259	0.0091	0.0009	0.0083
260	0.0091	0.0009	0.0082
261	0.0090	0.0008	0.0081
262	0.0089	0.0008	0.0081
263	0.0088	0.0008	0.0080
264	0.0088	0.0008	0.0079
265	0.0087	0.0008	0.0079
266	0.0086	0.0008	0.0078
267	0.0086	0.0008	0.0078
268	0.0085	0.0008	0.0077
269	0.0084	0.0008	0.0077
270	0.0084	0.0008	0.0076
271	0.0083	0.0008	0.0075
272	0.0083	0.0008	0.0075
273	0.0082	0.0008	0.0074
274	0.0081	0.0008	0.0074
275	0.0081	0.0008	0.0073
276	0.0080	0.0008	0.0073
277	0.0080	0.0007	0.0072
278	0.0079	0.0007	0.0072
279	0.0079	0.0007	0.0071
280	0.0078	0.0007	0.0071
281	0.0078	0.0007	0.0070
282	0.0077	0.0007	0.0070
283	0.0077	0.0007	0.0070
284	0.0076	0.0007	0.0069
285	0.0076	0.0007	0.0069
286	0.0075	0.0007	0.0068
287	0.0075	0.0007	0.0068
288	0.0074	0.0007	0.0067

Total soil rain loss = 0.39(In)
Total effective rainfall = 4.50(In)
Peak flow rate in flood hydrograph = 1.14(CFS)

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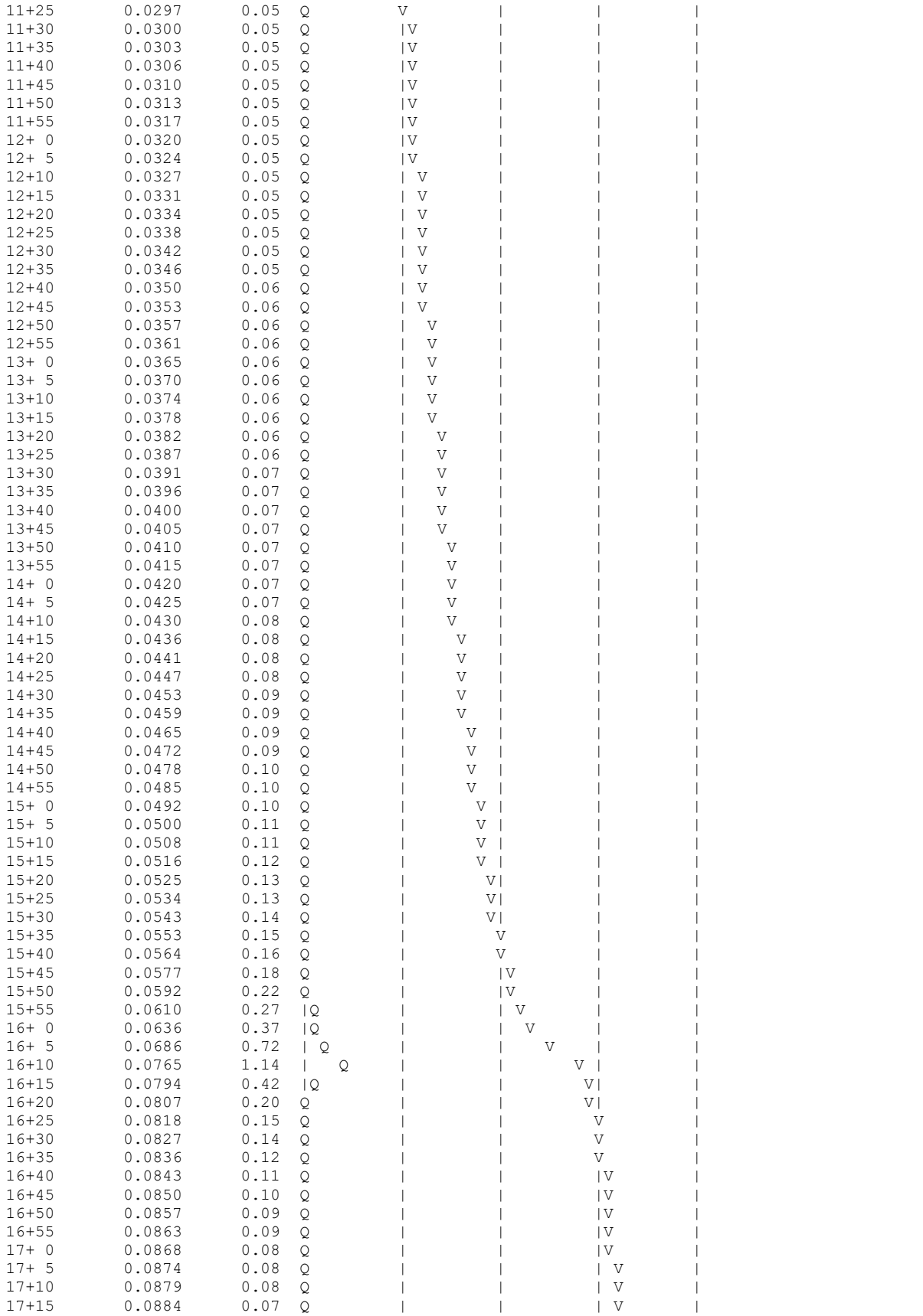
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0000	0.01	Q				
0+10	0.0002	0.02	Q				
0+15	0.0003	0.02	Q				
0+20	0.0005	0.02	Q				
0+25	0.0007	0.02	Q				
0+30	0.0008	0.02	Q				
0+35	0.0010	0.02	Q				
0+40	0.0012	0.02	Q				
0+45	0.0013	0.02	Q				
0+50	0.0015	0.02	Q				
0+55	0.0017	0.02	Q				
1+ 0	0.0018	0.02	Q				
1+ 5	0.0020	0.02	Q				
1+10	0.0022	0.02	Q				
1+15	0.0023	0.02	Q				
1+20	0.0025	0.02	Q				
1+25	0.0027	0.02	Q				
1+30	0.0028	0.02	QV				
1+35	0.0030	0.02	QV				
1+40	0.0032	0.02	QV				
1+45	0.0034	0.02	QV				
1+50	0.0035	0.03	QV				
1+55	0.0037	0.03	QV				
2+ 0	0.0039	0.03	QV				
2+ 5	0.0041	0.03	QV				
2+10	0.0042	0.03	QV				
2+15	0.0044	0.03	QV				
2+20	0.0046	0.03	QV				
2+25	0.0048	0.03	QV				
2+30	0.0049	0.03	QV				
2+35	0.0051	0.03	QV				
2+40	0.0053	0.03	QV				
2+45	0.0055	0.03	Q V				
2+50	0.0057	0.03	Q V				
2+55	0.0058	0.03	Q V				
3+ 0	0.0060	0.03	Q V				
3+ 5	0.0062	0.03	Q V				
3+10	0.0064	0.03	Q V				
3+15	0.0066	0.03	Q V				
3+20	0.0067	0.03	Q V				
3+25	0.0069	0.03	Q V				
3+30	0.0071	0.03	Q V				
3+35	0.0073	0.03	Q V				
3+40	0.0075	0.03	Q V				
3+45	0.0077	0.03	Q V				
3+50	0.0079	0.03	Q V				
3+55	0.0081	0.03	Q V				
4+ 0	0.0082	0.03	Q V				
4+ 5	0.0084	0.03	Q V				
4+10	0.0086	0.03	Q V				
4+15	0.0088	0.03	Q V				
4+20	0.0090	0.03	Q V				
4+25	0.0092	0.03	Q V				
4+30	0.0094	0.03	Q V				
4+35	0.0096	0.03	Q V				
4+40	0.0098	0.03	Q V				
4+45	0.0100	0.03	Q V				
4+50	0.0102	0.03	Q V				
4+55	0.0104	0.03	Q V				
5+ 0	0.0106	0.03	Q V				
5+ 5	0.0108	0.03	Q V				
5+10	0.0110	0.03	Q V				
5+15	0.0112	0.03	Q V				
5+20	0.0114	0.03	Q V				
5+25	0.0116	0.03	Q V				

5+30	0.0118	0.03	Q	V				
5+35	0.0120	0.03	Q	V				
5+40	0.0122	0.03	Q	V				
5+45	0.0124	0.03	Q	V				
5+50	0.0126	0.03	Q	V				
5+55	0.0128	0.03	Q	V				
6+ 0	0.0130	0.03	Q	V				
6+ 5	0.0132	0.03	Q	V				
6+10	0.0135	0.03	Q	V				
6+15	0.0137	0.03	Q	V				
6+20	0.0139	0.03	Q	V				
6+25	0.0141	0.03	Q	V				
6+30	0.0143	0.03	Q	V				
6+35	0.0145	0.03	Q	V				
6+40	0.0147	0.03	Q	V				
6+45	0.0150	0.03	Q	V				
6+50	0.0152	0.03	Q	V				
6+55	0.0154	0.03	Q	V				
7+ 0	0.0156	0.03	Q	V				
7+ 5	0.0158	0.03	Q	V				
7+10	0.0161	0.03	Q	V				
7+15	0.0163	0.03	Q	V				
7+20	0.0165	0.03	Q	V				
7+25	0.0168	0.03	Q	V				
7+30	0.0170	0.03	Q	V				
7+35	0.0172	0.03	Q	V				
7+40	0.0174	0.03	Q	V				
7+45	0.0177	0.03	Q	V				
7+50	0.0179	0.03	Q	V				
7+55	0.0182	0.03	Q	V				
8+ 0	0.0184	0.03	Q	V				
8+ 5	0.0186	0.03	Q	V				
8+10	0.0189	0.03	Q	V				
8+15	0.0191	0.04	Q	V				
8+20	0.0194	0.04	Q	V				
8+25	0.0196	0.04	Q	V				
8+30	0.0198	0.04	Q	V				
8+35	0.0201	0.04	Q	V				
8+40	0.0203	0.04	Q	V				
8+45	0.0206	0.04	Q	V				
8+50	0.0208	0.04	Q	V				
8+55	0.0211	0.04	Q	V				
9+ 0	0.0214	0.04	Q	V				
9+ 5	0.0216	0.04	Q	V				
9+10	0.0219	0.04	Q	V				
9+15	0.0221	0.04	Q	V				
9+20	0.0224	0.04	Q	V				
9+25	0.0227	0.04	Q	V				
9+30	0.0229	0.04	Q	V				
9+35	0.0232	0.04	Q	V				
9+40	0.0235	0.04	Q	V				
9+45	0.0237	0.04	Q	V				
9+50	0.0240	0.04	Q	V				
9+55	0.0243	0.04	Q	V				
10+ 0	0.0246	0.04	Q	V				
10+ 5	0.0248	0.04	Q	V				
10+10	0.0251	0.04	Q	V				
10+15	0.0254	0.04	Q	V				
10+20	0.0257	0.04	Q	V				
10+25	0.0260	0.04	Q	V				
10+30	0.0263	0.04	Q	V				
10+35	0.0266	0.04	Q	V				
10+40	0.0269	0.04	Q	V				
10+45	0.0272	0.04	Q	V				
10+50	0.0275	0.04	Q	V				
10+55	0.0278	0.04	Q	V				
11+ 0	0.0281	0.04	Q	V				
11+ 5	0.0284	0.05	Q	V				
11+10	0.0287	0.05	Q	V				
11+15	0.0290	0.05	Q	V				
11+20	0.0293	0.05	Q	V				



11+25	0.0297	0.05	Q	V	|	|	|
11+30	0.0300	0.05	Q	|V	|	|	|
11+35	0.0303	0.05	Q	|V	|	|	|
11+40	0.0306	0.05	Q	|V	|	|	|
11+45	0.0310	0.05	Q	|V	|	|	|
11+50	0.0313	0.05	Q	|V	|	|	|
11+55	0.0317	0.05	Q	|V	|	|	|
12+ 0	0.0320	0.05	Q	|V	|	|	|
12+ 5	0.0324	0.05	Q	|V	|	|	|
12+10	0.0327	0.05	Q	| V	|	|	|
12+15	0.0331	0.05	Q	| V	|	|	|
12+20	0.0334	0.05	Q	| V	|	|	|
12+25	0.0338	0.05	Q	| V	|	|	|
12+30	0.0342	0.05	Q	| V	|	|	|
12+35	0.0346	0.05	Q	| V	|	|	|
12+40	0.0350	0.06	Q	| V	|	|	|
12+45	0.0353	0.06	Q	| V	|	|	|
12+50	0.0357	0.06	Q	| V	|	|	|
12+55	0.0361	0.06	Q	| V	|	|	|
13+ 0	0.0365	0.06	Q	| V	|	|	|
13+ 5	0.0370	0.06	Q	| V	|	|	|
13+10	0.0374	0.06	Q	| V	|	|	|
13+15	0.0378	0.06	Q	| V	|	|	|
13+20	0.0382	0.06	Q	| V	|	|	|
13+25	0.0387	0.06	Q	| V	|	|	|
13+30	0.0391	0.07	Q	| V	|	|	|
13+35	0.0396	0.07	Q	| V	|	|	|
13+40	0.0400	0.07	Q	| V	|	|	|
13+45	0.0405	0.07	Q	| V	|	|	|
13+50	0.0410	0.07	Q	| V	|	|	|
13+55	0.0415	0.07	Q	| V	|	|	|
14+ 0	0.0420	0.07	Q	| V	|	|	|
14+ 5	0.0425	0.07	Q	| V	|	|	|
14+10	0.0430	0.08	Q	| V	|	|	|
14+15	0.0436	0.08	Q	| V	|	|	|
14+20	0.0441	0.08	Q	| V	|	|	|
14+25	0.0447	0.08	Q	| V	|	|	|
14+30	0.0453	0.09	Q	| V	|	|	|
14+35	0.0459	0.09	Q	| V	|	|	|
14+40	0.0465	0.09	Q	| V	|	|	|
14+45	0.0472	0.09	Q	| V	|	|	|
14+50	0.0478	0.10	Q	| V	|	|	|
14+55	0.0485	0.10	Q	| V	|	|	|
15+ 0	0.0492	0.10	Q	| V	|	|	|
15+ 5	0.0500	0.11	Q	| V	|	|	|
15+10	0.0508	0.11	Q	| V	|	|	|
15+15	0.0516	0.12	Q	| V	|	|	|
15+20	0.0525	0.13	Q	| V|	|	|
15+25	0.0534	0.13	Q	| V|	|	|
15+30	0.0543	0.14	Q	| V|	|	|
15+35	0.0553	0.15	Q	| V	|	|	|
15+40	0.0564	0.16	Q	| V	|	|	|
15+45	0.0577	0.18	Q	| |V	|	|	|
15+50	0.0592	0.22	Q	| |V	|	|	|
15+55	0.0610	0.27	|Q	| | V	|	|	|
16+ 0	0.0636	0.37	|Q	| | V	|	|	|
16+ 5	0.0686	0.72	| Q	| | V	|	|	|
16+10	0.0765	1.14	| Q	| | V |	|	|
16+15	0.0794	0.42	|Q	| | V|	|	|
16+20	0.0807	0.20	Q	| | V|	|	|
16+25	0.0818	0.15	Q	| | V	|	|	|
16+30	0.0827	0.14	Q	| | V	|	|	|
16+35	0.0836	0.12	Q	| | V	|	|	|
16+40	0.0843	0.11	Q	| | |V	|	|	|
16+45	0.0850	0.10	Q	| | |V	|	|	|
16+50	0.0857	0.09	Q	| | |V	|	|	|
16+55	0.0863	0.09	Q	| | |V	|	|	|
17+ 0	0.0868	0.08	Q	| | |V	|	|	|
17+ 5	0.0874	0.08	Q	| | | V	|	|	|
17+10	0.0879	0.08	Q	| | | V	|	|	|
17+15	0.0884	0.07	Q	| | | V	|	|	|

17+20	0.0889	0.07	Q	|	|	V	|
17+25	0.0893	0.07	Q	|	|	V	|
17+30	0.0898	0.06	Q	|	|	V	|
17+35	0.0902	0.06	Q	|	|	V	|
17+40	0.0906	0.06	Q	|	|	V	|
17+45	0.0910	0.06	Q	|	|	V	|
17+50	0.0914	0.06	Q	|	|	V	|
17+55	0.0918	0.06	Q	|	|	V	|
18+ 0	0.0922	0.05	Q	|	|	V	|
18+ 5	0.0925	0.05	Q	|	|	V	|
18+10	0.0929	0.05	Q	|	|	V	|
18+15	0.0932	0.05	Q	|	|	V	|
18+20	0.0936	0.05	Q	|	|	V	|
18+25	0.0939	0.05	Q	|	|	V	|
18+30	0.0942	0.05	Q	|	|	V	|
18+35	0.0945	0.05	Q	|	|	V	|
18+40	0.0948	0.05	Q	|	|	V	|
18+45	0.0951	0.04	Q	|	|	V	|
18+50	0.0954	0.04	Q	|	|	V	|
18+55	0.0957	0.04	Q	|	|	V	|
19+ 0	0.0960	0.04	Q	|	|	V	|
19+ 5	0.0963	0.04	Q	|	|	V	|
19+10	0.0966	0.04	Q	|	|	V	|
19+15	0.0969	0.04	Q	|	|	V	|
19+20	0.0971	0.04	Q	|	|	V	|
19+25	0.0974	0.04	Q	|	|	V	|
19+30	0.0977	0.04	Q	|	|	V	|
19+35	0.0979	0.04	Q	|	|	V	|
19+40	0.0982	0.04	Q	|	|	V	|
19+45	0.0984	0.04	Q	|	|	V	|
19+50	0.0987	0.04	Q	|	|	V	|
19+55	0.0989	0.04	Q	|	|	V	|
20+ 0	0.0992	0.04	Q	|	|	V	|
20+ 5	0.0994	0.04	Q	|	|	V	|
20+10	0.0997	0.03	Q	|	|	V	|
20+15	0.0999	0.03	Q	|	|	V	|
20+20	0.1001	0.03	Q	|	|	V	|
20+25	0.1004	0.03	Q	|	|	V	|
20+30	0.1006	0.03	Q	|	|	V	|
20+35	0.1008	0.03	Q	|	|	V	|
20+40	0.1010	0.03	Q	|	|	V	|
20+45	0.1013	0.03	Q	|	|	V	|
20+50	0.1015	0.03	Q	|	|	V	|
20+55	0.1017	0.03	Q	|	|	V	|
21+ 0	0.1019	0.03	Q	|	|	V	|
21+ 5	0.1021	0.03	Q	|	|	V	|
21+10	0.1023	0.03	Q	|	|	V	|
21+15	0.1026	0.03	Q	|	|	V	|
21+20	0.1028	0.03	Q	|	|	V	|
21+25	0.1030	0.03	Q	|	|	V	|
21+30	0.1032	0.03	Q	|	|	V	|
21+35	0.1034	0.03	Q	|	|	V	|
21+40	0.1036	0.03	Q	|	|	V	|
21+45	0.1038	0.03	Q	|	|	V	|
21+50	0.1040	0.03	Q	|	|	V	|
21+55	0.1042	0.03	Q	|	|	V	|
22+ 0	0.1044	0.03	Q	|	|	V	|
22+ 5	0.1045	0.03	Q	|	|	V	|
22+10	0.1047	0.03	Q	|	|	V	|
22+15	0.1049	0.03	Q	|	|	V	|
22+20	0.1051	0.03	Q	|	|	V	|
22+25	0.1053	0.03	Q	|	|	V	|
22+30	0.1055	0.03	Q	|	|	V	|
22+35	0.1057	0.03	Q	|	|	V	|
22+40	0.1058	0.03	Q	|	|	V	|
22+45	0.1060	0.03	Q	|	|	V	|
22+50	0.1062	0.03	Q	|	|	V	|
22+55	0.1064	0.03	Q	|	|	V	|
23+ 0	0.1066	0.03	Q	|	|	V	|
23+ 5	0.1067	0.03	Q	|	|	V	|
23+10	0.1069	0.03	Q	|	|	V	|

23+15	0.1071	0.03	Q	|	|	|	V|
23+20	0.1073	0.03	Q	|	|	|	V|
23+25	0.1074	0.02	Q	|	|	|	V|
23+30	0.1076	0.02	Q	|	|	|	V|
23+35	0.1078	0.02	Q	|	|	|	V|
23+40	0.1079	0.02	Q	|	|	|	V|
23+45	0.1081	0.02	Q	|	|	|	V|
23+50	0.1083	0.02	Q	|	|	|	V|
23+55	0.1084	0.02	Q	|	|	|	V|
24+ 0	0.1086	0.02	Q	|	|	|	V|

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

Study date 09/29/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 1C (POC 1)
100 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA1CQ100.HCU

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1.71	1	0.77
Rainfall data for year 2		
1.71	6	1.16
Rainfall data for year 2		
1.71	24	2.07
Rainfall data for year 100		
1.71	1	1.22
Rainfall data for year 100		
1.71	6	2.67
Rainfall data for year 100		
1.71	24	4.89

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	1.71	1.000	0.440	0.100	0.044

Area-averaged adjusted loss rate Fm (In/Hr) = 0.044

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.17	0.100	56.0	75.8	3.19	0.497
1.54	0.900	98.0	98.0	0.20	0.952

Area-averaged catchment yield fraction, Y = 0.906
Area-averaged low loss fraction, Yb = 0.094
User entry of time of concentration = 0.111 (hours)
++
Watershed area = 1.71(Ac.)
Catchment Lag time = 0.089 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 93.8438
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.044(In/Hr)
Average low loss rate fraction (Yb) = 0.094 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.452(In)
Computed peak 30-minute rainfall = 0.925(In)
Specified peak 1-hour rainfall = 1.220(In)
Computed peak 3-hour rainfall = 1.972(In)
Specified peak 6-hour rainfall = 2.670(In)
Specified peak 24-hour rainfall = 4.890(In)

Rainfall depth area reduction factors:
Using a total area of 1.71(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.451(In)
30-minute factor = 1.000 Adjusted rainfall = 0.925(In)
1-hour factor = 1.000 Adjusted rainfall = 1.220(In)
3-hour factor = 1.000 Adjusted rainfall = 1.972(In)
6-hour factor = 1.000 Adjusted rainfall = 2.670(In)
24-hour factor = 1.000 Adjusted rainfall = 4.890(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 20.68 (CFS))	
1	15.247	3.153
2	75.329	12.425
3	97.124	4.507
4	100.000	0.595

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.4515	0.4515
2	0.5958	0.1443
3	0.7006	0.1049
4	0.7861	0.0854
5	0.8595	0.0734
6	0.9245	0.0650
7	0.9833	0.0588
8	1.0373	0.0539
9	1.0873	0.0500
10	1.1341	0.0468
11	1.1782	0.0441
12	1.2199	0.0417
13	1.2633	0.0434
14	1.3049	0.0416
15	1.3449	0.0400
16	1.3834	0.0385
17	1.4206	0.0372
18	1.4565	0.0359
19	1.4913	0.0348
20	1.5252	0.0338
21	1.5580	0.0329

22	1.5901	0.0320
23	1.6213	0.0312
24	1.6517	0.0304
25	1.6814	0.0297
26	1.7105	0.0291
27	1.7390	0.0285
28	1.7669	0.0279
29	1.7942	0.0273
30	1.8210	0.0268
31	1.8473	0.0263
32	1.8731	0.0258
33	1.8984	0.0254
34	1.9234	0.0249
35	1.9479	0.0245
36	1.9721	0.0241
37	1.9958	0.0238
38	2.0192	0.0234
39	2.0423	0.0231
40	2.0650	0.0227
41	2.0874	0.0224
42	2.1095	0.0221
43	2.1313	0.0218
44	2.1529	0.0215
45	2.1741	0.0213
46	2.1951	0.0210
47	2.2158	0.0207
48	2.2363	0.0205
49	2.2566	0.0202
50	2.2766	0.0200
51	2.2964	0.0198
52	2.3159	0.0196
53	2.3353	0.0194
54	2.3545	0.0192
55	2.3734	0.0190
56	2.3922	0.0188
57	2.4108	0.0186
58	2.4292	0.0184
59	2.4474	0.0182
60	2.4654	0.0180
61	2.4833	0.0179
62	2.5010	0.0177
63	2.5186	0.0176
64	2.5360	0.0174
65	2.5532	0.0172
66	2.5703	0.0171
67	2.5873	0.0170
68	2.6041	0.0168
69	2.6208	0.0167
70	2.6373	0.0165
71	2.6537	0.0164
72	2.6700	0.0163
73	2.6861	0.0161
74	2.7021	0.0160
75	2.7180	0.0159
76	2.7337	0.0158
77	2.7494	0.0156
78	2.7649	0.0155
79	2.7803	0.0154
80	2.7956	0.0153
81	2.8108	0.0152
82	2.8259	0.0151
83	2.8409	0.0150
84	2.8558	0.0149
85	2.8706	0.0148
86	2.8853	0.0147
87	2.8999	0.0146
88	2.9144	0.0145
89	2.9288	0.0144
90	2.9431	0.0143
91	2.9574	0.0142
92	2.9715	0.0141

93	2.9856	0.0141
94	2.9995	0.0140
95	3.0134	0.0139
96	3.0272	0.0138
97	3.0409	0.0137
98	3.0546	0.0136
99	3.0682	0.0136
100	3.0816	0.0135
101	3.0951	0.0134
102	3.1084	0.0133
103	3.1217	0.0133
104	3.1349	0.0132
105	3.1480	0.0131
106	3.1610	0.0131
107	3.1740	0.0130
108	3.1869	0.0129
109	3.1998	0.0128
110	3.2126	0.0128
111	3.2253	0.0127
112	3.2379	0.0127
113	3.2505	0.0126
114	3.2630	0.0125
115	3.2755	0.0125
116	3.2879	0.0124
117	3.3002	0.0123
118	3.3125	0.0123
119	3.3248	0.0122
120	3.3369	0.0122
121	3.3490	0.0121
122	3.3611	0.0121
123	3.3731	0.0120
124	3.3850	0.0119
125	3.3969	0.0119
126	3.4087	0.0118
127	3.4205	0.0118
128	3.4323	0.0117
129	3.4439	0.0117
130	3.4556	0.0116
131	3.4671	0.0116
132	3.4787	0.0115
133	3.4902	0.0115
134	3.5016	0.0114
135	3.5130	0.0114
136	3.5243	0.0113
137	3.5356	0.0113
138	3.5468	0.0112
139	3.5580	0.0112
140	3.5692	0.0112
141	3.5803	0.0111
142	3.5913	0.0111
143	3.6024	0.0110
144	3.6133	0.0110
145	3.6243	0.0109
146	3.6352	0.0109
147	3.6460	0.0108
148	3.6568	0.0108
149	3.6676	0.0108
150	3.6783	0.0107
151	3.6890	0.0107
152	3.6996	0.0106
153	3.7102	0.0106
154	3.7208	0.0106
155	3.7313	0.0105
156	3.7418	0.0105
157	3.7523	0.0105
158	3.7627	0.0104
159	3.7731	0.0104
160	3.7834	0.0103
161	3.7937	0.0103
162	3.8040	0.0103
163	3.8142	0.0102

164	3.8244	0.0102
165	3.8346	0.0102
166	3.8447	0.0101
167	3.8548	0.0101
168	3.8648	0.0101
169	3.8749	0.0100
170	3.8848	0.0100
171	3.8948	0.0100
172	3.9047	0.0099
173	3.9146	0.0099
174	3.9245	0.0099
175	3.9343	0.0098
176	3.9441	0.0098
177	3.9539	0.0098
178	3.9636	0.0097
179	3.9733	0.0097
180	3.9830	0.0097
181	3.9926	0.0096
182	4.0023	0.0096
183	4.0118	0.0096
184	4.0214	0.0096
185	4.0309	0.0095
186	4.0404	0.0095
187	4.0499	0.0095
188	4.0593	0.0094
189	4.0687	0.0094
190	4.0781	0.0094
191	4.0875	0.0094
192	4.0968	0.0093
193	4.1061	0.0093
194	4.1154	0.0093
195	4.1246	0.0092
196	4.1338	0.0092
197	4.1430	0.0092
198	4.1522	0.0092
199	4.1613	0.0091
200	4.1704	0.0091
201	4.1795	0.0091
202	4.1886	0.0091
203	4.1976	0.0090
204	4.2067	0.0090
205	4.2156	0.0090
206	4.2246	0.0090
207	4.2335	0.0089
208	4.2425	0.0089
209	4.2514	0.0089
210	4.2602	0.0089
211	4.2691	0.0088
212	4.2779	0.0088
213	4.2867	0.0088
214	4.2955	0.0088
215	4.3042	0.0088
216	4.3129	0.0087
217	4.3216	0.0087
218	4.3303	0.0087
219	4.3390	0.0087
220	4.3476	0.0086
221	4.3562	0.0086
222	4.3648	0.0086
223	4.3734	0.0086
224	4.3819	0.0085
225	4.3905	0.0085
226	4.3990	0.0085
227	4.4075	0.0085
228	4.4159	0.0085
229	4.4244	0.0084
230	4.4328	0.0084
231	4.4412	0.0084
232	4.4496	0.0084
233	4.4579	0.0084
234	4.4663	0.0083

235	4.4746	0.0083
236	4.4829	0.0083
237	4.4912	0.0083
238	4.4994	0.0083
239	4.5077	0.0082
240	4.5159	0.0082
241	4.5241	0.0082
242	4.5323	0.0082
243	4.5405	0.0082
244	4.5486	0.0081
245	4.5567	0.0081
246	4.5648	0.0081
247	4.5729	0.0081
248	4.5810	0.0081
249	4.5891	0.0081
250	4.5971	0.0080
251	4.6051	0.0080
252	4.6131	0.0080
253	4.6211	0.0080
254	4.6291	0.0080
255	4.6370	0.0079
256	4.6449	0.0079
257	4.6528	0.0079
258	4.6607	0.0079
259	4.6686	0.0079
260	4.6765	0.0079
261	4.6843	0.0078
262	4.6921	0.0078
263	4.7000	0.0078
264	4.7077	0.0078
265	4.7155	0.0078
266	4.7233	0.0078
267	4.7310	0.0077
268	4.7388	0.0077
269	4.7465	0.0077
270	4.7542	0.0077
271	4.7618	0.0077
272	4.7695	0.0077
273	4.7771	0.0076
274	4.7848	0.0076
275	4.7924	0.0076
276	4.8000	0.0076
277	4.8076	0.0076
278	4.8151	0.0076
279	4.8227	0.0076
280	4.8302	0.0075
281	4.8378	0.0075
282	4.8453	0.0075
283	4.8527	0.0075
284	4.8602	0.0075
285	4.8677	0.0075
286	4.8751	0.0074
287	4.8826	0.0074
288	4.8900	0.0074

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0074	0.0007	0.0067
2	0.0074	0.0007	0.0067
3	0.0075	0.0007	0.0068
4	0.0075	0.0007	0.0068
5	0.0075	0.0007	0.0068
6	0.0075	0.0007	0.0068
7	0.0076	0.0007	0.0068
8	0.0076	0.0007	0.0069
9	0.0076	0.0007	0.0069
10	0.0076	0.0007	0.0069
11	0.0076	0.0007	0.0069
12	0.0077	0.0007	0.0069

13	0.0077	0.0007	0.0070
14	0.0077	0.0007	0.0070
15	0.0077	0.0007	0.0070
16	0.0078	0.0007	0.0070
17	0.0078	0.0007	0.0071
18	0.0078	0.0007	0.0071
19	0.0078	0.0007	0.0071
20	0.0079	0.0007	0.0071
21	0.0079	0.0007	0.0072
22	0.0079	0.0007	0.0072
23	0.0079	0.0007	0.0072
24	0.0080	0.0007	0.0072
25	0.0080	0.0008	0.0072
26	0.0080	0.0008	0.0073
27	0.0081	0.0008	0.0073
28	0.0081	0.0008	0.0073
29	0.0081	0.0008	0.0073
30	0.0081	0.0008	0.0074
31	0.0082	0.0008	0.0074
32	0.0082	0.0008	0.0074
33	0.0082	0.0008	0.0075
34	0.0082	0.0008	0.0075
35	0.0083	0.0008	0.0075
36	0.0083	0.0008	0.0075
37	0.0083	0.0008	0.0076
38	0.0084	0.0008	0.0076
39	0.0084	0.0008	0.0076
40	0.0084	0.0008	0.0076
41	0.0085	0.0008	0.0077
42	0.0085	0.0008	0.0077
43	0.0085	0.0008	0.0077
44	0.0085	0.0008	0.0077
45	0.0086	0.0008	0.0078
46	0.0086	0.0008	0.0078
47	0.0087	0.0008	0.0078
48	0.0087	0.0008	0.0079
49	0.0087	0.0008	0.0079
50	0.0088	0.0008	0.0079
51	0.0088	0.0008	0.0080
52	0.0088	0.0008	0.0080
53	0.0089	0.0008	0.0080
54	0.0089	0.0008	0.0081
55	0.0089	0.0008	0.0081
56	0.0090	0.0008	0.0081
57	0.0090	0.0008	0.0082
58	0.0090	0.0008	0.0082
59	0.0091	0.0009	0.0082
60	0.0091	0.0009	0.0083
61	0.0092	0.0009	0.0083
62	0.0092	0.0009	0.0083
63	0.0092	0.0009	0.0084
64	0.0093	0.0009	0.0084
65	0.0093	0.0009	0.0085
66	0.0094	0.0009	0.0085
67	0.0094	0.0009	0.0085
68	0.0094	0.0009	0.0086
69	0.0095	0.0009	0.0086
70	0.0095	0.0009	0.0086
71	0.0096	0.0009	0.0087
72	0.0096	0.0009	0.0087
73	0.0097	0.0009	0.0088
74	0.0097	0.0009	0.0088
75	0.0098	0.0009	0.0088
76	0.0098	0.0009	0.0089
77	0.0099	0.0009	0.0089
78	0.0099	0.0009	0.0090
79	0.0100	0.0009	0.0090
80	0.0100	0.0009	0.0091
81	0.0101	0.0009	0.0091
82	0.0101	0.0009	0.0091
83	0.0102	0.0010	0.0092

