PACIFIC CONSULTING GROUP

Preliminary Drainage Area Study

For:

Gateway Terminal Chino

5885 Schaefer Ave. Chino, CA 91710

APNS: 1021-052-04-0-000, 1021-052-06-0-000, 1021-052-09-0-000, 1021-052-11-0-000

Project File No.: PL24-0097 (SCUP) & PL24-0098 (SA)

Prepared for:
Gateway Terminal
13925 City Center Dr
Chino, California 91709

REVIEWED FOR CODE COMPLIANCE

These plans and documents have been reviewed and found to be in compliance with the applicable code requirements of the jurisdiction Issuance of a permit is recommended subject to approval by other departments and any noted conditions. The stamping of these plans shall not be held to permit or be an approval of any violation of applicable codes and standards no relieve the owner, design professional of record or contractor of compliance with the applicable codes and standards. Plan review of documents does not authorize construction to proceed in violation of any federal, state, nor local regulation.

BUREAU VERITAS NORTH AMERICA, INC.

CITY OF CHINO ENGINEERING
Reviewed

By: Daniel Aguirre 05/06/2025 2:27:04 PM
Project No: PL24-0098 (SA)

SIGNATURE:_WILLIAM ADDINGTON

DATE: 05/08/2025

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Table of Contents

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Section 1. Purpose

The purpose of this report is to assess the project site, identify the pre-development and post-development hydrologic conditions for the proposed Gateway Terminal Chino Project in the City of Chino, CA. The Gateway Terminal Chino project is a mixed-use project consisting of two buildings. The project will create two separate parcels. Parcel 1 will be 6.55 Ac and will consist of one industrial building comprising of 153,548 square feet of industrial use. Parcel 2 will be 0.80 Ac and will consist of a one-story commercial building consisting of 4,340 square feet of commercial area (intended for restaurant use). Other improvements will include the construction of retaining walls, concrete flatwork, landscaping, new ROW improvements, sidewalk, trash enclosures, and storm water Infiltration trenches. This report does not discuss the post construction water quality requirements, but these can be found in the project's Preliminary WQMP. The governing jurisdictions for this project include:

- City of Chino
- Santa Ana Regional Water Quality Control Board (SARWQCB)
- San Bernadino County Hydrology Manual

Section 2. Methodology

For both the existing and proposed conditions, the peak storm discharge and runoff volumes for the drainage areas were calculated using the San Bernadino County Hydrology Manual and Civil Design software. Plate D-4 "Time of Concentration Nomograph for Initial Subarea" from the Hydrology Manual was used to calculate the time of concentration (ToC) for the unit hydrographs produced. The Small Unit Area Hydrograph Method for San Bernardino, using Civil Design Software, was used to generate hydrographs for the 100-year storm events. These hydrographs will be used to determine the required detention volume for the proposed project to ensure the peak runoff flow is not exceeding that of the existing condition.

The existing and proposed hydrologic conditions were also analyzed using Civil Design Software to compute the runoff generated from each drainage area. The software utilizes the Rational Method and conforms to the hydrologic methodologies set forth in the San Bernadino County Hydrology Manual (SBCHM). The Rational Method is used to calculate peak flow rates (Q) as a function of runoff coefficients (C), intensities (I), and drainage areas (A).

$Q = C * i * A$

Q – flow rate in cubic feet per second

i – rainfall intensity in inches per hour

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A – drainage area in acres

Civil Design Software is programed to utilize the regression equations within the SBCHM from precipitation depths and intensities for the 2-100-yr storm event. The program also incorporates the antecedent moisture condition, hydrologic soil type (NCRS, see Appendix A), pervious area percentage, and infiltration rates defined by the user to determine the appropriate watershed losses and runoff coefficient as laid out in the SBCHM. Time of concentration was developed internally though the program.

Based on FEMA flood zone maps, the project is located within flood zone x. This area is noted as having a 0.2% annual chance of flood hazard, and 1% annual chance of flood with average depth less than one foot or with drainage areas of less than one square mile. The FEMA FIRMette map can be found in Appendix B.

Section 3. Existing Condition

The 7.35-acre project site is located on the South west corner of the intersection of Schaefer Ave. and Oaks Ave. The site is currently zoned as (M-1) Light Industrial and is bounded to the north by Schaefer Ave., to the east by Oaks Ave., to the south by an existing automotive repair center, and to the west by a commercial park. See project vicinity map in Figure 1 below.

Figure 1 – Vicinity Map

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In its existing condition, the project site is Partially developed and contains no natural drainage pathways or features. As seen in the Existing Conditions Hydrology Exhibit in Appendix B, the project site slopes from the northeast to the southwest at an average slope of 1%. The flow path of the existing condition sheet flows over a large portion of undeveloped land and is assumed to pond and infiltrate at the low point of the site in the southwest corner. It is also assumed that larger storm events may end up conveying run-off to the southern properties. By visual inspection, there is currently no curb outlets along the property frontage and all stormwater is assumed to be retained on-site.

The public stormwater infrastructure adjacent to the project includes a 36" storm drain located at the centerline within Schaefer Ave., an existing side opened catch basin approximately 20 feet west of the western property line, and the perimeter of the public right of way is wrapped with curb and gutter to convey storm water. Storm water in Schaefer Ave. will be conveyed westerly, and storm water in Oaks Ave. will be conveyed southerly.

Section 3.1 Existing Hydrology

As previously noted, the existing hydrologic condition of the site is vastly comprised of sheet flowing runoff by gravity along the existing slope. The flow pattern can be described as flowing southwesterly to the low point of the property which is located in undeveloped land. The average grade is fairly low at an average slope of 1% and the flow path length for the hydrologic calculations is approximately 810 linear feet. The time of concentration was calculated to be 15.1 minutes. Other hydrologic characteristics can be seen in the Existing Hydrology Exhibit shown in Appendix B and the results of the hydrologic modeling can be found in Appendix D. A summary of these results can be found below.

Table 1: Existing Hydrology Results

Drainage Area	2-Yr Runoff (cfs)	10-Yr Runoff (cfs)	100-Yr Runoff (cfs)
A (7.35 Ac)	5.953	11.823	21.359

Section 4. Proposed Condition

In the post-development condition, the project proposes to redevelop the site to include two buildings, auto parking and drive aisles for vehicular and fire access around the site, truck loading docks, truck/trailer parking spaces located at the southern end of the property, and landscaping throughout the site. Runoff generated from the site will fall

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into three main drainage areas. Each one of these drainage areas will consist of runoff collection devices such as area drains and catch basins which will collect all of the surface runoff before being conveyed through pipes to a hydrodynamic separator which will be the pretreatment device for the drainage area allowing for trash collection and sedimentation to be deposited prior to entering in to their respective infiltration trenches. The infiltration trenches will be sized based on the local requirements for the NPDES permit and will use the collected stormwater runoff and recharge the groundwater system below. Any storms greater than the design storm will have an overflow relief. Drainage areas B and C will use a pump to discharge overflow to the adjacent street and Drainage area A will overflow via gravity to the adjacent street. A brief summary of each Drainage area will be provided below.

Drainage area A is located in the Northeast corner of the property and consists of 0.87 Acres of the proposed development. This subarea consists of one commercial building totaling approx. 4,340 SF and has an impervious percentage of 75%. The area will contain parking areas and drive aisles along with landscaping and permeable paved patios. As described above, the runoff will be conveyed via sheet flow to it's respective collection device (roof drains, area drains, and catch basins) before it will be conveyed via pipe flow to the hydrodynamic separator and further downstream to the infiltration trench. Larger storm events will overflow from the infiltration trench via gravity and be discharged through the curb face to Oaks Ave.

Drainage area B is located at the North end of the property and consists of 2.44 Acres of the proposed development. This subarea consists of a portion of the commercial/industrial building totaling approx. 82,147 SF and has an impervious percentage of 78%. This drainage area consists mostly of the industrial/commercial building, various hardscaped pedestrian walkways, landscaped areas and a permeable paved patio. As described above, the runoff will be conveyed via sheet flow to its respective collection device (roof drains, area drains, and catch basins) before it will be conveyed via pipe flow to the hydrodynamic separator and further downstream to the infiltration trench. Larger storm events will overflow from the infiltration trench to a sump pit where it will be pumped to a catch basin before it gravity flows out to the curb face at Schaefer Ave.

Drainage area C is the largest subarea of the property and consists of 4.04 Acres of the proposed development. This subarea consists of the remaining portion of the industrial/commercial building totaling approx. 71,388 SF and has an impervious percentage of 98%. The area will contain parking areas and drive aisles along with landscaping and hardscaped pedestrian walkways. As previously described, the runoff will be conveyed via sheet flow to its respective collection device (roof drains, area drains, and catch basins) before it will be conveyed via pipe flow to the hydrodynamic

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separator and further downstream to the infiltration trench. Larger storm events will overflow from the infiltration trench to a sump pit that will pump runoff up to a catch basin located on the east side of the property adjacent to Oaks Ave before it is conveyed via gravity through the curb face to Oaks Ave.

A summary of the proposed condition rational method hydrology can be found below.

Table 2.1: Proposed Hydrology Flow Results

Drainage Area	2-Yr Runoff (cfs)	10-Yr Runoff (cfs)	100-Yr Runoff (cfs)
A	1.268	2.227	3.586
B	4.649	8.083	13.052
C	6.08	10.629	17.252
Total	11.997	20.939	33.89

Table 2.2: Proposed Hydrology Volume Results

Drainage Area	2-Yr Runoff (CF)	10-Yr Runoff (CF)	100-Yr Runoff (CF)
A	2,178	6,578	16,444
B	5,493	17,799	45,738
C	2,365	22,429	71,874
Total	10,036	46,806	134,056

Section 5. Results

A summary and comparison of the preliminary analysis of the existing and post-development conditions have been provided below in Table 3. The results of this analysis shows an increase of runoff of the post-development condition. This is largely due to the increase in impervious area from the development when compared to the existing condition.

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Table 3: Hydrology Comparison

Site Condition	2-Yr Runoff (cfs)	10-Yr Runoff (cfs)	100-Yr Runoff (cfs)
Pre-Development	5.953	11.823	21.359
Post-Development	11.997	20.939	33.89
Difference	+6.044	+9.116	+12.531

The increase in runoff will be retained by the proposed BMP volumes. To show this the small unit area hydrograph has been calculated using Civildesign Engineering software. The area between the proposed and existing condition 100 year hydrograph will need to be retained on-site to ensure there is no increase of stormwater runoff from the proposed project. If the area under the curve is equal to or less than the retention of the infiltration basins then no increase in runoff should be anticipated. The results of the Unit Hydrographs can be found in Appendix D. The plotted unit hydrographs can be shown below. The difference between the proposed and existing hydrograph totals to be 1,587 cubic feet. The total retention volume of the three proposed infiltration trenches total to be 34,243 cubic feet which well exceeds the difference between the proposed and existing hydrograph. Therefore, it should be reasonable to conclude the proposed project will not impose any impact due to the proposed runoff.

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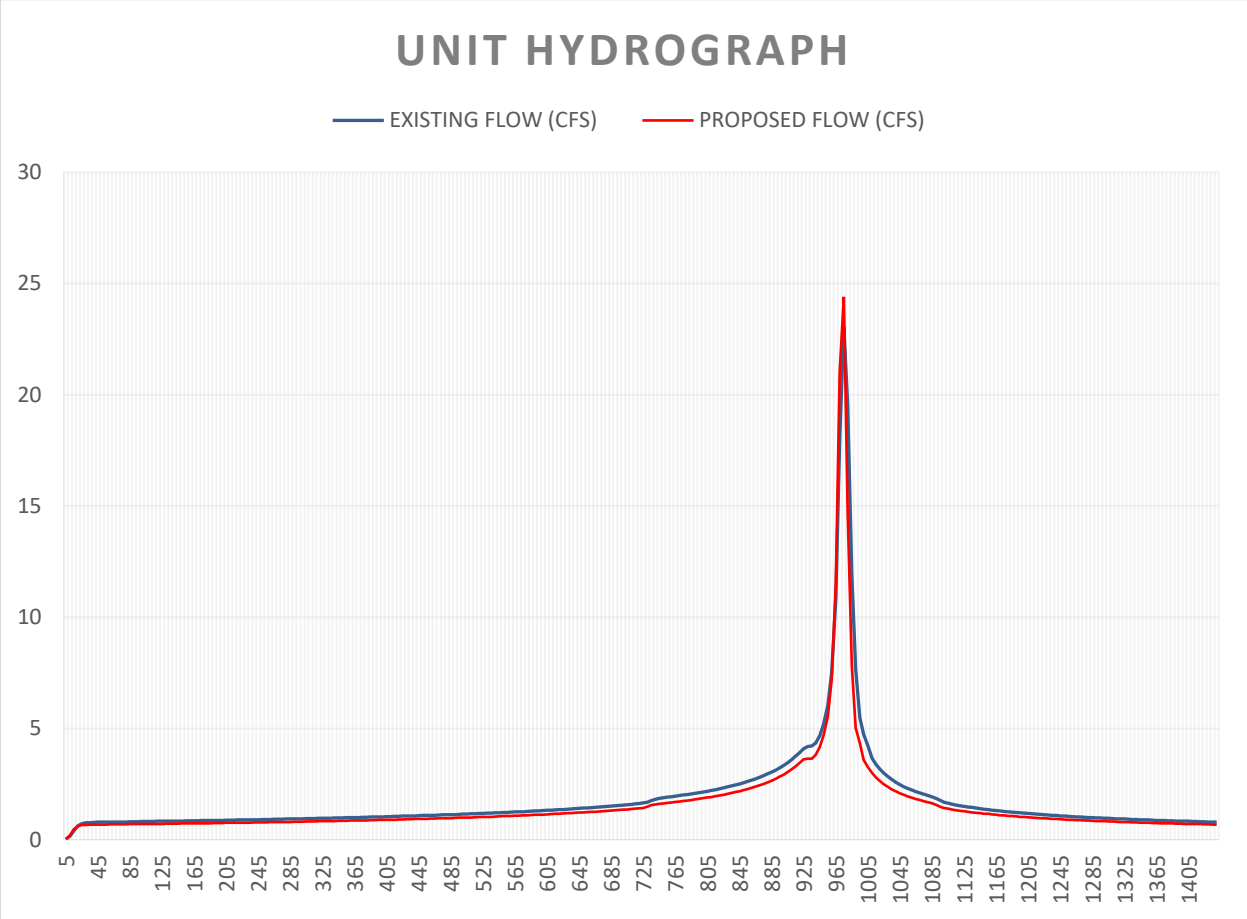
Figure 1: Unit Hydrograph comparison



Section 6. Conclusion

The proposed project does not increase runoff volumes or modify peak flow rates and can be shown in the calculations provided. Overall, the project sees a decrease in peak flow rate as compared to the existing condition by increasing the retention volume on-site due to the required NPDES BMPs being proposed apart of the project. The additional retention volumes far exceed the increase in runoff flow rates and will decrease the runoff peak flow rate and the runoff volume generated by the proposed condition. These conclusions can be substantiated by the hydrologic calculations provided in Appendix D. Therefore, it should be reasonable to conclude the proposed project will not impose any impact due to the proposed runoff.