84	0.0102	0.0010	0.0092
85	0.0103	0.0010	0.0093
86	0.0103	0.0010	0.0093
87	0.0104	0.0010	0.0094
88	0.0104	0.0010	0.0094
89	0.0105	0.0010	0.0095
90	0.0105	0.0010	0.0095
91	0.0106	0.0010	0.0096
92	0.0106	0.0010	0.0096
93	0.0107	0.0010	0.0097
94	0.0108	0.0010	0.0098
95	0.0108	0.0010	0.0098
96	0.0109	0.0010	0.0099
97	0.0110	0.0010	0.0099
98	0.0110	0.0010	0.0100
99	0.0111	0.0010	0.0101
100	0.0112	0.0010	0.0101
101	0.0112	0.0011	0.0102
102	0.0113	0.0011	0.0102
103	0.0114	0.0011	0.0103
104	0.0114	0.0011	0.0104
105	0.0115	0.0011	0.0104
106	0.0116	0.0011	0.0105
107	0.0117	0.0011	0.0106
108	0.0117	0.0011	0.0106
109	0.0118	0.0011	0.0107
110	0.0119	0.0011	0.0108
111	0.0120	0.0011	0.0109
112	0.0121	0.0011	0.0109
113	0.0122	0.0011	0.0110
114	0.0122	0.0011	0.0111
115	0.0123	0.0012	0.0112
116	0.0124	0.0012	0.0112
117	0.0125	0.0012	0.0113
118	0.0126	0.0012	0.0114
119	0.0127	0.0012	0.0115
120	0.0128	0.0012	0.0116
121	0.0129	0.0012	0.0117
122	0.0130	0.0012	0.0118
123	0.0131	0.0012	0.0119
124	0.0132	0.0012	0.0120
125	0.0133	0.0013	0.0121
126	0.0134	0.0013	0.0122
127	0.0136	0.0013	0.0123
128	0.0136	0.0013	0.0124
129	0.0138	0.0013	0.0125
130	0.0139	0.0013	0.0126
131	0.0141	0.0013	0.0127
132	0.0141	0.0013	0.0128
133	0.0143	0.0013	0.0130
134	0.0144	0.0014	0.0131
135	0.0146	0.0014	0.0132
136	0.0147	0.0014	0.0133
137	0.0149	0.0014	0.0135
138	0.0150	0.0014	0.0136
139	0.0152	0.0014	0.0138
140	0.0153	0.0014	0.0139
141	0.0155	0.0015	0.0141
142	0.0156	0.0015	0.0142
143	0.0159	0.0015	0.0144
144	0.0160	0.0015	0.0145
145	0.0163	0.0015	0.0147
146	0.0164	0.0015	0.0149
147	0.0167	0.0016	0.0151
148	0.0168	0.0016	0.0152
149	0.0171	0.0016	0.0155
150	0.0172	0.0016	0.0156
151	0.0176	0.0016	0.0159
152	0.0177	0.0017	0.0161
153	0.0180	0.0017	0.0164
154	0.0182	0.0017	0.0165

155	0.0186	0.0017	0.0168
156	0.0188	0.0018	0.0170
157	0.0192	0.0018	0.0174
158	0.0194	0.0018	0.0175
159	0.0198	0.0019	0.0179
160	0.0200	0.0019	0.0181
161	0.0205	0.0019	0.0186
162	0.0207	0.0019	0.0188
163	0.0213	0.0020	0.0193
164	0.0215	0.0020	0.0195
165	0.0221	0.0021	0.0200
166	0.0224	0.0021	0.0203
167	0.0231	0.0022	0.0209
168	0.0234	0.0022	0.0212
169	0.0241	0.0023	0.0219
170	0.0245	0.0023	0.0222
171	0.0254	0.0024	0.0230
172	0.0258	0.0024	0.0234
173	0.0268	0.0025	0.0243
174	0.0273	0.0026	0.0248
175	0.0285	0.0027	0.0258
176	0.0291	0.0027	0.0263
177	0.0304	0.0029	0.0276
178	0.0312	0.0029	0.0283
179	0.0329	0.0031	0.0298
180	0.0338	0.0032	0.0306
181	0.0359	0.0034	0.0326
182	0.0372	0.0035	0.0337
183	0.0400	0.0037	0.0363
184	0.0416	0.0037	0.0379
185	0.0417	0.0037	0.0381
186	0.0441	0.0037	0.0404
187	0.0500	0.0037	0.0464
188	0.0539	0.0037	0.0503
189	0.0650	0.0037	0.0614
190	0.0734	0.0037	0.0697
191	0.1049	0.0037	0.1012
192	0.1443	0.0037	0.1406
193	0.4515	0.0037	0.4478
194	0.0854	0.0037	0.0818
195	0.0588	0.0037	0.0551
196	0.0468	0.0037	0.0431
197	0.0434	0.0037	0.0398
198	0.0385	0.0036	0.0349
199	0.0348	0.0033	0.0316
200	0.0320	0.0030	0.0290
201	0.0297	0.0028	0.0269
202	0.0279	0.0026	0.0253
203	0.0263	0.0025	0.0238
204	0.0249	0.0023	0.0226
205	0.0238	0.0022	0.0215
206	0.0227	0.0021	0.0206
207	0.0218	0.0020	0.0198
208	0.0210	0.0020	0.0190
209	0.0202	0.0019	0.0183
210	0.0196	0.0018	0.0177
211	0.0190	0.0018	0.0172
212	0.0184	0.0017	0.0167
213	0.0179	0.0017	0.0162
214	0.0174	0.0016	0.0158
215	0.0170	0.0016	0.0154
216	0.0165	0.0016	0.0150
217	0.0161	0.0015	0.0146
218	0.0158	0.0015	0.0143
219	0.0154	0.0014	0.0140
220	0.0151	0.0014	0.0137
221	0.0148	0.0014	0.0134
222	0.0145	0.0014	0.0131
223	0.0142	0.0013	0.0129
224	0.0140	0.0013	0.0127
225	0.0137	0.0013	0.0124

226	0.0135	0.0013	0.0122
227	0.0133	0.0012	0.0120
228	0.0131	0.0012	0.0118
229	0.0128	0.0012	0.0116
230	0.0127	0.0012	0.0115
231	0.0125	0.0012	0.0113
232	0.0123	0.0012	0.0111
233	0.0121	0.0011	0.0110
234	0.0119	0.0011	0.0108
235	0.0118	0.0011	0.0107
236	0.0116	0.0011	0.0105
237	0.0115	0.0011	0.0104
238	0.0113	0.0011	0.0103
239	0.0112	0.0011	0.0101
240	0.0111	0.0010	0.0100
241	0.0109	0.0010	0.0099
242	0.0108	0.0010	0.0098
243	0.0107	0.0010	0.0097
244	0.0106	0.0010	0.0096
245	0.0105	0.0010	0.0095
246	0.0103	0.0010	0.0094
247	0.0102	0.0010	0.0093
248	0.0101	0.0010	0.0092
249	0.0100	0.0009	0.0091
250	0.0099	0.0009	0.0090
251	0.0098	0.0009	0.0089
252	0.0097	0.0009	0.0088
253	0.0096	0.0009	0.0087
254	0.0096	0.0009	0.0087
255	0.0095	0.0009	0.0086
256	0.0094	0.0009	0.0085
257	0.0093	0.0009	0.0084
258	0.0092	0.0009	0.0084
259	0.0091	0.0009	0.0083
260	0.0091	0.0009	0.0082
261	0.0090	0.0008	0.0081
262	0.0089	0.0008	0.0081
263	0.0088	0.0008	0.0080
264	0.0088	0.0008	0.0079
265	0.0087	0.0008	0.0079
266	0.0086	0.0008	0.0078
267	0.0086	0.0008	0.0078
268	0.0085	0.0008	0.0077
269	0.0084	0.0008	0.0077
270	0.0084	0.0008	0.0076
271	0.0083	0.0008	0.0075
272	0.0083	0.0008	0.0075
273	0.0082	0.0008	0.0074
274	0.0081	0.0008	0.0074
275	0.0081	0.0008	0.0073
276	0.0080	0.0008	0.0073
277	0.0080	0.0007	0.0072
278	0.0079	0.0007	0.0072
279	0.0079	0.0007	0.0071
280	0.0078	0.0007	0.0071
281	0.0078	0.0007	0.0070
282	0.0077	0.0007	0.0070
283	0.0077	0.0007	0.0070
284	0.0076	0.0007	0.0069
285	0.0076	0.0007	0.0069
286	0.0075	0.0007	0.0068
287	0.0075	0.0007	0.0068
288	0.0074	0.0007	0.0067

Total soil rain loss = 0.39(In)
Total effective rainfall = 4.50(In)
Peak flow rate in flood hydrograph = 6.52(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

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	0.0001	0.02	Q				
0+10	0.0009	0.10	Q				
0+15	0.0018	0.14	Q				
0+20	0.0028	0.14	Q				
0+25	0.0037	0.14	Q				
0+30	0.0047	0.14	Q				
0+35	0.0057	0.14	Q				
0+40	0.0066	0.14	Q				
0+45	0.0076	0.14	Q				
0+50	0.0086	0.14	Q				
0+55	0.0096	0.14	Q				
1+ 0	0.0106	0.14	Q				
1+ 5	0.0116	0.14	Q				
1+10	0.0125	0.14	Q				
1+15	0.0135	0.14	Q				
1+20	0.0145	0.14	Q				
1+25	0.0155	0.15	Q				
1+30	0.0165	0.15	QV				
1+35	0.0176	0.15	QV				
1+40	0.0186	0.15	QV				
1+45	0.0196	0.15	QV				
1+50	0.0206	0.15	QV				
1+55	0.0216	0.15	QV				
2+ 0	0.0226	0.15	QV				
2+ 5	0.0237	0.15	QV				
2+10	0.0247	0.15	QV				
2+15	0.0257	0.15	QV				
2+20	0.0268	0.15	QV				
2+25	0.0278	0.15	QV				
2+30	0.0289	0.15	QV				
2+35	0.0299	0.15	QV				
2+40	0.0310	0.15	QV				
2+45	0.0320	0.15	QV				
2+50	0.0331	0.15	Q V				
2+55	0.0341	0.15	Q V				
3+ 0	0.0352	0.16	Q V				
3+ 5	0.0363	0.16	Q V				
3+10	0.0374	0.16	Q V				
3+15	0.0384	0.16	Q V				
3+20	0.0395	0.16	Q V				
3+25	0.0406	0.16	Q V				
3+30	0.0417	0.16	Q V				
3+35	0.0428	0.16	Q V				
3+40	0.0439	0.16	Q V				
3+45	0.0450	0.16	Q V				
3+50	0.0461	0.16	Q V				
3+55	0.0472	0.16	Q V				
4+ 0	0.0483	0.16	Q V				
4+ 5	0.0495	0.16	Q V				
4+10	0.0506	0.16	Q V				
4+15	0.0517	0.16	Q V				
4+20	0.0528	0.16	Q V				
4+25	0.0540	0.17	Q V				
4+30	0.0551	0.17	Q V				
4+35	0.0563	0.17	Q V				
4+40	0.0574	0.17	Q V				
4+45	0.0586	0.17	Q V				
4+50	0.0597	0.17	Q V				
4+55	0.0609	0.17	Q V				
5+ 0	0.0621	0.17	Q V				
5+ 5	0.0633	0.17	Q V				
5+10	0.0644	0.17	Q V				
5+15	0.0656	0.17	Q V				
5+20	0.0668	0.17	Q V				

5+25	0.0680	0.17	Q	V	|	|	|	|
5+30	0.0692	0.17	Q	V	|	|	|	|
5+35	0.0704	0.18	Q	V	|	|	|	|
5+40	0.0716	0.18	Q	V	|	|	|	|
5+45	0.0729	0.18	Q	V	|	|	|	|
5+50	0.0741	0.18	Q	V	|	|	|	|
5+55	0.0753	0.18	Q	V	|	|	|	|
6+ 0	0.0765	0.18	Q	V	|	|	|	|
6+ 5	0.0778	0.18	Q	V	|	|	|	|
6+10	0.0790	0.18	Q	V	|	|	|	|
6+15	0.0803	0.18	Q	V	|	|	|	|
6+20	0.0815	0.18	Q	V	|	|	|	|
6+25	0.0828	0.18	Q	V	|	|	|	|
6+30	0.0841	0.18	Q	V	|	|	|	|
6+35	0.0854	0.19	Q	V	|	|	|	|
6+40	0.0866	0.19	Q	V	|	|	|	|
6+45	0.0879	0.19	Q	V	|	|	|	|
6+50	0.0892	0.19	Q	V	|	|	|	|
6+55	0.0905	0.19	Q	V	|	|	|	|
7+ 0	0.0918	0.19	Q	V	|	|	|	|
7+ 5	0.0932	0.19	Q	V	|	|	|	|
7+10	0.0945	0.19	Q	V	|	|	|	|
7+15	0.0958	0.19	Q	V	|	|	|	|
7+20	0.0971	0.19	Q	V	|	|	|	|
7+25	0.0985	0.20	Q	V	|	|	|	|
7+30	0.0998	0.20	Q	V	|	|	|	|
7+35	0.1012	0.20	Q	V	|	|	|	|
7+40	0.1026	0.20	Q	V	|	|	|	|
7+45	0.1039	0.20	Q	V	|	|	|	|
7+50	0.1053	0.20	Q	V	|	|	|	|
7+55	0.1067	0.20	Q	V	|	|	|	|
8+ 0	0.1081	0.20	Q	V	|	|	|	|
8+ 5	0.1095	0.20	Q	V	|	|	|	|
8+10	0.1109	0.21	Q	V	|	|	|	|
8+15	0.1123	0.21	Q	V	|	|	|	|
8+20	0.1138	0.21	Q	V	|	|	|	|
8+25	0.1152	0.21	Q	V	|	|	|	|
8+30	0.1167	0.21	Q	V	|	|	|	|
8+35	0.1181	0.21	Q	V	|	|	|	|
8+40	0.1196	0.21	Q	V	|	|	|	|
8+45	0.1211	0.21	Q	V	|	|	|	|
8+50	0.1226	0.22	Q	V	|	|	|	|
8+55	0.1240	0.22	Q	V	|	|	|	|
9+ 0	0.1256	0.22	Q	V	|	|	|	|
9+ 5	0.1271	0.22	Q	V	|	|	|	|
9+10	0.1286	0.22	Q	V	|	|	|	|
9+15	0.1301	0.22	Q	V	|	|	|	|
9+20	0.1317	0.22	Q	V	|	|	|	|
9+25	0.1332	0.23	Q	V	|	|	|	|
9+30	0.1348	0.23	Q	V	|	|	|	|
9+35	0.1364	0.23	Q	V	|	|	|	|
9+40	0.1380	0.23	Q	V	|	|	|	|
9+45	0.1396	0.23	Q	V	|	|	|	|
9+50	0.1412	0.23	Q	V	|	|	|	|
9+55	0.1428	0.24	Q	V	|	|	|	|
10+ 0	0.1444	0.24	Q	V	|	|	|	|
10+ 5	0.1461	0.24	Q	V	|	|	|	|
10+10	0.1478	0.24	Q	V	|	|	|	|
10+15	0.1494	0.24	Q	V	|	|	|	|
10+20	0.1511	0.25	Q	V	|	|	|	|
10+25	0.1528	0.25	Q	V	|	|	|	|
10+30	0.1545	0.25	Q	V	|	|	|	|
10+35	0.1563	0.25	| Q	V	|	|	|	|
10+40	0.1580	0.25	| Q	V	|	|	|	|
10+45	0.1598	0.26	| Q	V	|	|	|	|
10+50	0.1616	0.26	| Q	V	|	|	|	|
10+55	0.1633	0.26	| Q	V	|	|	|	|
11+ 0	0.1652	0.26	| Q	V	|	|	|	|
11+ 5	0.1670	0.27	| Q	V	|	|	|	|
11+10	0.1688	0.27	| Q	V	|	|	|	|
11+15	0.1707	0.27	| Q	V	|	|	|	|

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11+20       0.1726      0.27  |Q        V         |         |         |
11+25       0.1745      0.28  |Q        V         |         |         |
11+30       0.1764      0.28  |Q        |V        |         |         |
11+35       0.1783      0.28  |Q        |V        |         |         |
11+40       0.1803      0.28  |Q        |V        |         |         |
11+45       0.1822      0.29  |Q        |V        |         |         |
11+50       0.1842      0.29  |Q        |V        |         |         |
11+55       0.1863      0.29  |Q        |V        |         |         |
12+ 0       0.1883      0.30  |Q        |V        |         |         |
12+ 5       0.1904      0.30  |Q        |V        |         |         |
12+10       0.1925      0.30  |Q        | V       |         |         |
12+15       0.1946      0.31  |Q        | V       |         |         |
12+20       0.1967      0.31  |Q        | V       |         |         |
12+25       0.1989      0.32  |Q        | V       |         |         |
12+30       0.2011      0.32  |Q        | V       |         |         |
12+35       0.2033      0.32  |Q        | V       |         |         |
12+40       0.2056      0.33  |Q        | V       |         |         |
12+45       0.2079      0.33  |Q        | V       |         |         |
12+50       0.2102      0.34  |Q        |  V      |         |         |
12+55       0.2125      0.34  |Q        |  V      |         |         |
13+ 0       0.2149      0.35  |Q        |  V      |         |         |
13+ 5       0.2174      0.35  |Q        |  V      |         |         |
13+10       0.2198      0.36  |Q        |  V      |         |         |
13+15       0.2223      0.36  |Q        |  V      |         |         |
13+20       0.2249      0.37  |Q        |   V     |         |         |
13+25       0.2274      0.38  |Q        |   V     |         |         |
13+30       0.2301      0.38  |Q        |   V     |         |         |
13+35       0.2328      0.39  |Q        |   V     |         |         |
13+40       0.2355      0.40  |Q        |   V     |         |         |
13+45       0.2383      0.40  |Q        |   V     |         |         |
13+50       0.2411      0.41  |Q        |    V    |         |         |
13+55       0.2440      0.42  |Q        |    V    |         |         |
14+ 0       0.2470      0.43  |Q        |    V    |         |         |
14+ 5       0.2500      0.44  |Q        |    V    |         |         |
14+10       0.2531      0.45  |Q        |    V    |         |         |
14+15       0.2562      0.46  |Q        |    V    |         |         |
14+20       0.2595      0.47  |Q        |     V   |         |         |
14+25       0.2628      0.48  |Q        |     V   |         |         |
14+30       0.2663      0.50  |Q        |     V   |         |         |
14+35       0.2698      0.51  | Q       |     V   |         |         |
14+40       0.2734      0.53  | Q       |      V  |         |         |
14+45       0.2772      0.55  | Q       |      V  |         |         |
14+50       0.2811      0.57  | Q       |      V  |         |         |
14+55       0.2851      0.59  | Q       |      V  |         |         |
15+ 0       0.2893      0.61  | Q       |       V |         |         |
15+ 5       0.2937      0.63  | Q       |       V |         |         |
15+10       0.2983      0.67  | Q       |       V |         |         |
15+15       0.3031      0.70  | Q       |       V |         |         |
15+20       0.3082      0.74  | Q       |        V|         |         |
15+25       0.3135      0.77  |  Q      |        V|         |         |
15+30       0.3190      0.79  |  Q      |        V|         |         |
15+35       0.3248      0.84  |  Q      |         V         |         |
15+40       0.3313      0.94  |  Q      |         V         |         |
15+45       0.3385      1.05  |   Q     |          V        |         |
15+50       0.3470      1.24  |   Q     |          V        |         |
15+55       0.3573      1.49  |    Q    |          | V      |         |
16+ 0       0.3714      2.05  |      Q  |          |  V     |         |
16+ 5       0.3966      3.66  |         |   Q      |   V    |         |
16+10       0.4415      6.52  |         |          |    QV  |         |
16+15       0.4642      3.29  |         |  Q       |      V |         |
16+20       0.4742      1.46  |    Q    |          |       V|         |
16+25       0.4808      0.96  |  Q      |          |        V|        |
16+30       0.4865      0.83  |  Q      |          |         V        |
16+35       0.4916      0.74  | Q       |          |         V        |
16+40       0.4962      0.66  | Q       |          |         V        |
16+45       0.5004      0.61  | Q       |          |          V       |
16+50       0.5043      0.56  | Q       |          |          V       |
16+55       0.5079      0.53  | Q       |          |          V       |
17+ 0       0.5113      0.50  |Q        |          |          V       |
17+ 5       0.5146      0.47  |Q        |          |          | V     |
17+10       0.5176      0.45  |Q        |          |          | V     |
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17+15       0.5206      0.43  |Q        |         |         | V       |
17+20       0.5234      0.41  |Q        |         |         | V       |
17+25       0.5262      0.40  |Q        |         |         | V       |
17+30       0.5288      0.38  |Q        |         |         | V       |
17+35       0.5313      0.37  |Q        |         |         |  V      |
17+40       0.5338      0.36  |Q        |         |         |  V      |
17+45       0.5362      0.35  |Q        |         |         |  V      |
17+50       0.5385      0.34  |Q        |         |         |  V      |
17+55       0.5407      0.33  |Q        |         |         |  V      |
18+ 0       0.5429      0.32  |Q        |         |         |  V      |
18+ 5       0.5451      0.31  |Q        |         |         |   V     |
18+10       0.5472      0.30  |Q        |         |         |   V     |
18+15       0.5492      0.30  |Q        |         |         |   V     |
18+20       0.5512      0.29  |Q        |         |         |   V     |
18+25       0.5531      0.28  |Q        |         |         |   V     |
18+30       0.5551      0.28  |Q        |         |         |   V     |
18+35       0.5569      0.27  |Q        |         |         |   V     |
18+40       0.5588      0.27  |Q        |         |         |   V     |
18+45       0.5606      0.26  |Q        |         |         |   V     |
18+50       0.5624      0.26  |Q        |         |         |    V    |
18+55       0.5641      0.25  |Q        |         |         |    V    |
19+ 0       0.5658      0.25  Q        |         |         |    V    |
19+ 5       0.5675      0.25  Q        |         |         |    V    |
19+10       0.5692      0.24  Q        |         |         |    V    |
19+15       0.5708      0.24  Q        |         |         |    V    |
19+20       0.5724      0.23  Q        |         |         |    V    |
19+25       0.5740      0.23  Q        |         |         |    V    |
19+30       0.5756      0.23  Q        |         |         |    V    |
19+35       0.5771      0.22  Q        |         |         |     V   |
19+40       0.5786      0.22  Q        |         |         |     V   |
19+45       0.5801      0.22  Q        |         |         |     V   |
19+50       0.5816      0.22  Q        |         |         |     V   |
19+55       0.5831      0.21  Q        |         |         |     V   |
20+ 0       0.5845      0.21  Q        |         |         |     V   |
20+ 5       0.5860      0.21  Q        |         |         |     V   |
20+10       0.5874      0.21  Q        |         |         |     V   |
20+15       0.5888      0.20  Q        |         |         |     V   |
20+20       0.5902      0.20  Q        |         |         |     V   |
20+25       0.5915      0.20  Q        |         |         |     V   |
20+30       0.5929      0.20  Q        |         |         |     V   |
20+35       0.5942      0.19  Q        |         |         |      V  |
20+40       0.5955      0.19  Q        |         |         |      V  |
20+45       0.5968      0.19  Q        |         |         |      V  |
20+50       0.5981      0.19  Q        |         |         |      V  |
20+55       0.5994      0.19  Q        |         |         |      V  |
21+ 0       0.6007      0.18  Q        |         |         |      V  |
21+ 5       0.6019      0.18  Q        |         |         |      V  |
21+10       0.6032      0.18  Q        |         |         |      V  |
21+15       0.6044      0.18  Q        |         |         |      V  |
21+20       0.6057      0.18  Q        |         |         |      V  |
21+25       0.6069      0.18  Q        |         |         |      V  |
21+30       0.6081      0.17  Q        |         |         |      V  |
21+35       0.6093      0.17  Q        |         |         |       V |
21+40       0.6104      0.17  Q        |         |         |       V |
21+45       0.6116      0.17  Q        |         |         |       V |
21+50       0.6128      0.17  Q        |         |         |       V |
21+55       0.6139      0.17  Q        |         |         |       V |
22+ 0       0.6151      0.17  Q        |         |         |       V |
22+ 5       0.6162      0.16  Q        |         |         |       V |
22+10       0.6173      0.16  Q        |         |         |       V |
22+15       0.6184      0.16  Q        |         |         |       V |
22+20       0.6195      0.16  Q        |         |         |       V |
22+25       0.6206      0.16  Q        |         |         |       V |
22+30       0.6217      0.16  Q        |         |         |       V |
22+35       0.6228      0.16  Q        |         |         |       V |
22+40       0.6239      0.16  Q        |         |         |       V |
22+45       0.6250      0.15  Q        |         |         |       V |
22+50       0.6260      0.15  Q        |         |         |        V|
22+55       0.6271      0.15  Q        |         |         |        V|
23+ 0       0.6281      0.15  Q        |         |         |        V|
23+ 5       0.6292      0.15  Q        |         |         |        V|
```

23+10	0.6302	0.15	Q	|	|	|	V|
23+15	0.6312	0.15	Q	|	|	|	V|
23+20	0.6322	0.15	Q	|	|	|	V|
23+25	0.6332	0.15	Q	|	|	|	V|
23+30	0.6342	0.15	Q	|	|	|	V|
23+35	0.6352	0.14	Q	|	|	|	V|
23+40	0.6362	0.14	Q	|	|	|	V|
23+45	0.6372	0.14	Q	|	|	|	V|
23+50	0.6382	0.14	Q	|	|	|	V|
23+55	0.6392	0.14	Q	|	|	|	V|
24+ 0	0.6401	0.14	Q	|	|	|	V|

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

Study date 09/29/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 2A (POC 2)
100 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA2AQ100.HCU

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
0.71	1	0.77
Rainfall data for year 2		
0.71	6	1.16
Rainfall data for year 2		
0.71	24	2.07
Rainfall data for year 100		
0.71	1	1.22
Rainfall data for year 100		
0.71	6	2.67
Rainfall data for year 100		
0.71	24	4.89

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	0.71	1.000	0.440	0.100	0.044

Area-averaged adjusted loss rate Fm (In/Hr) = 0.044

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.07	0.100	56.0	75.8	3.19	0.497
0.64	0.900	98.0	98.0	0.20	0.952

Area-averaged catchment yield fraction, Y = 0.906
Area-averaged low loss fraction, Yb = 0.094
User entry of time of concentration = 0.202 (hours)
++
Watershed area = 0.71(Ac.)
Catchment Lag time = 0.162 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 51.5677
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.044(In/Hr)
Average low loss rate fraction (Yb) = 0.094 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.452(In)
Computed peak 30-minute rainfall = 0.925(In)
Specified peak 1-hour rainfall = 1.220(In)
Computed peak 3-hour rainfall = 1.972(In)
Specified peak 6-hour rainfall = 2.670(In)
Specified peak 24-hour rainfall = 4.890(In)

Rainfall depth area reduction factors:
Using a total area of 0.71(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.452(In)
30-minute factor = 1.000 Adjusted rainfall = 0.925(In)
1-hour factor = 1.000 Adjusted rainfall = 1.220(In)
3-hour factor = 1.000 Adjusted rainfall = 1.972(In)
6-hour factor = 1.000 Adjusted rainfall = 2.670(In)
24-hour factor = 1.000 Adjusted rainfall = 4.890(In)

U n i t H y d r o g r a p h
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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K =	8.59 (CFS))	
1	4.856	0.417
2	31.586	2.295
3	71.215	3.403
4	91.153	1.712
5	97.444	0.540
6	98.905	0.125
7	100.000	0.094

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.4515	0.4515
2	0.5958	0.1443
3	0.7007	0.1049
4	0.7861	0.0855
5	0.8595	0.0734
6	0.9246	0.0650
7	0.9834	0.0588
8	1.0373	0.0540
9	1.0874	0.0500
10	1.1342	0.0468
11	1.1782	0.0441
12	1.2200	0.0417
13	1.2634	0.0434
14	1.3050	0.0416
15	1.3450	0.0400
16	1.3834	0.0385
17	1.4206	0.0372
18	1.4565	0.0359

19	1.4914	0.0348
20	1.5252	0.0338
21	1.5581	0.0329
22	1.5901	0.0320
23	1.6213	0.0312
24	1.6517	0.0304
25	1.6815	0.0297
26	1.7106	0.0291
27	1.7390	0.0285
28	1.7669	0.0279
29	1.7942	0.0273
30	1.8210	0.0268
31	1.8473	0.0263
32	1.8731	0.0258
33	1.8985	0.0254
34	1.9234	0.0249
35	1.9479	0.0245
36	1.9721	0.0241
37	1.9958	0.0238
38	2.0192	0.0234
39	2.0423	0.0231
40	2.0650	0.0227
41	2.0874	0.0224
42	2.1095	0.0221
43	2.1313	0.0218
44	2.1529	0.0215
45	2.1741	0.0213
46	2.1951	0.0210
47	2.2158	0.0207
48	2.2363	0.0205
49	2.2566	0.0202
50	2.2766	0.0200
51	2.2964	0.0198
52	2.3160	0.0196
53	2.3353	0.0194
54	2.3545	0.0192
55	2.3734	0.0190
56	2.3922	0.0188
57	2.4108	0.0186
58	2.4292	0.0184
59	2.4474	0.0182
60	2.4655	0.0180
61	2.4833	0.0179
62	2.5011	0.0177
63	2.5186	0.0176
64	2.5360	0.0174
65	2.5532	0.0172
66	2.5703	0.0171
67	2.5873	0.0170
68	2.6041	0.0168
69	2.6208	0.0167
70	2.6373	0.0165
71	2.6537	0.0164
72	2.6700	0.0163
73	2.6861	0.0161
74	2.7021	0.0160
75	2.7180	0.0159
76	2.7338	0.0158
77	2.7494	0.0156
78	2.7649	0.0155
79	2.7803	0.0154
80	2.7957	0.0153
81	2.8109	0.0152
82	2.8259	0.0151
83	2.8409	0.0150
84	2.8558	0.0149
85	2.8706	0.0148
86	2.8853	0.0147
87	2.8999	0.0146
88	2.9144	0.0145
89	2.9288	0.0144

90	2.9431	0.0143
91	2.9574	0.0142
92	2.9715	0.0141
93	2.9856	0.0141
94	2.9995	0.0140
95	3.0134	0.0139
96	3.0272	0.0138
97	3.0410	0.0137
98	3.0546	0.0136
99	3.0682	0.0136
100	3.0817	0.0135
101	3.0951	0.0134
102	3.1084	0.0133
103	3.1217	0.0133
104	3.1349	0.0132
105	3.1480	0.0131
106	3.1610	0.0131
107	3.1740	0.0130
108	3.1869	0.0129
109	3.1998	0.0128
110	3.2126	0.0128
111	3.2253	0.0127
112	3.2379	0.0127
113	3.2505	0.0126
114	3.2630	0.0125
115	3.2755	0.0125
116	3.2879	0.0124
117	3.3003	0.0123
118	3.3125	0.0123
119	3.3248	0.0122
120	3.3369	0.0122
121	3.3490	0.0121
122	3.3611	0.0121
123	3.3731	0.0120
124	3.3850	0.0119
125	3.3969	0.0119
126	3.4088	0.0118
127	3.4205	0.0118
128	3.4323	0.0117
129	3.4439	0.0117
130	3.4556	0.0116
131	3.4672	0.0116
132	3.4787	0.0115
133	3.4902	0.0115