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Appendix A
References

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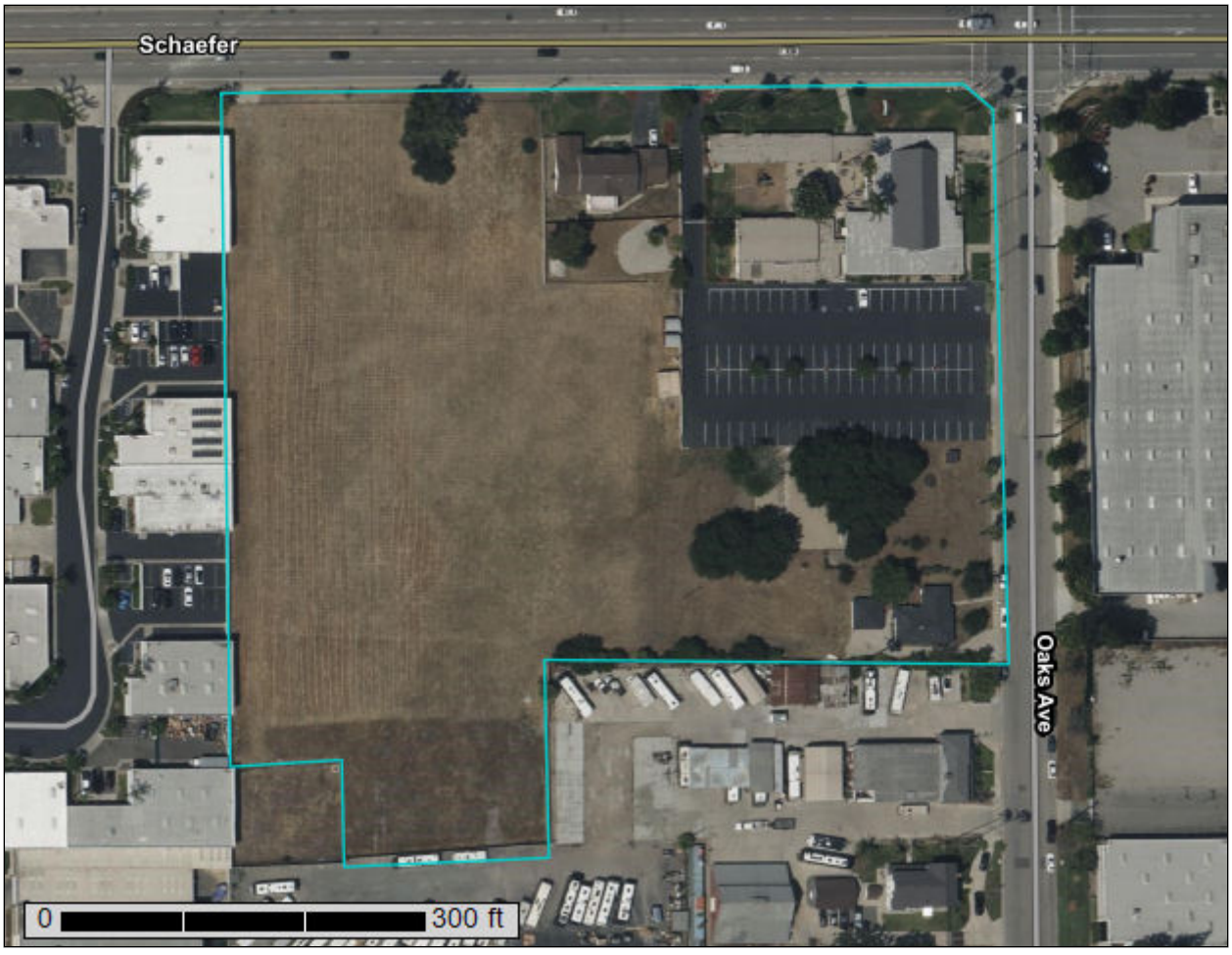
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Bernardino County Southwestern Part, California



December 6, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

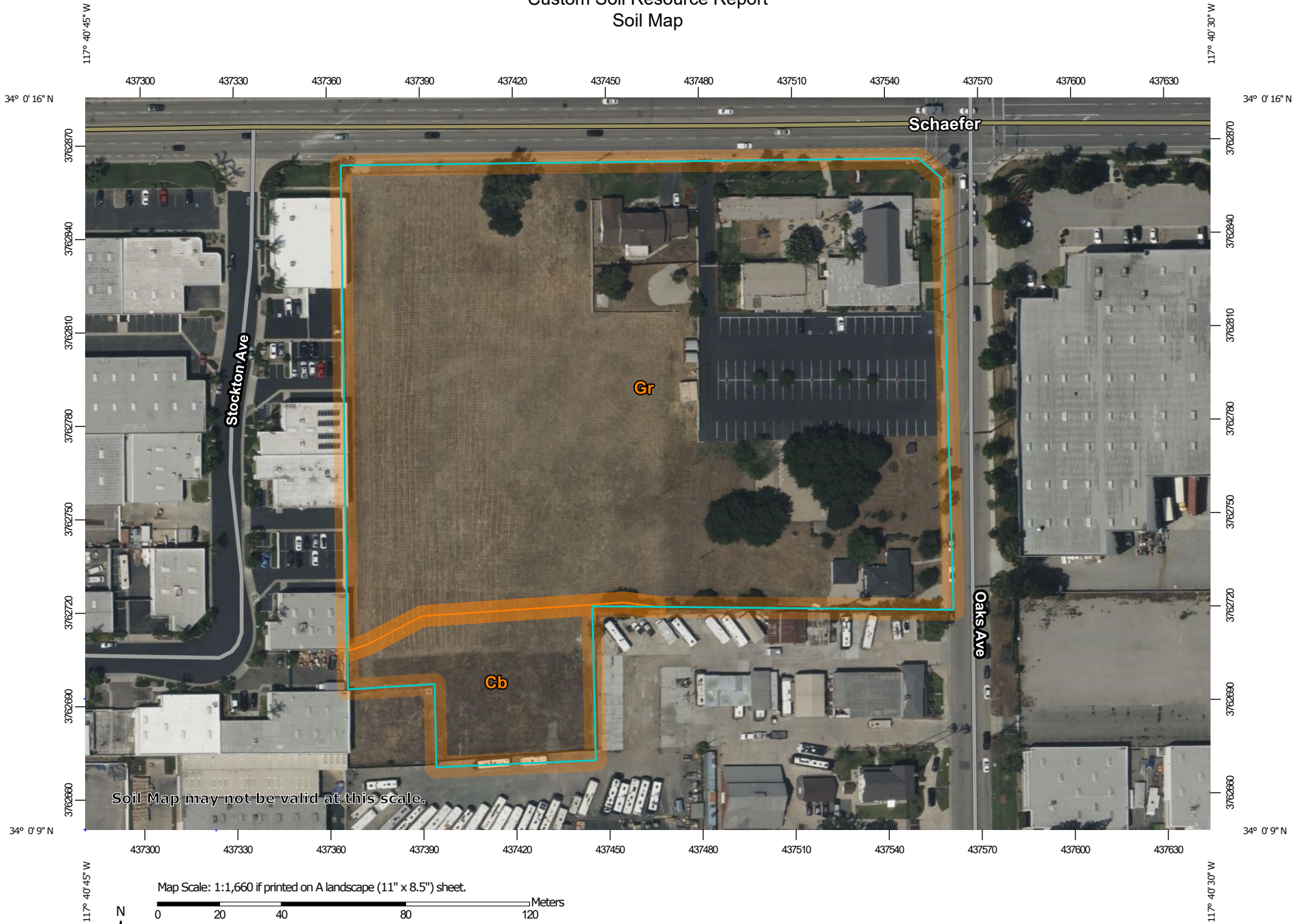
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:1,660 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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 16, Aug 30, 2024

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

Date(s) aerial images were photographed: Mar 17, 2022—Jun 12, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cb	Chino silt loam	0.8	9.8%
Gr	Grangeville fine sandy loam, warm MAAT, MLRA 19	7.0	90.2%
Totals for Area of Interest		**7.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Bernardino County Southwestern Part, California

Cb—Chino silt loam

Map Unit Setting

National map unit symbol: hcjg
Elevation: 20 to 3,100 feet
Mean annual precipitation: 8 to 20 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 230 to 340 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Chino and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chino

Setting

Landform: Basin floors, flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed

Typical profile

H1 - 0 to 16 inches: silt loam
H2 - 16 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: Rare
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 11.2 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: R019XG907CA - Loamy Bottom
Hydric soil rating: No

Minor Components

Unnamed
Percent of map unit: 5 percent
Landform: Fan remnants
Hydric soil rating: Yes

Merrill, silt loam
Percent of map unit: 5 percent
Hydric soil rating: No

Hanford
Percent of map unit: 5 percent
Hydric soil rating: No

Gr—Grangeville fine sandy loam, warm MAAT, MLRA 19

Map Unit Setting
National map unit symbol: 2vncy
Elevation: 490 to 1,430 feet
Mean annual precipitation: 11 to 17 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 271 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Grangeville and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grangeville

Setting
Landform: Alluvial fans, flood plains
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile
A - 0 to 12 inches: fine sandy loam
C - 12 to 79 inches: fine sandy loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: A
Ecological site: R019XG911CA - Loamy Fan
Hydric soil rating: No

Minor Components

Unnamed, hydric

Percent of map unit: 5 percent
Landform: Flood plains, alluvial fans, depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

San emigdio, fine sandy loam

Percent of map unit: 5 percent
Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Chino

Percent of map unit: 5 percent
Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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PACIFIC CONSULTING GROUP

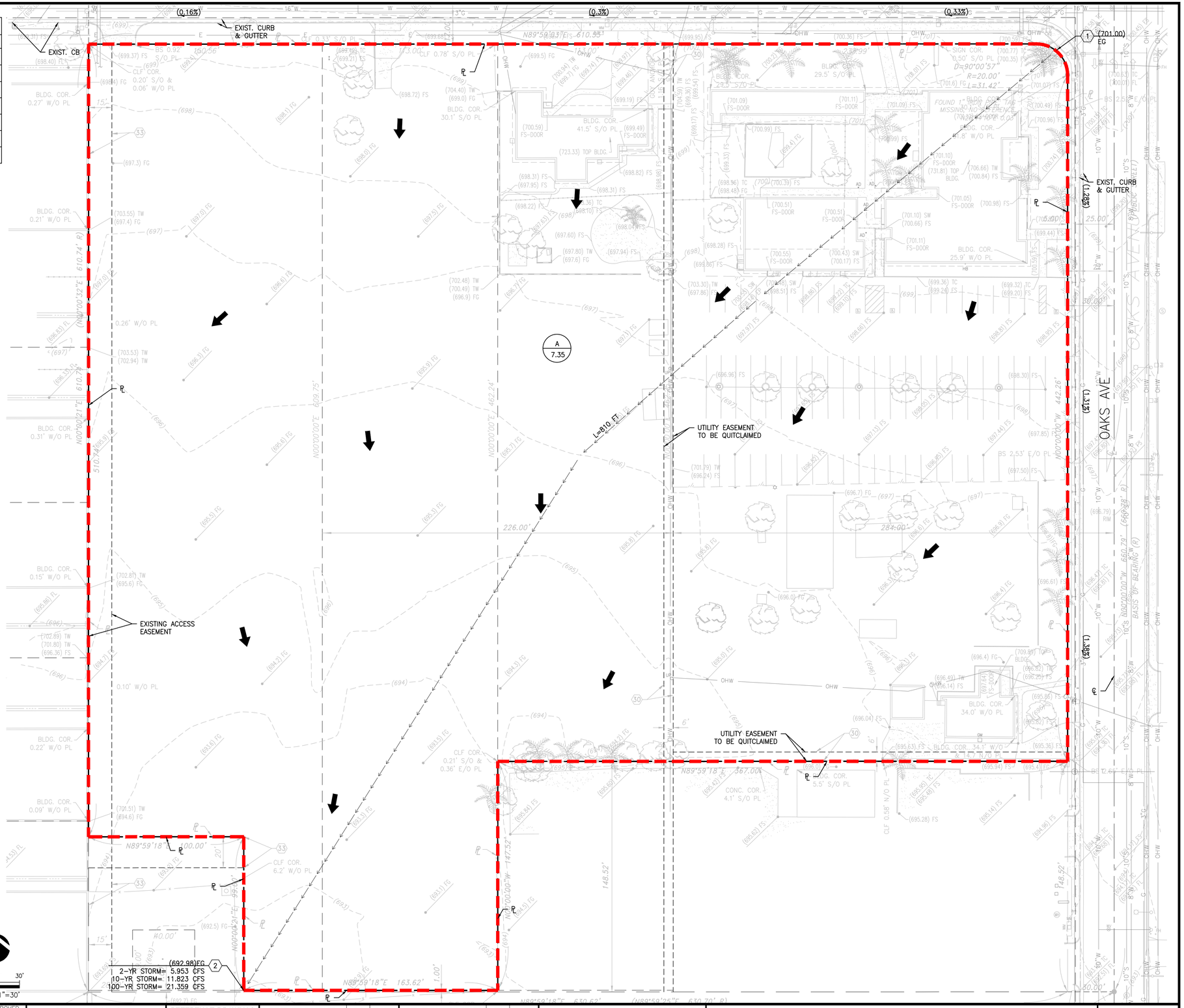
Appendix B
Maps & Exhibits

2239 State Ave, #B
Costa Mesa, California 92627
(818) 800 6991
Kyle@pacificconsultinginc.com

LEGEND

- DRAINAGE AREA BOUNDARY
- PROPERTY LINE
- FLOW PATH
- DIRECTION OF FLOW
- (X) DRAINAGE NODE
- X / X SUBAREA ID / ACREAGE

EXISTING CONDITIONS	
AREA	QUANTITIES
TOTAL SITE AREA (S.F.)	320,382
IMPERVIOUS AREA (S.F.)	96,691
PERVIOUS AREA (S.F.)	223,691
PERCENT IMPERVIOUS	30%
FLOW PATH LENGTH (FT)	810
AVERAGE SLOPE (FT/FT)	0.01
TIME OF CONCENTRATION (MIN)	13.9



SEAL

REGISTERED PROFESSIONAL ENGINEER · KYLE HARDING FROUDIT · C 95048 EXP. 09/30/25 · CIVIL · STATE OF CALIFORNIA

SIGN DATE 03/26/2025

PREPARED BY	REVISIONS	MADE BY	MADE DATE	APPROVED BY	APPROVED DATE
FIRM: PACIFIC CONSULTING GROUP, INC.	1 PLANNING SUBMITTAL		8/13/24		
ADDRESS: 2239 STATE AVE., #B COSTA MESA, CA 92627	2 1ST RE-SUBMITTAL		10/17/24		
TELEPHONE: (818) 800-6991 FAX: ( )	3 2ND RE-SUBMITTAL		12/18/24		
SIGNATURE RCE DATE	4 3RD RE-SUBMITTAL		3/25/25		
	5				

BENCH MARK DATA

NO. 137/57 ELEV 697.5040 FT

LOCATION:

FOUND 2 1/2" BRASS DISC LOCATED IN THE TOP OF CURB, 5' EAST OF THE ECR OF THE NORTHWEST CURB AND BEING 58.5' WEST AND 36.5' NORTH OF THE CENTERLINE INTERSECTION OF BENSON AVENUE AND SCHAEFER AVENUE.

REFERENCE DRAWINGS

REVIEWED BY STAFF	BY	DATE
WATER:		
SEWER:		
FIRE:		
PLANNING:		
TRAFFIC:		
SERVICES:		

CITY ENGINEER'S STAFF	BY	DATE
DRAWN:		
DESIGNED:		
CHECKED:		
RECOMMENDED:		

APPROVED BY:

PUBLIC WORKS DIRECTOR DATE:

CITY ENGINEER DATE:

CITY OF CHINO ENGINEERING DIVISION

GATEWAY CHINO

5885 SCHAEFER AVE

EXISTING HYDROLOGY

PROJECT NO.

SHEET OF 18

DRAWING NO.

LEGEND

- LANDSCAPE AREA BY OTHERS
- PEDESTRIAN PERMEABLE PAVERS BY OTHERS
- VEHICULAR CONCRETE PAVING
- PEDESTRIAN CONCRETE PAVING
- BELOW GRADE INFILTRATION TRENCH
- RETAINING WALL
- PROPERTY LINE
- FLOW PATH
- DRAINAGE AREA BOUNDARIES
- SD — STORM DRAIN PIPE
- SDOF — STORM DRAIN OVERFLOW PIPE
- CATCH BASIN
- AREA DRAIN
- X / X.XX — SUB AREA ID / SUB-HYDROLOGY AREA IN ACRES
- DIRECTION OF FLOW
- X — DRAINAGE NODE

CONTRUCTION NOTES

(SD1) CONNECT TO PROPOSED DOWNSPOUT BELOW GRADE. SEE ARCHITECTURAL PLANS FOR CONTINUATION.

(SD2) INSTALL PVC STORM DRAIN PIPE. SIZE TO BE CONFIRMED. (MIN SLOPE = 0.5%)

(SD3) INSTALL PRECAST CONCRETE CATCH BASIN.

(SD4) INSTALL 4' RIBBON GUTTER PER DETAIL **3**, SHEET **16**.

(SD5) INSTALL BELOW GRADE INFILTRATION TRENCH PER DETAIL **2**, SHEET **16**.

(SD6) INSTALL CURB OUTLET PER APWA STD PLAN 151-3. SIZE TO BE CONFIRMED.

(SD7) INSTALL CONTECH CDS PRETREATMENT DEVICE PER DETAIL **1**, SHEET **16**.

(SD8) INSTALL 4" TRENCH DRAIN BY ACO OR APPROVED EQUAL.

(SD9) INSTALL BUBBLER BOX PER DETAIL **4**, SHEET **16**.

(SD10) INSTALL SUMP PUMP.

(SD11) INSTALL 6" TRENCH DRAIN BY ACO OR APPROVED EQUAL.

BMP NOTES

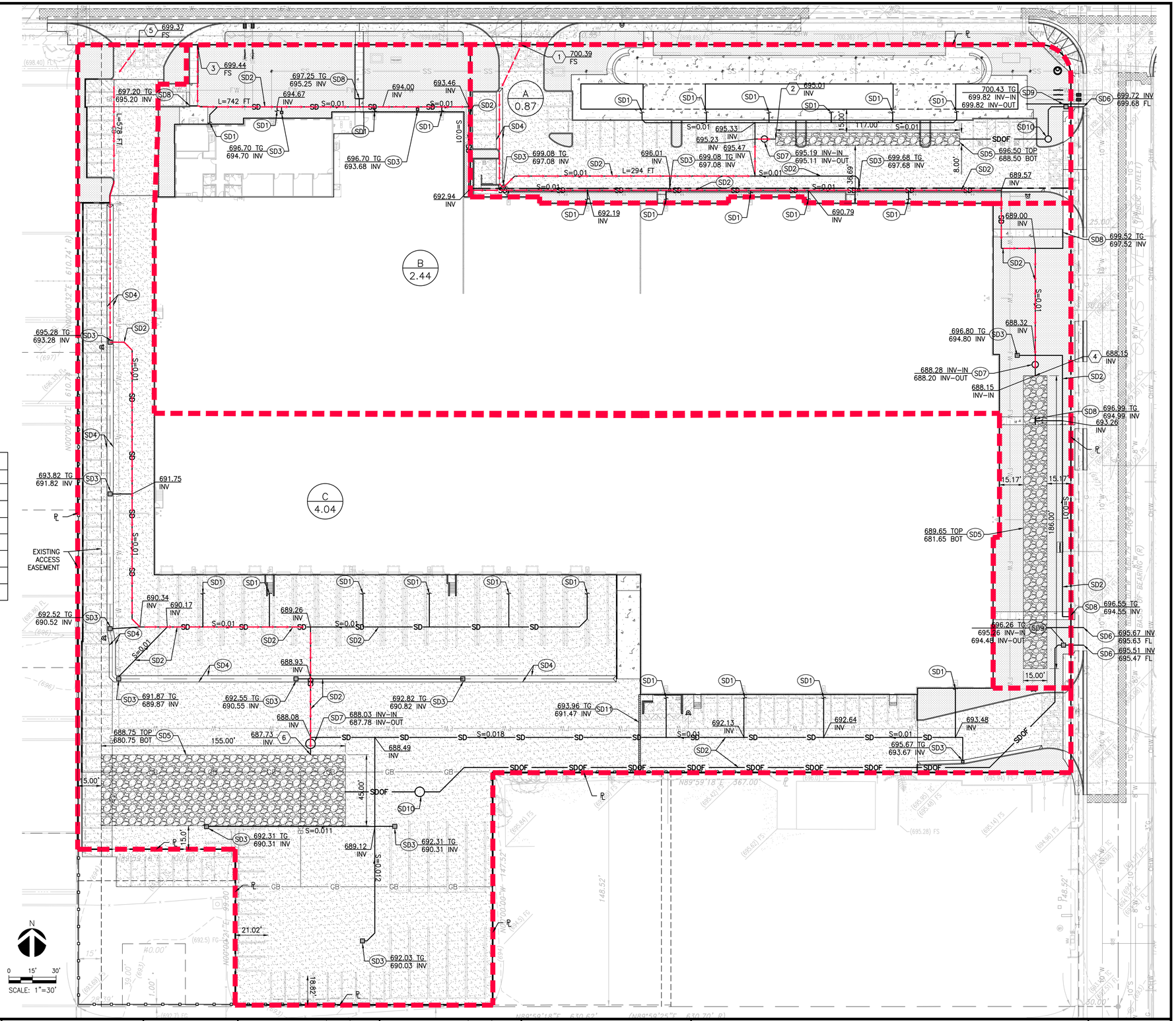
1. ANY CHANGES (TYPE, SIZE, LOCATION) TO APPROVED STORMWATER BEST MANAGEMENT PRACTICE(S) (BMPs) MUST OBTAIN WRITTEN APPROVAL FROM RANCHO CUCAMONGA PRIOR, TO CONSTRUCTION OF BMP(s).
2. ALL ON-SITE STORM DRAIN PIPES SHOWN HEREON SHALL BE WATER-TIGHT.
3. ALL DOWNSPOUTS TO DRAIN TO PROPOSED BMPS. SEE PLUMBING PLANS.

WQMP SUMMARY

DRAINAGE MANAGEMENT AREA	A	B	C	TOTAL
TOTAL DEVELOPMENT AREA (S.F.)				320,382
DISTURBED PROJECT AREA (S.F.)	37,935	106,270	176,177	320,382
PROPOSED IMPERVIOUS AREA (S.F.)	28,628	83,195	171,992	283,815
PROPOSED IMPERVIOUS PERCENTAGE	75%	78%	98%	89%
PROPOSED BUILDINGS (S.F.)	3,160	81,773	71,776	156,709
PROPOSED PAVING/HARDSCAPE (S.F.)	25,468	1,422	100,216	139,906
PROPOSED PERVIOUS AREA (S.F.)	9,307	23,075	4,185	36,567
FLOW PATH LENGTH	294	742	578	
AVREAGE SLOPE (FT/FT)	0.018	0.015	0.016	
BMP TYPE	INFILTRATION TRENCH	INFILTRATION TRENCH	INFILTRATION TRENCH	
TIME OF CONCENTRATION (MIN)	6.57	9.88	8.45	
2-YR STORM (CFS/CF)	1.52/2,178	3.36/5,493	6.13/2,365	
10-YR STORM (CFS/CF)	2.68/6,578	5.88/17,799	10.70/22,429	
100-YR STORM (CFS/CF)	4.33/16,444	9.54/45,738	17.35/71.874	

STORM WATER QUALITY SUMMARY

SUB-HYDROLOGY AREA	TRIBUTARY AREA (AC)	PROPOSED BMP
A	0.87	BMP1
B	2.44	BMP2
C	4.04	BMP3
TOTAL	7.35	



N

0 15' 30'

SCALE: 1"=30'

SEAL

REGISTERED PROFESSIONAL ENGINEER — KYLE JARDINE PRUITT — C 95048 — EXP. 09/30/25 — CIVIL — STATE OF CALIFORNIA

SIGN DATE 03/26/2025

PREPARED BY	REVISIONS	MADE BY	MADE DATE	APPROVED BY	APPROVED DATE
FIRM: PACIFIC CONSULTING GROUP, INC.	1 PLANNING SUBMITTAL		8/13/24		
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LOCATION:

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CITY ENGINEER'S STAFF	BY	DATE
DRAWN:		
DESIGNED:		
CHECKED:		
RECOMMENDED:		

APPROVED BY:

PUBLIC WORKS DIRECTOR DATE:

CITY ENGINEER DATE:

CITY OF CHINO ENGINEERING DIVISION

GATEWAY CHINO

5885 SCHAEFER AVE

PROPOSED HYDROLOGY EXHIBIT

PROJECT NO.