134	3.5016	0.0114
135	3.5130	0.0114
136	3.5243	0.0113
137	3.5356	0.0113
138	3.5468	0.0112
139	3.5580	0.0112
140	3.5692	0.0112
141	3.5803	0.0111
142	3.5914	0.0111
143	3.6024	0.0110
144	3.6133	0.0110
145	3.6243	0.0109
146	3.6352	0.0109
147	3.6460	0.0108
148	3.6568	0.0108
149	3.6676	0.0108
150	3.6783	0.0107
151	3.6890	0.0107
152	3.6996	0.0106
153	3.7102	0.0106
154	3.7208	0.0106
155	3.7313	0.0105
156	3.7418	0.0105
157	3.7523	0.0105
158	3.7627	0.0104
159	3.7731	0.0104
160	3.7834	0.0103

161	3.7937	0.0103
162	3.8040	0.0103
163	3.8142	0.0102
164	3.8244	0.0102
165	3.8346	0.0102
166	3.8447	0.0101
167	3.8548	0.0101
168	3.8648	0.0101
169	3.8749	0.0100
170	3.8849	0.0100
171	3.8948	0.0100
172	3.9047	0.0099
173	3.9146	0.0099
174	3.9245	0.0099
175	3.9343	0.0098
176	3.9441	0.0098
177	3.9539	0.0098
178	3.9636	0.0097
179	3.9733	0.0097
180	3.9830	0.0097
181	3.9926	0.0096
182	4.0023	0.0096
183	4.0118	0.0096
184	4.0214	0.0096
185	4.0309	0.0095
186	4.0404	0.0095
187	4.0499	0.0095
188	4.0593	0.0094
189	4.0687	0.0094
190	4.0781	0.0094
191	4.0875	0.0094
192	4.0968	0.0093
193	4.1061	0.0093
194	4.1154	0.0093
195	4.1246	0.0092
196	4.1338	0.0092
197	4.1430	0.0092
198	4.1522	0.0092
199	4.1613	0.0091
200	4.1705	0.0091
201	4.1795	0.0091
202	4.1886	0.0091
203	4.1976	0.0090
204	4.2067	0.0090
205	4.2156	0.0090
206	4.2246	0.0090
207	4.2336	0.0089
208	4.2425	0.0089
209	4.2514	0.0089
210	4.2602	0.0089
211	4.2691	0.0088
212	4.2779	0.0088
213	4.2867	0.0088
214	4.2955	0.0088
215	4.3042	0.0087
216	4.3129	0.0087
217	4.3216	0.0087
218	4.3303	0.0087
219	4.3390	0.0087
220	4.3476	0.0086
221	4.3562	0.0086
222	4.3648	0.0086
223	4.3734	0.0086
224	4.3819	0.0085
225	4.3905	0.0085
226	4.3990	0.0085
227	4.4075	0.0085
228	4.4159	0.0085
229	4.4244	0.0084
230	4.4328	0.0084
231	4.4412	0.0084

232	4.4496	0.0084
233	4.4579	0.0084
234	4.4663	0.0083
235	4.4746	0.0083
236	4.4829	0.0083
237	4.4912	0.0083
238	4.4995	0.0083
239	4.5077	0.0082
240	4.5159	0.0082
241	4.5241	0.0082
242	4.5323	0.0082
243	4.5405	0.0082
244	4.5486	0.0081
245	4.5567	0.0081
246	4.5649	0.0081
247	4.5729	0.0081
248	4.5810	0.0081
249	4.5891	0.0081
250	4.5971	0.0080
251	4.6051	0.0080
252	4.6131	0.0080
253	4.6211	0.0080
254	4.6291	0.0080
255	4.6370	0.0079
256	4.6449	0.0079
257	4.6529	0.0079
258	4.6607	0.0079
259	4.6686	0.0079
260	4.6765	0.0079
261	4.6843	0.0078
262	4.6922	0.0078
263	4.7000	0.0078
264	4.7078	0.0078
265	4.7155	0.0078
266	4.7233	0.0078
267	4.7310	0.0077
268	4.7388	0.0077
269	4.7465	0.0077
270	4.7542	0.0077
271	4.7618	0.0077
272	4.7695	0.0077
273	4.7771	0.0076
274	4.7848	0.0076
275	4.7924	0.0076
276	4.8000	0.0076
277	4.8076	0.0076
278	4.8151	0.0076
279	4.8227	0.0076
280	4.8302	0.0075
281	4.8378	0.0075
282	4.8453	0.0075
283	4.8528	0.0075
284	4.8602	0.0075
285	4.8677	0.0075
286	4.8751	0.0074
287	4.8826	0.0074
288	4.8900	0.0074

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0074	0.0007	0.0067
2	0.0074	0.0007	0.0067
3	0.0075	0.0007	0.0068
4	0.0075	0.0007	0.0068
5	0.0075	0.0007	0.0068
6	0.0075	0.0007	0.0068
7	0.0076	0.0007	0.0068
8	0.0076	0.0007	0.0069
9	0.0076	0.0007	0.0069

10	0.0076	0.0007	0.0069
11	0.0076	0.0007	0.0069
12	0.0077	0.0007	0.0069
13	0.0077	0.0007	0.0070
14	0.0077	0.0007	0.0070
15	0.0077	0.0007	0.0070
16	0.0078	0.0007	0.0070
17	0.0078	0.0007	0.0071
18	0.0078	0.0007	0.0071
19	0.0078	0.0007	0.0071
20	0.0079	0.0007	0.0071
21	0.0079	0.0007	0.0072
22	0.0079	0.0007	0.0072
23	0.0079	0.0007	0.0072
24	0.0080	0.0007	0.0072
25	0.0080	0.0008	0.0072
26	0.0080	0.0008	0.0073
27	0.0081	0.0008	0.0073
28	0.0081	0.0008	0.0073
29	0.0081	0.0008	0.0073
30	0.0081	0.0008	0.0074
31	0.0082	0.0008	0.0074
32	0.0082	0.0008	0.0074
33	0.0082	0.0008	0.0075
34	0.0082	0.0008	0.0075
35	0.0083	0.0008	0.0075
36	0.0083	0.0008	0.0075
37	0.0083	0.0008	0.0076
38	0.0084	0.0008	0.0076
39	0.0084	0.0008	0.0076
40	0.0084	0.0008	0.0076
41	0.0085	0.0008	0.0077
42	0.0085	0.0008	0.0077
43	0.0085	0.0008	0.0077
44	0.0085	0.0008	0.0077
45	0.0086	0.0008	0.0078
46	0.0086	0.0008	0.0078
47	0.0087	0.0008	0.0078
48	0.0087	0.0008	0.0079
49	0.0087	0.0008	0.0079
50	0.0087	0.0008	0.0079
51	0.0088	0.0008	0.0080
52	0.0088	0.0008	0.0080
53	0.0089	0.0008	0.0080
54	0.0089	0.0008	0.0081
55	0.0089	0.0008	0.0081
56	0.0090	0.0008	0.0081
57	0.0090	0.0008	0.0082
58	0.0090	0.0008	0.0082
59	0.0091	0.0009	0.0082
60	0.0091	0.0009	0.0083
61	0.0092	0.0009	0.0083
62	0.0092	0.0009	0.0083
63	0.0092	0.0009	0.0084
64	0.0093	0.0009	0.0084
65	0.0093	0.0009	0.0085
66	0.0094	0.0009	0.0085
67	0.0094	0.0009	0.0085
68	0.0094	0.0009	0.0086
69	0.0095	0.0009	0.0086
70	0.0095	0.0009	0.0086
71	0.0096	0.0009	0.0087
72	0.0096	0.0009	0.0087
73	0.0097	0.0009	0.0088
74	0.0097	0.0009	0.0088
75	0.0098	0.0009	0.0088
76	0.0098	0.0009	0.0089
77	0.0099	0.0009	0.0089
78	0.0099	0.0009	0.0090
79	0.0100	0.0009	0.0090
80	0.0100	0.0009	0.0091

81	0.0101	0.0009	0.0091
82	0.0101	0.0009	0.0091
83	0.0102	0.0010	0.0092
84	0.0102	0.0010	0.0092
85	0.0103	0.0010	0.0093
86	0.0103	0.0010	0.0093
87	0.0104	0.0010	0.0094
88	0.0104	0.0010	0.0094
89	0.0105	0.0010	0.0095
90	0.0105	0.0010	0.0095
91	0.0106	0.0010	0.0096
92	0.0106	0.0010	0.0096
93	0.0107	0.0010	0.0097
94	0.0108	0.0010	0.0098
95	0.0108	0.0010	0.0098
96	0.0109	0.0010	0.0099
97	0.0110	0.0010	0.0099
98	0.0110	0.0010	0.0100
99	0.0111	0.0010	0.0101
100	0.0112	0.0010	0.0101
101	0.0112	0.0011	0.0102
102	0.0113	0.0011	0.0102
103	0.0114	0.0011	0.0103
104	0.0114	0.0011	0.0104
105	0.0115	0.0011	0.0104
106	0.0116	0.0011	0.0105
107	0.0117	0.0011	0.0106
108	0.0117	0.0011	0.0106
109	0.0118	0.0011	0.0107
110	0.0119	0.0011	0.0108
111	0.0120	0.0011	0.0109
112	0.0121	0.0011	0.0109
113	0.0122	0.0011	0.0110
114	0.0122	0.0011	0.0111
115	0.0123	0.0012	0.0112
116	0.0124	0.0012	0.0112
117	0.0125	0.0012	0.0113
118	0.0126	0.0012	0.0114
119	0.0127	0.0012	0.0115
120	0.0128	0.0012	0.0116
121	0.0129	0.0012	0.0117
122	0.0130	0.0012	0.0118
123	0.0131	0.0012	0.0119
124	0.0132	0.0012	0.0120
125	0.0133	0.0013	0.0121
126	0.0134	0.0013	0.0122
127	0.0136	0.0013	0.0123
128	0.0136	0.0013	0.0124
129	0.0138	0.0013	0.0125
130	0.0139	0.0013	0.0126
131	0.0141	0.0013	0.0127
132	0.0141	0.0013	0.0128
133	0.0143	0.0013	0.0130
134	0.0144	0.0014	0.0131
135	0.0146	0.0014	0.0132
136	0.0147	0.0014	0.0133
137	0.0149	0.0014	0.0135
138	0.0150	0.0014	0.0136
139	0.0152	0.0014	0.0138
140	0.0153	0.0014	0.0139
141	0.0155	0.0015	0.0141
142	0.0156	0.0015	0.0142
143	0.0159	0.0015	0.0144
144	0.0160	0.0015	0.0145
145	0.0163	0.0015	0.0147
146	0.0164	0.0015	0.0149
147	0.0167	0.0016	0.0151
148	0.0168	0.0016	0.0152
149	0.0171	0.0016	0.0155
150	0.0172	0.0016	0.0156
151	0.0176	0.0016	0.0159

152	0.0177	0.0017	0.0161
153	0.0180	0.0017	0.0164
154	0.0182	0.0017	0.0165
155	0.0186	0.0017	0.0168
156	0.0188	0.0018	0.0170
157	0.0192	0.0018	0.0174
158	0.0194	0.0018	0.0175
159	0.0198	0.0019	0.0179
160	0.0200	0.0019	0.0181
161	0.0205	0.0019	0.0186
162	0.0207	0.0019	0.0188
163	0.0213	0.0020	0.0193
164	0.0215	0.0020	0.0195
165	0.0221	0.0021	0.0200
166	0.0224	0.0021	0.0203
167	0.0231	0.0022	0.0209
168	0.0234	0.0022	0.0212
169	0.0241	0.0023	0.0219
170	0.0245	0.0023	0.0222
171	0.0254	0.0024	0.0230
172	0.0258	0.0024	0.0234
173	0.0268	0.0025	0.0243
174	0.0273	0.0026	0.0247
175	0.0285	0.0027	0.0258
176	0.0291	0.0027	0.0263
177	0.0304	0.0029	0.0276
178	0.0312	0.0029	0.0283
179	0.0329	0.0031	0.0298
180	0.0338	0.0032	0.0306
181	0.0359	0.0034	0.0326
182	0.0372	0.0035	0.0337
183	0.0400	0.0037	0.0363
184	0.0416	0.0037	0.0379
185	0.0417	0.0037	0.0381
186	0.0441	0.0037	0.0404
187	0.0500	0.0037	0.0464
188	0.0540	0.0037	0.0503
189	0.0650	0.0037	0.0614
190	0.0734	0.0037	0.0697
191	0.1049	0.0037	0.1012
192	0.1443	0.0037	0.1406
193	0.4515	0.0037	0.4478
194	0.0855	0.0037	0.0818
195	0.0588	0.0037	0.0551
196	0.0468	0.0037	0.0431
197	0.0434	0.0037	0.0398
198	0.0385	0.0036	0.0349
199	0.0348	0.0033	0.0316
200	0.0320	0.0030	0.0290
201	0.0297	0.0028	0.0269
202	0.0279	0.0026	0.0253
203	0.0263	0.0025	0.0238
204	0.0249	0.0023	0.0226
205	0.0238	0.0022	0.0215
206	0.0227	0.0021	0.0206
207	0.0218	0.0020	0.0198
208	0.0210	0.0020	0.0190
209	0.0202	0.0019	0.0183
210	0.0196	0.0018	0.0177
211	0.0190	0.0018	0.0172
212	0.0184	0.0017	0.0167
213	0.0179	0.0017	0.0162
214	0.0174	0.0016	0.0158
215	0.0170	0.0016	0.0154
216	0.0165	0.0016	0.0150
217	0.0161	0.0015	0.0146
218	0.0158	0.0015	0.0143
219	0.0154	0.0014	0.0140
220	0.0151	0.0014	0.0137
221	0.0148	0.0014	0.0134
222	0.0145	0.0014	0.0131

223	0.0142	0.0013	0.0129
224	0.0140	0.0013	0.0127
225	0.0137	0.0013	0.0124
226	0.0135	0.0013	0.0122
227	0.0133	0.0012	0.0120
228	0.0131	0.0012	0.0118
229	0.0128	0.0012	0.0116
230	0.0127	0.0012	0.0115
231	0.0125	0.0012	0.0113
232	0.0123	0.0012	0.0111
233	0.0121	0.0011	0.0110
234	0.0119	0.0011	0.0108
235	0.0118	0.0011	0.0107
236	0.0116	0.0011	0.0105
237	0.0115	0.0011	0.0104
238	0.0113	0.0011	0.0103
239	0.0112	0.0011	0.0101
240	0.0111	0.0010	0.0100
241	0.0109	0.0010	0.0099
242	0.0108	0.0010	0.0098
243	0.0107	0.0010	0.0097
244	0.0106	0.0010	0.0096
245	0.0105	0.0010	0.0095
246	0.0103	0.0010	0.0094
247	0.0102	0.0010	0.0093
248	0.0101	0.0010	0.0092
249	0.0100	0.0009	0.0091
250	0.0099	0.0009	0.0090
251	0.0098	0.0009	0.0089
252	0.0097	0.0009	0.0088
253	0.0096	0.0009	0.0087
254	0.0096	0.0009	0.0087
255	0.0095	0.0009	0.0086
256	0.0094	0.0009	0.0085
257	0.0093	0.0009	0.0084
258	0.0092	0.0009	0.0084
259	0.0091	0.0009	0.0083
260	0.0091	0.0009	0.0082
261	0.0090	0.0008	0.0081
262	0.0089	0.0008	0.0081
263	0.0088	0.0008	0.0080
264	0.0088	0.0008	0.0079
265	0.0087	0.0008	0.0079
266	0.0086	0.0008	0.0078
267	0.0086	0.0008	0.0078
268	0.0085	0.0008	0.0077
269	0.0084	0.0008	0.0077
270	0.0084	0.0008	0.0076
271	0.0083	0.0008	0.0075
272	0.0083	0.0008	0.0075
273	0.0082	0.0008	0.0074
274	0.0081	0.0008	0.0074
275	0.0081	0.0008	0.0073
276	0.0080	0.0008	0.0073
277	0.0080	0.0007	0.0072
278	0.0079	0.0007	0.0072
279	0.0079	0.0007	0.0071
280	0.0078	0.0007	0.0071
281	0.0078	0.0007	0.0070
282	0.0077	0.0007	0.0070
283	0.0077	0.0007	0.0070
284	0.0076	0.0007	0.0069
285	0.0076	0.0007	0.0069
286	0.0075	0.0007	0.0068
287	0.0075	0.0007	0.0068
288	0.0074	0.0007	0.0067

Total soil rain loss = 0.39(In)
Total effective rainfall = 4.50(In)
Peak flow rate in flood hydrograph = 2.04(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

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	0.0000	0.00	Q				
0+10	0.0001	0.02	Q				
0+15	0.0004	0.04	Q				
0+20	0.0008	0.05	Q				
0+25	0.0012	0.06	Q				
0+30	0.0016	0.06	Q				
0+35	0.0020	0.06	Q				
0+40	0.0024	0.06	Q				
0+45	0.0028	0.06	Q				
0+50	0.0032	0.06	Q				
0+55	0.0036	0.06	Q				
1+ 0	0.0040	0.06	Q				
1+ 5	0.0044	0.06	Q				
1+10	0.0048	0.06	Q				
1+15	0.0052	0.06	Q				
1+20	0.0057	0.06	Q				
1+25	0.0061	0.06	Q				
1+30	0.0065	0.06	Q				
1+35	0.0069	0.06	QV				
1+40	0.0073	0.06	QV				
1+45	0.0077	0.06	QV				
1+50	0.0082	0.06	QV				
1+55	0.0086	0.06	QV				
2+ 0	0.0090	0.06	QV				
2+ 5	0.0094	0.06	QV				
2+10	0.0099	0.06	QV				
2+15	0.0103	0.06	QV				
2+20	0.0107	0.06	QV				
2+25	0.0111	0.06	QV				
2+30	0.0116	0.06	QV				
2+35	0.0120	0.06	QV				
2+40	0.0125	0.06	QV				
2+45	0.0129	0.06	QV				
2+50	0.0133	0.06	Q V				
2+55	0.0138	0.06	Q V				
3+ 0	0.0142	0.06	Q V				
3+ 5	0.0147	0.06	Q V				
3+10	0.0151	0.06	Q V				
3+15	0.0155	0.06	Q V				
3+20	0.0160	0.07	Q V				
3+25	0.0164	0.07	Q V				
3+30	0.0169	0.07	Q V				
3+35	0.0173	0.07	Q V				
3+40	0.0178	0.07	Q V				
3+45	0.0183	0.07	Q V				
3+50	0.0187	0.07	Q V				
3+55	0.0192	0.07	Q V				
4+ 0	0.0196	0.07	Q V				
4+ 5	0.0201	0.07	Q V				
4+10	0.0206	0.07	Q V				
4+15	0.0210	0.07	Q V				
4+20	0.0215	0.07	Q V				
4+25	0.0220	0.07	Q V				
4+30	0.0224	0.07	Q V				
4+35	0.0229	0.07	Q V				
4+40	0.0234	0.07	Q V				
4+45	0.0239	0.07	Q V				
4+50	0.0244	0.07	Q V				
4+55	0.0248	0.07	Q V				
5+ 0	0.0253	0.07	Q V				
5+ 5	0.0258	0.07	Q V				

5+10	0.0263	0.07	Q	V			
5+15	0.0268	0.07	Q	V			
5+20	0.0273	0.07	Q	V			
5+25	0.0278	0.07	Q	V			
5+30	0.0283	0.07	Q	V			
5+35	0.0288	0.07	Q	V			
5+40	0.0293	0.07	Q	V			
5+45	0.0298	0.07	Q	V			
5+50	0.0303	0.07	Q	V			
5+55	0.0308	0.07	Q	V			
6+ 0	0.0313	0.07	Q	V			
6+ 5	0.0318	0.07	Q	V			
6+10	0.0323	0.07	Q	V			
6+15	0.0329	0.08	Q	V			
6+20	0.0334	0.08	Q	V			
6+25	0.0339	0.08	Q	V			
6+30	0.0344	0.08	Q	V			
6+35	0.0350	0.08	Q	V			
6+40	0.0355	0.08	Q	V			
6+45	0.0360	0.08	Q	V			
6+50	0.0365	0.08	Q	V			
6+55	0.0371	0.08	Q	V			
7+ 0	0.0376	0.08	Q	V			
7+ 5	0.0382	0.08	Q	V			
7+10	0.0387	0.08	Q	V			
7+15	0.0393	0.08	Q	V			
7+20	0.0398	0.08	Q	V			
7+25	0.0404	0.08	Q	V			
7+30	0.0409	0.08	Q	V			
7+35	0.0415	0.08	Q	V			
7+40	0.0421	0.08	Q	V			
7+45	0.0426	0.08	Q	V			
7+50	0.0432	0.08	Q	V			
7+55	0.0438	0.08	Q	V			
8+ 0	0.0444	0.08	Q	V			
8+ 5	0.0449	0.08	Q	V			
8+10	0.0455	0.08	Q	V			
8+15	0.0461	0.09	Q	V			
8+20	0.0467	0.09	Q	V			
8+25	0.0473	0.09	Q	V			
8+30	0.0479	0.09	Q	V			
8+35	0.0485	0.09	Q	V			
8+40	0.0491	0.09	Q	V			
8+45	0.0497	0.09	Q	V			
8+50	0.0503	0.09	Q	V			
8+55	0.0509	0.09	Q	V			
9+ 0	0.0516	0.09	Q	V			
9+ 5	0.0522	0.09	Q	V			
9+10	0.0528	0.09	Q	V			
9+15	0.0534	0.09	Q	V			
9+20	0.0541	0.09	Q	V			
9+25	0.0547	0.09	Q	V			
9+30	0.0554	0.09	Q	V			
9+35	0.0560	0.09	Q	V			
9+40	0.0567	0.10	Q	V			
9+45	0.0573	0.10	Q	V			
9+50	0.0580	0.10	Q	V			
9+55	0.0587	0.10	Q	V			
10+ 0	0.0593	0.10	Q	V			
10+ 5	0.0600	0.10	Q	V			
10+10	0.0607	0.10	Q	V			
10+15	0.0614	0.10	Q	V			
10+20	0.0621	0.10	Q	V			
10+25	0.0628	0.10	Q	V			
10+30	0.0635	0.10	Q	V			
10+35	0.0642	0.10	Q	V			
10+40	0.0649	0.10	Q	V			
10+45	0.0657	0.11	Q	V			
10+50	0.0664	0.11	Q	V			
10+55	0.0671	0.11	Q	V			
11+ 0	0.0679	0.11	Q	V			

11+ 5	0.0686	0.11	Q	V			
11+10	0.0694	0.11	Q	V			
11+15	0.0702	0.11	Q	V			
11+20	0.0709	0.11	Q	V			
11+25	0.0717	0.11	Q	V			
11+30	0.0725	0.11	Q	V			
11+35	0.0733	0.12	Q	|V			
11+40	0.0741	0.12	Q	|V			
11+45	0.0749	0.12	Q	|V			
11+50	0.0757	0.12	Q	|V			
11+55	0.0766	0.12	Q	|V			
12+ 0	0.0774	0.12	Q	|V			
12+ 5	0.0783	0.12	Q	|V			
12+10	0.0791	0.12	Q	|V			
12+15	0.0800	0.13	Q	| V			
12+20	0.0809	0.13	Q	| V			
12+25	0.0818	0.13	Q	| V			
12+30	0.0827	0.13	Q	| V			
12+35	0.0836	0.13	Q	| V			
12+40	0.0845	0.13	Q	| V			
12+45	0.0854	0.14	Q	| V			
12+50	0.0864	0.14	Q	| V			
12+55	0.0873	0.14	Q	| V			
13+ 0	0.0883	0.14	Q	| V			
13+ 5	0.0893	0.14	Q	| V			
13+10	0.0903	0.15	Q	| V			
13+15	0.0914	0.15	Q	| V			
13+20	0.0924	0.15	Q	| V			
13+25	0.0934	0.15	Q	| V			
13+30	0.0945	0.16	Q	| V			
13+35	0.0956	0.16	Q	| V			
13+40	0.0967	0.16	Q	| V			
13+45	0.0979	0.16	Q	| V			
13+50	0.0990	0.17	Q	| V			
13+55	0.1002	0.17	Q	| V			
14+ 0	0.1014	0.17	Q	| V			
14+ 5	0.1026	0.18	Q	| V			
14+10	0.1039	0.18	Q	| V			
14+15	0.1052	0.19	Q	| V			
14+20	0.1065	0.19	Q	| V			
14+25	0.1079	0.20	Q	| V			
14+30	0.1092	0.20	Q	| V			
14+35	0.1107	0.21	Q	| V			
14+40	0.1121	0.21	Q	| V			
14+45	0.1137	0.22	Q	| V			
14+50	0.1152	0.23	Q	| V			
14+55	0.1169	0.24	Q	| V			
15+ 0	0.1185	0.24	Q	| V			
15+ 5	0.1203	0.25	|Q	| V			
15+10	0.1221	0.27	|Q	| V			
15+15	0.1240	0.28	|Q	| V			
15+20	0.1260	0.29	|Q	| V			
15+25	0.1282	0.31	|Q	| V|			
15+30	0.1304	0.32	|Q	| V|			
15+35	0.1327	0.33	|Q	| V|			
15+40	0.1351	0.36	|Q	| V			
15+45	0.1379	0.40	|Q	| V			
15+50	0.1410	0.45	|Q	| |V			
15+55	0.1446	0.53	| Q	| |V			
16+ 0	0.1492	0.67	| Q	| | V			
16+ 5	0.1562	1.02	| Q	| | V			