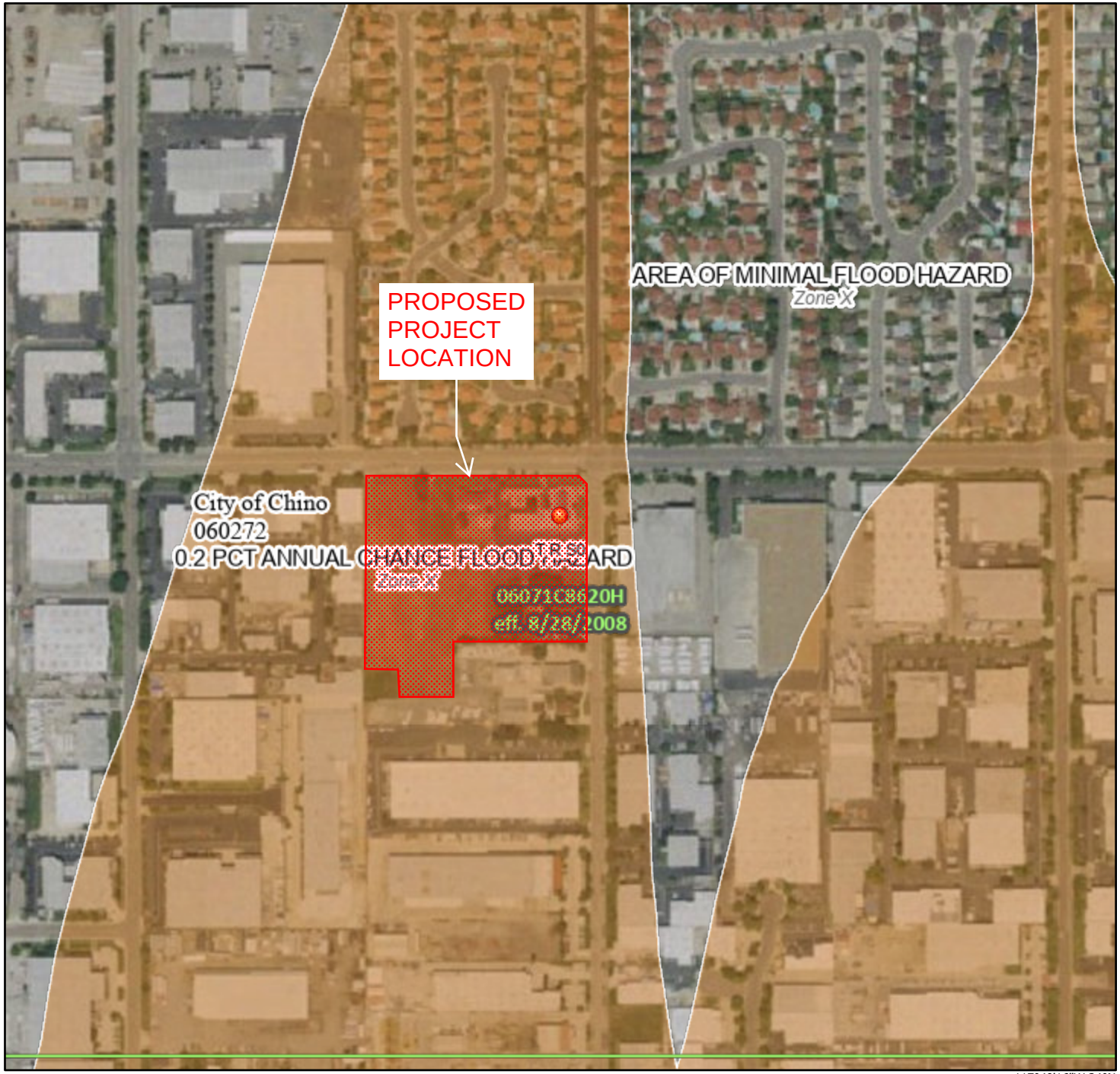
SHEET OF 18

DRAWING NO.

National Flood Hazard Layer FIRMette

FEMA

117°40'54"W 34°0'29"N



117°40'16"W 34°N

Feet

0 250 500 1,000 1,500 2,000

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/26/2025 at 3:03 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

PACIFIC CONSULTING GROUP

Appendix C
Supporting Documents

2239 State Ave, #B
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(818) 800 6991
Kyle@pacificconsultinginc.com

NOAA Atlas 14, Volume 6, Version 2
Location name: Chino, California, USA*
Latitude: 34.0039°, Longitude: -117.6766°
Elevation: 700 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	**0.115** (0.096-0.139)	**0.150** (0.126-0.182)	**0.198** (0.164-0.240)	**0.237** (0.195-0.290)	**0.291** (0.232-0.369)	**0.334** (0.260-0.433)	**0.378** (0.287-0.503)	**0.425** (0.313-0.582)	**0.490** (0.346-0.701)	**0.568** (0.387-0.843)
10-min	**0.165** (0.138-0.200)	**0.216** (0.180-0.261)	**0.283** (0.236-0.344)	**0.339** (0.280-0.416)	**0.417** (0.332-0.529)	**0.479** (0.373-0.621)	**0.542** (0.412-0.722)	**0.609** (0.449-0.835)	**0.702** (0.496-1.00)	**0.815** (0.555-1.21)
15-min	**0.200** (0.167-0.242)	**0.261** (0.218-0.316)	**0.342** (0.285-0.416)	**0.410** (0.338-0.502)	**0.505** (0.402-0.640)	**0.579** (0.451-0.751)	**0.656** (0.498-0.873)	**0.737** (0.543-1.01)	**0.849** (0.600-1.22)	**0.985** (0.671-1.46)
30-min	**0.300** (0.251-0.363)	**0.392** (0.327-0.475)	**0.515** (0.428-0.625)	**0.617** (0.509-0.755)	**0.758** (0.604-0.962)	**0.870** (0.678-1.13)	**0.986** (0.748-1.31)	**1.11** (0.817-1.52)	**1.28** (0.901-1.83)	**1.48** (1.01-2.20)
60-min	**0.451** (0.377-0.545)	**0.588** (0.491-0.712)	**0.772** (0.642-0.937)	**0.925** (0.763-1.13)	**1.14** (0.906-1.44)	**1.30** (1.02-1.69)	**1.48** (1.12-1.97)	**1.66** (1.22-2.28)	**1.92** (1.35-2.74)	**2.22** (1.51-3.30)
2-hr	**0.678** (0.566-0.820)	**0.886** (0.739-1.07)	**1.15** (0.959-1.40)	**1.37** (1.13-1.67)	**1.65** (1.31-2.09)	**1.86** (1.45-2.41)	**2.07** (1.57-2.76)	**2.29** (1.68-3.13)	**2.57** (1.81-3.68)	**2.78** (1.90-4.13)
3-hr	**0.859** (0.718-1.04)	**1.12** (0.936-1.36)	**1.46** (1.21-1.77)	**1.72** (1.42-2.10)	**2.06** (1.64-2.61)	**2.31** (1.80-3.00)	**2.56** (1.95-3.41)	**2.81** (2.08-3.86)	**3.14** (2.22-4.50)	**3.39** (2.31-5.02)
6-hr	**1.19** (0.991-1.43)	**1.55** (1.29-1.87)	**2.00** (1.66-2.43)	**2.35** (1.94-2.88)	**2.81** (2.24-3.56)	**3.14** (2.45-4.07)	**3.47** (2.63-4.62)	**3.79** (2.80-5.20)	**4.21** (2.97-6.03)	**4.52** (3.08-6.71)
12-hr	**1.56** (1.30-1.88)	**2.03** (1.69-2.46)	**2.63** (2.19-3.19)	**3.10** (2.56-3.80)	**3.72** (2.96-4.72)	**4.19** (3.26-5.43)	**4.64** (3.53-6.18)	**5.10** (3.76-6.99)	**5.70** (4.03-8.16)	**6.16** (4.19-9.14)
24-hr	**2.01** (1.78-2.32)	**2.63** (2.33-3.04)	**3.44** (3.04-3.99)	**4.10** (3.59-4.79)	**4.99** (4.23-6.02)	**5.68** (4.71-6.98)	**6.37** (5.16-8.02)	**7.07** (5.57-9.16)	**8.03** (6.08-10.8)	**8.77** (6.41-12.2)
2-day	**2.42** (2.14-2.78)	**3.23** (2.85-3.72)	**4.32** (3.81-5.00)	**5.23** (4.57-6.10)	**6.50** (5.50-7.83)	**7.50** (6.22-9.22)	**8.54** (6.91-10.8)	**9.63** (7.59-12.5)	**11.2** (8.44-15.0)	**12.4** (9.05-17.3)
3-day	**2.59** (2.30-2.99)	**3.51** (3.10-4.06)	**4.76** (4.20-5.52)	**5.82** (5.09-6.79)	**7.31** (6.19-8.81)	**8.50** (7.05-10.5)	**9.76** (7.90-12.3)	**11.1** (8.74-14.4)	**13.0** (9.81-17.5)	**14.5** (10.6-20.2)
4-day	**2.81** (2.49-3.24)	**3.84** (3.39-4.43)	**5.23** (4.61-6.06)	**6.41** (5.60-7.48)	**8.06** (6.82-9.71)	**9.37** (7.77-11.5)	**10.8** (8.71-13.5)	**12.2** (9.62-15.8)	**14.3** (10.8-19.2)	**15.9** (11.6-22.2)
7-day	**3.21** (2.84-3.70)	**4.40** (3.89-5.08)	**5.98** (5.27-6.92)	**7.28** (6.37-8.50)	**9.09** (7.69-11.0)	**10.5** (8.71-12.9)	**12.0** (9.68-15.1)	**13.5** (10.6-17.4)	**15.6** (11.8-21.0)	**17.2** (12.6-24.0)
10-day	**3.52** (3.12-4.06)	**4.83** (4.27-5.57)	**6.55** (5.78-7.58)	**7.97** (6.97-9.30)	**9.90** (8.38-11.9)	**11.4** (9.45-14.0)	**12.9** (10.5-16.3)	**14.5** (11.4-18.8)	**16.6** (12.6-22.5)	**18.3** (13.4-25.6)
20-day	**4.26** (3.77-4.92)	**5.92** (5.23-6.83)	**8.10** (7.14-9.37)	**9.88** (8.64-11.5)	**12.3** (10.4-14.9)	**14.2** (11.8-17.5)	**16.2** (13.1-20.4)	**18.2** (14.3-23.5)	**20.9** (15.8-28.2)	**23.0** (16.9-32.1)
30-day	**5.10** (4.51-5.88)	**7.10** (6.28-8.20)	**9.79** (8.63-11.3)	**12.0** (10.5-14.0)	**15.1** (12.8-18.3)	**17.6** (14.6-21.6)	**20.1** (16.3-25.4)	**22.8** (18.0-29.5)	**26.5** (20.0-35.7)	**29.4** (21.5-41.0)
45-day	**6.04** (5.34-6.97)	**8.40** (7.43-9.70)	**11.7** (10.3-13.5)	**14.4** (12.6-16.8)	**18.4** (15.6-22.2)	**21.6** (17.9-26.5)	**25.0** (20.2-31.4)	**28.6** (22.5-37.0)	**33.7** (25.5-45.5)	**37.9** (27.7-52.9)
60-day	**6.95** (6.15-8.01)	**9.60** (8.48-11.1)	**13.3** (11.8-15.4)	**16.6** (14.5-19.4)	**21.4** (18.1-25.7)	**25.3** (21.0-31.1)	**29.5** (23.9-37.2)	**34.2** (26.9-44.3)	**41.0** (31.0-55.2)	**46.6** (34.1-65.0)

[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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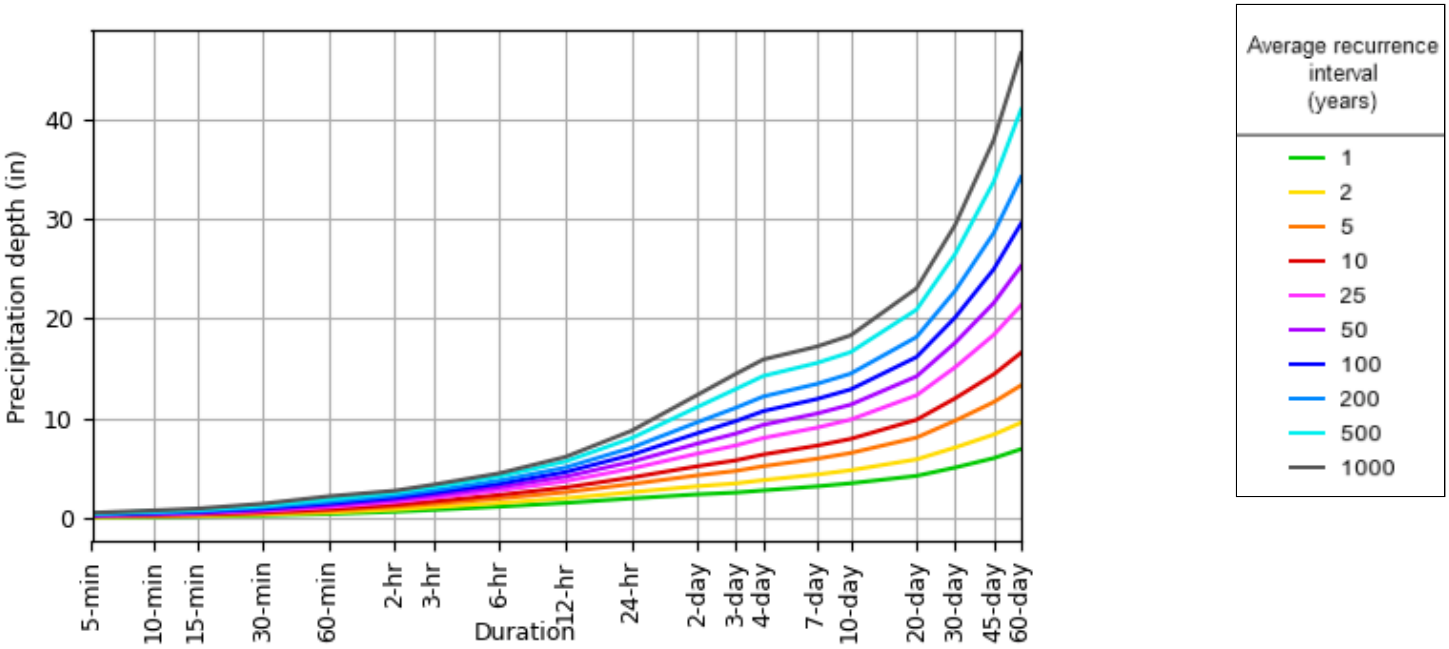
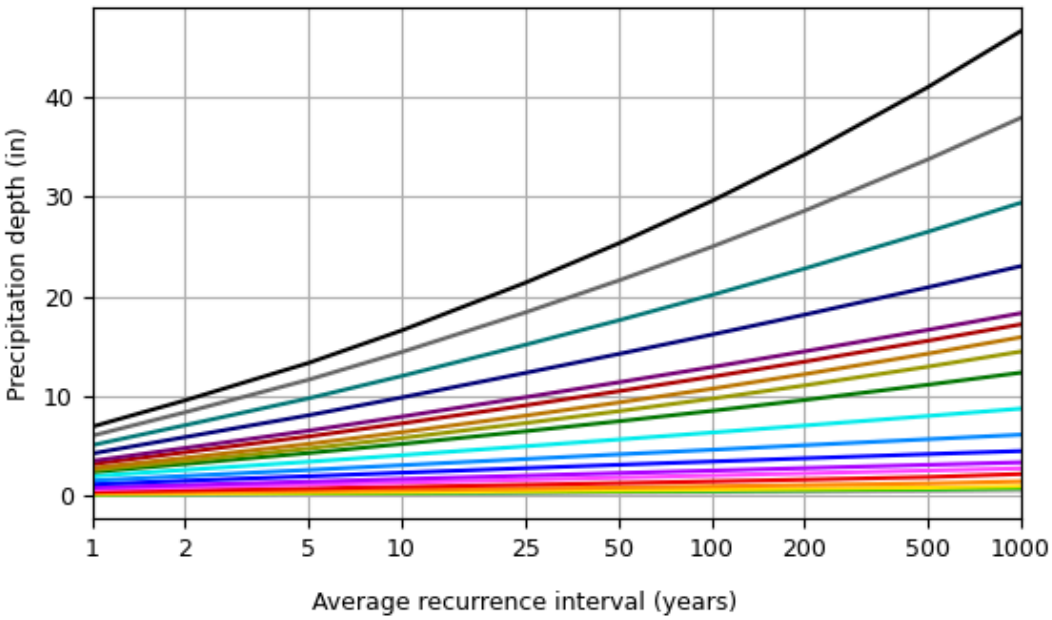
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 34.0039°, Longitude: -117.6766°





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Maps & aerials

Small scale terrain

Large scale terrain

Large scale map

Large scale aerial

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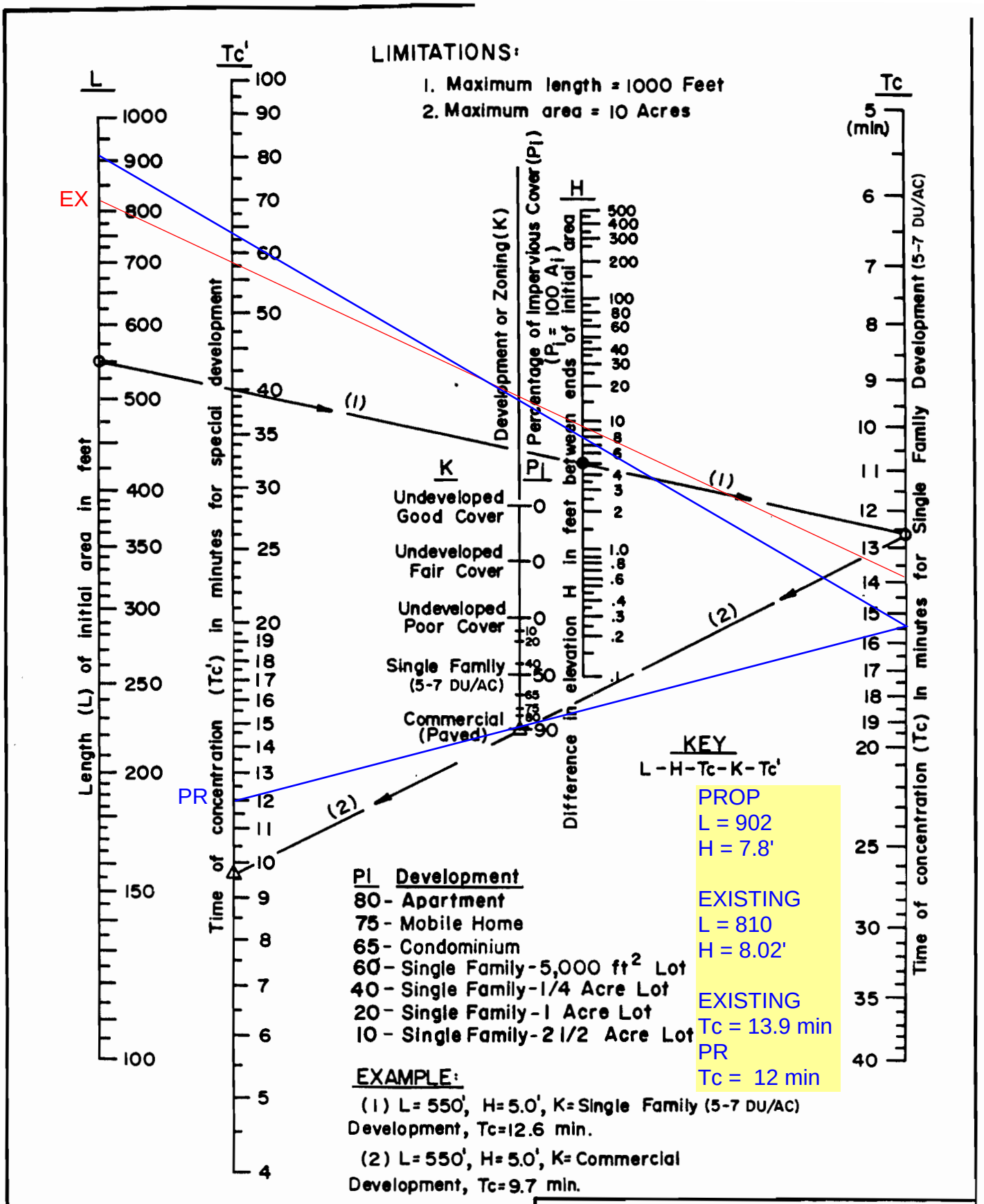

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

TIME OF CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA

Figure D-1

PACIFIC CONSULTING GROUP

Appendix D
Hydrologic Calculations

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Costa Mesa, California 92627
(818) 800 6991
Kyle@pacificconsultinginc.com

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: 12/17/24

5885 Schaefer Existing 2Yr Hydrology

Program License Serial Number 6683

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

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.925(In.)
100 Year storm 1 hour rainfall = 1.480(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.537 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 0.000(Ft.) to Point/Station 810.000(Ft.)
**** INITIAL AREA EVALUATION ****

SCHOOL subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 810.000(Ft.)
Top (of initial area) elevation = 701.000(Ft.)
Bottom (of initial area) elevation = 692.980(Ft.)
Difference in elevation = 8.020(Ft.)

Slope = 0.00990 s(%)= 0.99
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 15.106 min.
Rainfall intensity = 1.229(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.659
Subarea runoff = 5.953(CFS)
Total initial stream area = 7.350(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)
End of computations, Total Study Area = 7.35 (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) = 0.600
Area averaged SCS curve number = 69.0

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: 12/17/24

5885 Schaefer Existing 10Yr Hydrology

Program License Serial Number 6683

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.925 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 0.000(Ft.) to Point/Station 810.000(Ft.)

**** INITIAL AREA EVALUATION ****

SCHOOL subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 810.000(Ft.)
Top (of initial area) elevation = 701.000(Ft.)
Bottom (of initial area) elevation = 692.980(Ft.)
Difference in elevation = 8.020(Ft.)
Slope = 0.00990 s(%)= 0.99
TC = k(0.412)*[(length^3)/(elevation change)]^0.2

Initial area time of concentration = 15.106 min.
Rainfall intensity = 2.116(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.760
Subarea runoff = 11.823(CFS)
Total initial stream area = 7.350(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)
End of computations, Total Study Area = 7.35 (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) = 0.600
Area averaged SCS curve number = 69.0

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: 12/17/24

5885 Schaefer Existing 100Yr Hydrology

Program License Serial Number 6683

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

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.925(In.)
100 Year storm 1 hour rainfall = 1.480(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.480 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 0.000(Ft.) to Point/Station 810.000(Ft.)
**** INITIAL AREA EVALUATION ****

SCHOOL subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.157(In/Hr)
Initial subarea data:
Initial area flow distance = 810.000(Ft.)
Top (of initial area) elevation = 701.000(Ft.)
Bottom (of initial area) elevation = 692.980(Ft.)

Difference in elevation =   8.020(Ft.)
Slope =   0.00990 s(%)=   0.99
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.106 min.
Rainfall intensity =   3.386(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.858
Subarea runoff =   21.359(CFS)
Total initial stream area =   7.350(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =   0.157(In/Hr)
End of computations, Total Study Area =   7.35 (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) = 0.600
Area averaged SCS curve number = 69.0

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

Study date 03/26/25

++

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

Program License Serial Number 6683

5885 Schaefer Proposed Drainage Area A 2 Yr hydrograph

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 2		
0.87	1	0.59
Rainfall data for year 2		
0.87	6	1.55
Rainfall data for year 2		
0.87	24	2.63

++

******** 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)
69.0	49.8	0.87	1.000	0.812	0.750	0.609

Area-averaged adjusted loss rate Fm (In/Hr) = 0.609

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
0.65	0.750	69.0	49.8	10.08	0.013
0.22	0.250	98.0	98.0	0.20	0.913

Area-averaged catchment yield fraction, Y = 0.238
Area-averaged low loss fraction, Yb = 0.762
User entry of time of concentration = 0.110 (hours)
++
Watershed area = 0.87(Ac.)
Catchment Lag time = 0.088 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 94.6970
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.609(In/Hr)
Average low loss rate fraction (Yb) = 0.762 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.150(In)
Computed peak 30-minute rainfall = 0.392(In)
Specified peak 1-hour rainfall = 0.588(In)
Computed peak 3-hour rainfall = 1.120(In)
Specified peak 6-hour rainfall = 1.550(In)
Specified peak 24-hour rainfall = 2.630(In)

Note: user specified rainfall values used.
Rainfall depth area reduction factors:
Using a total area of 0.87(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.150(In)
30-minute factor = 1.000 Adjusted rainfall = 0.392(In)
1-hour factor = 1.000 Adjusted rainfall = 0.588(In)
3-hour factor = 1.000 Adjusted rainfall = 1.120(In)
6-hour factor = 1.000 Adjusted rainfall = 1.550(In)
24-hour factor = 1.000 Adjusted rainfall = 2.630(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 = 10.52 (CFS))	
1	15.507	1.632
2	75.928	6.357
3	97.248	2.243
4	100.000	0.290

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1500	0.1500
2	0.2175	0.0675
3	0.2703	0.0528
4	0.3154	0.0451
5	0.3555	0.0401
6	0.3920	0.0365
7	0.4290	0.0370
8	0.4638	0.0349
9	0.4969	0.0331
10	0.5285	0.0316
11	0.5588	0.0303
12	0.5880	0.0292
13	0.6162	0.0283
14	0.6436	0.0274
15	0.6702	0.0266
16	0.6961	0.0259
17	0.7213	0.0252
18	0.7458	0.0246
19	0.7699	0.0240
20	0.7934	0.0235
21	0.8164	0.0230
22	0.8390	0.0226
23	0.8612	0.0222
24	0.8829	0.0218
25	0.9043	0.0214
26	0.9254	0.0210
27	0.9461	0.0207
28	0.9665	0.0204
29	0.9866	0.0201
30	1.0064	0.0198
31	1.0259	0.0195
32	1.0452	0.0193
33	1.0643	0.0190
34	1.0831	0.0188
35	1.1016	0.0186
36	1.1200	0.0184
37	1.1345	0.0145