16+10	0.1684	1.76	| Q	| | V			
16+15	0.1825	2.04	| Q	| | V			
16+20	0.1913	1.28	| Q	| | V			
16+25	0.1962	0.71	| Q	| | V|			
16+30	0.1994	0.46	|Q	| | V|			
16+35	0.2021	0.38	|Q	| | V			
16+40	0.2042	0.31	|Q	| | V			
16+45	0.2061	0.28	|Q	| | V			
16+50	0.2078	0.25	|Q	| | |V			
16+55	0.2094	0.23	Q	| | |V			

17+ 0	0.2110	0.22	Q	|	|	|V	|
17+ 5	0.2124	0.21	Q	|	|	|V	|
17+10	0.2137	0.20	Q	|	|	| V	|
17+15	0.2150	0.19	Q	|	|	| V	|
17+20	0.2162	0.18	Q	|	|	| V	|
17+25	0.2174	0.17	Q	|	|	| V	|
17+30	0.2185	0.16	Q	|	|	| V	|
17+35	0.2196	0.16	Q	|	|	| V	|
17+40	0.2207	0.15	Q	|	|	| V	|
17+45	0.2217	0.15	Q	|	|	| V	|
17+50	0.2227	0.14	Q	|	|	| V	|
17+55	0.2236	0.14	Q	|	|	| V	|
18+ 0	0.2246	0.14	Q	|	|	| V	|
18+ 5	0.2255	0.13	Q	|	|	| V	|
18+10	0.2264	0.13	Q	|	|	| V	|
18+15	0.2272	0.13	Q	|	|	| V	|
18+20	0.2281	0.12	Q	|	|	| V	|
18+25	0.2289	0.12	Q	|	|	| V	|
18+30	0.2297	0.12	Q	|	|	| V	|
18+35	0.2305	0.12	Q	|	|	| V	|
18+40	0.2313	0.11	Q	|	|	| V	|
18+45	0.2321	0.11	Q	|	|	| V	|
18+50	0.2328	0.11	Q	|	|	| V	|
18+55	0.2335	0.11	Q	|	|	| V	|
19+ 0	0.2343	0.11	Q	|	|	| V	|
19+ 5	0.2350	0.10	Q	|	|	| V	|
19+10	0.2357	0.10	Q	|	|	| V	|
19+15	0.2364	0.10	Q	|	|	| V	|
19+20	0.2370	0.10	Q	|	|	| V	|
19+25	0.2377	0.10	Q	|	|	| V	|
19+30	0.2384	0.10	Q	|	|	| V	|
19+35	0.2390	0.09	Q	|	|	| V	|
19+40	0.2397	0.09	Q	|	|	| V	|
19+45	0.2403	0.09	Q	|	|	| V	|
19+50	0.2409	0.09	Q	|	|	| V	|
19+55	0.2415	0.09	Q	|	|	| V	|
20+ 0	0.2421	0.09	Q	|	|	| V	|
20+ 5	0.2427	0.09	Q	|	|	| V	|
20+10	0.2433	0.09	Q	|	|	| V	|
20+15	0.2439	0.09	Q	|	|	| V	|
20+20	0.2445	0.08	Q	|	|	| V	|
20+25	0.2451	0.08	Q	|	|	| V	|
20+30	0.2456	0.08	Q	|	|	| V	|
20+35	0.2462	0.08	Q	|	|	| V	|
20+40	0.2468	0.08	Q	|	|	| V	|
20+45	0.2473	0.08	Q	|	|	| V	|
20+50	0.2479	0.08	Q	|	|	| V	|
20+55	0.2484	0.08	Q	|	|	| V	|
21+ 0	0.2489	0.08	Q	|	|	| V	|
21+ 5	0.2494	0.08	Q	|	|	| V	|
21+10	0.2500	0.08	Q	|	|	| V	|
21+15	0.2505	0.08	Q	|	|	| V	|
21+20	0.2510	0.07	Q	|	|	| V	|
21+25	0.2515	0.07	Q	|	|	| V	|
21+30	0.2520	0.07	Q	|	|	| V	|
21+35	0.2525	0.07	Q	|	|	| V	|
21+40	0.2530	0.07	Q	|	|	| V	|
21+45	0.2535	0.07	Q	|	|	| V	|
21+50	0.2540	0.07	Q	|	|	| V	|
21+55	0.2545	0.07	Q	|	|	| V	|
22+ 0	0.2549	0.07	Q	|	|	| V	|
22+ 5	0.2554	0.07	Q	|	|	| V	|
22+10	0.2559	0.07	Q	|	|	| V	|
22+15	0.2563	0.07	Q	|	|	| V	|
22+20	0.2568	0.07	Q	|	|	| V	|
22+25	0.2573	0.07	Q	|	|	| V	|
22+30	0.2577	0.07	Q	|	|	| V	|
22+35	0.2582	0.07	Q	|	|	| V	|
22+40	0.2586	0.07	Q	|	|	| V	|
22+45	0.2591	0.06	Q	|	|	| V	|
22+50	0.2595	0.06	Q	|	|	| V	|

22+55	0.2600	0.06	Q	|	|	|	V|
23+ 0	0.2604	0.06	Q	|	|	|	V|
23+ 5	0.2608	0.06	Q	|	|	|	V|
23+10	0.2613	0.06	Q	|	|	|	V|
23+15	0.2617	0.06	Q	|	|	|	V|
23+20	0.2621	0.06	Q	|	|	|	V|
23+25	0.2625	0.06	Q	|	|	|	V|
23+30	0.2630	0.06	Q	|	|	|	V|
23+35	0.2634	0.06	Q	|	|	|	V|
23+40	0.2638	0.06	Q	|	|	|	V|
23+45	0.2642	0.06	Q	|	|	|	V|
23+50	0.2646	0.06	Q	|	|	|	V|
23+55	0.2650	0.06	Q	|	|	|	V|
24+ 0	0.2654	0.06	Q	|	|	|	V|

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

Study date 09/29/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 2B (POC 2)
100 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA2BQ100.HCU

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
0.53	1	0.77
Rainfall data for year 2		
0.53	6	1.16
Rainfall data for year 2		
0.53	24	2.07
Rainfall data for year 100		
0.53	1	1.22
Rainfall data for year 100		
0.53	6	2.67
Rainfall data for year 100		
0.53	24	4.89

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	0.53	1.000	0.440	0.100	0.044

Area-averaged adjusted loss rate Fm (In/Hr) = 0.044

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.05	0.100	56.0	75.8	3.19	0.497
0.48	0.900	98.0	98.0	0.20	0.952

Area-averaged catchment yield fraction, Y = 0.906
Area-averaged low loss fraction, Yb = 0.094
User entry of time of concentration = 0.178 (hours)
++
Watershed area = 0.53(Ac.)
Catchment Lag time = 0.142 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 58.5206
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.044(In/Hr)
Average low loss rate fraction (Yb) = 0.094 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.452(In)
Computed peak 30-minute rainfall = 0.925(In)
Specified peak 1-hour rainfall = 1.220(In)
Computed peak 3-hour rainfall = 1.972(In)
Specified peak 6-hour rainfall = 2.670(In)
Specified peak 24-hour rainfall = 4.890(In)

Rainfall depth area reduction factors:
Using a total area of 0.53(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.452(In)
30-minute factor = 1.000 Adjusted rainfall = 0.925(In)
1-hour factor = 1.000 Adjusted rainfall = 1.220(In)
3-hour factor = 1.000 Adjusted rainfall = 1.972(In)
6-hour factor = 1.000 Adjusted rainfall = 2.670(In)
24-hour factor = 1.000 Adjusted rainfall = 4.890(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 6.41 (CFS))	
1	6.210	0.398
2	39.813	2.154
3	80.245	2.592
4	94.922	0.941
5	98.531	0.231
6	100.000	0.094

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.4515	0.4515
2	0.5958	0.1443
3	0.7007	0.1049
4	0.7861	0.0855
5	0.8595	0.0734
6	0.9246	0.0650
7	0.9834	0.0588
8	1.0373	0.0540
9	1.0874	0.0500
10	1.1342	0.0468
11	1.1782	0.0441
12	1.2200	0.0417
13	1.2634	0.0434
14	1.3050	0.0416
15	1.3450	0.0400
16	1.3835	0.0385
17	1.4206	0.0372
18	1.4566	0.0359
19	1.4914	0.0348

20	1.5252	0.0338
21	1.5581	0.0329
22	1.5901	0.0320
23	1.6213	0.0312
24	1.6517	0.0304
25	1.6815	0.0297
26	1.7106	0.0291
27	1.7390	0.0285
28	1.7669	0.0279
29	1.7942	0.0273
30	1.8210	0.0268
31	1.8473	0.0263
32	1.8731	0.0258
33	1.8985	0.0254
34	1.9234	0.0249
35	1.9479	0.0245
36	1.9721	0.0241
37	1.9958	0.0238
38	2.0192	0.0234
39	2.0423	0.0231
40	2.0650	0.0227
41	2.0874	0.0224
42	2.1095	0.0221
43	2.1313	0.0218
44	2.1529	0.0215
45	2.1741	0.0213
46	2.1951	0.0210
47	2.2158	0.0207
48	2.2363	0.0205
49	2.2566	0.0202
50	2.2766	0.0200
51	2.2964	0.0198
52	2.3160	0.0196
53	2.3353	0.0194
54	2.3545	0.0192
55	2.3734	0.0190
56	2.3922	0.0188
57	2.4108	0.0186
58	2.4292	0.0184
59	2.4474	0.0182
60	2.4655	0.0180
61	2.4833	0.0179
62	2.5011	0.0177
63	2.5186	0.0176
64	2.5360	0.0174
65	2.5533	0.0172
66	2.5703	0.0171
67	2.5873	0.0170
68	2.6041	0.0168
69	2.6208	0.0167
70	2.6373	0.0165
71	2.6537	0.0164
72	2.6700	0.0163
73	2.6861	0.0161
74	2.7021	0.0160
75	2.7180	0.0159
76	2.7338	0.0158
77	2.7494	0.0156
78	2.7649	0.0155
79	2.7803	0.0154
80	2.7957	0.0153
81	2.8109	0.0152
82	2.8260	0.0151
83	2.8409	0.0150
84	2.8558	0.0149
85	2.8706	0.0148
86	2.8853	0.0147
87	2.8999	0.0146
88	2.9144	0.0145
89	2.9288	0.0144
90	2.9431	0.0143

91	2.9574	0.0142
92	2.9715	0.0141
93	2.9856	0.0141
94	2.9995	0.0140
95	3.0134	0.0139
96	3.0272	0.0138
97	3.0410	0.0137
98	3.0546	0.0136
99	3.0682	0.0136
100	3.0817	0.0135
101	3.0951	0.0134
102	3.1084	0.0133
103	3.1217	0.0133
104	3.1349	0.0132
105	3.1480	0.0131
106	3.1610	0.0131
107	3.1740	0.0130
108	3.1869	0.0129
109	3.1998	0.0128
110	3.2126	0.0128
111	3.2253	0.0127
112	3.2379	0.0127
113	3.2505	0.0126
114	3.2630	0.0125
115	3.2755	0.0125
116	3.2879	0.0124
117	3.3003	0.0123
118	3.3125	0.0123
119	3.3248	0.0122
120	3.3369	0.0122
121	3.3490	0.0121
122	3.3611	0.0121
123	3.3731	0.0120
124	3.3850	0.0119
125	3.3969	0.0119
126	3.4088	0.0118
127	3.4205	0.0118
128	3.4323	0.0117
129	3.4439	0.0117
130	3.4556	0.0116
131	3.4672	0.0116
132	3.4787	0.0115
133	3.4902	0.0115
134	3.5016	0.0114
135	3.5130	0.0114
136	3.5243	0.0113
137	3.5356	0.0113
138	3.5468	0.0112
139	3.5580	0.0112
140	3.5692	0.0112
141	3.5803	0.0111
142	3.5914	0.0111
143	3.6024	0.0110
144	3.6133	0.0110
145	3.6243	0.0109
146	3.6352	0.0109
147	3.6460	0.0108
148	3.6568	0.0108
149	3.6676	0.0108
150	3.6783	0.0107
151	3.6890	0.0107
152	3.6996	0.0106
153	3.7102	0.0106
154	3.7208	0.0106
155	3.7313	0.0105
156	3.7418	0.0105
157	3.7523	0.0105
158	3.7627	0.0104
159	3.7731	0.0104
160	3.7834	0.0103
161	3.7937	0.0103

162	3.8040	0.0103
163	3.8142	0.0102
164	3.8244	0.0102
165	3.8346	0.0102
166	3.8447	0.0101
167	3.8548	0.0101
168	3.8648	0.0101
169	3.8749	0.0100
170	3.8849	0.0100
171	3.8948	0.0100
172	3.9047	0.0099
173	3.9146	0.0099
174	3.9245	0.0099
175	3.9343	0.0098
176	3.9441	0.0098
177	3.9539	0.0098
178	3.9636	0.0097
179	3.9733	0.0097
180	3.9830	0.0097
181	3.9926	0.0096
182	4.0023	0.0096
183	4.0118	0.0096
184	4.0214	0.0096
185	4.0309	0.0095
186	4.0404	0.0095
187	4.0499	0.0095
188	4.0593	0.0094
189	4.0687	0.0094
190	4.0781	0.0094
191	4.0875	0.0094
192	4.0968	0.0093
193	4.1061	0.0093
194	4.1154	0.0093
195	4.1246	0.0092
196	4.1338	0.0092
197	4.1430	0.0092
198	4.1522	0.0092
199	4.1613	0.0091
200	4.1705	0.0091
201	4.1795	0.0091
202	4.1886	0.0091
203	4.1976	0.0090
204	4.2067	0.0090
205	4.2157	0.0090
206	4.2246	0.0090
207	4.2336	0.0089
208	4.2425	0.0089
209	4.2514	0.0089
210	4.2602	0.0089
211	4.2691	0.0088
212	4.2779	0.0088
213	4.2867	0.0088
214	4.2955	0.0088
215	4.3042	0.0087
216	4.3129	0.0087
217	4.3216	0.0087
218	4.3303	0.0087
219	4.3390	0.0087
220	4.3476	0.0086
221	4.3562	0.0086
222	4.3648	0.0086
223	4.3734	0.0086
224	4.3819	0.0085
225	4.3905	0.0085
226	4.3990	0.0085
227	4.4075	0.0085
228	4.4159	0.0085
229	4.4244	0.0084
230	4.4328	0.0084
231	4.4412	0.0084
232	4.4496	0.0084

233	4.4579	0.0084
234	4.4663	0.0083
235	4.4746	0.0083
236	4.4829	0.0083
237	4.4912	0.0083
238	4.4995	0.0083
239	4.5077	0.0082
240	4.5159	0.0082
241	4.5241	0.0082
242	4.5323	0.0082
243	4.5405	0.0082
244	4.5486	0.0081
245	4.5567	0.0081
246	4.5649	0.0081
247	4.5729	0.0081
248	4.5810	0.0081
249	4.5891	0.0081
250	4.5971	0.0080
251	4.6051	0.0080
252	4.6131	0.0080
253	4.6211	0.0080
254	4.6291	0.0080
255	4.6370	0.0079
256	4.6449	0.0079
257	4.6529	0.0079
258	4.6608	0.0079
259	4.6686	0.0079
260	4.6765	0.0079
261	4.6843	0.0078
262	4.6922	0.0078
263	4.7000	0.0078
264	4.7078	0.0078
265	4.7155	0.0078
266	4.7233	0.0078
267	4.7310	0.0077
268	4.7388	0.0077
269	4.7465	0.0077
270	4.7542	0.0077
271	4.7618	0.0077
272	4.7695	0.0077
273	4.7771	0.0076
274	4.7848	0.0076
275	4.7924	0.0076
276	4.8000	0.0076
277	4.8076	0.0076
278	4.8151	0.0076
279	4.8227	0.0076
280	4.8302	0.0075
281	4.8378	0.0075
282	4.8453	0.0075
283	4.8528	0.0075
284	4.8602	0.0075
285	4.8677	0.0075
286	4.8751	0.0074
287	4.8826	0.0074
288	4.8900	0.0074

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0074	0.0007	0.0067
2	0.0074	0.0007	0.0067
3	0.0075	0.0007	0.0068
4	0.0075	0.0007	0.0068
5	0.0075	0.0007	0.0068
6	0.0075	0.0007	0.0068
7	0.0076	0.0007	0.0068
8	0.0076	0.0007	0.0069
9	0.0076	0.0007	0.0069
10	0.0076	0.0007	0.0069

11	0.0076	0.0007	0.0069
12	0.0077	0.0007	0.0069
13	0.0077	0.0007	0.0070
14	0.0077	0.0007	0.0070
15	0.0077	0.0007	0.0070
16	0.0078	0.0007	0.0070
17	0.0078	0.0007	0.0071
18	0.0078	0.0007	0.0071
19	0.0078	0.0007	0.0071
20	0.0079	0.0007	0.0071
21	0.0079	0.0007	0.0072
22	0.0079	0.0007	0.0072
23	0.0079	0.0007	0.0072
24	0.0080	0.0007	0.0072
25	0.0080	0.0008	0.0072
26	0.0080	0.0008	0.0073
27	0.0081	0.0008	0.0073
28	0.0081	0.0008	0.0073
29	0.0081	0.0008	0.0073
30	0.0081	0.0008	0.0074
31	0.0082	0.0008	0.0074
32	0.0082	0.0008	0.0074
33	0.0082	0.0008	0.0075
34	0.0082	0.0008	0.0075
35	0.0083	0.0008	0.0075
36	0.0083	0.0008	0.0075
37	0.0083	0.0008	0.0076
38	0.0084	0.0008	0.0076
39	0.0084	0.0008	0.0076
40	0.0084	0.0008	0.0076
41	0.0085	0.0008	0.0077
42	0.0085	0.0008	0.0077
43	0.0085	0.0008	0.0077
44	0.0085	0.0008	0.0077
45	0.0086	0.0008	0.0078
46	0.0086	0.0008	0.0078
47	0.0087	0.0008	0.0078
48	0.0087	0.0008	0.0079
49	0.0087	0.0008	0.0079
50	0.0087	0.0008	0.0079
51	0.0088	0.0008	0.0080
52	0.0088	0.0008	0.0080
53	0.0089	0.0008	0.0080
54	0.0089	0.0008	0.0081
55	0.0089	0.0008	0.0081
56	0.0090	0.0008	0.0081
57	0.0090	0.0008	0.0082
58	0.0090	0.0008	0.0082
59	0.0091	0.0009	0.0082
60	0.0091	0.0009	0.0083
61	0.0092	0.0009	0.0083
62	0.0092	0.0009	0.0083
63	0.0092	0.0009	0.0084
64	0.0093	0.0009	0.0084
65	0.0093	0.0009	0.0085
66	0.0094	0.0009	0.0085
67	0.0094	0.0009	0.0085
68	0.0094	0.0009	0.0086
69	0.0095	0.0009	0.0086
70	0.0095	0.0009	0.0086
71	0.0096	0.0009	0.0087
72	0.0096	0.0009	0.0087
73	0.0097	0.0009	0.0088
74	0.0097	0.0009	0.0088
75	0.0098	0.0009	0.0088
76	0.0098	0.0009	0.0089
77	0.0099	0.0009	0.0089
78	0.0099	0.0009	0.0090
79	0.0100	0.0009	0.0090
80	0.0100	0.0009	0.0091
81	0.0101	0.0009	0.0091

82	0.0101	0.0009	0.0091
83	0.0102	0.0010	0.0092
84	0.0102	0.0010	0.0092
85	0.0103	0.0010	0.0093
86	0.0103	0.0010	0.0093
87	0.0104	0.0010	0.0094
88	0.0104	0.0010	0.0094
89	0.0105	0.0010	0.0095
90	0.0105	0.0010	0.0095
91	0.0106	0.0010	0.0096
92	0.0106	0.0010	0.0096
93	0.0107	0.0010	0.0097
94	0.0108	0.0010	0.0098
95	0.0108	0.0010	0.0098
96	0.0109	0.0010	0.0099
97	0.0110	0.0010	0.0099
98	0.0110	0.0010	0.0100
99	0.0111	0.0010	0.0101
100	0.0112	0.0010	0.0101
101	0.0112	0.0011	0.0102
102	0.0113	0.0011	0.0102
103	0.0114	0.0011	0.0103
104	0.0114	0.0011	0.0104
105	0.0115	0.0011	0.0104
106	0.0116	0.0011	0.0105
107	0.0117	0.0011	0.0106
108	0.0117	0.0011	0.0106
109	0.0118	0.0011	0.0107
110	0.0119	0.0011	0.0108
111	0.0120	0.0011	0.0109
112	0.0121	0.0011	0.0109
113	0.0122	0.0011	0.0110
114	0.0122	0.0011	0.0111
115	0.0123	0.0012	0.0112
116	0.0124	0.0012	0.0112
117	0.0125	0.0012	0.0113
118	0.0126	0.0012	0.0114
119	0.0127	0.0012	0.0115
120	0.0128	0.0012	0.0116
121	0.0129	0.0012	0.0117
122	0.0130	0.0012	0.0118
123	0.0131	0.0012	0.0119
124	0.0132	0.0012	0.0120
125	0.0133	0.0013	0.0121
126	0.0134	0.0013	0.0122
127	0.0136	0.0013	0.0123
128	0.0136	0.0013	0.0124
129	0.0138	0.0013	0.0125
130	0.0139	0.0013	0.0126
131	0.0141	0.0013	0.0127
132	0.0141	0.0013	0.0128
133	0.0143	0.0013	0.0130
134	0.0144	0.0014	0.0131
135	0.0146	0.0014	0.0132
136	0.0147	0.0014	0.0133
137	0.0149	0.0014	0.0135
138	0.0150	0.0014	0.0136
139	0.0152	0.0014	0.0138
140	0.0153	0.0014	0.0139
141	0.0155	0.0015	0.0141
142	0.0156	0.0015	0.0142
143	0.0159	0.0015	0.0144
144	0.0160	0.0015	0.0145
145	0.0163	0.0015	0.0147
146	0.0164	0.0015	0.0149
147	0.0167	0.0016	0.0151
148	0.0168	0.0016	0.0152
149	0.0171	0.0016	0.0155
150	0.0172	0.0016	0.0156
151	0.0176	0.0016	0.0159
152	0.0177	0.0017	0.0161

153	0.0180	0.0017	0.0164
154	0.0182	0.0017	0.0165
155	0.0186	0.0017	0.0168
156	0.0188	0.0018	0.0170
157	0.0192	0.0018	0.0174
158	0.0194	0.0018	0.0175
159	0.0198	0.0019	0.0179
160	0.0200	0.0019	0.0181
161	0.0205	0.0019	0.0186
162	0.0207	0.0019	0.0188
163	0.0213	0.0020	0.0193
164	0.0215	0.0020	0.0195
165	0.0221	0.0021	0.0200
166	0.0224	0.0021	0.0203
167	0.0231	0.0022	0.0209
168	0.0234	0.0022	0.0212
169	0.0241	0.0023	0.0219
170	0.0245	0.0023	0.0222
171	0.0254	0.0024	0.0230
172	0.0258	0.0024	0.0234
173	0.0268	0.0025	0.0243
174	0.0273	0.0026	0.0247
175	0.0285	0.0027	0.0258
176	0.0291	0.0027	0.0263
177	0.0304	0.0029	0.0276
178	0.0312	0.0029	0.0283
179	0.0329	0.0031	0.0298
180	0.0338	0.0032	0.0306
181	0.0359	0.0034	0.0326
182	0.0372	0.0035	0.0337
183	0.0400	0.0037	0.0363
184	0.0416	0.0037	0.0379
185	0.0417	0.0037	0.0381
186	0.0441	0.0037	0.0404
187	0.0500	0.0037	0.0464
188	0.0540	0.0037	0.0503
189	0.0650	0.0037	0.0614
190	0.0734	0.0037	0.0697
191	0.1049	0.0037	0.1012
192	0.1443	0.0037	0.1406
193	0.4515	0.0037	0.4479
194	0.0855	0.0037	0.0818
195	0.0588	0.0037	0.0551
196	0.0468	0.0037	0.0431
197	0.0434	0.0037	0.0398
198	0.0385	0.0036	0.0349
199	0.0348	0.0033	0.0316
200	0.0320	0.0030	0.0290
201	0.0297	0.0028	0.0269
202	0.0279	0.0026	0.0253
203	0.0263	0.0025	0.0238
204	0.0249	0.0023	0.0226
205	0.0238	0.0022	0.0215