38	1.1487	0.0143
39	1.1628	0.0141
40	1.1767	0.0139
41	1.1904	0.0137
42	1.2039	0.0135
43	1.2173	0.0134
44	1.2305	0.0132
45	1.2435	0.0130
46	1.2564	0.0129
47	1.2691	0.0127
48	1.2817	0.0126
49	1.2941	0.0124
50	1.3065	0.0123
51	1.3186	0.0122
52	1.3307	0.0121
53	1.3426	0.0119
54	1.3544	0.0118
55	1.3661	0.0117
56	1.3777	0.0116
57	1.3892	0.0115
58	1.4006	0.0114
59	1.4119	0.0113
60	1.4230	0.0112
61	1.4341	0.0111
62	1.4451	0.0110
63	1.4559	0.0109
64	1.4667	0.0108
65	1.4774	0.0107
66	1.4880	0.0106
67	1.4986	0.0105
68	1.5090	0.0104
69	1.5194	0.0104
70	1.5297	0.0103
71	1.5399	0.0102
72	1.5500	0.0101
73	1.5582	0.0082
74	1.5663	0.0081
75	1.5743	0.0080
76	1.5823	0.0080
77	1.5902	0.0079
78	1.5980	0.0078
79	1.6058	0.0078
80	1.6135	0.0077
81	1.6212	0.0077
82	1.6288	0.0076
83	1.6364	0.0075
84	1.6439	0.0075
85	1.6513	0.0074
86	1.6587	0.0074
87	1.6660	0.0073

88	1.6733	0.0073
89	1.6805	0.0072
90	1.6877	0.0072
91	1.6948	0.0071
92	1.7019	0.0071
93	1.7089	0.0070
94	1.7159	0.0070
95	1.7229	0.0069
96	1.7297	0.0069
97	1.7366	0.0069
98	1.7434	0.0068
99	1.7502	0.0068
100	1.7569	0.0067
101	1.7636	0.0067
102	1.7702	0.0066
103	1.7768	0.0066
104	1.7834	0.0066
105	1.7899	0.0065
106	1.7964	0.0065
107	1.8028	0.0064
108	1.8092	0.0064
109	1.8156	0.0064
110	1.8219	0.0063
111	1.8282	0.0063
112	1.8345	0.0063
113	1.8407	0.0062
114	1.8469	0.0062
115	1.8531	0.0062
116	1.8592	0.0061
117	1.8653	0.0061
118	1.8714	0.0061
119	1.8774	0.0060
120	1.8834	0.0060
121	1.8894	0.0060
122	1.8953	0.0059
123	1.9012	0.0059
124	1.9071	0.0059
125	1.9130	0.0059
126	1.9188	0.0058
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128	1.9303	0.0058
129	1.9361	0.0057
130	1.9418	0.0057
131	1.9475	0.0057
132	1.9531	0.0057
133	1.9588	0.0056
134	1.9644	0.0056
135	1.9699	0.0056
136	1.9755	0.0056
137	1.9810	0.0055

138	1.9865	0.0055
139	1.9920	0.0055
140	1.9975	0.0055
141	2.0029	0.0054
142	2.0083	0.0054
143	2.0137	0.0054
144	2.0190	0.0054
145	2.0244	0.0053
146	2.0297	0.0053
147	2.0350	0.0053
148	2.0402	0.0053
149	2.0455	0.0052
150	2.0507	0.0052
151	2.0559	0.0052
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154	2.0714	0.0051
155	2.0765	0.0051
156	2.0816	0.0051
157	2.0867	0.0051
158	2.0918	0.0051
159	2.0968	0.0050
160	2.1018	0.0050
161	2.1068	0.0050
162	2.1118	0.0050
163	2.1168	0.0050
164	2.1217	0.0049
165	2.1266	0.0049
166	2.1315	0.0049
167	2.1364	0.0049
168	2.1413	0.0049
169	2.1461	0.0049
170	2.1510	0.0048
171	2.1558	0.0048
172	2.1606	0.0048
173	2.1654	0.0048
174	2.1701	0.0048
175	2.1749	0.0047
176	2.1796	0.0047
177	2.1843	0.0047
178	2.1890	0.0047
179	2.1937	0.0047
180	2.1984	0.0047
181	2.2030	0.0047
182	2.2077	0.0046
183	2.2123	0.0046
184	2.2169	0.0046
185	2.2215	0.0046
186	2.2261	0.0046
187	2.2306	0.0046

188	2.2352	0.0045
189	2.2397	0.0045
190	2.2442	0.0045
191	2.2487	0.0045
192	2.2532	0.0045
193	2.2576	0.0045
194	2.2621	0.0045
195	2.2665	0.0044
196	2.2710	0.0044
197	2.2754	0.0044
198	2.2798	0.0044
199	2.2842	0.0044
200	2.2885	0.0044
201	2.2929	0.0044
202	2.2972	0.0043
203	2.3016	0.0043
204	2.3059	0.0043
205	2.3102	0.0043
206	2.3145	0.0043
207	2.3188	0.0043
208	2.3230	0.0043
209	2.3273	0.0043
210	2.3315	0.0042
211	2.3357	0.0042
212	2.3400	0.0042
213	2.3442	0.0042
214	2.3484	0.0042
215	2.3525	0.0042
216	2.3567	0.0042
217	2.3609	0.0042
218	2.3650	0.0041
219	2.3691	0.0041
220	2.3732	0.0041
221	2.3774	0.0041
222	2.3815	0.0041
223	2.3855	0.0041
224	2.3896	0.0041
225	2.3937	0.0041
226	2.3977	0.0041
227	2.4018	0.0040
228	2.4058	0.0040
229	2.4098	0.0040
230	2.4138	0.0040
231	2.4178	0.0040
232	2.4218	0.0040
233	2.4258	0.0040
234	2.4298	0.0040
235	2.4337	0.0040
236	2.4377	0.0039
237	2.4416	0.0039

238	2.4455	0.0039
239	2.4494	0.0039
240	2.4533	0.0039
241	2.4572	0.0039
242	2.4611	0.0039
243	2.4650	0.0039
244	2.4688	0.0039
245	2.4727	0.0039
246	2.4765	0.0038
247	2.4804	0.0038
248	2.4842	0.0038
249	2.4880	0.0038
250	2.4918	0.0038
251	2.4956	0.0038
252	2.4994	0.0038
253	2.5032	0.0038
254	2.5070	0.0038
255	2.5107	0.0038
256	2.5145	0.0038
257	2.5182	0.0037
258	2.5219	0.0037
259	2.5257	0.0037
260	2.5294	0.0037
261	2.5331	0.0037
262	2.5368	0.0037
263	2.5405	0.0037
264	2.5442	0.0037
265	2.5478	0.0037
266	2.5515	0.0037
267	2.5551	0.0037
268	2.5588	0.0036
269	2.5624	0.0036
270	2.5661	0.0036
271	2.5697	0.0036
272	2.5733	0.0036
273	2.5769	0.0036
274	2.5805	0.0036
275	2.5841	0.0036
276	2.5877	0.0036
277	2.5912	0.0036
278	2.5948	0.0036
279	2.5983	0.0036
280	2.6019	0.0035
281	2.6054	0.0035
282	2.6090	0.0035
283	2.6125	0.0035
284	2.6160	0.0035
285	2.6195	0.0035
286	2.6230	0.0035
287	2.6265	0.0035

288 2.6300 0.0035

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0035	0.0027	0.0008
2	0.0035	0.0027	0.0008
3	0.0035	0.0027	0.0008
4	0.0035	0.0027	0.0008
5	0.0035	0.0027	0.0008
6	0.0035	0.0027	0.0008
7	0.0036	0.0027	0.0008
8	0.0036	0.0027	0.0008
9	0.0036	0.0027	0.0009
10	0.0036	0.0027	0.0009
11	0.0036	0.0027	0.0009
12	0.0036	0.0028	0.0009
13	0.0036	0.0028	0.0009
14	0.0036	0.0028	0.0009
15	0.0037	0.0028	0.0009
16	0.0037	0.0028	0.0009
17	0.0037	0.0028	0.0009
18	0.0037	0.0028	0.0009
19	0.0037	0.0028	0.0009
20	0.0037	0.0028	0.0009
21	0.0037	0.0028	0.0009
22	0.0037	0.0029	0.0009
23	0.0038	0.0029	0.0009
24	0.0038	0.0029	0.0009
25	0.0038	0.0029	0.0009
26	0.0038	0.0029	0.0009
27	0.0038	0.0029	0.0009
28	0.0038	0.0029	0.0009
29	0.0038	0.0029	0.0009
30	0.0039	0.0029	0.0009
31	0.0039	0.0030	0.0009
32	0.0039	0.0030	0.0009
33	0.0039	0.0030	0.0009
34	0.0039	0.0030	0.0009
35	0.0039	0.0030	0.0009
36	0.0039	0.0030	0.0009
37	0.0040	0.0030	0.0009
38	0.0040	0.0030	0.0009
39	0.0040	0.0030	0.0010
40	0.0040	0.0031	0.0010
41	0.0040	0.0031	0.0010
42	0.0040	0.0031	0.0010
43	0.0041	0.0031	0.0010
44	0.0041	0.0031	0.0010

45	0.0041	0.0031	0.0010
46	0.0041	0.0031	0.0010
47	0.0041	0.0031	0.0010
48	0.0041	0.0032	0.0010
49	0.0042	0.0032	0.0010
50	0.0042	0.0032	0.0010
51	0.0042	0.0032	0.0010
52	0.0042	0.0032	0.0010
53	0.0042	0.0032	0.0010
54	0.0043	0.0032	0.0010
55	0.0043	0.0033	0.0010
56	0.0043	0.0033	0.0010
57	0.0043	0.0033	0.0010
58	0.0043	0.0033	0.0010
59	0.0044	0.0033	0.0010
60	0.0044	0.0033	0.0010
61	0.0044	0.0034	0.0010
62	0.0044	0.0034	0.0011
63	0.0044	0.0034	0.0011
64	0.0045	0.0034	0.0011
65	0.0045	0.0034	0.0011
66	0.0045	0.0034	0.0011
67	0.0045	0.0034	0.0011
68	0.0045	0.0035	0.0011
69	0.0046	0.0035	0.0011
70	0.0046	0.0035	0.0011
71	0.0046	0.0035	0.0011
72	0.0046	0.0035	0.0011
73	0.0047	0.0036	0.0011
74	0.0047	0.0036	0.0011
75	0.0047	0.0036	0.0011
76	0.0047	0.0036	0.0011
77	0.0048	0.0036	0.0011
78	0.0048	0.0036	0.0011
79	0.0048	0.0037	0.0011
80	0.0048	0.0037	0.0012
81	0.0049	0.0037	0.0012
82	0.0049	0.0037	0.0012
83	0.0049	0.0038	0.0012
84	0.0049	0.0038	0.0012
85	0.0050	0.0038	0.0012
86	0.0050	0.0038	0.0012
87	0.0050	0.0038	0.0012
88	0.0051	0.0039	0.0012
89	0.0051	0.0039	0.0012
90	0.0051	0.0039	0.0012
91	0.0052	0.0039	0.0012
92	0.0052	0.0039	0.0012
93	0.0052	0.0040	0.0012
94	0.0052	0.0040	0.0012

95	0.0053	0.0040	0.0013
96	0.0053	0.0040	0.0013
97	0.0054	0.0041	0.0013
98	0.0054	0.0041	0.0013
99	0.0054	0.0041	0.0013
100	0.0055	0.0042	0.0013
101	0.0055	0.0042	0.0013
102	0.0055	0.0042	0.0013
103	0.0056	0.0042	0.0013
104	0.0056	0.0043	0.0013
105	0.0057	0.0043	0.0013
106	0.0057	0.0043	0.0014
107	0.0057	0.0044	0.0014
108	0.0058	0.0044	0.0014
109	0.0058	0.0044	0.0014
110	0.0059	0.0045	0.0014
111	0.0059	0.0045	0.0014
112	0.0059	0.0045	0.0014
113	0.0060	0.0046	0.0014
114	0.0060	0.0046	0.0014
115	0.0061	0.0046	0.0015
116	0.0061	0.0047	0.0015
117	0.0062	0.0047	0.0015
118	0.0062	0.0047	0.0015
119	0.0063	0.0048	0.0015
120	0.0063	0.0048	0.0015
121	0.0064	0.0049	0.0015
122	0.0064	0.0049	0.0015
123	0.0065	0.0050	0.0016
124	0.0066	0.0050	0.0016
125	0.0066	0.0051	0.0016
126	0.0067	0.0051	0.0016
127	0.0068	0.0052	0.0016
128	0.0068	0.0052	0.0016
129	0.0069	0.0053	0.0016
130	0.0069	0.0053	0.0017
131	0.0070	0.0054	0.0017
132	0.0071	0.0054	0.0017
133	0.0072	0.0055	0.0017
134	0.0072	0.0055	0.0017
135	0.0073	0.0056	0.0017
136	0.0074	0.0056	0.0018
137	0.0075	0.0057	0.0018
138	0.0075	0.0057	0.0018
139	0.0077	0.0058	0.0018
140	0.0077	0.0059	0.0018
141	0.0078	0.0060	0.0019
142	0.0079	0.0060	0.0019
143	0.0080	0.0061	0.0019
144	0.0081	0.0062	0.0019

145	0.0101	0.0077	0.0024
146	0.0102	0.0078	0.0024
147	0.0104	0.0079	0.0025
148	0.0104	0.0080	0.0025
149	0.0106	0.0081	0.0025
150	0.0107	0.0082	0.0025
151	0.0109	0.0083	0.0026
152	0.0110	0.0084	0.0026
153	0.0112	0.0085	0.0027
154	0.0113	0.0086	0.0027
155	0.0115	0.0087	0.0027
156	0.0116	0.0088	0.0028
157	0.0118	0.0090	0.0028
158	0.0119	0.0091	0.0028
159	0.0122	0.0093	0.0029
160	0.0123	0.0094	0.0029
161	0.0126	0.0096	0.0030
162	0.0127	0.0097	0.0030
163	0.0130	0.0099	0.0031
164	0.0132	0.0100	0.0031
165	0.0135	0.0103	0.0032
166	0.0137	0.0104	0.0033
167	0.0141	0.0107	0.0034
168	0.0143	0.0109	0.0034
169	0.0184	0.0140	0.0044
170	0.0186	0.0141	0.0044
171	0.0190	0.0145	0.0045
172	0.0193	0.0147	0.0046
173	0.0198	0.0151	0.0047
174	0.0201	0.0153	0.0048
175	0.0207	0.0158	0.0049
176	0.0210	0.0160	0.0050
177	0.0218	0.0166	0.0052
178	0.0222	0.0169	0.0053
179	0.0230	0.0175	0.0055
180	0.0235	0.0179	0.0056
181	0.0246	0.0187	0.0059
182	0.0252	0.0192	0.0060
183	0.0266	0.0202	0.0063
184	0.0274	0.0209	0.0065
185	0.0292	0.0222	0.0069
186	0.0303	0.0231	0.0072
187	0.0331	0.0252	0.0079
188	0.0349	0.0265	0.0083
189	0.0365	0.0278	0.0087
190	0.0401	0.0305	0.0095
191	0.0528	0.0402	0.0126
192	0.0675	0.0507	0.0168
193	0.1500	0.0507	0.0992
194	0.0451	0.0343	0.0107

195	0.0370	0.0282	0.0088
196	0.0316	0.0241	0.0075
197	0.0283	0.0215	0.0067
198	0.0259	0.0197	0.0062
199	0.0240	0.0183	0.0057
200	0.0226	0.0172	0.0054
201	0.0214	0.0163	0.0051
202	0.0204	0.0155	0.0049
203	0.0195	0.0149	0.0047
204	0.0188	0.0143	0.0045
205	0.0145	0.0110	0.0034
206	0.0139	0.0106	0.0033
207	0.0134	0.0102	0.0032
208	0.0129	0.0098	0.0031
209	0.0124	0.0095	0.0030
210	0.0121	0.0092	0.0029
211	0.0117	0.0089	0.0028
212	0.0114	0.0087	0.0027
213	0.0111	0.0084	0.0026
214	0.0108	0.0082	0.0026
215	0.0105	0.0080	0.0025
216	0.0103	0.0078	0.0024
217	0.0082	0.0062	0.0019
218	0.0080	0.0061	0.0019
219	0.0078	0.0059	0.0019
220	0.0076	0.0058	0.0018
221	0.0074	0.0057	0.0018
222	0.0073	0.0055	0.0017
223	0.0071	0.0054	0.0017
224	0.0070	0.0053	0.0017
225	0.0069	0.0052	0.0016
226	0.0067	0.0051	0.0016
227	0.0066	0.0050	0.0016
228	0.0065	0.0049	0.0015
229	0.0064	0.0049	0.0015
230	0.0063	0.0048	0.0015
231	0.0062	0.0047	0.0015
232	0.0061	0.0046	0.0014
233	0.0060	0.0045	0.0014
234	0.0059	0.0045	0.0014
235	0.0058	0.0044	0.0014
236	0.0057	0.0044	0.0014
237	0.0056	0.0043	0.0013
238	0.0056	0.0042	0.0013
239	0.0055	0.0042	0.0013
240	0.0054	0.0041	0.0013
241	0.0053	0.0041	0.0013
242	0.0053	0.0040	0.0013
243	0.0052	0.0040	0.0012
244	0.0051	0.0039	0.0012

245	0.0051	0.0039	0.0012
246	0.0050	0.0038	0.0012
247	0.0050	0.0038	0.0012
248	0.0049	0.0037	0.0012
249	0.0049	0.0037	0.0012
250	0.0048	0.0037	0.0011
251	0.0047	0.0036	0.0011
252	0.0047	0.0036	0.0011
253	0.0047	0.0035	0.0011
254	0.0046	0.0035	0.0011
255	0.0046	0.0035	0.0011
256	0.0045	0.0034	0.0011
257	0.0045	0.0034	0.0011
258	0.0044	0.0034	0.0011
259	0.0044	0.0033	0.0010
260	0.0043	0.0033	0.0010
261	0.0043	0.0033	0.0010
262	0.0043	0.0032	0.0010
263	0.0042	0.0032	0.0010
264	0.0042	0.0032	0.0010
265	0.0042	0.0032	0.0010
266	0.0041	0.0031	0.0010
267	0.0041	0.0031	0.0010
268	0.0041	0.0031	0.0010
269	0.0040	0.0031	0.0010
270	0.0040	0.0030	0.0009
271	0.0040	0.0030	0.0009
272	0.0039	0.0030	0.0009
273	0.0039	0.0030	0.0009
274	0.0039	0.0029	0.0009
275	0.0038	0.0029	0.0009
276	0.0038	0.0029	0.0009
277	0.0038	0.0029	0.0009
278	0.0038	0.0029	0.0009
279	0.0037	0.0028	0.0009
280	0.0037	0.0028	0.0009
281	0.0037	0.0028	0.0009
282	0.0036	0.0028	0.0009
283	0.0036	0.0028	0.0009
284	0.0036	0.0027	0.0009
285	0.0036	0.0027	0.0009
286	0.0035	0.0027	0.0008
287	0.0035	0.0027	0.0008
288	0.0035	0.0027	0.0008

Total soil rain loss = 1.94(In)
Total effective rainfall = 0.69(In)
Peak flow rate in flood hydrograph = 0.69(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	0.0007	0.01	Q				
1+ 5	0.0007	0.01	Q				
1+10	0.0008	0.01	Q				
1+15	0.0009	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	Q				
1+40	0.0012	0.01	Q				
1+45	0.0012	0.01	Q				
1+50	0.0013	0.01	QV				
1+55	0.0014	0.01	QV				
2+ 0	0.0014	0.01	QV				
2+ 5	0.0015	0.01	QV				
2+10	0.0016	0.01	QV				
2+15	0.0016	0.01	QV				
2+20	0.0017	0.01	QV				
2+25	0.0018	0.01	QV				
2+30	0.0018	0.01	QV				
2+35	0.0019	0.01	QV				
2+40	0.0020	0.01	QV				
2+45	0.0020	0.01	QV				
2+50	0.0021	0.01	QV				
2+55	0.0022	0.01	QV				
3+ 0	0.0022	0.01	QV				
3+ 5	0.0023	0.01	QV				
3+10	0.0024	0.01	QV				
3+15	0.0024	0.01	QV				
3+20	0.0025	0.01	QV				
3+25	0.0026	0.01	Q V				

3+30	0.0026	0.01	Q V	|	|	|	|
3+35	0.0027	0.01	Q V	|	|	|	|
3+40	0.0028	0.01	Q V	|	|	|	|
3+45	0.0028	0.01	Q V	|	|	|	|
3+50	0.0029	0.01	Q V	|	|	|	|
3+55	0.0030	0.01	Q V	|	|	|	|
4+ 0	0.0031	0.01	Q V	|	|	|	|
4+ 5	0.0031	0.01	Q V	|	|	|	|
4+10	0.0032	0.01	Q V	|	|	|	|
4+15	0.0033	0.01	Q V	|	|	|	|
4+20	0.0033	0.01	Q V	|	|	|	|
4+25	0.0034	0.01	Q V	|	|	|	|
4+30	0.0035	0.01	Q V	|	|	|	|
4+35	0.0036	0.01	Q V	|	|	|	|
4+40	0.0036	0.01	Q V	|	|	|	|
4+45	0.0037	0.01	Q V	|	|	|	|
4+50	0.0038	0.01	Q V	|	|	|	|
4+55	0.0039	0.01	Q V	|	|	|	|
5+ 0	0.0039	0.01	Q V	|	|	|	|
5+ 5	0.0040	0.01	Q V	|	|	|	|
5+10	0.0041	0.01	Q V	|	|	|	|
5+15	0.0042	0.01	Q V	|	|	|	|
5+20	0.0042	0.01	Q V	|	|	|	|
5+25	0.0043	0.01	Q V	|	|	|	|
5+30	0.0044	0.01	Q V	|	|	|	|
5+35	0.0045	0.01	Q V	|	|	|	|
5+40	0.0046	0.01	Q V	|	|	|	|
5+45	0.0046	0.01	Q V	|	|	|	|
5+50	0.0047	0.01	Q V	|	|	|	|
5+55	0.0048	0.01	Q V	|	|	|	|
6+ 0	0.0049	0.01	Q V	|	|	|	|
6+ 5	0.0050	0.01	Q V	|	|	|	|
6+10	0.0050	0.01	Q V	|	|	|	|
6+15	0.0051	0.01	Q V	|	|	|	|
6+20	0.0052	0.01	Q V	|	|	|	|
6+25	0.0053	0.01	Q V	|	|	|	|
6+30	0.0054	0.01	Q V	|	|	|	|
6+35	0.0054	0.01	Q V	|	|	|	|
6+40	0.0055	0.01	Q V	|	|	|	|
6+45	0.0056	0.01	Q V	|	|	|	|
6+50	0.0057	0.01	Q V	|	|	|	|
6+55	0.0058	0.01	Q V	|	|	|	|
7+ 0	0.0059	0.01	Q V	|	|	|	|
7+ 5	0.0059	0.01	Q V	|	|	|	|
7+10	0.0060	0.01	Q V	|	|	|	|
7+15	0.0061	0.01	Q V	|	|	|	|
7+20	0.0062	0.01	Q V	|	|	|	|
7+25	0.0063	0.01	Q V	|	|	|	|
7+30	0.0064	0.01	Q V	|	|	|	|
7+35	0.0065	0.01	Q V	|	|	|	|