206	0.0227	0.0021	0.0206
207	0.0218	0.0020	0.0198
208	0.0210	0.0020	0.0190
209	0.0202	0.0019	0.0183
210	0.0196	0.0018	0.0177
211	0.0190	0.0018	0.0172
212	0.0184	0.0017	0.0167
213	0.0179	0.0017	0.0162
214	0.0174	0.0016	0.0158
215	0.0170	0.0016	0.0154
216	0.0165	0.0016	0.0150
217	0.0161	0.0015	0.0146
218	0.0158	0.0015	0.0143
219	0.0154	0.0014	0.0140
220	0.0151	0.0014	0.0137
221	0.0148	0.0014	0.0134
222	0.0145	0.0014	0.0131
223	0.0142	0.0013	0.0129

224	0.0140	0.0013	0.0127
225	0.0137	0.0013	0.0124
226	0.0135	0.0013	0.0122
227	0.0133	0.0012	0.0120
228	0.0131	0.0012	0.0118
229	0.0128	0.0012	0.0116
230	0.0127	0.0012	0.0115
231	0.0125	0.0012	0.0113
232	0.0123	0.0012	0.0111
233	0.0121	0.0011	0.0110
234	0.0119	0.0011	0.0108
235	0.0118	0.0011	0.0107
236	0.0116	0.0011	0.0105
237	0.0115	0.0011	0.0104
238	0.0113	0.0011	0.0103
239	0.0112	0.0011	0.0101
240	0.0111	0.0010	0.0100
241	0.0109	0.0010	0.0099
242	0.0108	0.0010	0.0098
243	0.0107	0.0010	0.0097
244	0.0106	0.0010	0.0096
245	0.0105	0.0010	0.0095
246	0.0103	0.0010	0.0094
247	0.0102	0.0010	0.0093
248	0.0101	0.0010	0.0092
249	0.0100	0.0009	0.0091
250	0.0099	0.0009	0.0090
251	0.0098	0.0009	0.0089
252	0.0097	0.0009	0.0088
253	0.0096	0.0009	0.0087
254	0.0096	0.0009	0.0087
255	0.0095	0.0009	0.0086
256	0.0094	0.0009	0.0085
257	0.0093	0.0009	0.0084
258	0.0092	0.0009	0.0084
259	0.0091	0.0009	0.0083
260	0.0091	0.0009	0.0082
261	0.0090	0.0008	0.0081
262	0.0089	0.0008	0.0081
263	0.0088	0.0008	0.0080
264	0.0088	0.0008	0.0079
265	0.0087	0.0008	0.0079
266	0.0086	0.0008	0.0078
267	0.0086	0.0008	0.0078
268	0.0085	0.0008	0.0077
269	0.0084	0.0008	0.0077
270	0.0084	0.0008	0.0076
271	0.0083	0.0008	0.0075
272	0.0083	0.0008	0.0075
273	0.0082	0.0008	0.0074
274	0.0081	0.0008	0.0074
275	0.0081	0.0008	0.0073
276	0.0080	0.0008	0.0073
277	0.0080	0.0007	0.0072
278	0.0079	0.0007	0.0072
279	0.0079	0.0007	0.0071
280	0.0078	0.0007	0.0071
281	0.0078	0.0007	0.0070
282	0.0077	0.0007	0.0070
283	0.0077	0.0007	0.0070
284	0.0076	0.0007	0.0069
285	0.0076	0.0007	0.0069
286	0.0075	0.0007	0.0068
287	0.0075	0.0007	0.0068
288	0.0074	0.0007	0.0067

Total soil rain loss = 0.39(In)
Total effective rainfall = 4.50(In)
Peak flow rate in flood hydrograph = 1.52(CFS)

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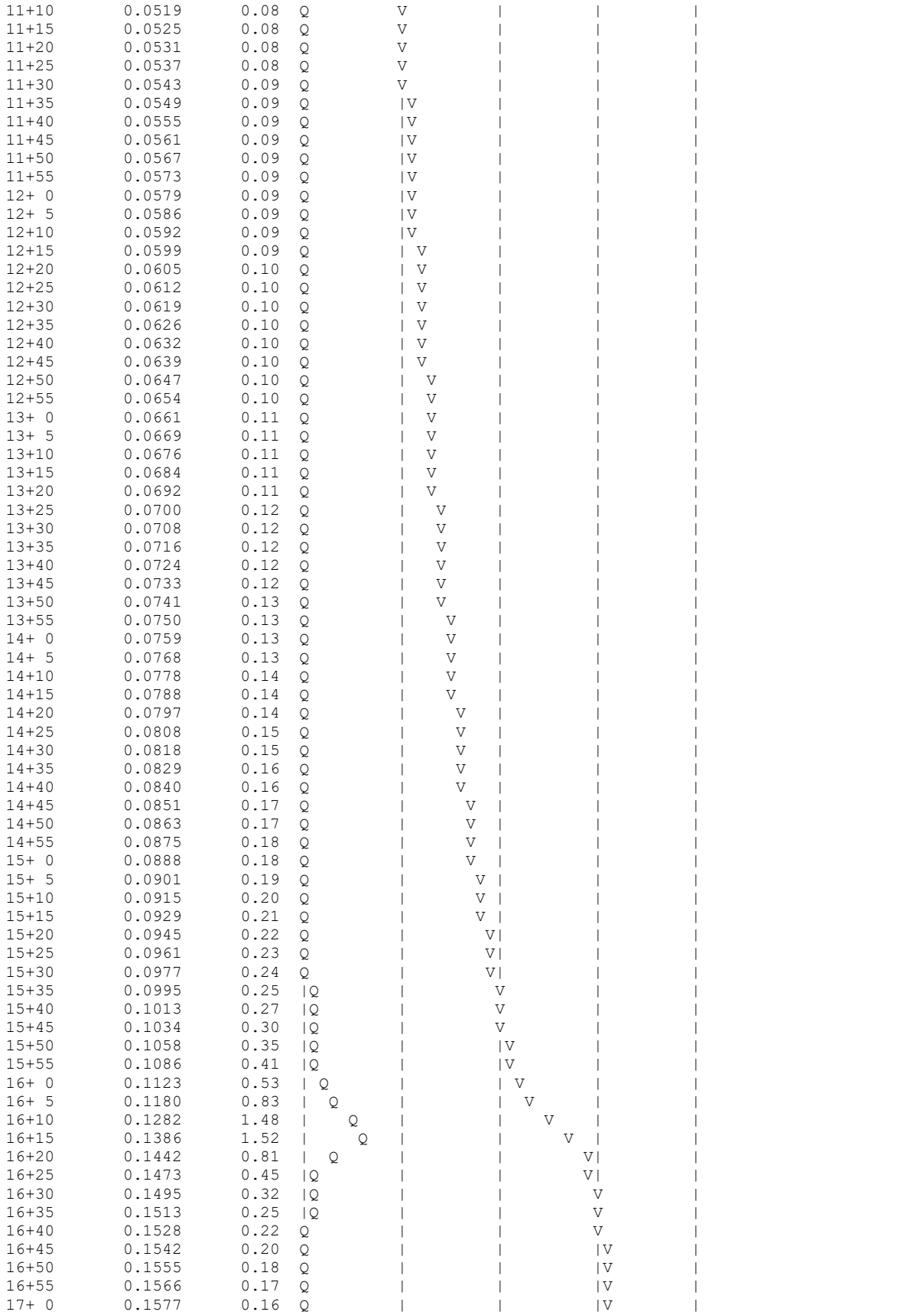
24 - H O U R S T O R M

R u n o f f H y d r o g r a p h

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	0.0000	0.00	Q				
0+10	0.0001	0.02	Q				
0+15	0.0004	0.03	Q				
0+20	0.0007	0.04	Q				
0+25	0.0010	0.04	Q				
0+30	0.0013	0.04	Q				
0+35	0.0016	0.04	Q				
0+40	0.0019	0.04	Q				
0+45	0.0022	0.04	Q				
0+50	0.0025	0.04	Q				
0+55	0.0028	0.04	Q				
1+ 0	0.0031	0.04	Q				
1+ 5	0.0034	0.04	Q				
1+10	0.0037	0.04	Q				
1+15	0.0040	0.04	Q				
1+20	0.0043	0.04	Q				
1+25	0.0046	0.04	Q				
1+30	0.0049	0.05	Q				
1+35	0.0052	0.05	QV				
1+40	0.0055	0.05	QV				
1+45	0.0059	0.05	QV				
1+50	0.0062	0.05	QV				
1+55	0.0065	0.05	QV				
2+ 0	0.0068	0.05	QV				
2+ 5	0.0071	0.05	QV				
2+10	0.0074	0.05	QV				
2+15	0.0078	0.05	QV				
2+20	0.0081	0.05	QV				
2+25	0.0084	0.05	QV				
2+30	0.0087	0.05	QV				
2+35	0.0090	0.05	QV				
2+40	0.0094	0.05	QV				
2+45	0.0097	0.05	QV				
2+50	0.0100	0.05	Q V				
2+55	0.0104	0.05	Q V				
3+ 0	0.0107	0.05	Q V				
3+ 5	0.0110	0.05	Q V				
3+10	0.0114	0.05	Q V				
3+15	0.0117	0.05	Q V				
3+20	0.0120	0.05	Q V				
3+25	0.0124	0.05	Q V				
3+30	0.0127	0.05	Q V				
3+35	0.0130	0.05	Q V				
3+40	0.0134	0.05	Q V				
3+45	0.0137	0.05	Q V				
3+50	0.0141	0.05	Q V				
3+55	0.0144	0.05	Q V				
4+ 0	0.0147	0.05	Q V				
4+ 5	0.0151	0.05	Q V				
4+10	0.0154	0.05	Q V				
4+15	0.0158	0.05	Q V				
4+20	0.0161	0.05	Q V				
4+25	0.0165	0.05	Q V				
4+30	0.0168	0.05	Q V				
4+35	0.0172	0.05	Q V				
4+40	0.0176	0.05	Q V				
4+45	0.0179	0.05	Q V				
4+50	0.0183	0.05	Q V				
4+55	0.0186	0.05	Q V				
5+ 0	0.0190	0.05	Q V				
5+ 5	0.0194	0.05	Q V				
5+10	0.0197	0.05	Q V				

5+15	0.0201	0.05	Q	V	|	|	|	|
5+20	0.0205	0.05	Q	V	|	|	|	|
5+25	0.0208	0.05	Q	V	|	|	|	|
5+30	0.0212	0.05	Q	V	|	|	|	|
5+35	0.0216	0.05	Q	V	|	|	|	|
5+40	0.0219	0.05	Q	V	|	|	|	|
5+45	0.0223	0.05	Q	V	|	|	|	|
5+50	0.0227	0.05	Q	V	|	|	|	|
5+55	0.0231	0.06	Q	V	|	|	|	|
6+ 0	0.0235	0.06	Q	V	|	|	|	|
6+ 5	0.0238	0.06	Q	V	|	|	|	|
6+10	0.0242	0.06	Q	V	|	|	|	|
6+15	0.0246	0.06	Q	V	|	|	|	|
6+20	0.0250	0.06	Q	V	|	|	|	|
6+25	0.0254	0.06	Q	V	|	|	|	|
6+30	0.0258	0.06	Q	V	|	|	|	|
6+35	0.0262	0.06	Q	V	|	|	|	|
6+40	0.0266	0.06	Q	V	|	|	|	|
6+45	0.0270	0.06	Q	V	|	|	|	|
6+50	0.0274	0.06	Q	V	|	|	|	|
6+55	0.0278	0.06	Q	V	|	|	|	|
7+ 0	0.0282	0.06	Q	V	|	|	|	|
7+ 5	0.0286	0.06	Q	V	|	|	|	|
7+10	0.0290	0.06	Q	V	|	|	|	|
7+15	0.0294	0.06	Q	V	|	|	|	|
7+20	0.0298	0.06	Q	V	|	|	|	|
7+25	0.0302	0.06	Q	V	|	|	|	|
7+30	0.0307	0.06	Q	V	|	|	|	|
7+35	0.0311	0.06	Q	V	|	|	|	|
7+40	0.0315	0.06	Q	V	|	|	|	|
7+45	0.0319	0.06	Q	V	|	|	|	|
7+50	0.0324	0.06	Q	V	|	|	|	|
7+55	0.0328	0.06	Q	V	|	|	|	|
8+ 0	0.0332	0.06	Q	V	|	|	|	|
8+ 5	0.0336	0.06	Q	V	|	|	|	|
8+10	0.0341	0.06	Q	V	|	|	|	|
8+15	0.0345	0.06	Q	V	|	|	|	|
8+20	0.0350	0.06	Q	V	|	|	|	|
8+25	0.0354	0.06	Q	V	|	|	|	|
8+30	0.0359	0.06	Q	V	|	|	|	|
8+35	0.0363	0.07	Q	V	|	|	|	|
8+40	0.0368	0.07	Q	V	|	|	|	|
8+45	0.0372	0.07	Q	V	|	|	|	|
8+50	0.0377	0.07	Q	V	|	|	|	|
8+55	0.0381	0.07	Q	V	|	|	|	|
9+ 0	0.0386	0.07	Q	V	|	|	|	|
9+ 5	0.0391	0.07	Q	V	|	|	|	|
9+10	0.0395	0.07	Q	V	|	|	|	|
9+15	0.0400	0.07	Q	V	|	|	|	|
9+20	0.0405	0.07	Q	V	|	|	|	|
9+25	0.0410	0.07	Q	V	|	|	|	|
9+30	0.0414	0.07	Q	V	|	|	|	|
9+35	0.0419	0.07	Q	V	|	|	|	|
9+40	0.0424	0.07	Q	V	|	|	|	|
9+45	0.0429	0.07	Q	V	|	|	|	|
9+50	0.0434	0.07	Q	V	|	|	|	|
9+55	0.0439	0.07	Q	V	|	|	|	|
10+ 0	0.0444	0.07	Q	V	|	|	|	|
10+ 5	0.0449	0.07	Q	V	|	|	|	|
10+10	0.0454	0.07	Q	V	|	|	|	|
10+15	0.0460	0.08	Q	V	|	|	|	|
10+20	0.0465	0.08	Q	V	|	|	|	|
10+25	0.0470	0.08	Q	V	|	|	|	|
10+30	0.0475	0.08	Q	V	|	|	|	|
10+35	0.0481	0.08	Q	V	|	|	|	|
10+40	0.0486	0.08	Q	V	|	|	|	|
10+45	0.0492	0.08	Q	V	|	|	|	|
10+50	0.0497	0.08	Q	V	|	|	|	|
10+55	0.0503	0.08	Q	V	|	|	|	|
11+ 0	0.0508	0.08	Q	V	|	|	|	|
11+ 5	0.0514	0.08	Q	V	|	|	|	|


11+10 0.0519 0.08
11+15 0.0525 0.08
11+20 0.0531 0.08
11+25 0.0537 0.08
11+30 0.0543 0.09
11+35 0.0549 0.09
11+40 0.0555 0.09
11+45 0.0561 0.09
11+50 0.0567 0.09
11+55 0.0573 0.09
12+ 0 0.0579 0.09
12+ 5 0.0586 0.09
12+10 0.0592 0.09
12+15 0.0599 0.09
12+20 0.0605 0.10
12+25 0.0612 0.10
12+30 0.0619 0.10
12+35 0.0626 0.10
12+40 0.0632 0.10
12+45 0.0639 0.10
12+50 0.0647 0.10
12+55 0.0654 0.10
13+ 0 0.0661 0.11
13+ 5 0.0669 0.11
13+10 0.0676 0.11
13+15 0.0684 0.11
13+20 0.0692 0.11
13+25 0.0700 0.12
13+30 0.0708 0.12
13+35 0.0716 0.12
13+40 0.0724 0.12
13+45 0.0733 0.12
13+50 0.0741 0.13
13+55 0.0750 0.13
14+ 0 0.0759 0.13
14+ 5 0.0768 0.13
14+10 0.0778 0.14
14+15 0.0788 0.14
14+20 0.0797 0.14
14+25 0.0808 0.15
14+30 0.0818 0.15
14+35 0.0829 0.16
14+40 0.0840 0.16
14+45 0.0851 0.17
14+50 0.0863 0.17
14+55 0.0875 0.18
15+ 0 0.0888 0.18
15+ 5 0.0901 0.19
15+10 0.0915 0.20
15+15 0.0929 0.21
15+20 0.0945 0.22
15+25 0.0961 0.23
15+30 0.0977 0.24
15+35 0.0995 0.25
15+40 0.1013 0.27
15+45 0.1034 0.30
15+50 0.1058 0.35
15+55 0.1086 0.41
16+ 0 0.1123 0.53
16+ 5 0.1180 0.83
16+10 0.1282 1.48
16+15 0.1386 1.52
16+20 0.1442 0.81
16+25 0.1473 0.45
16+30 0.1495 0.32
16+35 0.1513 0.25
16+40 0.1528 0.22
16+45 0.1542 0.20
16+50 0.1555 0.18
16+55 0.1566 0.17
17+ 0 0.1577 0.16

17+ 5	0.1588	0.15	Q	|	|	|V	|
17+10	0.1598	0.14	Q	|	|	| V	|
17+15	0.1607	0.14	Q	|	|	| V	|
17+20	0.1616	0.13	Q	|	|	| V	|
17+25	0.1625	0.13	Q	|	|	| V	|
17+30	0.1633	0.12	Q	|	|	| V	|
17+35	0.1641	0.12	Q	|	|	| V	|
17+40	0.1649	0.11	Q	|	|	| V	|
17+45	0.1657	0.11	Q	|	|	| V	|
17+50	0.1664	0.11	Q	|	|	| V	|
17+55	0.1671	0.10	Q	|	|	| V	|
18+ 0	0.1678	0.10	Q	|	|	| V	|
18+ 5	0.1685	0.10	Q	|	|	| V	|
18+10	0.1691	0.10	Q	|	|	| V	|
18+15	0.1698	0.09	Q	|	|	| V	|
18+20	0.1704	0.09	Q	|	|	| V	|
18+25	0.1710	0.09	Q	|	|	| V	|
18+30	0.1716	0.09	Q	|	|	| V	|
18+35	0.1722	0.09	Q	|	|	| V	|
18+40	0.1728	0.08	Q	|	|	| V	|
18+45	0.1734	0.08	Q	|	|	| V	|
18+50	0.1739	0.08	Q	|	|	| V	|
18+55	0.1745	0.08	Q	|	|	| V	|
19+ 0	0.1750	0.08	Q	|	|	| V	|
19+ 5	0.1755	0.08	Q	|	|	| V	|
19+10	0.1761	0.08	Q	|	|	| V	|
19+15	0.1766	0.07	Q	|	|	| V	|
19+20	0.1771	0.07	Q	|	|	| V	|
19+25	0.1776	0.07	Q	|	|	| V	|
19+30	0.1781	0.07	Q	|	|	| V	|
19+35	0.1785	0.07	Q	|	|	| V	|
19+40	0.1790	0.07	Q	|	|	| V	|
19+45	0.1795	0.07	Q	|	|	| V	|
19+50	0.1800	0.07	Q	|	|	| V	|
19+55	0.1804	0.07	Q	|	|	| V	|
20+ 0	0.1809	0.07	Q	|	|	| V	|
20+ 5	0.1813	0.06	Q	|	|	| V	|
20+10	0.1818	0.06	Q	|	|	| V	|
20+15	0.1822	0.06	Q	|	|	| V	|
20+20	0.1826	0.06	Q	|	|	| V	|
20+25	0.1831	0.06	Q	|	|	| V	|
20+30	0.1835	0.06	Q	|	|	| V	|
20+35	0.1839	0.06	Q	|	|	| V	|
20+40	0.1843	0.06	Q	|	|	| V	|
20+45	0.1847	0.06	Q	|	|	| V	|
20+50	0.1851	0.06	Q	|	|	| V	|
20+55	0.1855	0.06	Q	|	|	| V	|
21+ 0	0.1859	0.06	Q	|	|	| V	|
21+ 5	0.1863	0.06	Q	|	|	| V	|
21+10	0.1867	0.06	Q	|	|	| V	|
21+15	0.1871	0.06	Q	|	|	| V	|
21+20	0.1875	0.06	Q	|	|	| V	|
21+25	0.1878	0.05	Q	|	|	| V	|
21+30	0.1882	0.05	Q	|	|	| V	|
21+35	0.1886	0.05	Q	|	|	| V	|
21+40	0.1890	0.05	Q	|	|	| V	|
21+45	0.1893	0.05	Q	|	|	| V	|
21+50	0.1897	0.05	Q	|	|	| V	|
21+55	0.1900	0.05	Q	|	|	| V	|
22+ 0	0.1904	0.05	Q	|	|	| V	|
22+ 5	0.1907	0.05	Q	|	|	| V	|
22+10	0.1911	0.05	Q	|	|	| V	|
22+15	0.1914	0.05	Q	|	|	| V	|
22+20	0.1918	0.05	Q	|	|	| V	|
22+25	0.1921	0.05	Q	|	|	| V	|
22+30	0.1925	0.05	Q	|	|	| V	|
22+35	0.1928	0.05	Q	|	|	| V	|
22+40	0.1931	0.05	Q	|	|	| V	|
22+45	0.1935	0.05	Q	|	|	| V	|
22+50	0.1938	0.05	Q	|	|	| V	|
22+55	0.1941	0.05	Q	|	|	| V	|

23+ 0	0.1945	0.05	Q	|	|	|	V|
23+ 5	0.1948	0.05	Q	|	|	|	V|
23+10	0.1951	0.05	Q	|	|	|	V|
23+15	0.1954	0.05	Q	|	|	|	V|
23+20	0.1957	0.05	Q	|	|	|	V|
23+25	0.1961	0.05	Q	|	|	|	V|
23+30	0.1964	0.05	Q	|	|	|	V|
23+35	0.1967	0.05	Q	|	|	|	V|
23+40	0.1970	0.04	Q	|	|	|	V|
23+45	0.1973	0.04	Q	|	|	|	V|
23+50	0.1976	0.04	Q	|	|	|	V|
23+55	0.1979	0.04	Q	|	|	|	V|
24+ 0	0.1982	0.04	Q	|	|	|	V|
24+ 5	0.1985	0.04	Q	|	|	|	V|
24+10	0.1987	0.03	Q	|	|	|	V|
24+15	0.1987	0.01	Q	|	|	|	V|
24+20	0.1987	0.00	Q	|	|	|	V|
24+25	0.1987	0.00	Q	|	|	|	V|

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

Study date 09/29/21

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San Bernardino County Synthetic Unit Hydrology Method
Manual date - August 1986

Program License Serial Number 6350

POST DEVELOPMENT - DMA 3 (POC 3)
100 YEAR - UNIT HYDROGRAPH
BY WARE MALCOMB
FILE:DMA3Q100.HCU

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
2.10	1	0.77
Rainfall data for year 2		
2.10	6	1.16
Rainfall data for year 2		
2.10	24	2.07
Rainfall data for year 100		
2.10	1	1.22
Rainfall data for year 100		
2.10	6	2.67
Rainfall data for year 100		
2.10	24	4.89

++

******** Area-averaged max loss rate, Fm ********

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
56.0	75.8	2.10	1.000	0.440	0.100	0.044

Area-averaged adjusted loss rate Fm (In/Hr) = 0.044

********* Area-Averaged low loss rate fraction, Yb **********

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.21	0.100	56.0	75.8	3.19	0.497
1.89	0.900	98.0	98.0	0.20	0.952

Area-averaged catchment yield fraction, Y = 0.906
Area-averaged low loss fraction, Yb = 0.094
User entry of time of concentration = 0.075 (hours)
++
Watershed area = 2.10(Ac.)
Catchment Lag time = 0.060 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 138.8889
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.044(In/Hr)
Average low loss rate fraction (Yb) = 0.094 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.452(In)
Computed peak 30-minute rainfall = 0.925(In)
Specified peak 1-hour rainfall = 1.220(In)
Computed peak 3-hour rainfall = 1.972(In)
Specified peak 6-hour rainfall = 2.670(In)
Specified peak 24-hour rainfall = 4.890(In)

Rainfall depth area reduction factors:
Using a total area of 2.10(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.451(In)
30-minute factor = 1.000 Adjusted rainfall = 0.924(In)
1-hour factor = 1.000 Adjusted rainfall = 1.220(In)
3-hour factor = 1.000 Adjusted rainfall = 1.972(In)
6-hour factor = 1.000 Adjusted rainfall = 2.670(In)
24-hour factor = 1.000 Adjusted rainfall = 4.890(In)

U n i t H y d r o g r a p h
++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 25.40 (CFS))	
1	30.752	7.810
2	93.402	15.911
3	100.000	1.676

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.4515	0.4515
2	0.5957	0.1443
3	0.7006	0.1049
4	0.7861	0.0854
5	0.8595	0.0734
6	0.9245	0.0650
7	0.9833	0.0588
8	1.0372	0.0539
9	1.0873	0.0500
10	1.1341	0.0468
11	1.1782	0.0441
12	1.2199	0.0417
13	1.2633	0.0434
14	1.3049	0.0416
15	1.3449	0.0400
16	1.3834	0.0385
17	1.4205	0.0372
18	1.4565	0.0359
19	1.4913	0.0348
20	1.5251	0.0338
21	1.5580	0.0329
22	1.5900	0.0320

23	1.6212	0.0312
24	1.6517	0.0304
25	1.6814	0.0297
26	1.7105	0.0291
27	1.7390	0.0285
28	1.7668	0.0279
29	1.7942	0.0273
30	1.8210	0.0268
31	1.8472	0.0263
32	1.8731	0.0258
33	1.8984	0.0254
34	1.9234	0.0249
35	1.9479	0.0245
36	1.9720	0.0241
37	1.9958	0.0238
38	2.0192	0.0234
39	2.0423	0.0231
40	2.0650	0.0227
41	2.0874	0.0224
42	2.1095	0.0221
43	2.1313	0.0218
44	2.1529	0.0215
45	2.1741	0.0213
46	2.1951	0.0210
47	2.2158	0.0207
48	2.2363	0.0205
49	2.2566	0.0202
50	2.2766	0.0200
51	2.2964	0.0198
52	2.3159	0.0196
53	2.3353	0.0194
54	2.3545	0.0192
55	2.3734	0.0190
56	2.3922	0.0188
57	2.4108	0.0186
58	2.4292	0.0184
59	2.4474	0.0182
60	2.4654	0.0180
61	2.4833	0.0179
62	2.5010	0.0177
63	2.5186	0.0176
64	2.5360	0.0174
65	2.5532	0.0172
66	2.5703	0.0171
67	2.5873	0.0170
68	2.6041	0.0168
69	2.6208	0.0167
70	2.6373	0.0165
71	2.6537	0.0164
72	2.6700	0.0163
73	2.6861	0.0161
74	2.7021	0.0160
75	2.7180	0.0159
76	2.7337	0.0158
77	2.7494	0.0156
78	2.7649	0.0155
79	2.7803	0.0154
80	2.7956	0.0153
81	2.8108	0.0152
82	2.8259	0.0151
83	2.8409	0.0150
84	2.8558	0.0149
85	2.8706	0.0148
86	2.8853	0.0147
87	2.8999	0.0146
88	2.9144	0.0145
89	2.9288	0.0144
90	2.9431	0.0143
91	2.9574	0.0142
92	2.9715	0.0141
93	2.9856	0.0141

94	2.9995	0.0140
95	3.0134	0.0139
96	3.0272	0.0138
97	3.0409	0.0137
98	3.0546	0.0136
99	3.0682	0.0136
100	3.0816	0.0135
101	3.0951	0.0134
102	3.1084	0.0133
103	3.1217	0.0133
104	3.1349	0.0132
105	3.1480	0.0131
106	3.1610	0.0131
107	3.1740	0.0130
108	3.1869	0.0129
109	3.1998	0.0128
110	3.2126	0.0128
111	3.2253	0.0127
112	3.2379	0.0127
113	3.2505	0.0126
114	3.2630	0.0125
115	3.2755	0.0125
116	3.2879	0.0124
117	3.3002	0.0123
118	3.3125	0.0123
119	3.3248	0.0122
120	3.3369	0.0122
121	3.3490	0.0121
122	3.3611	0.0121
123	3.3731	0.0120
124	3.3850	0.0119
125	3.3969	0.0119
126	3.4087	0.0118
127	3.4205	0.0118
128	3.4323	0.0117
129	3.4439	0.0117
130	3.4556	0.0116
131	3.4671	0.0116
132	3.4787	0.0115
133	3.4901	0.0115
134	3.5016	0.0114
135	3.5130	0.0114
136	3.5243	0.0113
137	3.5356	0.0113
138	3.5468	0.0112
139	3.5580	0.0112
140	3.5692	0.0112
141	3.5803	0.0111
142	3.5913	0.0111
143	3.6024	0.0110
144	3.6133	0.0110
145	3.6243	0.0109
146	3.6352	0.0109
147	3.6460	0.0108
148	3.6568	0.0108
149	3.6676	0.0108
150	3.6783	0.0107
151	3.6890	0.0107
152	3.6996	0.0106
153	3.7102	0.0106
154	3.7208	0.0106
155	3.7313	0.0105
156	3.7418	0.0105
157	3.7523	0.0105
158	3.7627	0.0104
159	3.7731	0.0104
160	3.7834	0.0103
161	3.7937	0.0103
162	3.8040	0.0103
163	3.8142	0.0102
164	3.8244	0.0102

165	3.8346	0.0102
166	3.8447	0.0101
167	3.8548	0.0101
168	3.8648	0.0101
169	3.8749	0.0100
170	3.8848	0.0100
171	3.8948	0.0100
172	3.9047	0.0099
173	3.9146	0.0099
174	3.9245	0.0099
175	3.9343	0.0098
176	3.9441	0.0098
177	3.9539	0.0098
178	3.9636	0.0097
179	3.9733	0.0097
180	3.9830	0.0097
181	3.9926	0.0096
182	4.0022	0.0096
183	4.0118	0.0096
184	4.0214	0.0096
185	4.0309	0.0095
186	4.0404	0.0095
187	4.0499	0.0095
188	4.0593	0.0094
189	4.0687	0.0094
190	4.0781	0.0094
191	4.0875	0.0094
192	4.0968	0.0093
193	4.1061	0.0093
194	4.1154	0.0093
195	4.1246	0.0092
196	4.1338	0.0092
197	4.1430	0.0092
198	4.1522	0.0092
199	4.1613	0.0091
200	4.1704	0.0091
201	4.1795	0.0091
202	4.1886	0.0091
203	4.1976	0.0090
204	4.2067	0.0090
205	4.2156	0.0090
206	4.2246	0.0090
207	4.2335	0.0089
208	4.2425	0.0089
209	4.2513	0.0089
210	4.2602	0.0089
211	4.2691	0.0088
212	4.2779	0.0088
213	4.2867	0.0088
214	4.2954	0.0088
215	4.3042	0.0088
216	4.3129	0.0087
217	4.3216	0.0087
218	4.3303	0.0087
219	4.3390	0.0087
220	4.3476	0.0086
221	4.3562	0.0086
222	4.3648	0.0086
223	4.3734	0.0086
224	4.3819	0.0085
225	4.3905	0.0085
226	4.3990	0.0085
227	4.4075	0.0085
228	4.4159	0.0085
229	4.4244	0.0084
230	4.4328	0.0084
231	4.4412	0.0084
232	4.4496	0.0084
233	4.4579	0.0084
234	4.4663	0.0083
235	4.4746	0.0083

236	4.4829	0.0083
237	4.4912	0.0083
238	4.4994	0.0083
239	4.5077	0.0082
240	4.5159	0.0082
241	4.5241	0.0082
242	4.5323	0.0082
243	4.5405	0.0082
244	4.5486	0.0081
245	4.5567	0.0081
246	4.5648	0.0081
247	4.5729	0.0081
248	4.5810	0.0081
249	4.5891	0.0081
250	4.5971	0.0080
251	4.6051	0.0080
252	4.6131	0.0080
253	4.6211	0.0080
254	4.6291	0.0080
255	4.6370	0.0079
256	4.6449	0.0079
257	4.6528	0.0079
258	4.6607	0.0079
259	4.6686	0.0079
260	4.6765	0.0079
261	4.6843	0.0078
262	4.6921	0.0078
263	4.7000	0.0078
264	4.7077	0.0078
265	4.7155	0.0078
266	4.7233	0.0078
267	4.7310	0.0077
268	4.7387	0.0077
269	4.7465	0.0077
270	4.7542	0.0077
271	4.7618	0.0077
272	4.7695	0.0077
273	4.7771	0.0076
274	4.7848	0.0076
275	4.7924	0.0076
276	4.8000	0.0076
277	4.8076	0.0076
278	4.8151	0.0076
279	4.8227	0.0076
280	4.8302	0.0075
281	4.8377	0.0075
282	4.8453	0.0075
283	4.8527	0.0075
284	4.8602	0.0075
285	4.8677	0.0075
286	4.8751	0.0074
287	4.8826	0.0074
288	4.8900	0.0074

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0074	0.0007	0.0067
2	0.0074	0.0007	0.0067
3	0.0075	0.0007	0.0068
4	0.0075	0.0007	0.0068
5	0.0075	0.0007	0.0068
6	0.0075	0.0007	0.0068
7	0.0076	0.0007	0.0068
8	0.0076	0.0007	0.0069
9	0.0076	0.0007	0.0069
10	0.0076	0.0007	0.0069
11	0.0076	0.0007	0.0069
12	0.0077	0.0007	0.0069
13	0.0077	0.0007	0.0070

14	0.0077	0.0007	0.0070
15	0.0077	0.0007	0.0070
16	0.0078	0.0007	0.0070
17	0.0078	0.0007	0.0071
18	0.0078	0.0007	0.0071
19	0.0078	0.0007	0.0071
20	0.0079	0.0007	0.0071
21	0.0079	0.0007	0.0072
22	0.0079	0.0007	0.0072
23	0.0079	0.0007	0.0072
24	0.0080	0.0007	0.0072
25	0.0080	0.0008	0.0072
26	0.0080	0.0008	0.0073
27	0.0081	0.0008	0.0073
28	0.0081	0.0008	0.0073
29	0.0081	0.0008	0.0073
30	0.0081	0.0008	0.0074
31	0.0082	0.0008	0.0074
32	0.0082	0.0008	0.0074
33	0.0082	0.0008	0.0075
34	0.0082	0.0008	0.0075
35	0.0083	0.0008	0.0075
36	0.0083	0.0008	0.0075
37	0.0083	0.0008	0.0076
38	0.0084	0.0008	0.0076
39	0.0084	0.0008	0.0076
40	0.0084	0.0008	0.0076
41	0.0085	0.0008	0.0077
42	0.0085	0.0008	0.0077
43	0.0085	0.0008	0.0077
44	0.0085	0.0008	0.0077
45	0.0086	0.0008	0.0078
46	0.0086	0.0008	0.0078
47	0.0087	0.0008	0.0078
48	0.0087	0.0008	0.0079
49	0.0087	0.0008	0.0079
50	0.0088	0.0008	0.0079
51	0.0088	0.0008	0.0080
52	0.0088	0.0008	0.0080
53	0.0089	0.0008	0.0080
54	0.0089	0.0008	0.0081
55	0.0089	0.0008	0.0081
56	0.0090	0.0008	0.0081
57	0.0090	0.0008	0.0082
58	0.0090	0.0008	0.0082
59	0.0091	0.0009	0.0082
60	0.0091	0.0009	0.0083
61	0.0092	0.0009	0.0083
62	0.0092	0.0009	0.0083
63	0.0092	0.0009	0.0084
64	0.0093	0.0009	0.0084
65	0.0093	0.0009	0.0085
66	0.0094	0.0009	0.0085
67	0.0094	0.0009	0.0085
68	0.0094	0.0009	0.0086
69	0.0095	0.0009	0.0086
70	0.0095	0.0009	0.0086
71	0.0096	0.0009	0.0087
72	0.0096	0.0009	0.0087
73	0.0097	0.0009	0.0088
74	0.0097	0.0009	0.0088
75	0.0098	0.0009	0.0088
76	0.0098	0.0009	0.0089
77	0.0099	0.0009	0.0089
78	0.0099	0.0009	0.0090
79	0.0100	0.0009	0.0090
80	0.0100	0.0009	0.0091
81	0.0101	0.0009	0.0091
82	0.0101	0.0009	0.0091
83	0.0102	0.0010	0.0092
84	0.0102	0.0010	0.0092

85	0.0103	0.0010	0.0093
86	0.0103	0.0010	0.0093
87	0.0104	0.0010	0.0094
88	0.0104	0.0010	0.0094
89	0.0105	0.0010	0.0095
90	0.0105	0.0010	0.0095
91	0.0106	0.0010	0.0096
92	0.0106	0.0010	0.0096
93	0.0107	0.0010	0.0097
94	0.0108	0.0010	0.0098
95	0.0108	0.0010	0.0098
96	0.0109	0.0010	0.0099
97	0.0110	0.0010	0.0099
98	0.0110	0.0010	0.0100
99	0.0111	0.0010	0.0101
100	0.0112	0.0010	0.0101
101	0.0112	0.0011	0.0102
102	0.0113	0.0011	0.0102
103	0.0114	0.0011	0.0103
104	0.0114	0.0011	0.0104
105	0.0115	0.0011	0.0104
106	0.0116	0.0011	0.0105
107	0.0117	0.0011	0.0106
108	0.0117	0.0011	0.0106
109	0.0118	0.0011	0.0107
110	0.0119	0.0011	0.0108
111	0.0120	0.0011	0.0109
112	0.0121	0.0011	0.0109
113	0.0122	0.0011	0.0110
114	0.0122	0.0011	0.0111
115	0.0123	0.0012	0.0112
116	0.0124	0.0012	0.0112
117	0.0125	0.0012	0.0113
118	0.0126	0.0012	0.0114
119	0.0127	0.0012	0.0115
120	0.0128	0.0012	0.0116
121	0.0129	0.0012	0.0117
122	0.0130	0.0012	0.0118
123	0.0131	0.0012	0.0119
124	0.0132	0.0012	0.0120
125	0.0133	0.0013	0.0121
126	0.0134	0.0013	0.0122
127	0.0136	0.0013	0.0123
128	0.0136	0.0013	0.0124
129	0.0138	0.0013	0.0125
130	0.0139	0.0013	0.0126
131	0.0141	0.0013	0.0127
132	0.0141	0.0013	0.0128
133	0.0143	0.0013	0.0130
134	0.0144	0.0014	0.0131
135	0.0146	0.0014	0.0132
136	0.0147	0.0014	0.0133
137	0.0149	0.0014	0.0135
138	0.0150	0.0014	0.0136
139	0.0152	0.0014	0.0138
140	0.0153	0.0014	0.0139
141	0.0155	0.0015	0.0141
142	0.0156	0.0015	0.0142
143	0.0159	0.0015	0.0144
144	0.0160	0.0015	0.0145
145	0.0163	0.0015	0.0147
146	0.0164	0.0015	0.0149
147	0.0167	0.0016	0.0151
148	0.0168	0.0016	0.0152
149	0.0171	0.0016	0.0155
150	0.0172	0.0016	0.0156
151	0.0176	0.0016	0.0159
152	0.0177	0.0017	0.0161
153	0.0180	0.0017	0.0164
154	0.0182	0.0017	0.0165
155	0.0186	0.0017	0.0168

156	0.0188	0.0018	0.0170
157	0.0192	0.0018	0.0174
158	0.0194	0.0018	0.0175
159	0.0198	0.0019	0.0179
160	0.0200	0.0019	0.0181
161	0.0205	0.0019	0.0186
162	0.0207	0.0019	0.0188
163	0.0213	0.0020	0.0193
164	0.0215	0.0020	0.0195
165	0.0221	0.0021	0.0200
166	0.0224	0.0021	0.0203
167	0.0231	0.0022	0.0209
168	0.0234	0.0022	0.0212
169	0.0241	0.0023	0.0219
170	0.0245	0.0023	0.0222
171	0.0254	0.0024	0.0230
172	0.0258	0.0024	0.0234
173	0.0268	0.0025	0.0243
174	0.0273	0.0026	0.0248
175	0.0285	0.0027	0.0258
176	0.0291	0.0027	0.0264
177	0.0304	0.0029	0.0276
178	0.0312	0.0029	0.0283
179	0.0329	0.0031	0.0298
180	0.0338	0.0032	0.0306
181	0.0359	0.0034	0.0326
182	0.0372	0.0035	0.0337
183	0.0400	0.0037	0.0363
184	0.0416	0.0037	0.0379
185	0.0417	0.0037	0.0381
186	0.0441	0.0037	0.0404
187	0.0500	0.0037	0.0464
188	0.0539	0.0037	0.0503
189	0.0650	0.0037	0.0614
190	0.0734	0.0037	0.0697
191	0.1049	0.0037	0.1012
192	0.1443	0.0037	0.1406
193	0.4515	0.0037	0.4478
194	0.0854	0.0037	0.0818
195	0.0588	0.0037	0.0551
196	0.0468	0.0037	0.0431
197	0.0434	0.0037	0.0398
198	0.0385	0.0036	0.0349
199	0.0348	0.0033	0.0316
200	0.0320	0.0030	0.0290
201	0.0297	0.0028	0.0270
202	0.0279	0.0026	0.0253
203	0.0263	0.0025	0.0238
204	0.0249	0.0023	0.0226
205	0.0238	0.0022	0.0215
206	0.0227	0.0021	0.0206
207	0.0218	0.0020	0.0198
208	0.0210	0.0020	0.0190
209	0.0202	0.0019	0.0183
210	0.0196	0.0018	0.0177
211	0.0190	0.0018	0.0172
212	0.0184	0.0017	0.0167
213	0.0179	0.0017	0.0162
214	0.0174	0.0016	0.0158
215	0.0170	0.0016	0.0154
216	0.0165	0.0016	0.0150
217	0.0161	0.0015	0.0146
218	0.0158	0.0015	0.0143
219	0.0154	0.0014	0.0140
220	0.0151	0.0014	0.0137
221	0.0148	0.0014	0.0134
222	0.0145	0.0014	0.0131
223	0.0142	0.0013	0.0129
224	0.0140	0.0013	0.0127
225	0.0137	0.0013	0.0124
226	0.0135	0.0013	0.0122

227	0.0133	0.0012	0.0120
228	0.0131	0.0012	0.0118
229	0.0128	0.0012	0.0116
230	0.0127	0.0012	0.0115
231	0.0125	0.0012	0.0113
232	0.0123	0.0012	0.0111
233	0.0121	0.0011	0.0110
234	0.0119	0.0011	0.0108
235	0.0118	0.0011	0.0107
236	0.0116	0.0011	0.0105
237	0.0115	0.0011	0.0104
238	0.0113	0.0011	0.0103
239	0.0112	0.0011	0.0101
240	0.0111	0.0010	0.0100
241	0.0109	0.0010	0.0099
242	0.0108	0.0010	0.0098
243	0.0107	0.0010	0.0097
244	0.0106	0.0010	0.0096
245	0.0105	0.0010	0.0095
246	0.0103	0.0010	0.0094
247	0.0102	0.0010	0.0093
248	0.0101	0.0010	0.0092
249	0.0100	0.0009	0.0091
250	0.0099	0.0009	0.0090
251	0.0098	0.0009	0.0089
252	0.0097	0.0009	0.0088
253	0.0096	0.0009	0.0087
254	0.0096	0.0009	0.0087
255	0.0095	0.0009	0.0086
256	0.0094	0.0009	0.0085
257	0.0093	0.0009	0.0084
258	0.0092	0.0009	0.0084
259	0.0091	0.0009	0.0083
260	0.0091	0.0009	0.0082
261	0.0090	0.0008	0.0081
262	0.0089	0.0008	0.0081
263	0.0088	0.0008	0.0080
264	0.0088	0.0008	0.0079
265	0.0087	0.0008	0.0079
266	0.0086	0.0008	0.0078
267	0.0086	0.0008	0.0078
268	0.0085	0.0008	0.0077
269	0.0084	0.0008	0.0077
270	0.0084	0.0008	0.0076
271	0.0083	0.0008	0.0075
272	0.0083	0.0008	0.0075
273	0.0082	0.0008	0.0074
274	0.0081	0.0008	0.0074
275	0.0081	0.0008	0.0073
276	0.0080	0.0008	0.0073
277	0.0080	0.0007	0.0072
278	0.0079	0.0007	0.0072
279	0.0079	0.0007	0.0071
280	0.0078	0.0007	0.0071
281	0.0078	0.0007	0.0070
282	0.0077	0.0007	0.0070
283	0.0077	0.0007	0.0070
284	0.0076	0.0007	0.0069
285	0.0076	0.0007	0.0069
286	0.0075	0.0007	0.0068
287	0.0075	0.0007	0.0068
288	0.0074	0.0007	0.0067

Total soil rain loss = 0.39(In)
Total effective rainfall = 4.50(In)
Peak flow rate in flood hydrograph = 8.00(CFS)

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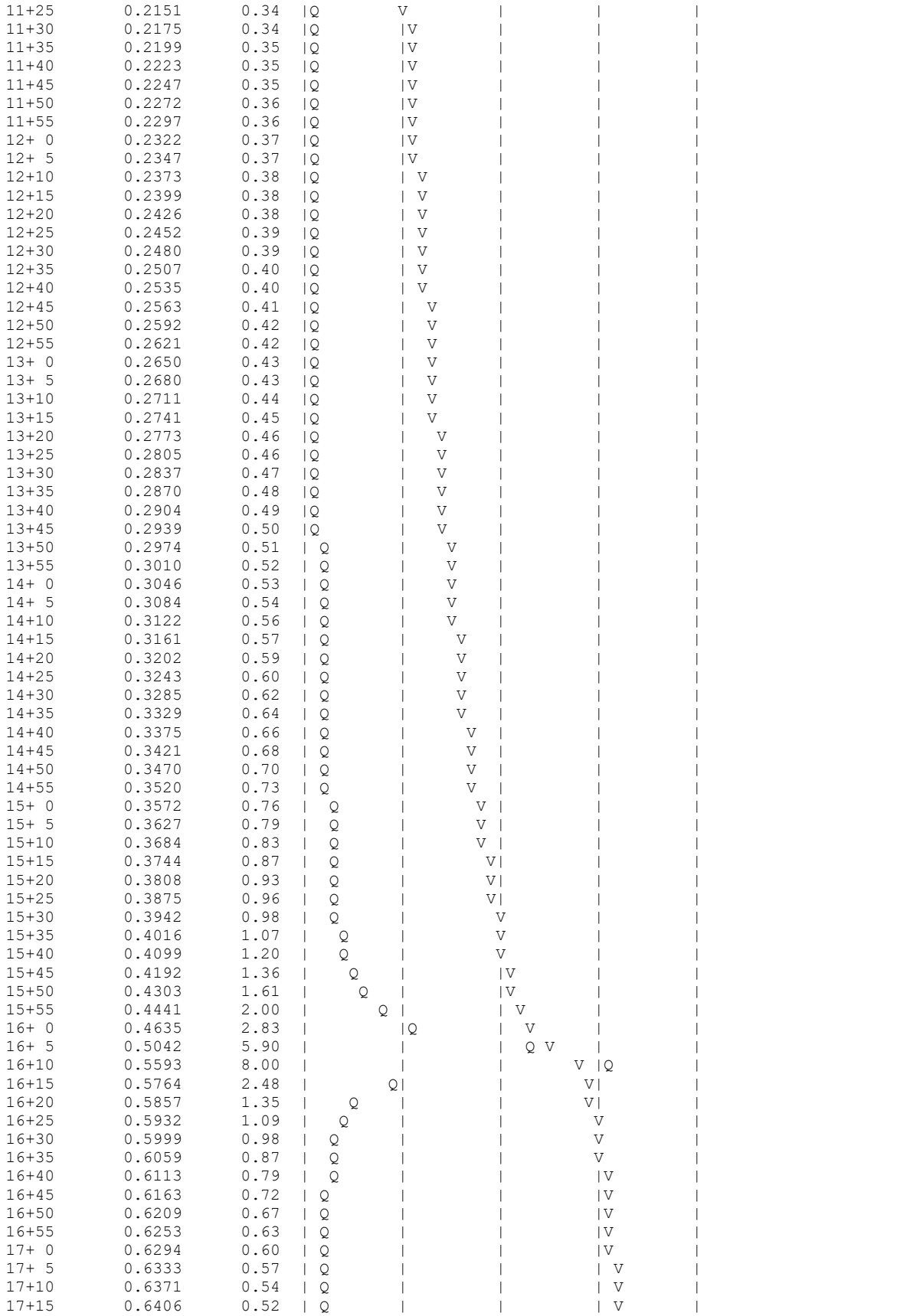
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0004	0.05	Q				
0+10	0.0015	0.16	Q				
0+15	0.0026	0.17	Q				
0+20	0.0038	0.17	Q				
0+25	0.0050	0.17	Q				
0+30	0.0062	0.17	Q				
0+35	0.0074	0.17	Q				
0+40	0.0086	0.17	Q				
0+45	0.0098	0.17	Q				
0+50	0.0110	0.17	Q				
0+55	0.0122	0.18	Q				
1+ 0	0.0134	0.18	Q				
1+ 5	0.0146	0.18	Q				
1+10	0.0159	0.18	Q				
1+15	0.0171	0.18	Q				
1+20	0.0183	0.18	Q				
1+25	0.0195	0.18	Q				
1+30	0.0208	0.18	QV				
1+35	0.0220	0.18	QV				
1+40	0.0233	0.18	QV				
1+45	0.0245	0.18	QV				
1+50	0.0258	0.18	QV				
1+55	0.0270	0.18	QV				
2+ 0	0.0283	0.18	QV				
2+ 5	0.0295	0.18	QV				
2+10	0.0308	0.18	QV				
2+15	0.0321	0.18	QV				
2+20	0.0333	0.19	QV				
2+25	0.0346	0.19	QV				
2+30	0.0359	0.19	QV				
2+35	0.0372	0.19	QV				
2+40	0.0385	0.19	QV				
2+45	0.0398	0.19	Q V				
2+50	0.0411	0.19	Q V				
2+55	0.0424	0.19	Q V				
3+ 0	0.0437	0.19	Q V				
3+ 5	0.0450	0.19	Q V				
3+10	0.0464	0.19	Q V				
3+15	0.0477	0.19	Q V				
3+20	0.0490	0.19	Q V				
3+25	0.0504	0.19	Q V				
3+30	0.0517	0.19	Q V				
3+35	0.0530	0.20	Q V				
3+40	0.0544	0.20	Q V				
3+45	0.0558	0.20	Q V				
3+50	0.0571	0.20	Q V				
3+55	0.0585	0.20	Q V				
4+ 0	0.0599	0.20	Q V				
4+ 5	0.0612	0.20	Q V				
4+10	0.0626	0.20	Q V				
4+15	0.0640	0.20	Q V				
4+20	0.0654	0.20	Q V				
4+25	0.0668	0.20	Q V				
4+30	0.0682	0.20	Q V				
4+35	0.0696	0.20	Q V				
4+40	0.0710	0.21	Q V				
4+45	0.0725	0.21	Q V				
4+50	0.0739	0.21	Q V				
4+55	0.0753	0.21	Q V				
5+ 0	0.0768	0.21	Q V				
5+ 5	0.0782	0.21	Q V				
5+10	0.0797	0.21	Q V				
5+15	0.0811	0.21	Q V				
5+20	0.0826	0.21	Q V				
5+25	0.0841	0.21	Q V				

5+30	0.0855	0.21	Q	V				
5+35	0.0870	0.22	Q	V				
5+40	0.0885	0.22	Q	V				
5+45	0.0900	0.22	Q	V				
5+50	0.0915	0.22	Q	V				
5+55	0.0930	0.22	Q	V				
6+ 0	0.0946	0.22	Q	V				
6+ 5	0.0961	0.22	Q	V				
6+10	0.0976	0.22	Q	V				
6+15	0.0992	0.22	Q	V				
6+20	0.1007	0.22	Q	V				
6+25	0.1023	0.23	Q	V				
6+30	0.1038	0.23	Q	V				
6+35	0.1054	0.23	Q	V				
6+40	0.1070	0.23	Q	V				
6+45	0.1086	0.23	Q	V				
6+50	0.1102	0.23	Q	V				
6+55	0.1118	0.23	Q	V				
7+ 0	0.1134	0.23	Q	V				
7+ 5	0.1150	0.24	Q	V				
7+10	0.1166	0.24	Q	V				
7+15	0.1183	0.24	Q	V				
7+20	0.1199	0.24	Q	V				
7+25	0.1216	0.24	Q	V				
7+30	0.1232	0.24	Q	V				
7+35	0.1249	0.24	Q	V				
7+40	0.1266	0.24	Q	V				
7+45	0.1283	0.25	Q	V				
7+50	0.1300	0.25	Q	V				
7+55	0.1317	0.25	Q	V				
8+ 0	0.1334	0.25	Q	V				
8+ 5	0.1351	0.25	|Q	V				
8+10	0.1369	0.25	|Q	V				
8+15	0.1386	0.25	|Q	V				
8+20	0.1404	0.26	|Q	V				
8+25	0.1421	0.26	|Q	V				
8+30	0.1439	0.26	|Q	V				
8+35	0.1457	0.26	|Q	V				
8+40	0.1475	0.26	|Q	V				
8+45	0.1493	0.26	|Q	V				
8+50	0.1512	0.27	|Q	V				
8+55	0.1530	0.27	|Q	V				
9+ 0	0.1549	0.27	|Q	V				
9+ 5	0.1567	0.27	|Q	V				
9+10	0.1586	0.27	|Q	V				
9+15	0.1605	0.27	|Q	V				
9+20	0.1624	0.28	|Q	V				
9+25	0.1643	0.28	|Q	V				
9+30	0.1662	0.28	|Q	V				
9+35	0.1682	0.28	|Q	V				
9+40	0.1701	0.28	|Q	V				
9+45	0.1721	0.29	|Q	V				
9+50	0.1741	0.29	|Q	V				
9+55	0.1761	0.29	|Q	V				
10+ 0	0.1781	0.29	|Q	V				
10+ 5	0.1801	0.29	|Q	V				
10+10	0.1822	0.30	|Q	V				
10+15	0.1843	0.30	|Q	V				
10+20	0.1863	0.30	|Q	V				
10+25	0.1884	0.30	|Q	V				
10+30	0.1906	0.31	|Q	V				
10+35	0.1927	0.31	|Q	V				
10+40	0.1948	0.31	|Q	V				
10+45	0.1970	0.32	|Q	V				
10+50	0.1992	0.32	|Q	V				
10+55	0.2014	0.32	|Q	V				
11+ 0	0.2036	0.32	|Q	V				
11+ 5	0.2059	0.33	|Q	V				
11+10	0.2082	0.33	|Q	V				
11+15	0.2104	0.33	|Q	V				
11+20	0.2128	0.34	|Q	V				



11+25	0.2151	0.34	
11+30	0.2175	0.34	
11+35	0.2199	0.35	
11+40	0.2223	0.35	
11+45	0.2247	0.35	
11+50	0.2272	0.36	
11+55	0.2297	0.36	
12+ 0	0.2322	0.37	
12+ 5	0.2347	0.37	
12+10	0.2373	0.38	
12+15	0.2399	0.38	
12+20	0.2426	0.38	
12+25	0.2452	0.39	
12+30	0.2480	0.39	
12+35	0.2507	0.40	
12+40	0.2535	0.40	
12+45	0.2563	0.41	
12+50	0.2592	0.42	
12+55	0.2621	0.42	
13+ 0	0.2650	0.43	
13+ 5	0.2680	0.43	
13+10	0.2711	0.44	
13+15	0.2741	0.45	
13+20	0.2773	0.46	
13+25	0.2805	0.46	
13+30	0.2837	0.47	
13+35	0.2870	0.48	
13+40	0.2904	0.49	
13+45	0.2939	0.50	
13+50	0.2974	0.51	
13+55	0.3010	0.52	
14+ 0	0.3046	0.53	
14+ 5	0.3084	0.54	
14+10	0.3122	0.56	
14+15	0.3161	0.57	
14+20	0.3202	0.59	
14+25	0.3243	0.60	
14+30	0.3285	0.62	
14+35	0.3329	0.64	
14+40	0.3375	0.66	
14+45	0.3421	0.68	
14+50	0.3470	0.70	
14+55	0.3520	0.73	
15+ 0	0.3572	0.76	
15+ 5	0.3627	0.79	
15+10	0.3684	0.83	
15+15	0.3744	0.87	
15+20	0.3808	0.93	
15+25	0.3875	0.96	
15+30	0.3942	0.98	
15+35	0.4016	1.07	
15+40	0.4099	1.20	
15+45	0.4192	1.36	
15+50	0.4303	1.61	
15+55	0.4441	2.00	
16+ 0	0.4635	2.83	
16+ 5	0.5042	5.90	
16+10	0.5593	8.00	
16+15	0.5764	2.48	
16+20	0.5857	1.35	
16+25	0.5932	1.09	
16+30	0.5999	0.98	
16+35	0.6059	0.87	
16+40	0.6113	0.79	
16+45	0.6163	0.72	
16+50	0.6209	0.67	
16+55	0.6253	0.63	
17+ 0	0.6294	0.60	
17+ 5	0.6333	0.57	
17+10	0.6371	0.54	
17+15	0.6406	0.52	

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17+20       0.6441      0.50  |Q        |         |         | V       |
17+25       0.6474      0.48  |Q        |         |         | V       |
17+30       0.6505      0.46  |Q        |         |         |  V      |
17+35       0.6536      0.45  |Q        |         |         |  V      |
17+40       0.6566      0.43  |Q        |         |         |  V      |
17+45       0.6595      0.42  |Q        |         |         |  V      |
17+50       0.6623      0.41  |Q        |         |         |  V      |
17+55       0.6651      0.40  |Q        |         |         |  V      |
18+ 0       0.6677      0.39  |Q        |         |         |  V      |
18+ 5       0.6703      0.38  |Q        |         |         |   V     |
18+10       0.6729      0.37  |Q        |         |         |   V     |
18+15       0.6754      0.36  |Q        |         |         |   V     |
18+20       0.6778      0.35  |Q        |         |         |   V     |
18+25       0.6802      0.35  |Q        |         |         |   V     |
18+30       0.6825      0.34  |Q        |         |         |   V     |
18+35       0.6848      0.33  |Q        |         |         |   V     |
18+40       0.6870      0.33  |Q        |         |         |   V     |
18+45       0.6892      0.32  |Q        |         |         |    V    |
18+50       0.6914      0.31  |Q        |         |         |    V    |
18+55       0.6935      0.31  |Q        |         |         |    V    |
19+ 0       0.6956      0.30  |Q        |         |         |    V    |
19+ 5       0.6977      0.30  |Q        |         |         |    V    |
19+10       0.6997      0.29  |Q        |         |         |    V    |
19+15       0.7017      0.29  |Q        |         |         |    V    |
19+20       0.7037      0.29  |Q        |         |         |    V    |
19+25       0.7056      0.28  |Q        |         |         |    V    |
19+30       0.7075      0.28  |Q        |         |         |    V    |
19+35       0.7094      0.27  |Q        |         |         |     V   |
19+40       0.7113      0.27  |Q        |         |         |     V   |
19+45       0.7131      0.27  |Q        |         |         |     V   |
19+50       0.7149      0.26  |Q        |         |         |     V   |
19+55       0.7167      0.26  |Q        |         |         |     V   |
20+ 0       0.7185      0.26  |Q        |         |         |     V   |
20+ 5       0.7202      0.25  |Q        |         |         |     V   |
20+10       0.7220      0.25  |Q        |         |         |     V   |
20+15       0.7237      0.25  Q         |         |         |     V   |
20+20       0.7254      0.25  Q         |         |         |     V   |
20+25       0.7270      0.24  Q         |         |         |     V   |
20+30       0.7287      0.24  Q         |         |         |      V  |
20+35       0.7303      0.24  Q         |         |         |      V  |
20+40       0.7319      0.23  Q         |         |         |      V  |
20+45       0.7335      0.23  Q         |         |         |      V  |
20+50       0.7351      0.23  Q         |         |         |      V  |
20+55       0.7367      0.23  Q         |         |         |      V  |
21+ 0       0.7383      0.23  Q         |         |         |      V  |
21+ 5       0.7398      0.22  Q         |         |         |      V  |
21+10       0.7413      0.22  Q         |         |         |      V  |
21+15       0.7428      0.22  Q         |         |         |      V  |
21+20       0.7443      0.22  Q         |         |         |      V  |
21+25       0.7458      0.22  Q         |         |         |      V  |
21+30       0.7473      0.21  Q         |         |         |      V  |
21+35       0.7487      0.21  Q         |         |         |       V |
21+40       0.7502      0.21  Q         |         |         |       V |
21+45       0.7516      0.21  Q         |         |         |       V |
21+50       0.7530      0.21  Q         |         |         |       V |
21+55       0.7545      0.20  Q         |         |         |       V |
22+ 0       0.7559      0.20  Q         |         |         |       V |
22+ 5       0.7572      0.20  Q         |         |         |       V |
22+10       0.7586      0.20  Q         |         |         |       V |
22+15       0.7600      0.20  Q         |         |         |       V |
22+20       0.7613      0.20  Q         |         |         |       V |
22+25       0.7627      0.20  Q         |         |         |       V |
22+30       0.7640      0.19  Q         |         |         |       V |
22+35       0.7653      0.19  Q         |         |         |       V |
22+40       0.7667      0.19  Q         |         |         |       V |
22+45       0.7680      0.19  Q         |         |         |        V|
22+50       0.7693      0.19  Q         |         |         |        V|
22+55       0.7706      0.19  Q         |         |         |        V|
23+ 0       0.7718      0.19  Q         |         |         |        V|
23+ 5       0.7731      0.18  Q         |         |         |        V|
23+10       0.7744      0.18  Q         |         |         |        V|
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23+15	0.7756	0.18	Q	|	|	|	V|
23+20	0.7769	0.18	Q	|	|	|	V|
23+25	0.7781	0.18	Q	|	|	|	V|
23+30	0.7793	0.18	Q	|	|	|	V|
23+35	0.7806	0.18	Q	|	|	|	V|
23+40	0.7818	0.18	Q	|	|	|	V|
23+45	0.7830	0.18	Q	|	|	|	V|
23+50	0.7842	0.17	Q	|	|	|	V|
23+55	0.7854	0.17	Q	|	|	|	V|
24+ 0	0.7866	0.17	Q	|	|	|	V|
24+ 5	0.7874	0.12	Q	|	|	|	V|
24+10	0.7875	0.01	Q	|	|	|	V|

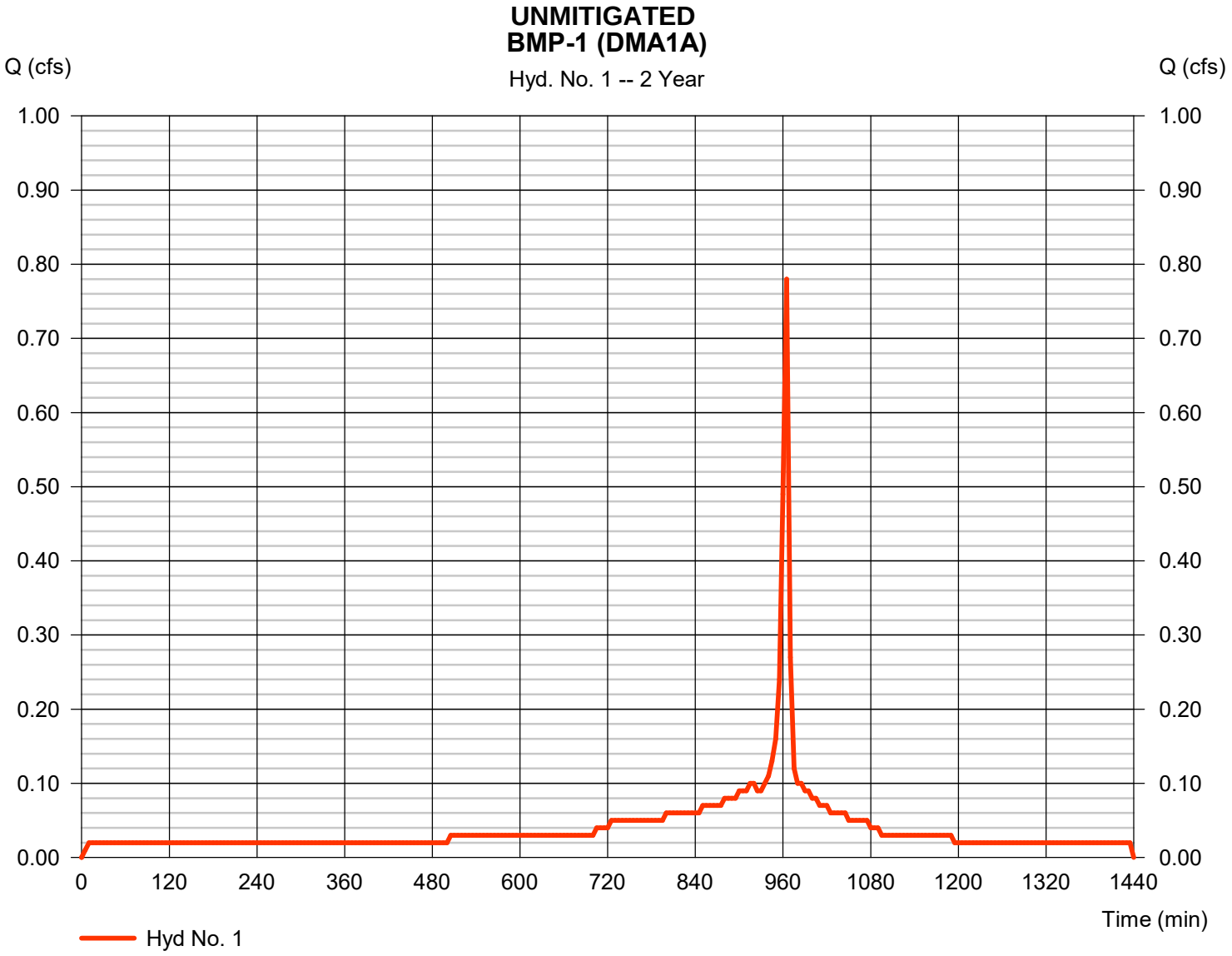
APPENDIX D
HYDRAULIC ANALYSIS

Hydrograph Report

Hyd. No. 1

BMP-1 (DMA1A)

Hydrograph type	= Manual	Peak discharge	= 0.780 cfs
Storm frequency	= 2 yrs	Time to peak	= 965 min
Time interval	= 5 min	Hyd. volume	= 3,462 cuft

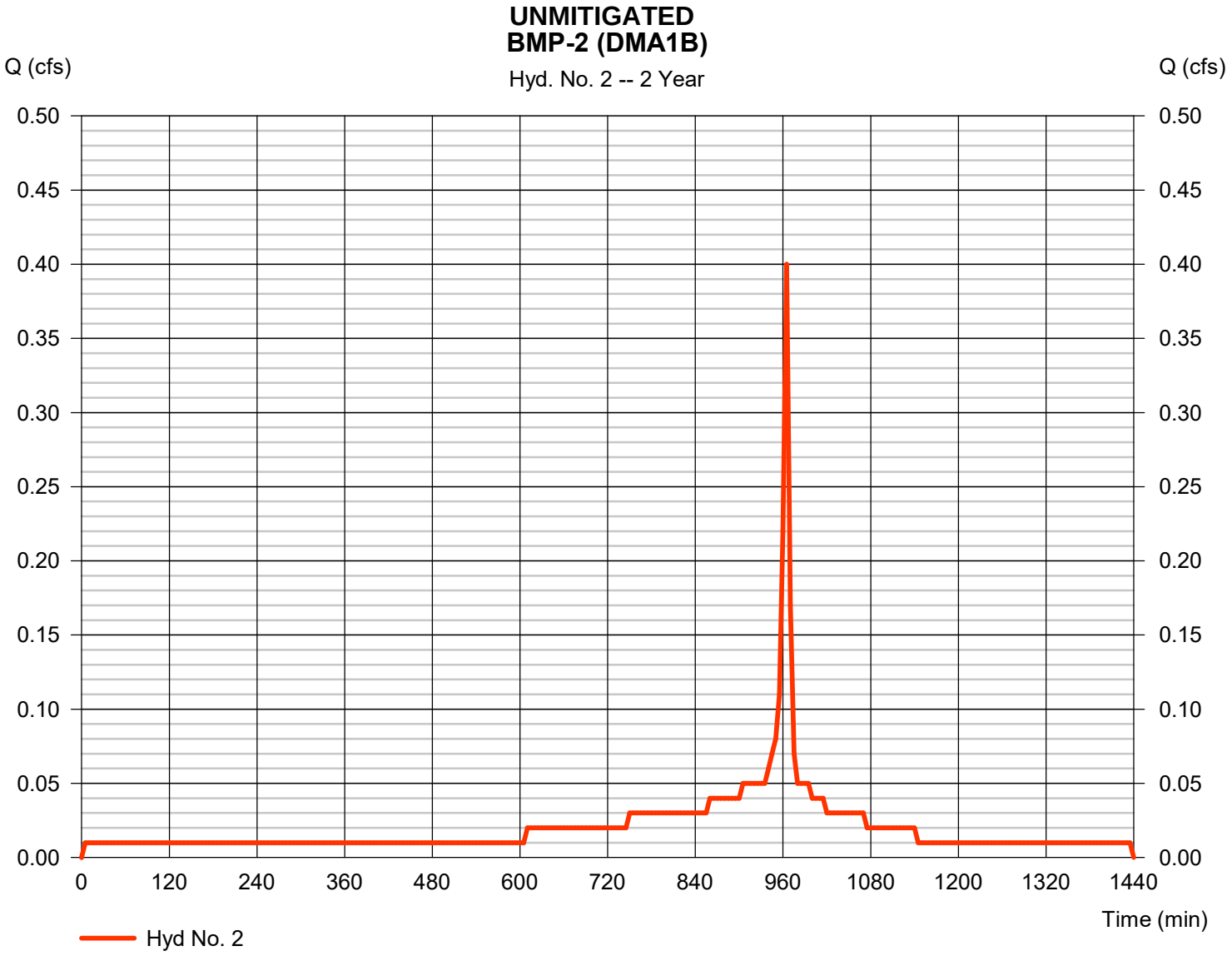


Hydrograph Report

Hyd. No. 2

BMP-2 (DMA1B)

Hydrograph type	= Manual	Peak discharge	= 0.400 cfs
Storm frequency	= 2 yrs	Time to peak	= 965 min
Time interval	= 5 min	Hyd. volume	= 1,764 cuft

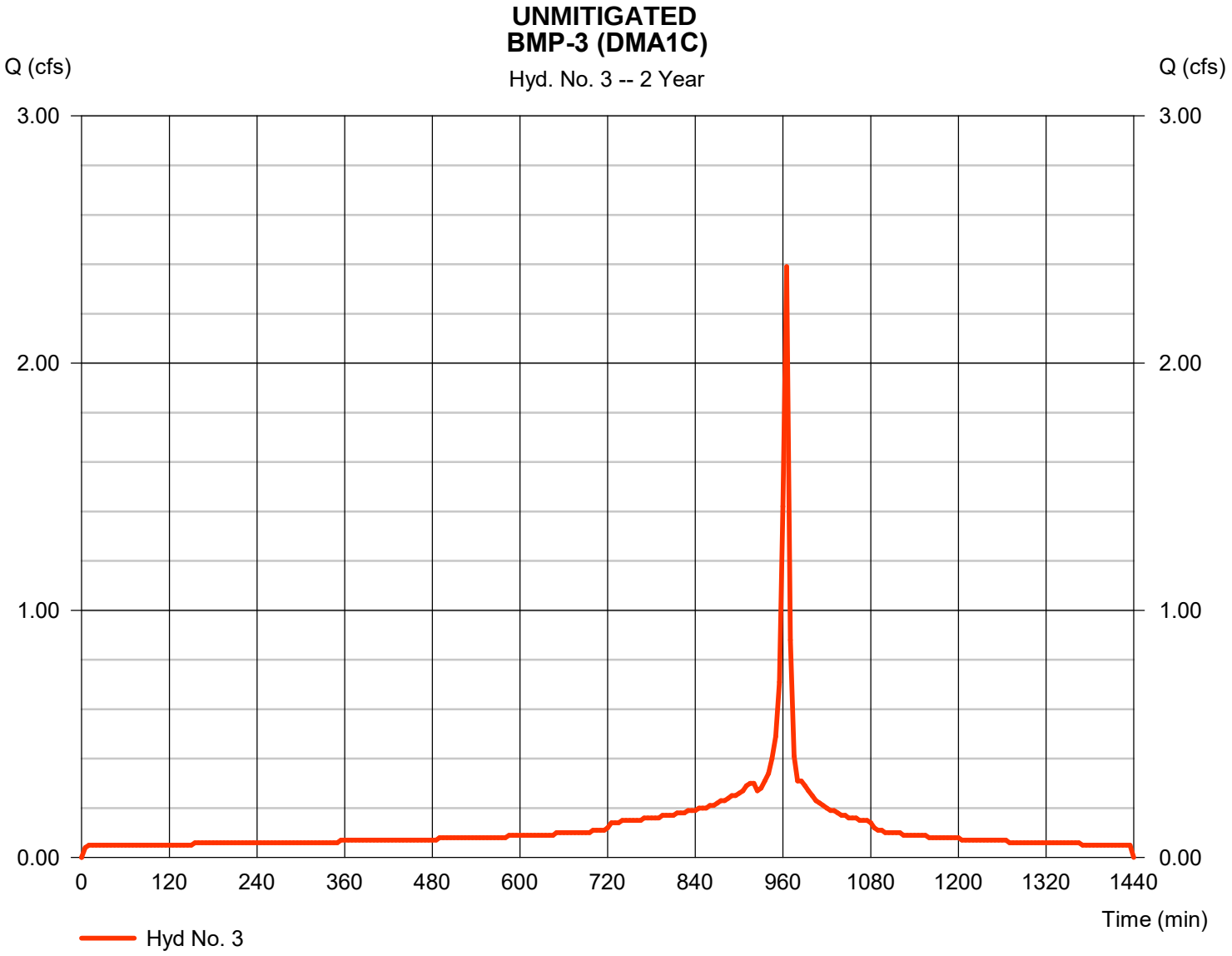


Hydrograph Report

Hyd. No. 3

BMP-3 (DMA1C)

Hydrograph type	=	Manual	Peak discharge	=	2.390 cfs
Storm frequency	=	2 yrs	Time to peak	=	965 min
Time interval	=	5 min	Hyd. volume	=	10,491 cuft

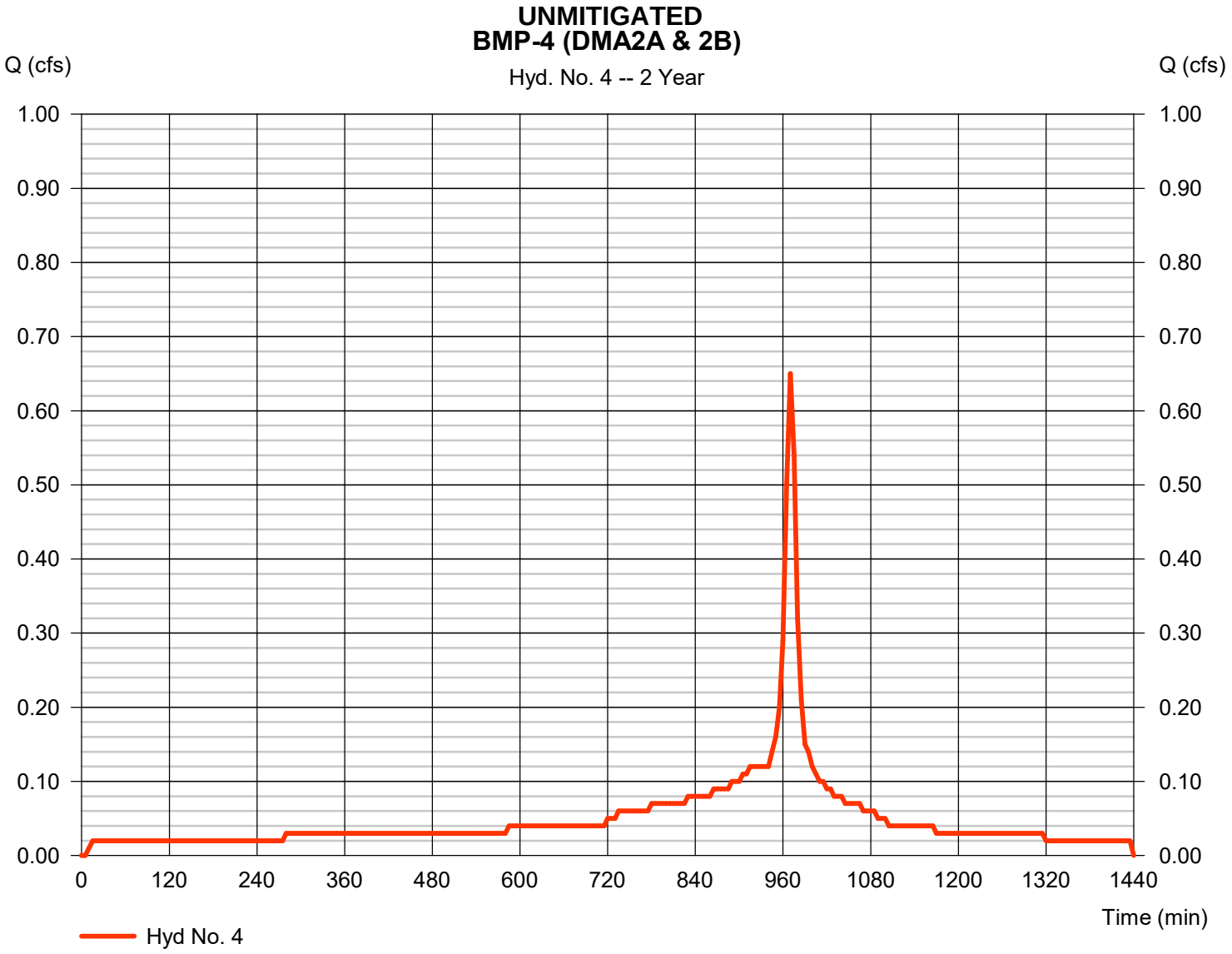


Hydrograph Report

Hyd. No. 4

BMP-4 (DMA2A & 2B)

Hydrograph type	= Manual	Peak discharge	= 0.650 cfs
Storm frequency	= 2 yrs	Time to peak	= 970 min
Time interval	= 5 min	Hyd. volume	= 4,323 cuft

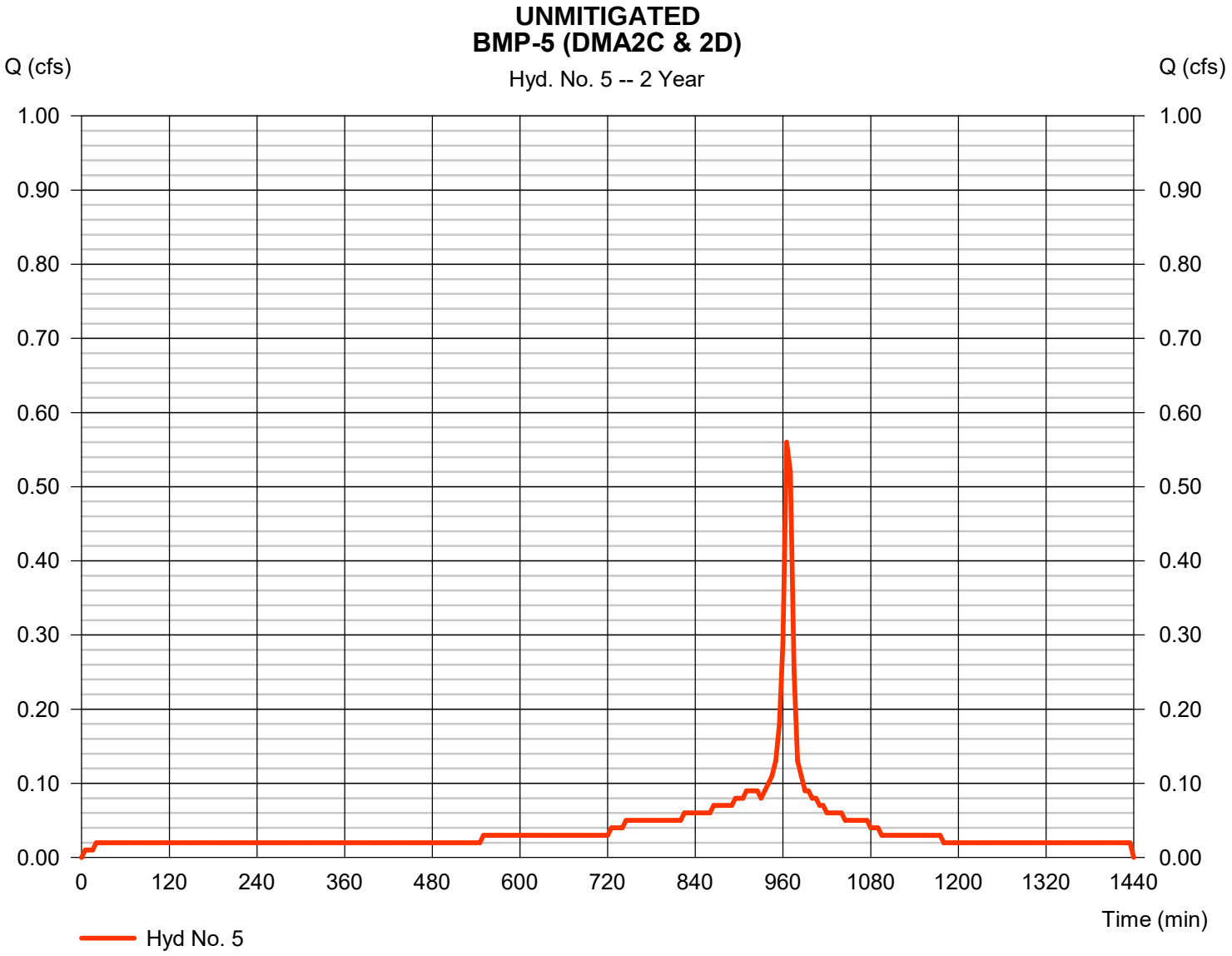


Hydrograph Report

Hyd. No. 5

BMP-5 (DMA2C & 2D)

Hydrograph type	= Manual	Peak discharge	= 0.560 cfs
Storm frequency	= 2 yrs	Time to peak	= 965 min
Time interval	= 5 min	Hyd. volume	= 3,303 cuft

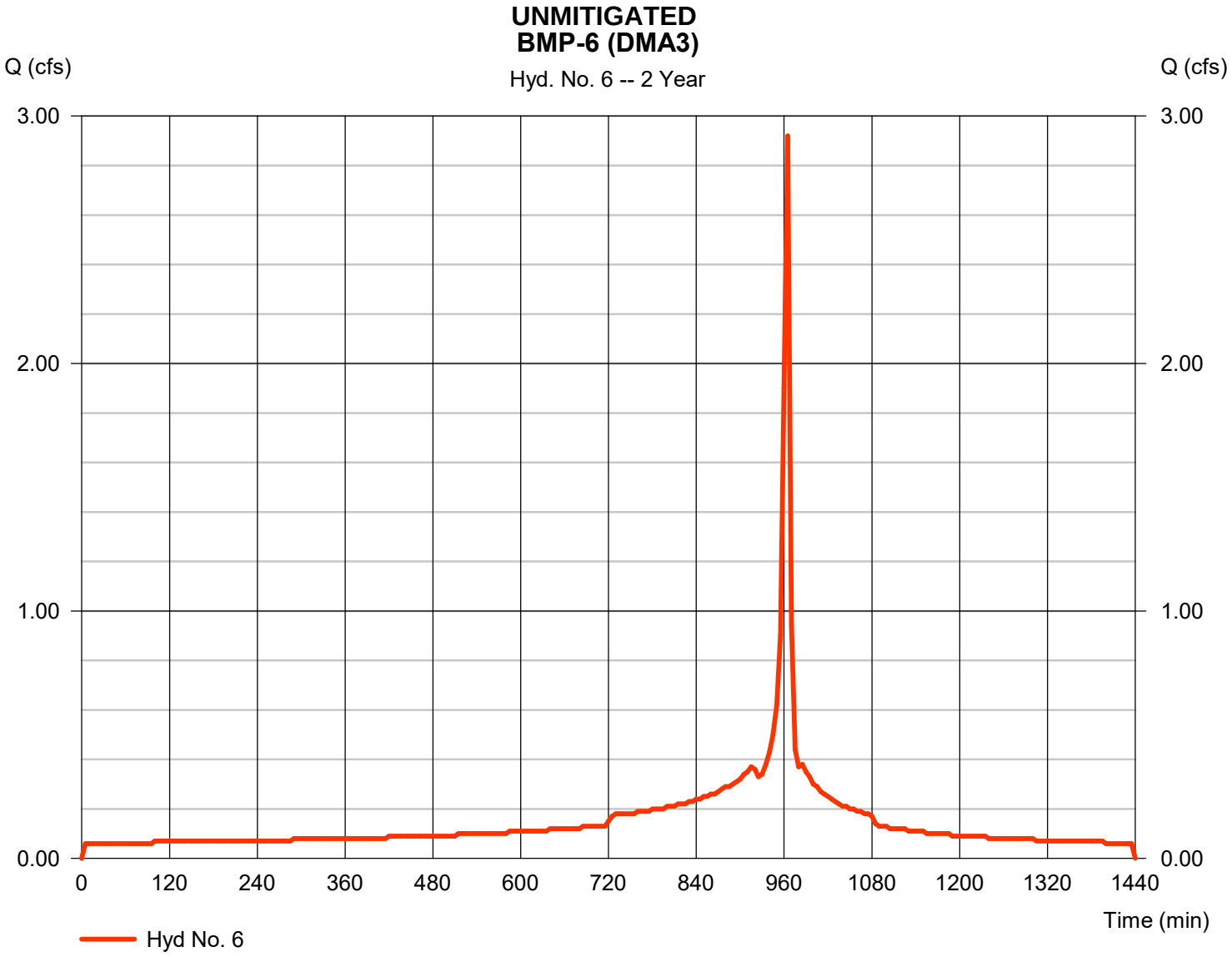


Hydrograph Report

Hyd. No. 6

BMP-6 (DMA3)

Hydrograph type	= Manual	Peak discharge	= 2.920 cfs
Storm frequency	= 2 yrs	Time to peak	= 965 min
Time interval	= 5 min	Hyd. volume	= 12,888 cuft



Hydrograph Report

Hyd. No. 9

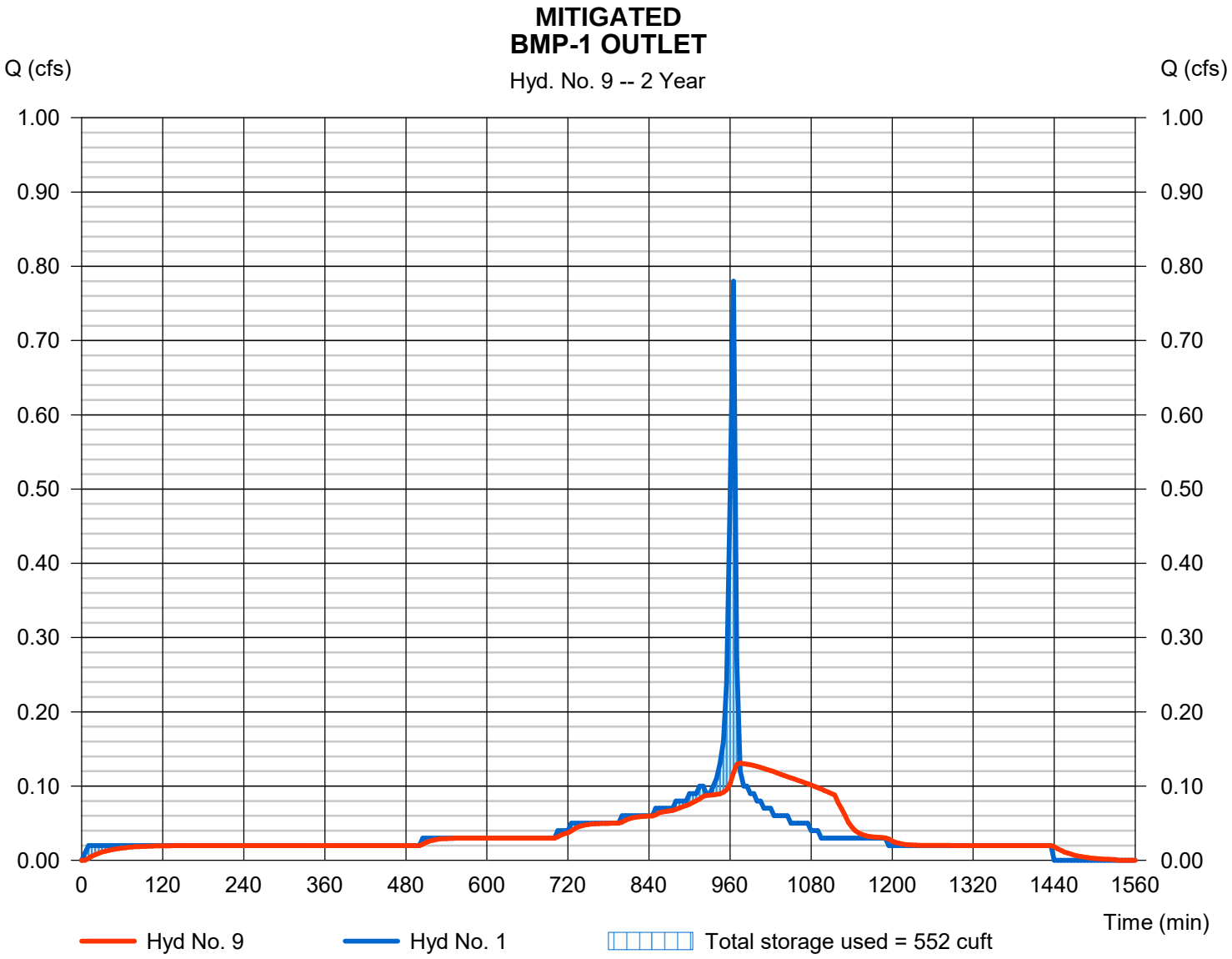
BMP-1 OUTLET

DMA 1A

Hydrograph type	=	Reservoir	Peak discharge	=	0.131 cfs
Storm frequency	=	2 yrs	Time to peak	=	975 min
Time interval	=	5 min	Hyd. volume	=	3,460 cuft
Inflow hyd. No.	=	1 - BMP-1 (DMA1A)	Max. Elevation	=	101.57 ft
Reservoir name	=	BMP-1 (BIO-BASIN)	Max. Storage	=	552 cuft

Storage Indication method used.

TIME OF CONCENTRATION INCREASED FROM 965 MIN TO 975 MIN.
10 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
5.30 MIN + 10 MIN = 15.30 MIN



Hydrograph Report

Hyd. No. 10

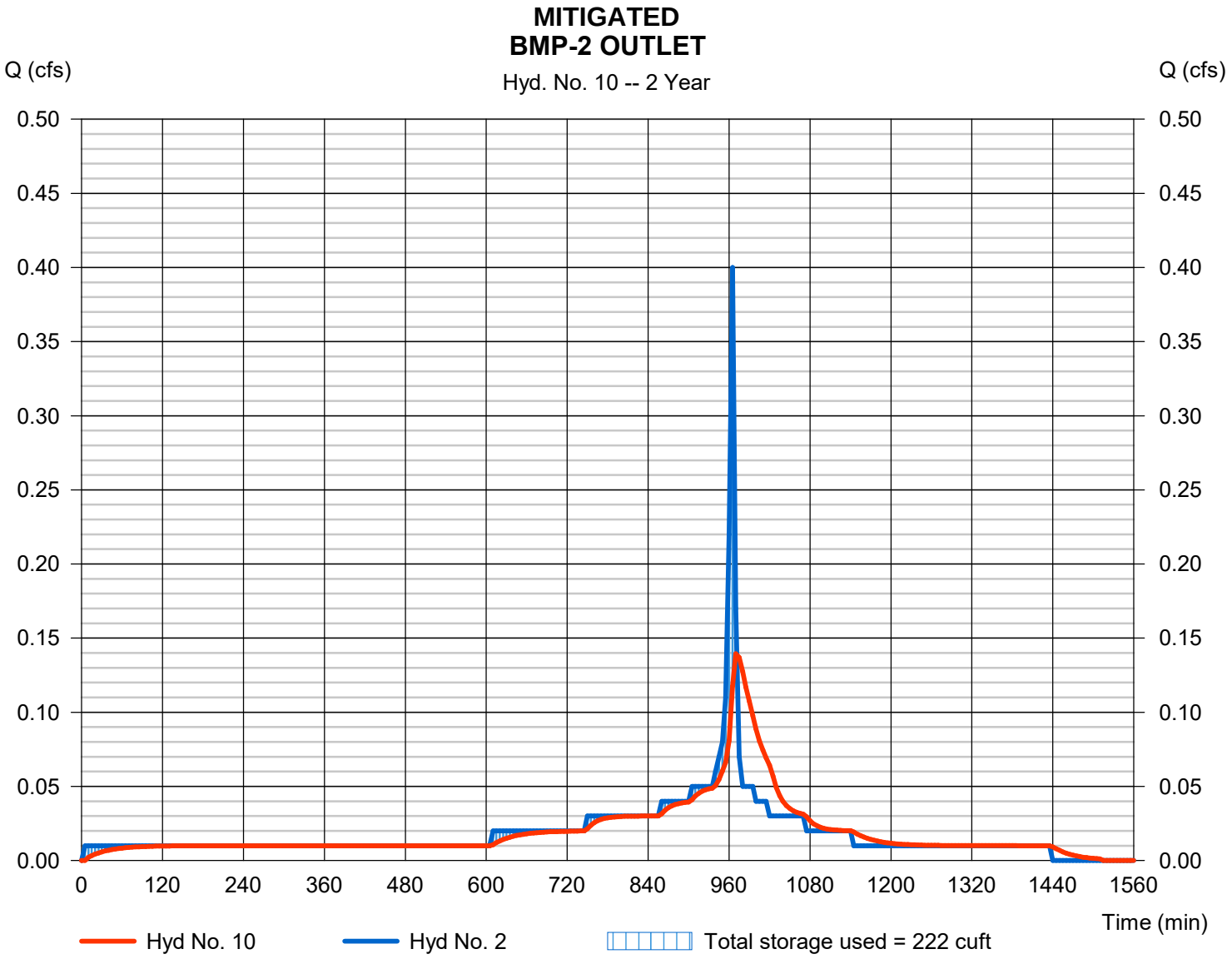
BMP-2 OUTLET

DMA 1B

Hydrograph type	=	Reservoir	Peak discharge	=	0.139 cfs
Storm frequency	=	2 yrs	Time to peak	=	970 min
Time interval	=	5 min	Hyd. volume	=	1,762 cuft
Inflow hyd. No.	=	2 - BMP-2 (DMA1B)	Max. Elevation	=	100.58 ft
Reservoir name	=	BMP-2 (BIO-BASIN)	Max. Storage	=	222 cuft

Storage Indication method used.

TIME OF CONCENTRATION INCREASED FROM 965 MIN TO 970 MIN.
5 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
6.04 MIN + 5 MIN = 11.04 MIN



Hydrograph Report

Hyd. No. 11

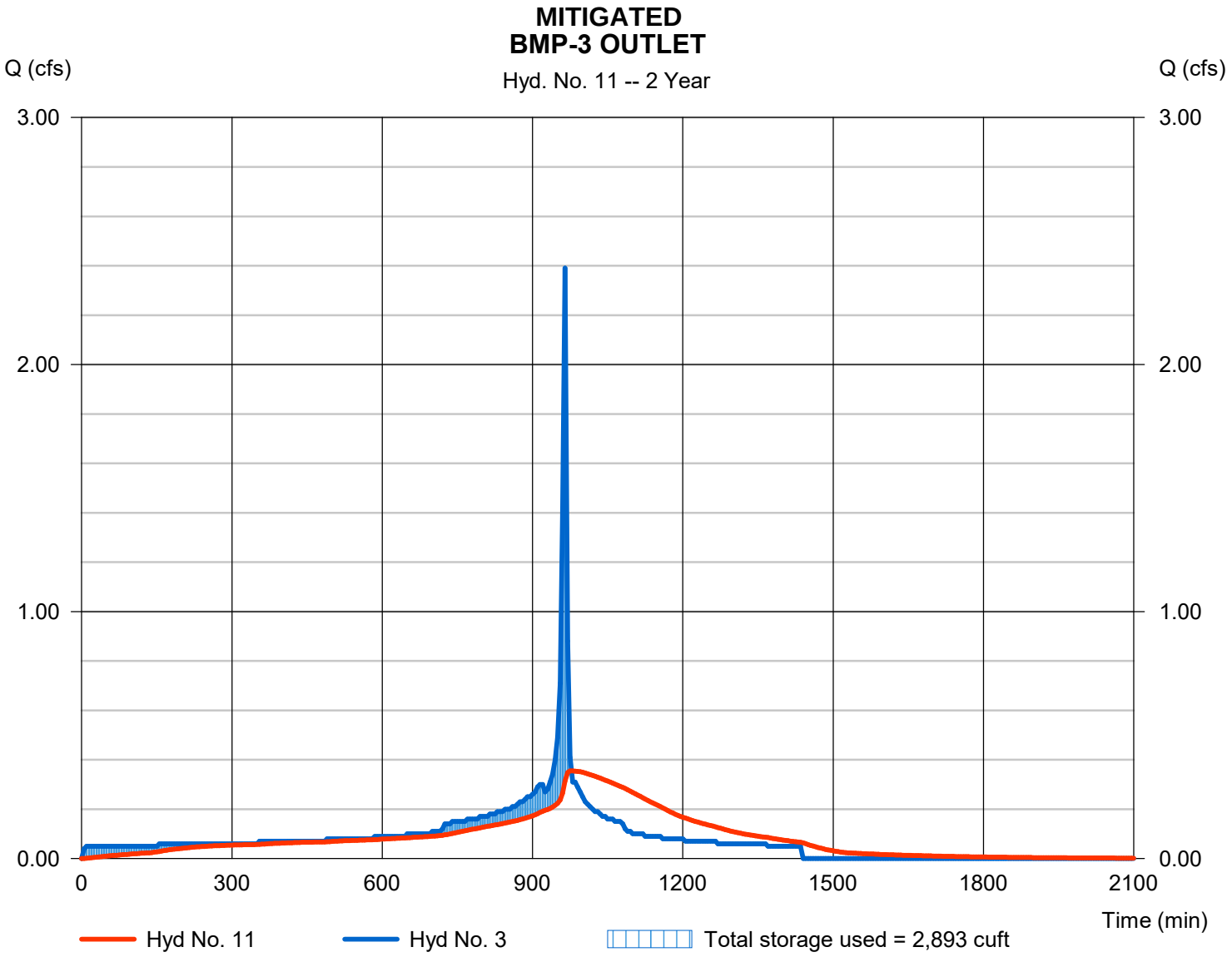
BMP-3 OUTLET

DMA 1C

Hydrograph type	=	Reservoir	Peak discharge	=	0.355 cfs
Storm frequency	=	2 yrs	Time to peak	=	980 min
Time interval	=	5 min	Hyd. volume	=	10,475 cuft
Inflow hyd. No.	=	3 - BMP-3 (DMA1C)	Max. Elevation	=	100.96 ft
Reservoir name	=	BMP-3 (UNDERGROUND)	Max. Storage	=	2,893 cuft

Storage Indication method used.

TIME OF CONCENTRATION INCREASED FROM 965 MIN TO 980 MIN.
15 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
5.65 MIN + 15 MIN = 20.65 MIN



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 — Saturday, 10 / 2 / 2021

Hyd. No. 12

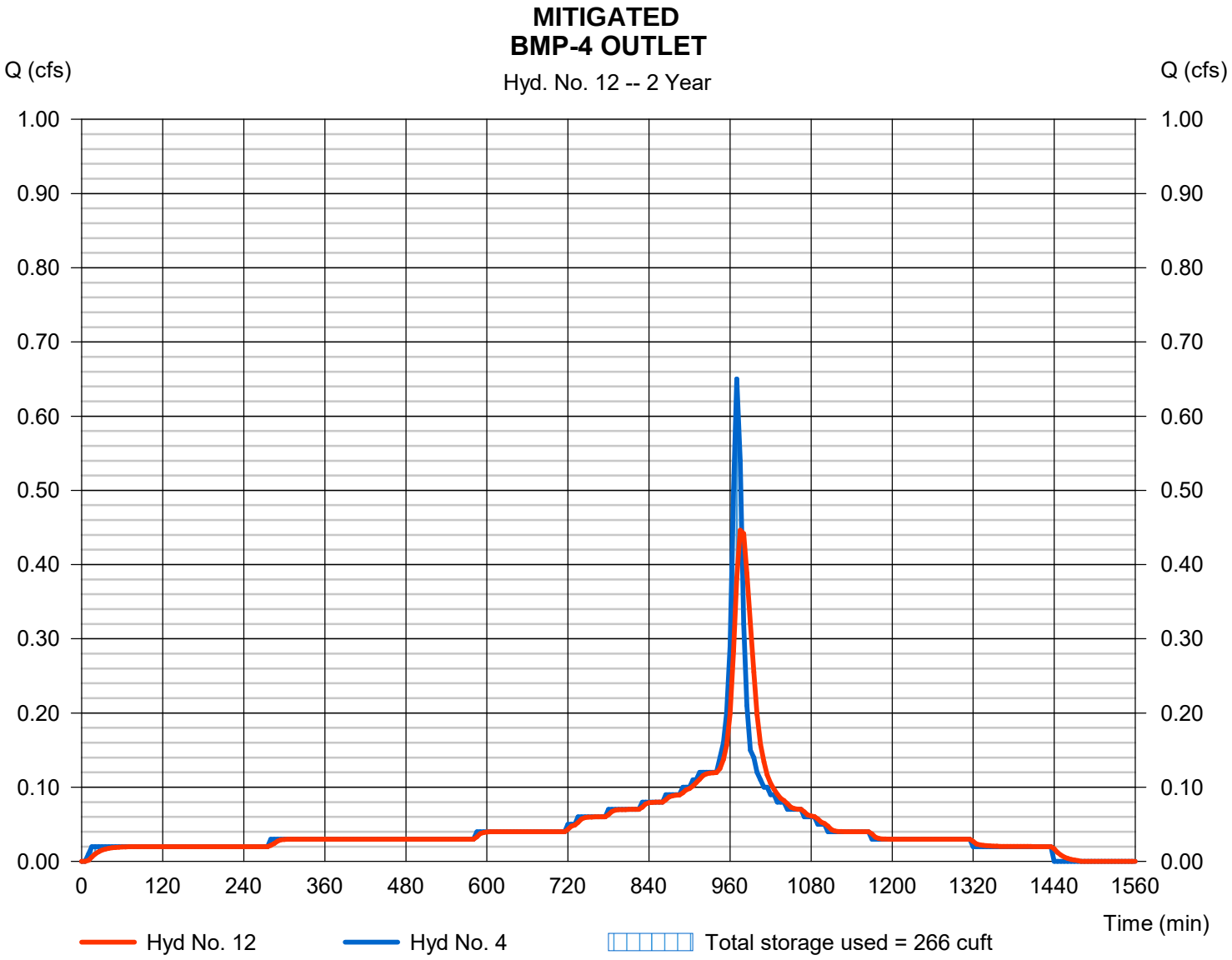
BMP-4 OUTLET

DMA 2A & 2B

Hydrograph type	= Reservoir	Peak discharge	= 0.446 cfs
Storm frequency	= 2 yrs	Time to peak	= 975 min
Time interval	= 5 min	Hyd. volume	= 4,322 cuft
Inflow hyd. No.	= 4 - BMP-4 (DMA2A & 2B)	Max. Elevation	= 101.36 ft
Reservoir name	= BMP-4 (BIO-BASIN)	Max. Storage	= 266 cuft

Storage Indication method used. Outflow includes exfiltration.

TIME OF CONCENTRATION INCREASED FROM 970 MIN TO 975 MIN.
5 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
14.80 MIN + 5 MIN = 19.80 MIN



Hydrograph Report

Hyd. No. 13

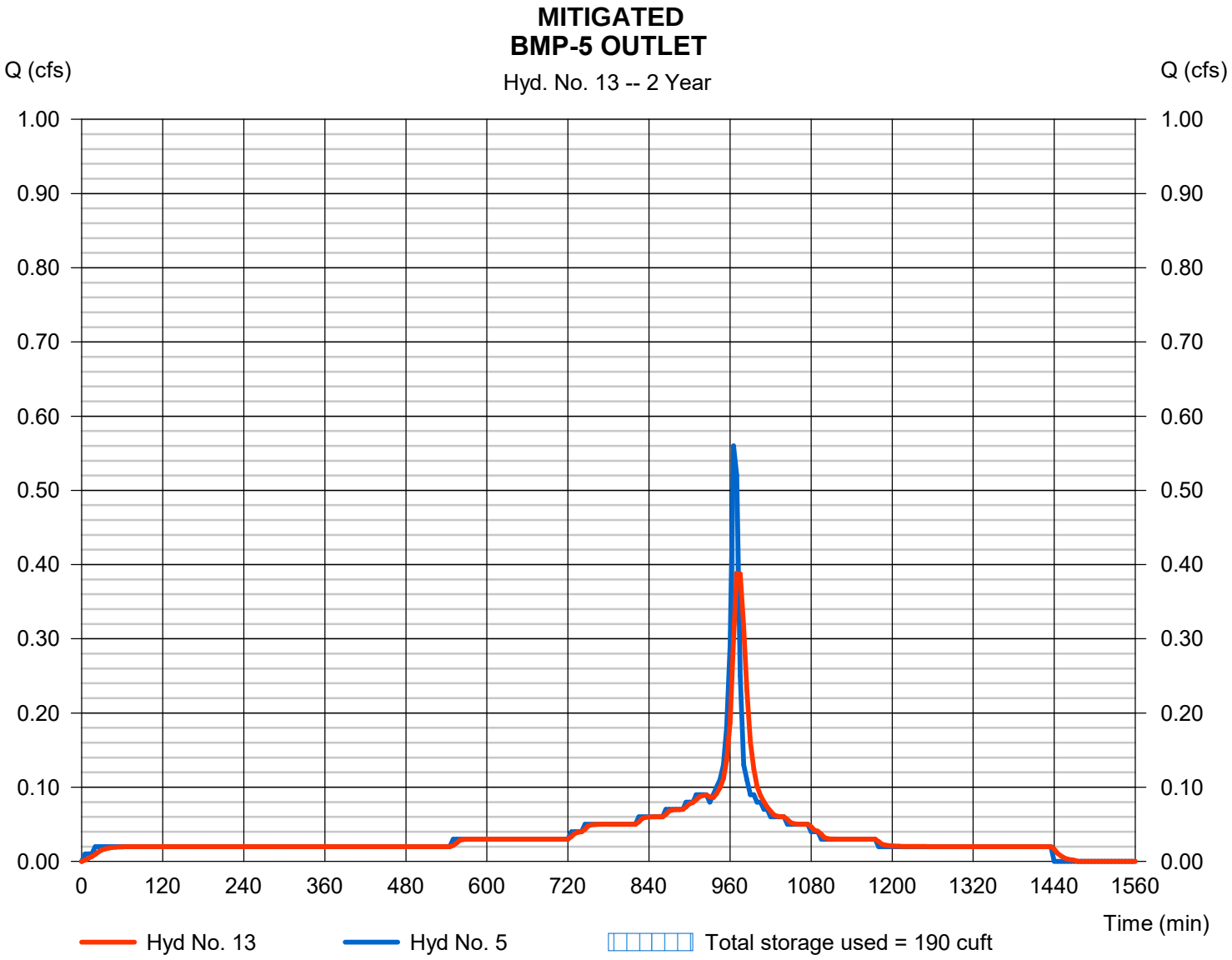
BMP-5 OUTLET

DMA 2C & 2D

Hydrograph type	=	Reservoir	Peak discharge	=	0.389 cfs
Storm frequency	=	2 yrs	Time to peak	=	970 min
Time interval	=	5 min	Hyd. volume	=	3,302 cuft
Inflow hyd. No.	=	5 - BMP-5 (DMA2C & 2D)	Max. Elevation	=	101.09 ft
Reservoir name	=	BMP-5 (BIO-BASIN)	Max. Storage	=	190 cuft

Storage Indication method used. Outflow includes exfiltration.

TIME OF CONCENTRATION INCREASED FROM 965 MIN TO 970 MIN.
5 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
9.91 MIN + 5 MIN = 14.91 MIN



Hydrograph Report

Hyd. No. 14

BMP-6 OUTLET

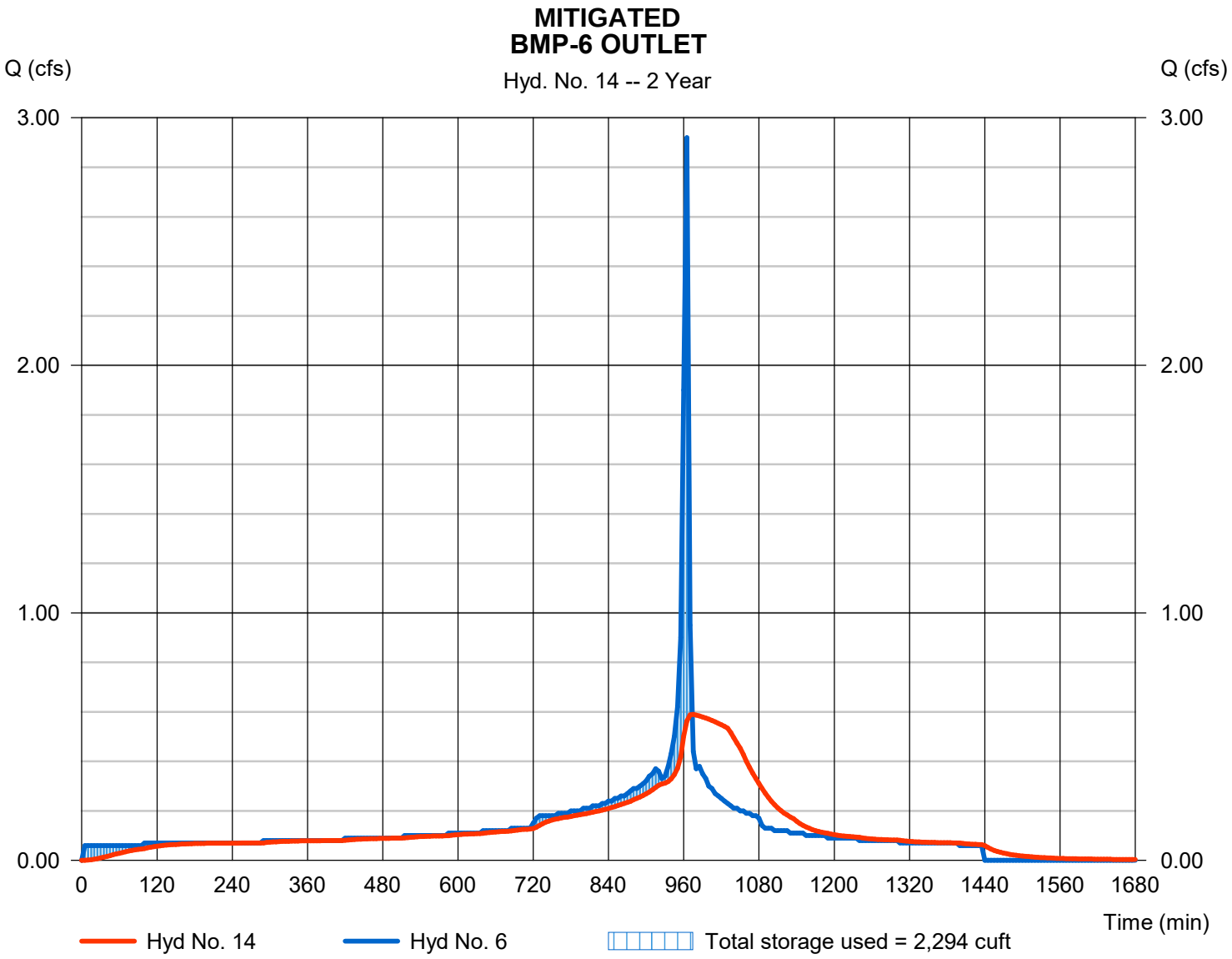
*DMA 3 & POC -3

Hydrograph type	=	Reservoir	Peak discharge	=	0.590 cfs
Storm frequency	=	2 yrs	Time to peak	=	975 min
Time interval	=	5 min	Hyd. volume	=	12,860 cuft
Inflow hyd. No.	=	6 - BMP-6 (DMA3)	Max. Elevation	=	100.80 ft
Reservoir name	=	BMP-6 (UNDERGROUND)	Max. Storage	=	2,294 cuft

Storage Indication method used.

*POC-3 ONLY HAS ONE (1) BMP AND THEREFORE DOES NOT REQUIRE ADDITIONAL CIVILD ANALYSIS. PEAK FLOW FOR DMA 3 IS ALSO THE PEAK FLOW FOR POC-3

TIME OF CONCENTRATION INCREASED FROM 965 MIN TO 975 MIN.
10 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
5.06 MIN + 10 MIN = 15.06 MIN

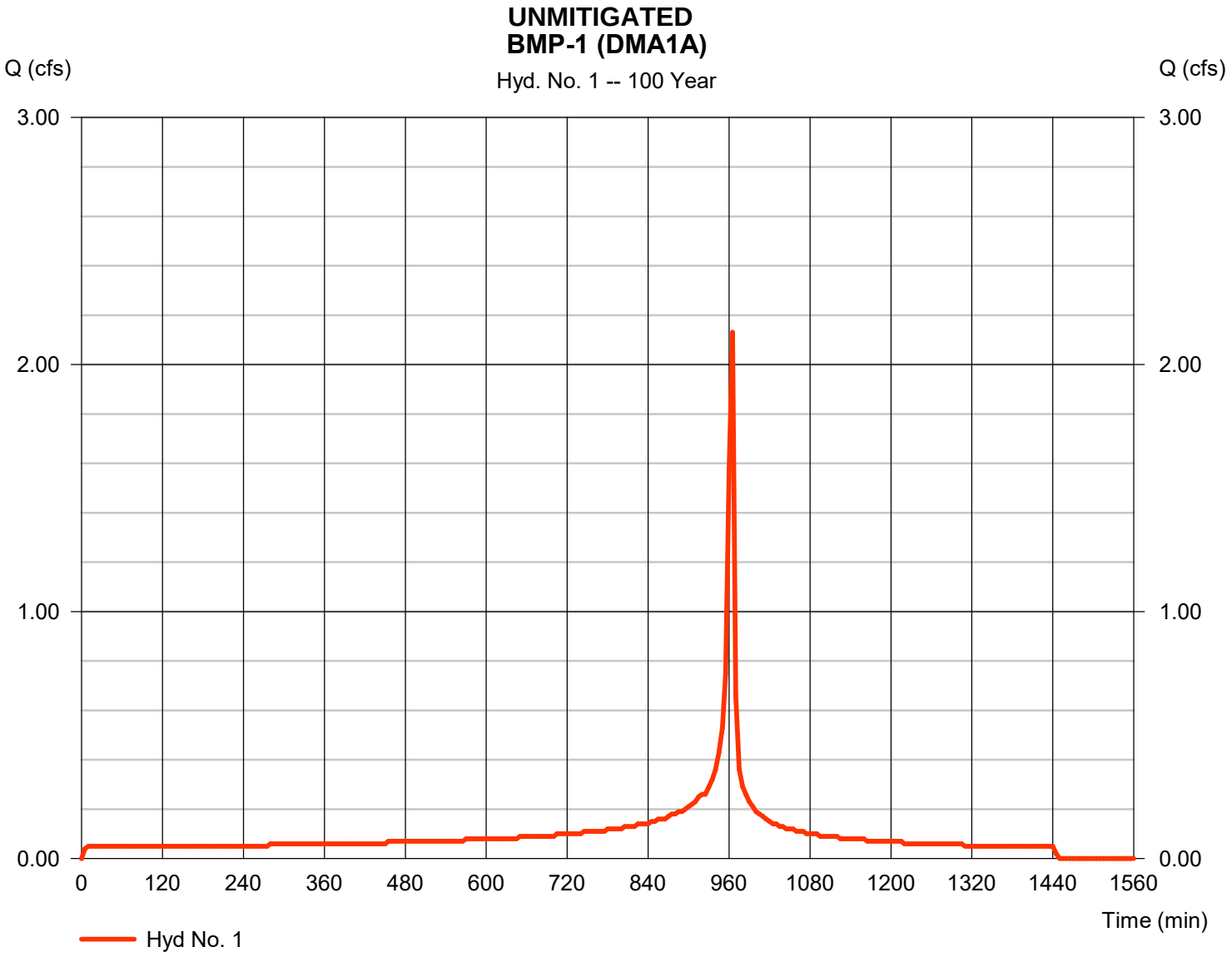


Hydrograph Report

Hyd. No. 1

BMP-1 (DMA1A)

Hydrograph type	= Manual	Peak discharge	= 2.130 cfs
Storm frequency	= 100 yrs	Time to peak	= 965 min
Time interval	= 5 min	Hyd. volume	= 9,168 cuft

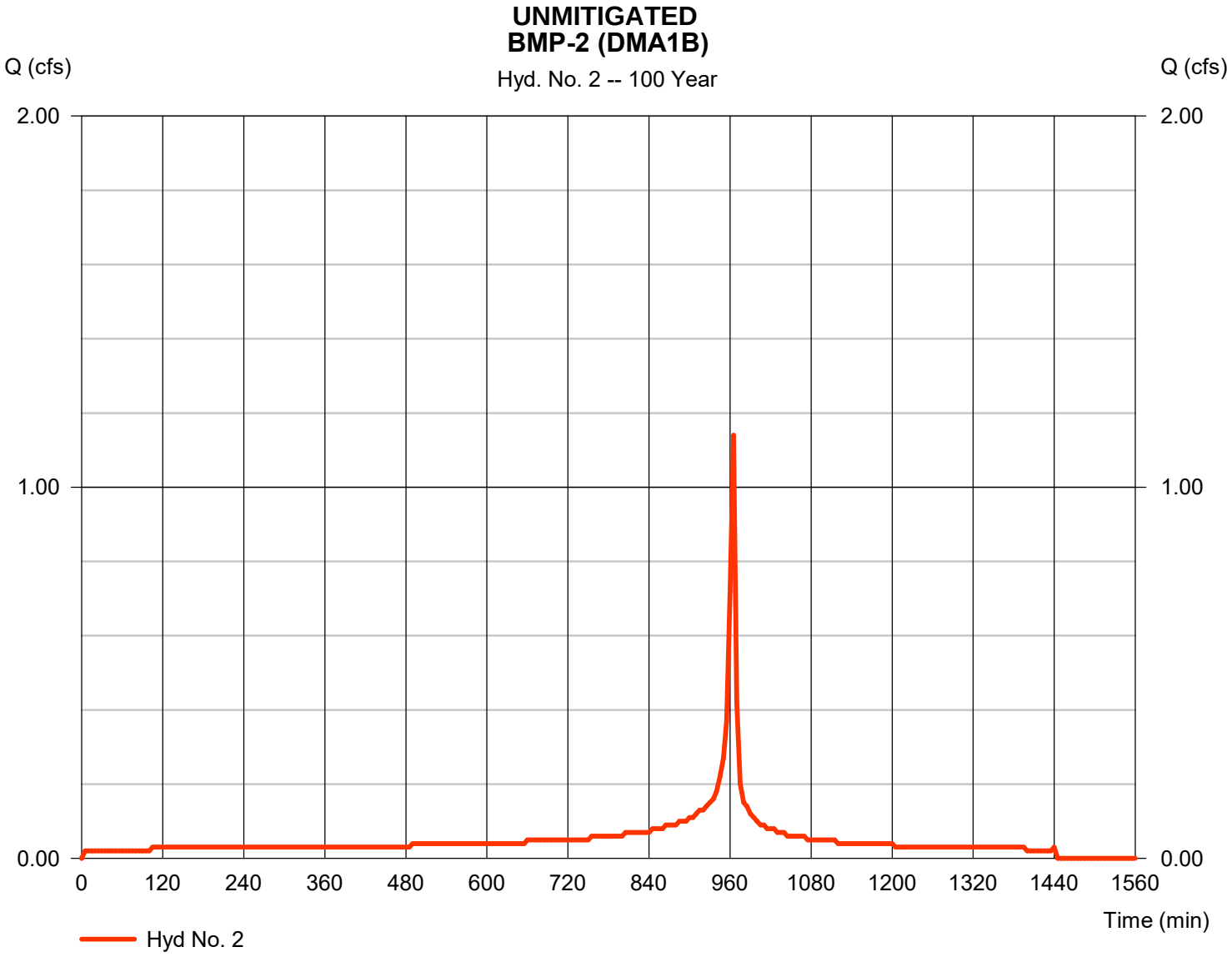


Hydrograph Report

Hyd. No. 2

BMP-2 (DMA1B)

Hydrograph type	= Manual	Peak discharge	= 1.140 cfs
Storm frequency	= 100 yrs	Time to peak	= 965 min
Time interval	= 5 min	Hyd. volume	= 4,749 cuft

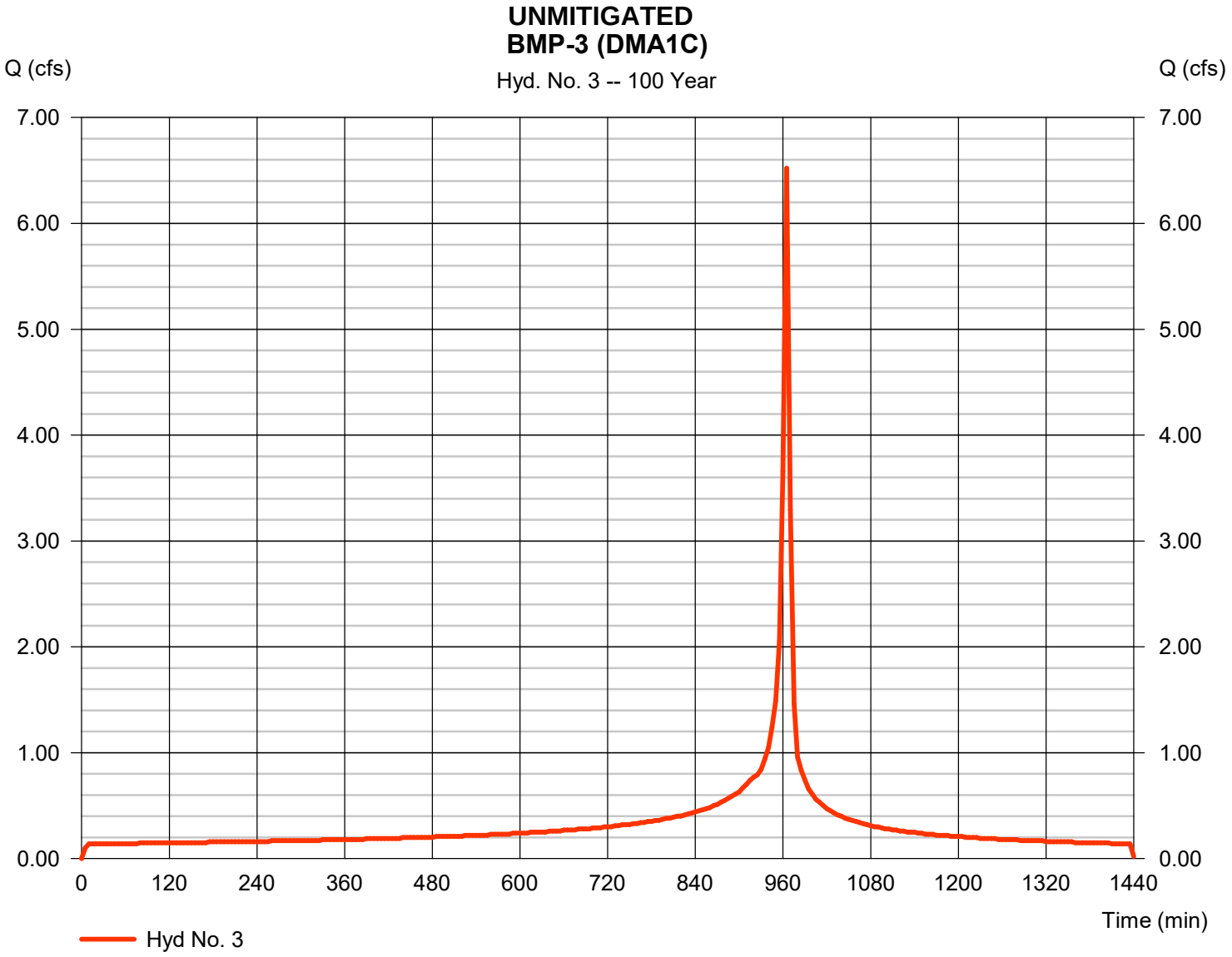


Hydrograph Report

Hyd. No. 3

BMP-3 (DMA1C)

Hydrograph type	= Manual	Peak discharge	= 6.520 cfs
Storm frequency	= 100 yrs	Time to peak	= 965 min
Time interval	= 5 min	Hyd. volume	= 27,891 cuft

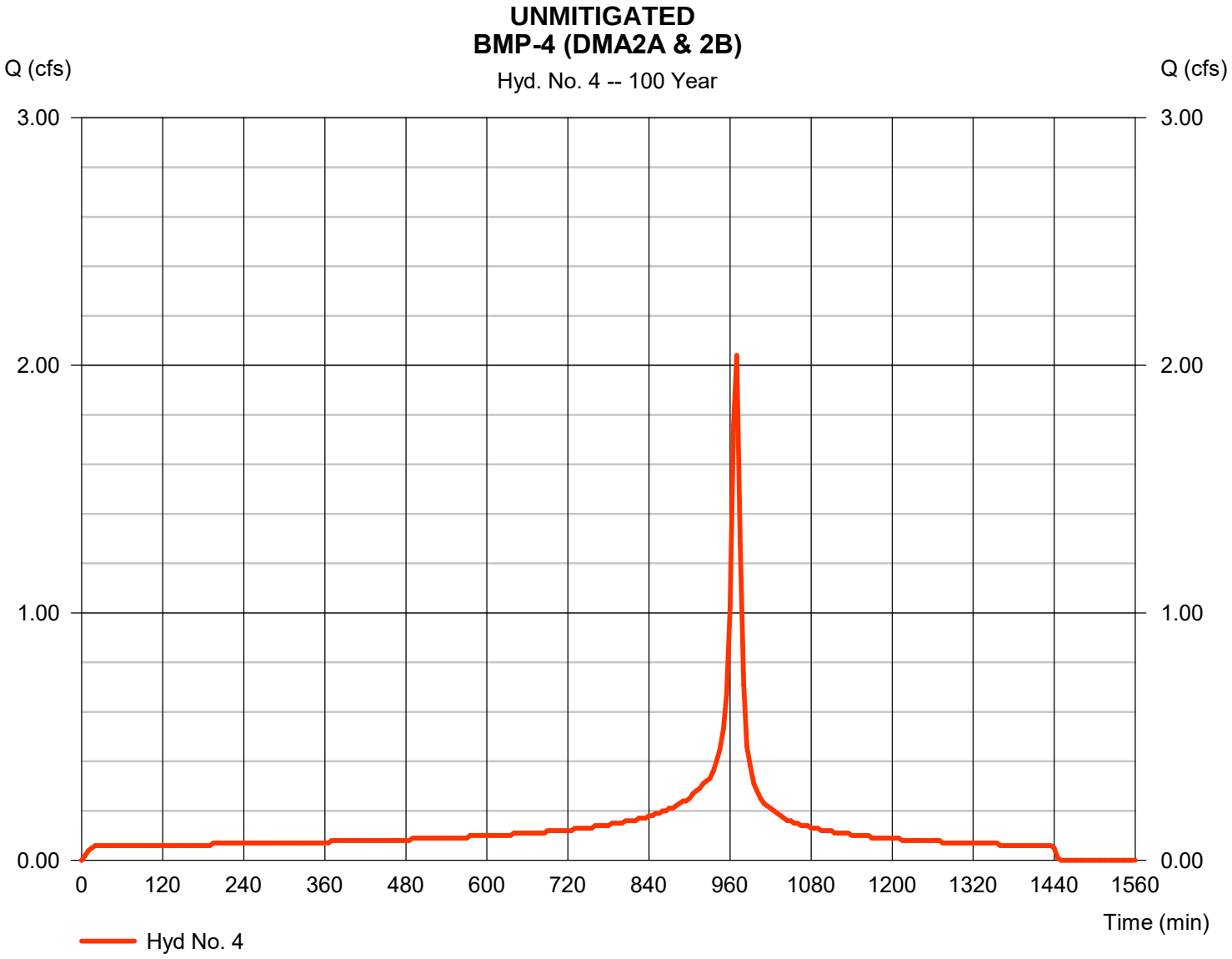


Hydrograph Report

Hyd. No. 4

BMP-4 (DMA2A & 2B)

Hydrograph type	= Manual	Peak discharge	= 2.040 cfs
Storm frequency	= 100 yrs	Time to peak	= 970 min
Time interval	= 5 min	Hyd. volume	= 11,574 cuft

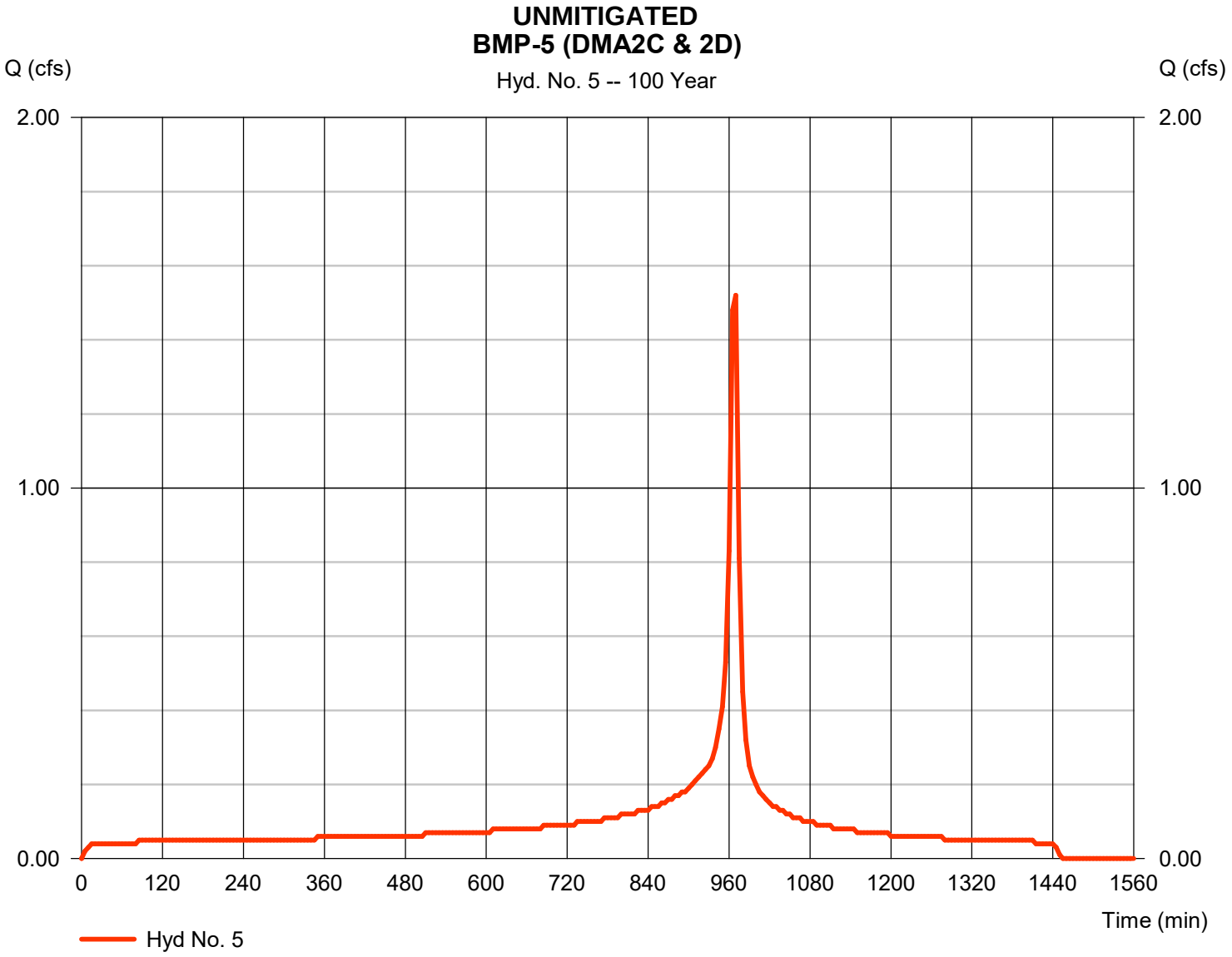


Hydrograph Report

Hyd. No. 5

BMP-5 (DMA2C & 2D)

Hydrograph type	= Manual	Peak discharge	= 1.520 cfs
Storm frequency	= 100 yrs	Time to peak	= 970 min
Time interval	= 5 min	Hyd. volume	= 8,652 cuft

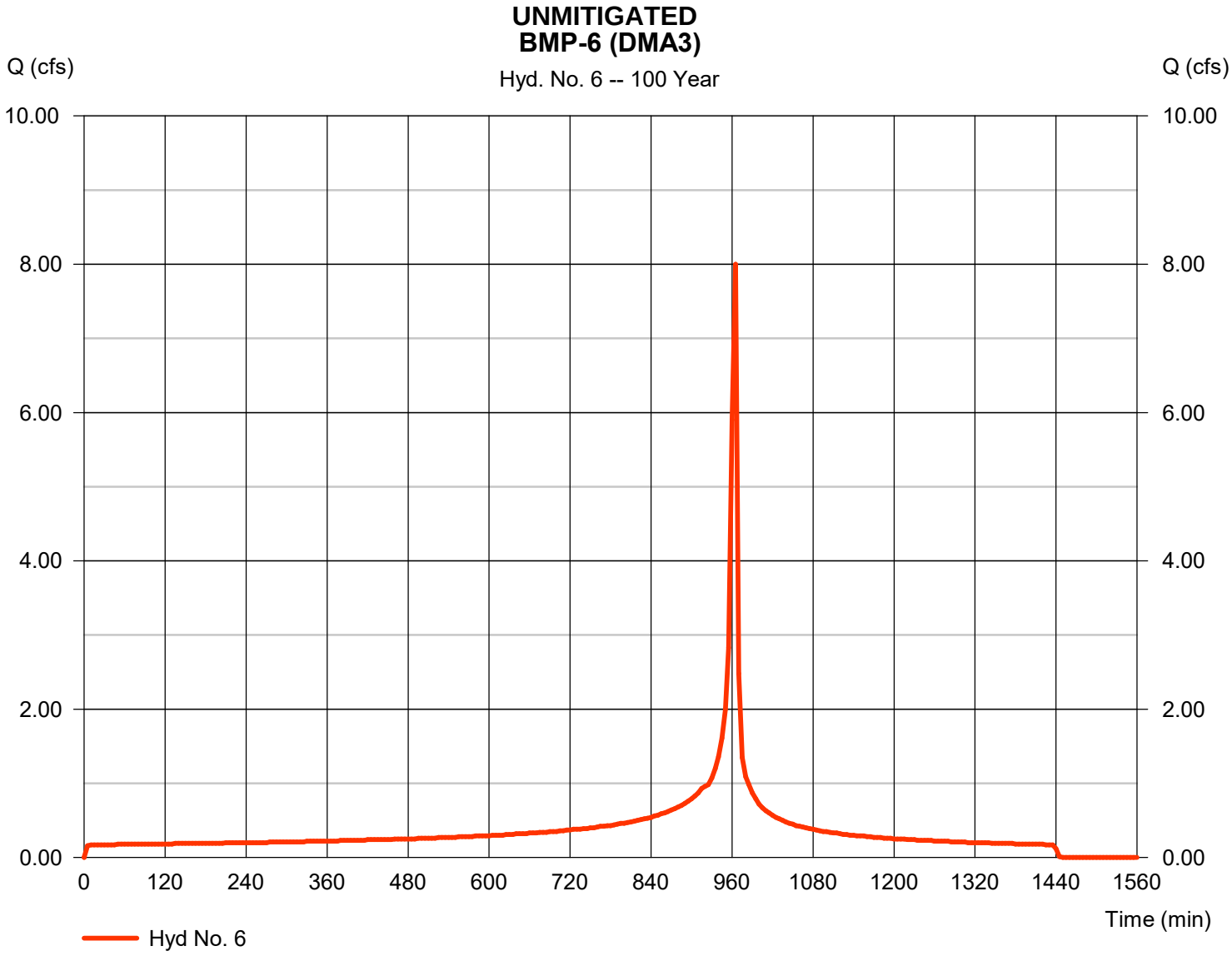


Hydrograph Report

Hyd. No. 6

BMP-6 (DMA3)

Hydrograph type	= Manual	Peak discharge	= 8.000 cfs
Storm frequency	= 100 yrs	Time to peak	= 965 min
Time interval	= 5 min	Hyd. volume	= 34,278 cuft



Hydrograph Report

Hyd. No. 9

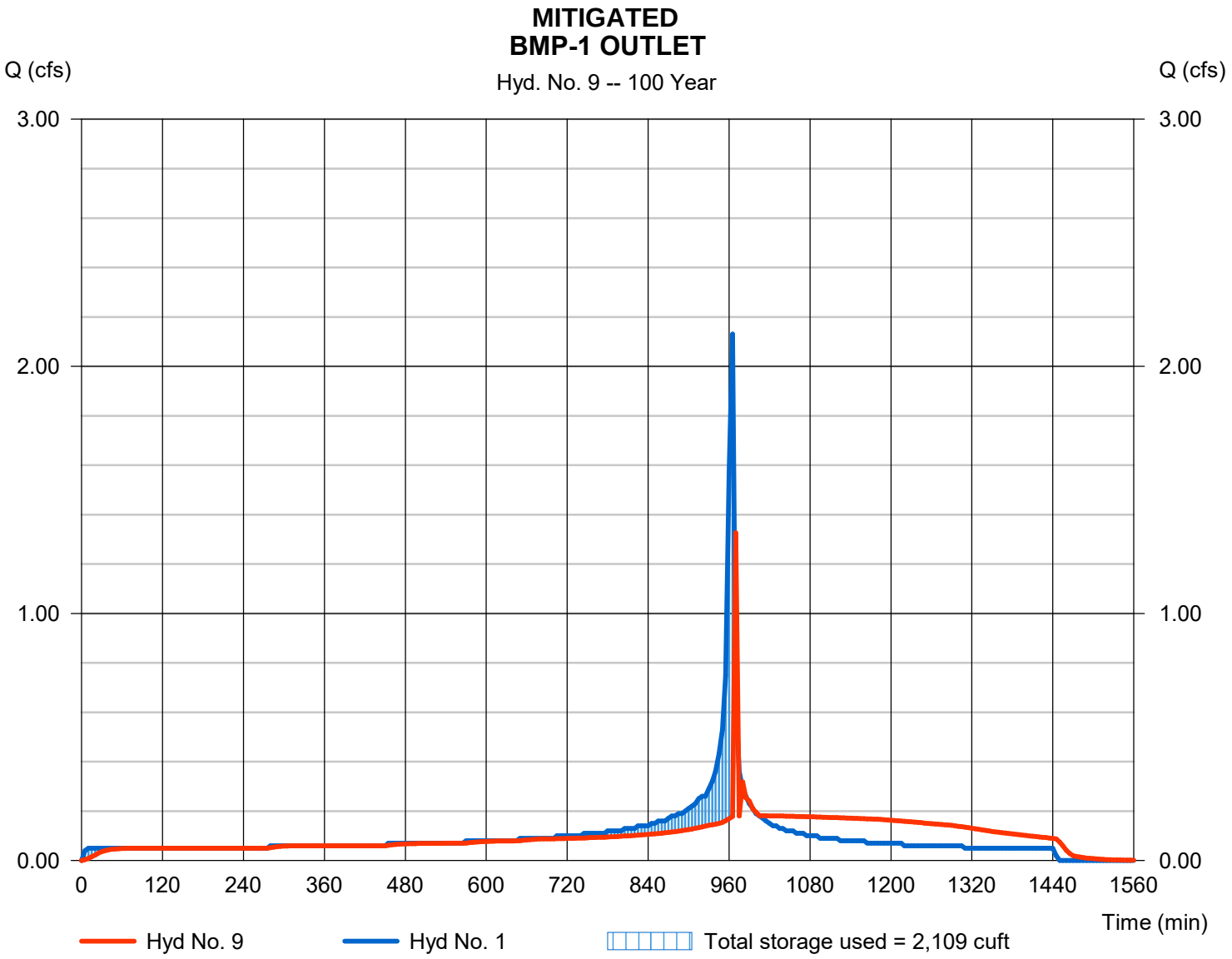
BMP-1 OUTLET

DMA 1A

Hydrograph type	=	Reservoir	Peak discharge	=	1.326 cfs
Storm frequency	=	100 yrs	Time to peak	=	970 min
Time interval	=	5 min	Hyd. volume	=	9,166 cuft
Inflow hyd. No.	=	1 - BMP-1 (DMA1A)	Max. Elevation	=	103.74 ft
Reservoir name	=	BMP-1 (BIO-BASIN)	Max. Storage	=	2,109 cuft

Storage Indication method used.

TIME OF CONCENTRATION INCREASED FROM 965 MIN TO 970 MIN.
5 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
4.52 MIN + 5 MIN = 9.52 MIN



Hydrograph Report

Hyd. No. 10

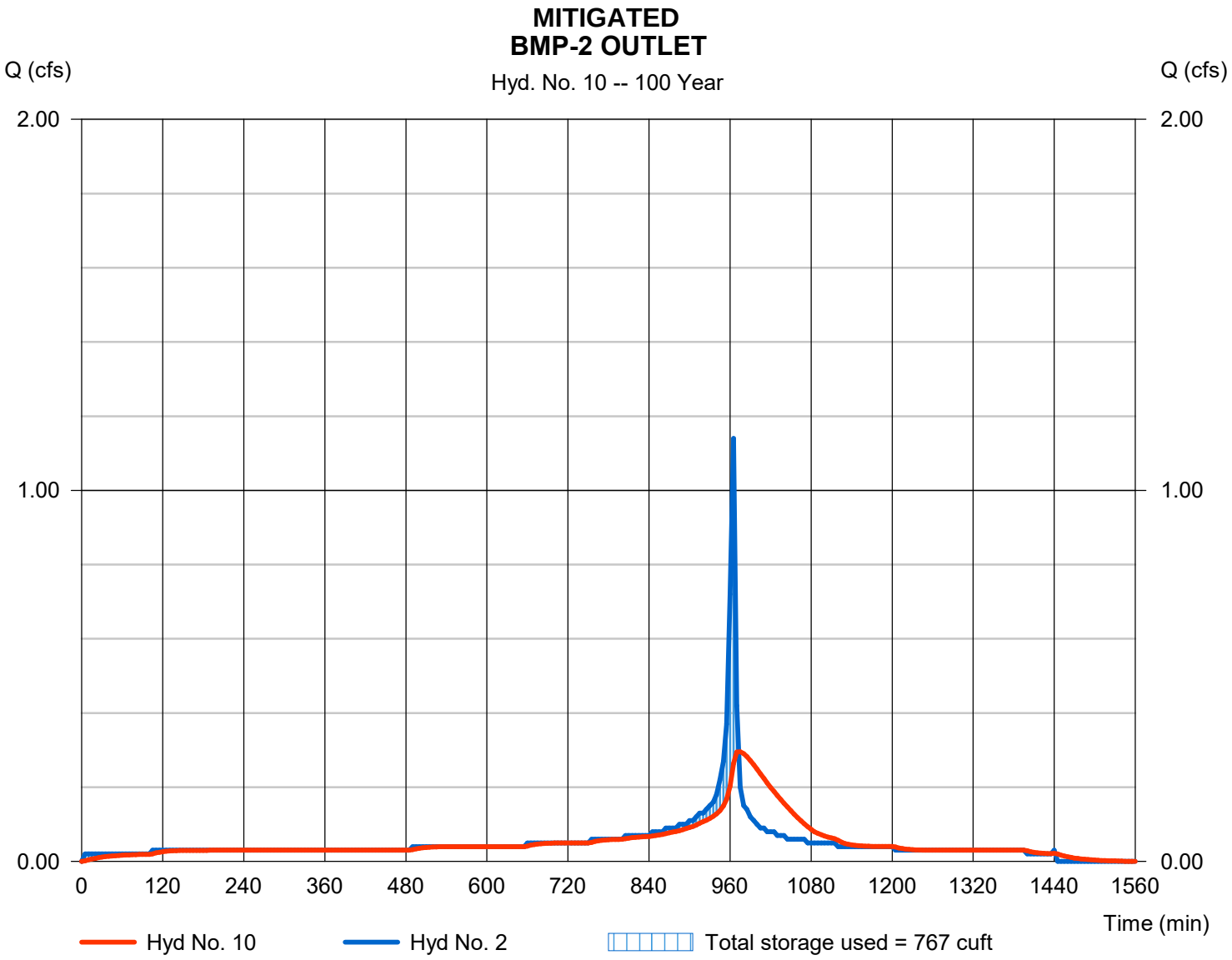
BMP-2 OUTLET

DMA 1B

Hydrograph type	=	Reservoir	Peak discharge	=	0.295 cfs
Storm frequency	=	100 yrs	Time to peak	=	975 min
Time interval	=	5 min	Hyd. volume	=	4,747 cuft
Inflow hyd. No.	=	2 - BMP-2 (DMA1B)	Max. Elevation	=	102.09 ft
Reservoir name	=	BMP-2 (BIO-BASIN)	Max. Storage	=	767 cuft

Storage Indication method used.

TIME OF CONCENTRATION INCREASED FROM 965 MIN TO 975 MIN.
10 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
5.35 MIN + 10 MIN = 15.35 MIN



Hydrograph Report

Hyd. No. 11

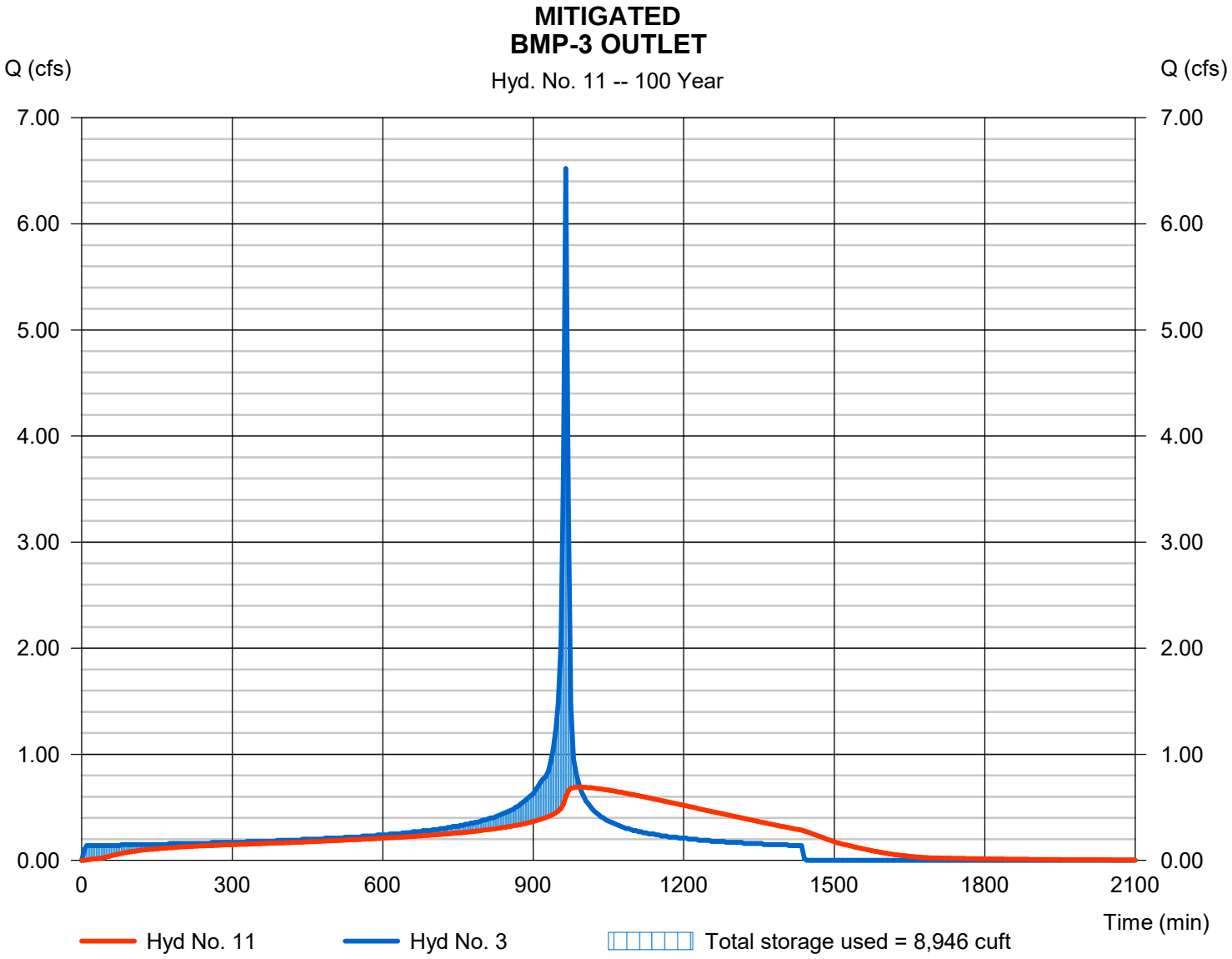
BMP-3 OUTLET

DMA 1C

Hydrograph type	=	Reservoir	Peak discharge	=	0.689 cfs
Storm frequency	=	100 yrs	Time to peak	=	995 min
Time interval	=	5 min	Hyd. volume	=	27,879 cuft
Inflow hyd. No.	=	3 - BMP-3 (DMA1C)	Max. Elevation	=	102.98 ft
Reservoir name	=	BMP-3 (UNDERGROUND)	Max. Storage	=	8,946 cuft

Storage Indication method used.

TIME OF CONCENTRATION INCREASED FROM 965 MIN TO 995 MIN.
30 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
4.79 MIN + 30 MIN = 34.79 MIN



Hydrograph Report

Hyd. No. 12

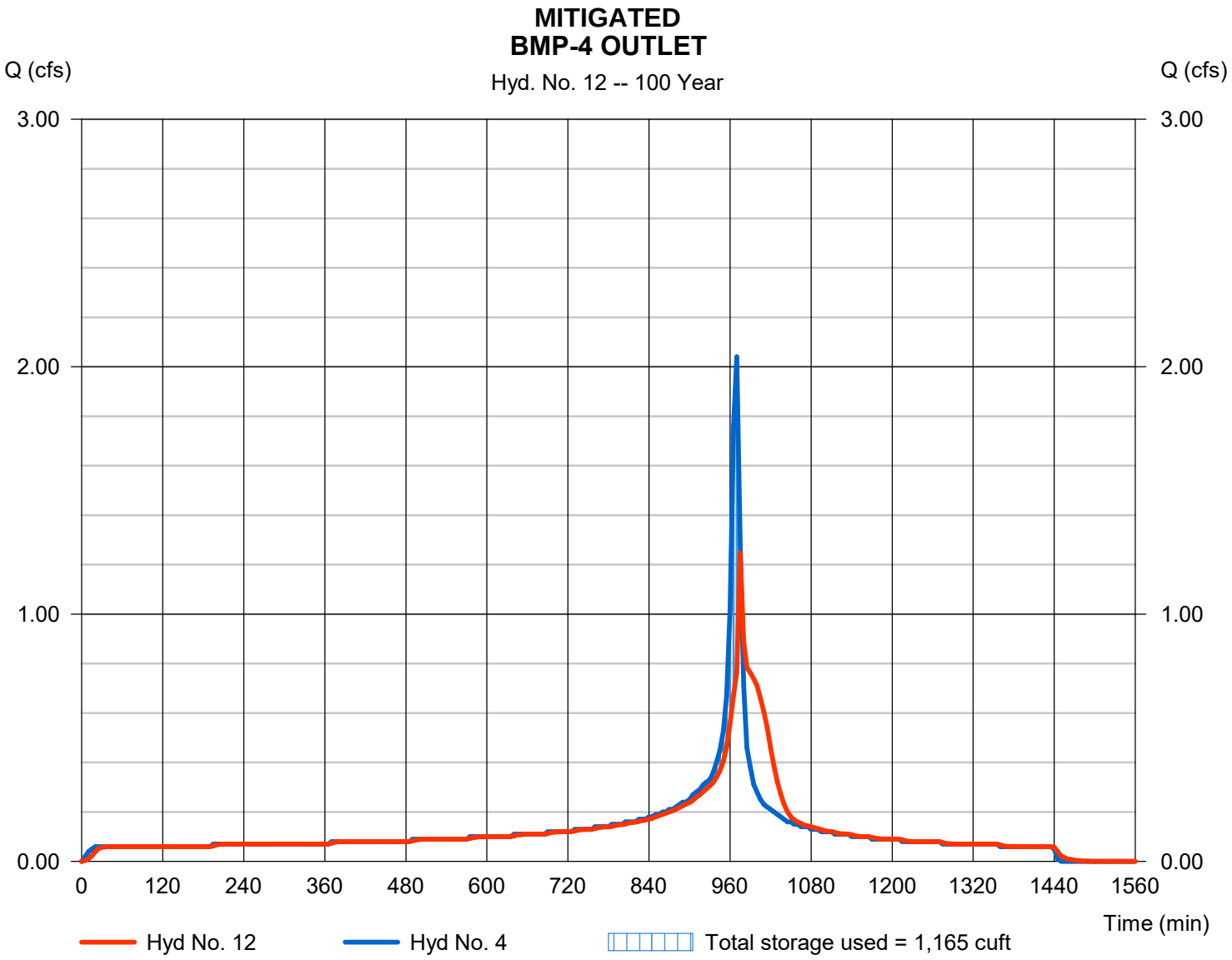
BMP-4 OUTLET

DMA 2A & 2B

Hydrograph type	=	Reservoir	Peak discharge	=	1.246 cfs
Storm frequency	=	100 yrs	Time to peak	=	975 min
Time interval	=	5 min	Hyd. volume	=	11,573 cuft
Inflow hyd. No.	=	4 - BMP-4 (DMA2A & 2B)	Max. Elevation	=	103.74 ft
Reservoir name	=	BMP-4 (BIO-BASIN)	Max. Storage	=	1,165 cuft

Storage Indication method used. Outflow includes exfiltration.

TIME OF CONCENTRATION INCREASED FROM 970 MIN TO 975 MIN.
5 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
7.37 MIN + 5 MIN = 12.37 MIN



Hydrograph Report

Hyd. No. 13

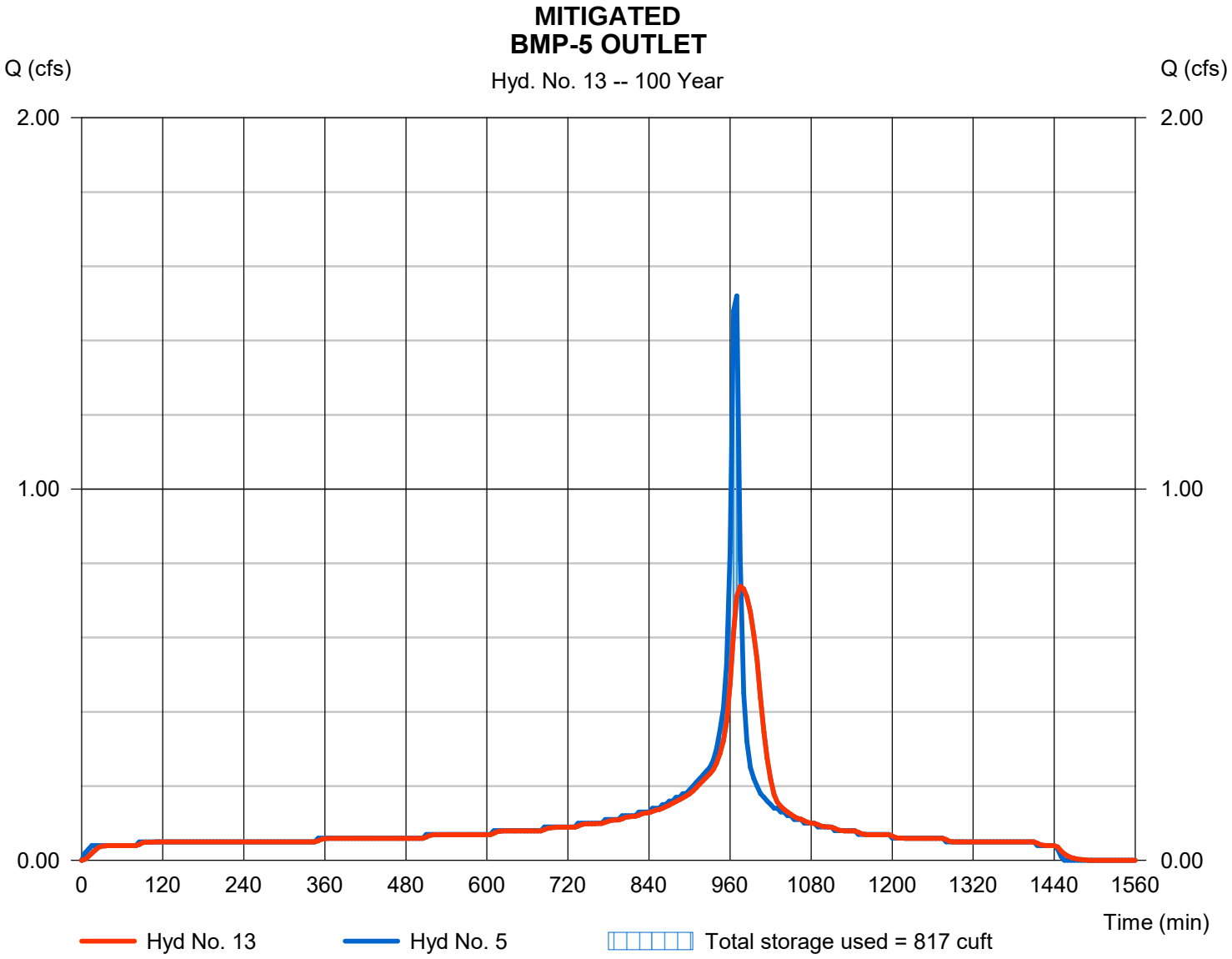
BMP-5 OUTLET

DMA 2C & 2D

Hydrograph type	=	Reservoir	Peak discharge	=	0.739 cfs
Storm frequency	=	100 yrs	Time to peak	=	975 min
Time interval	=	5 min	Hyd. volume	=	8,553 cuft
Inflow hyd. No.	=	5 - BMP-5 (DMA2C & 2D)	Max. Elevation	=	103.39 ft
Reservoir name	=	BMP-5 (BIO-BASIN)	Max. Storage	=	817 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

TIME OF CONCENTRATION INCREASED FROM 970 MIN TO 975 MIN.
5 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
7.45 MIN + 5 MIN = 12.45 MIN



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2022 — Saturday, 10 / 2 / 2021

Hyd. No. 14

*DMA 3 & POC -3

BMP-6 OUTLET

Hydrograph type	=	Reservoir	Peak discharge	=	1.349 cfs
Storm frequency	=	100 yrs	Time to peak	=	975 min
Time interval	=	5 min	Hyd. volume	=	34,256 cuft
Inflow hyd. No.	=	6 - BMP-6 (DMA3)	Max. Elevation	=	102.29 ft
Reservoir name	=	BMP-6 (UNDERGROUND)	Max. Storage	=	7,880 cuft

Storage Indication method used.

*POC-3 ONLY HAS ONE (1) BMP AND THEREFORE DOES NOT REQUIRE ADDITIONAL CIVILD ANALYSIS. PEAK FLOW FOR DMA 3 IS ALSO THE PEAK FLOW FOR POC-3

TIME OF CONCENTRATION INCREASED FROM 965 MIN TO 975 MIN.
10 MINUTES ADDED TO CIVILD TIME OF CONCENTRATION.
4.76 MIN + 10 MIN = 14.76 MIN