7+40	0.0066	0.01	Q	V	|	|	|	|
7+45	0.0066	0.01	Q	V	|	|	|	|
7+50	0.0067	0.01	Q	V	|	|	|	|
7+55	0.0068	0.01	Q	V	|	|	|	|
8+ 0	0.0069	0.01	Q	V	|	|	|	|
8+ 5	0.0070	0.01	Q	V	|	|	|	|
8+10	0.0071	0.01	Q	V	|	|	|	|
8+15	0.0072	0.01	Q	V	|	|	|	|
8+20	0.0073	0.01	Q	V	|	|	|	|
8+25	0.0074	0.01	Q	V	|	|	|	|
8+30	0.0075	0.01	Q	V	|	|	|	|
8+35	0.0076	0.01	Q	V	|	|	|	|
8+40	0.0077	0.01	Q	V	|	|	|	|
8+45	0.0078	0.01	Q	V	|	|	|	|
8+50	0.0079	0.01	Q	V	|	|	|	|
8+55	0.0080	0.01	Q	V	|	|	|	|
9+ 0	0.0081	0.01	Q	V	|	|	|	|
9+ 5	0.0082	0.01	Q	V	|	|	|	|
9+10	0.0083	0.01	Q	V	|	|	|	|
9+15	0.0084	0.01	Q	V	|	|	|	|
9+20	0.0085	0.01	Q	V	|	|	|	|
9+25	0.0086	0.01	Q	V	|	|	|	|
9+30	0.0087	0.02	Q	V	|	|	|	|
9+35	0.0088	0.02	Q	V	|	|	|	|
9+40	0.0089	0.02	Q	V	|	|	|	|
9+45	0.0090	0.02	Q	V	|	|	|	|
9+50	0.0091	0.02	Q	V	|	|	|	|
9+55	0.0092	0.02	Q	V	|	|	|	|
10+ 0	0.0093	0.02	Q	V	|	|	|	|
10+ 5	0.0094	0.02	Q	V	|	|	|	|
10+10	0.0095	0.02	Q	V	|	|	|	|
10+15	0.0096	0.02	Q	V	|	|	|	|
10+20	0.0097	0.02	Q	V	|	|	|	|
10+25	0.0099	0.02	Q	V	|	|	|	|
10+30	0.0100	0.02	Q	V	|	|	|	|
10+35	0.0101	0.02	Q	V	|	|	|	|
10+40	0.0102	0.02	Q	V	|	|	|	|
10+45	0.0103	0.02	Q	V	|	|	|	|
10+50	0.0104	0.02	Q	V	|	|	|	|
10+55	0.0106	0.02	Q	V	|	|	|	|
11+ 0	0.0107	0.02	Q	V	|	|	|	|
11+ 5	0.0108	0.02	Q	V	|	|	|	|
11+10	0.0109	0.02	Q	V	|	|	|	|
11+15	0.0111	0.02	Q	V	|	|	|	|
11+20	0.0112	0.02	Q	V	|	|	|	|
11+25	0.0113	0.02	Q	V	|	|	|	|
11+30	0.0114	0.02	Q	V	|	|	|	|
11+35	0.0116	0.02	Q	V	|	|	|	|
11+40	0.0117	0.02	Q	V	|	|	|	|
11+45	0.0118	0.02	Q	V	|	|	|	|

```
11+50       0.0120      0.02  Q        V|          |          |          |
11+55       0.0121      0.02  Q        V|          |          |          |
12+ 0       0.0122      0.02  Q        V|          |          |          |
12+ 5       0.0124      0.02  Q        V|          |          |          |
12+10       0.0126      0.02  Q         V          |          |          |
12+15       0.0127      0.03  Q         V          |          |          |
12+20       0.0129      0.03  Q         V          |          |          |
12+25       0.0131      0.03  Q         V          |          |          |
12+30       0.0133      0.03  Q         V          |          |          |
12+35       0.0135      0.03  Q         V          |          |          |
12+40       0.0136      0.03  Q         V          |          |          |
12+45       0.0138      0.03  Q         |V         |          |          |
12+50       0.0140      0.03  Q         |V         |          |          |
12+55       0.0142      0.03  Q         |V         |          |          |
13+ 0       0.0144      0.03  Q         |V         |          |          |
13+ 5       0.0146      0.03  Q         |V         |          |          |
13+10       0.0148      0.03  Q         |V         |          |          |
13+15       0.0150      0.03  Q         | V        |          |          |
13+20       0.0152      0.03  Q         | V        |          |          |
13+25       0.0154      0.03  Q         | V        |          |          |
13+30       0.0157      0.03  Q         | V        |          |          |
13+35       0.0159      0.03  Q         | V        |          |          |
13+40       0.0161      0.03  Q         | V        |          |          |
13+45       0.0163      0.03  Q         |  V       |          |          |
13+50       0.0166      0.03  Q         |  V       |          |          |
13+55       0.0168      0.03  Q         |  V       |          |          |
14+ 0       0.0170      0.04  Q         |  V       |          |          |
14+ 5       0.0173      0.04  Q         |  V       |          |          |
14+10       0.0176      0.04  Q         |   V      |          |          |
14+15       0.0179      0.05  Q         |   V      |          |          |
14+20       0.0183      0.05  Q         |   V      |          |          |
14+25       0.0186      0.05  Q         |   V      |          |          |
14+30       0.0189      0.05  Q         |    V     |          |          |
14+35       0.0193      0.05  Q         |    V     |          |          |
14+40       0.0196      0.05  Q         |    V     |          |          |
14+45       0.0200      0.05  Q         |    V     |          |          |
14+50       0.0204      0.05  Q         |     V    |          |          |
14+55       0.0207      0.06  Q         |     V    |          |          |
15+ 0       0.0211      0.06  Q         |     V    |          |          |
15+ 5       0.0215      0.06  Q         |      V   |          |          |
15+10       0.0220      0.06  Q         |      V   |          |          |
15+15       0.0224      0.06  Q         |      V   |          |          |
15+20       0.0229      0.07  Q         |       V  |          |          |
15+25       0.0233      0.07  Q         |       V  |          |          |
15+30       0.0238      0.07  Q         |        V|          |          |
15+35       0.0244      0.08  Q         |        V|          |          |
15+40       0.0249      0.08  Q         |        V|          |          |
15+45       0.0255      0.09  Q         |         V          |          |
15+50       0.0262      0.09  Q         |         V          |          |
15+55       0.0269      0.10  Q         |          |V        |          |
```

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16+ 0       0.0278      0.13  Q        |         | V       |         |
16+ 5       0.0298      0.30  |Q       |         |  V      |         |
16+10       0.0346      0.69  | Q      |         |      V  |         |
16+15       0.0367      0.31  |Q       |         |        V|         |
16+20       0.0375      0.12  Q        |         |         V         |
16+25       0.0381      0.08  Q        |         |         V         |
16+30       0.0386      0.07  Q        |         |         V         |
16+35       0.0391      0.07  Q        |         |         |V        |
16+40       0.0395      0.06  Q        |         |         |V        |
16+45       0.0399      0.06  Q        |         |         |V        |
16+50       0.0402      0.05  Q        |         |         | V       |
16+55       0.0406      0.05  Q        |         |         | V       |
17+ 0       0.0409      0.05  Q        |         |         | V       |
17+ 5       0.0413      0.05  Q        |         |         | V       |
17+10       0.0415      0.04  Q        |         |         |  V      |
17+15       0.0418      0.04  Q        |         |         |  V      |
17+20       0.0420      0.03  Q        |         |         |  V      |
17+25       0.0422      0.03  Q        |         |         |  V      |
17+30       0.0424      0.03  Q        |         |         |  V      |
17+35       0.0426      0.03  Q        |         |         |   V     |
17+40       0.0428      0.03  Q        |         |         |   V     |
17+45       0.0430      0.03  Q        |         |         |   V     |
17+50       0.0432      0.03  Q        |         |         |   V     |
17+55       0.0434      0.03  Q        |         |         |   V     |
18+ 0       0.0436      0.03  Q        |         |         |   V     |
18+ 5       0.0438      0.03  Q        |         |         |   V     |
18+10       0.0439      0.02  Q        |         |         |    V    |
18+15       0.0441      0.02  Q        |         |         |    V    |
18+20       0.0442      0.02  Q        |         |         |    V    |
18+25       0.0443      0.02  Q        |         |         |    V    |
18+30       0.0445      0.02  Q        |         |         |    V    |
18+35       0.0446      0.02  Q        |         |         |    V    |
18+40       0.0447      0.02  Q        |         |         |    V    |
18+45       0.0448      0.02  Q        |         |         |    V    |
18+50       0.0450      0.02  Q        |         |         |    V    |
18+55       0.0451      0.02  Q        |         |         |     V   |
19+ 0       0.0452      0.02  Q        |         |         |     V   |
19+ 5       0.0453      0.02  Q        |         |         |     V   |
19+10       0.0454      0.02  Q        |         |         |     V   |
19+15       0.0455      0.02  Q        |         |         |     V   |
19+20       0.0456      0.02  Q        |         |         |     V   |
19+25       0.0457      0.02  Q        |         |         |     V   |
19+30       0.0458      0.01  Q        |         |         |     V   |
19+35       0.0459      0.01  Q        |         |         |     V   |
19+40       0.0460      0.01  Q        |         |         |     V   |
19+45       0.0461      0.01  Q        |         |         |     V   |
19+50       0.0462      0.01  Q        |         |         |     V   |
19+55       0.0463      0.01  Q        |         |         |      V  |
20+ 0       0.0464      0.01  Q        |         |         |      V  |
20+ 5       0.0465      0.01  Q        |         |         |      V  |
```

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  20+10       0.0466      0.01  Q         |          |          |       V  |
  20+15       0.0467      0.01  Q         |          |          |       V  |
  20+20       0.0468      0.01  Q         |          |          |       V  |
  20+25       0.0469      0.01  Q         |          |          |       V  |
  20+30       0.0470      0.01  Q         |          |          |       V  |
  20+35       0.0470      0.01  Q         |          |          |       V  |
  20+40       0.0471      0.01  Q         |          |          |       V  |
  20+45       0.0472      0.01  Q         |          |          |       V  |
  20+50       0.0473      0.01  Q         |          |          |       V  |
  20+55       0.0474      0.01  Q         |          |          |       V  |
  21+ 0       0.0475      0.01  Q         |          |          |       V  |
  21+ 5       0.0475      0.01  Q         |          |          |        V |
  21+10       0.0476      0.01  Q         |          |          |        V |
  21+15       0.0477      0.01  Q         |          |          |        V |
  21+20       0.0478      0.01  Q         |          |          |        V |
  21+25       0.0479      0.01  Q         |          |          |        V |
  21+30       0.0479      0.01  Q         |          |          |        V |
  21+35       0.0480      0.01  Q         |          |          |        V |
  21+40       0.0481      0.01  Q         |          |          |        V |
  21+45       0.0482      0.01  Q         |          |          |        V |
  21+50       0.0482      0.01  Q         |          |          |        V |
  21+55       0.0483      0.01  Q         |          |          |        V |
  22+ 0       0.0484      0.01  Q         |          |          |        V |
  22+ 5       0.0485      0.01  Q         |          |          |        V |
  22+10       0.0485      0.01  Q         |          |          |        V |
  22+15       0.0486      0.01  Q         |          |          |        V |
  22+20       0.0487      0.01  Q         |          |          |        V |
  22+25       0.0487      0.01  Q         |          |          |        V |
  22+30       0.0488      0.01  Q         |          |          |         V|
  22+35       0.0489      0.01  Q         |          |          |         V|
  22+40       0.0490      0.01  Q         |          |          |         V|
  22+45       0.0490      0.01  Q         |          |          |         V|
  22+50       0.0491      0.01  Q         |          |          |         V|
  22+55       0.0492      0.01  Q         |          |          |         V|
  23+ 0       0.0492      0.01  Q         |          |          |         V|
  23+ 5       0.0493      0.01  Q         |          |          |         V|
  23+10       0.0494      0.01  Q         |          |          |         V|
  23+15       0.0494      0.01  Q         |          |          |         V|
  23+20       0.0495      0.01  Q         |          |          |         V|
  23+25       0.0495      0.01  Q         |          |          |         V|
  23+30       0.0496      0.01  Q         |          |          |         V|
  23+35       0.0497      0.01  Q         |          |          |         V|
  23+40       0.0497      0.01  Q         |          |          |         V|
  23+45       0.0498      0.01  Q         |          |          |         V|
  23+50       0.0499      0.01  Q         |          |          |         V|
  23+55       0.0499      0.01  Q         |          |          |         V|
  24+ 0       0.0500      0.01  Q         |          |          |         V|
-------------------------------------------------------------------------
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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: 03/26/25

5885 SCHAEFER PROPOSED DRAINAGE AREA A 2 YR HYDROLOGY

Program License Serial Number 6683

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

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.925(In.)
100 Year storm 1 hour rainfall = 1.480(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.537 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 0.000(Ft.) to Point/Station 294.000(Ft.)
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 294.000(Ft.)
Top (of initial area) elevation = 700.390(Ft.)
Bottom (of initial area) elevation = 695.010(Ft.)
Difference in elevation = 5.380(Ft.)
Slope = 0.01830 s(%)= 1.83

TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.572 min.
Rainfall intensity = 2.024(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876
Subarea runoff = 1.542(CFS)
Total initial stream area = 0.870(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)
End of computations, Total Study Area = 0.87 (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 = 69.0

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

Study date 03/26/25

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

Program License Serial Number 6683

5885 Schaefer Proposed Drainage Area A 100 Yr Hydrograph

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 100		
0.87	1	1.48
Rainfall data for year 100		
0.87	6	3.47
Rainfall data for year 100		
0.87	24	6.37

++

******** 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)
69.0	86.2	0.87	1.000	0.262	0.750	0.196

Area-averaged adjusted loss rate Fm (In/Hr) = 0.196

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.65	0.750	69.0	86.2	1.60	0.751
0.22	0.250	98.0	98.0	0.20	0.963

Area-averaged catchment yield fraction, Y = 0.804
Area-averaged low loss fraction, Yb = 0.196
User entry of time of concentration = 0.110 (hours)
++
Watershed area = 0.87(Ac.)
Catchment Lag time = 0.088 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 94.6970
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.196(In/Hr)
Average low loss rate fraction (Yb) = 0.196 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.378(In)
Computed peak 30-minute rainfall = 0.986(In)
Specified peak 1-hour rainfall = 1.480(In)
Computed peak 3-hour rainfall = 2.560(In)
Specified peak 6-hour rainfall = 3.470(In)
Specified peak 24-hour rainfall = 6.370(In)

Note: user specified rainfall values used.
Rainfall depth area reduction factors:
Using a total area of 0.87(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.378(In)
30-minute factor = 1.000 Adjusted rainfall = 0.986(In)
1-hour factor = 1.000 Adjusted rainfall = 1.480(In)
3-hour factor = 1.000 Adjusted rainfall = 2.560(In)
6-hour factor = 1.000 Adjusted rainfall = 3.470(In)
24-hour factor = 1.000 Adjusted rainfall = 6.370(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 = 10.52 (CFS))	
1	15.507	1.632
2	75.928	6.357
3	97.248	2.243
4	100.000	0.290

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3780	0.3780
2	0.5477	0.1697
3	0.6804	0.1327
4	0.7937	0.1132
5	0.8943	0.1007
6	0.9860	0.0916
7	1.0792	0.0932
8	1.1670	0.0878
9	1.2504	0.0834
10	1.3300	0.0796
11	1.4064	0.0764
12	1.4799	0.0736
13	1.5402	0.0603
14	1.5982	0.0580
15	1.6542	0.0560
16	1.7083	0.0541
17	1.7608	0.0524
18	1.8117	0.0509
19	1.8612	0.0495
20	1.9094	0.0482
21	1.9565	0.0470
22	2.0024	0.0459
23	2.0473	0.0449
24	2.0912	0.0439
25	2.1342	0.0430
26	2.1764	0.0422
27	2.2178	0.0414
28	2.2584	0.0406
29	2.2982	0.0399
30	2.3374	0.0392
31	2.3760	0.0385
32	2.4139	0.0379
33	2.4513	0.0373
34	2.4880	0.0368
35	2.5243	0.0362
36	2.5600	0.0357
37	2.5910	0.0310

38	2.6214	0.0305
39	2.6515	0.0300
40	2.6811	0.0296
41	2.7103	0.0292
42	2.7391	0.0288
43	2.7676	0.0284
44	2.7956	0.0281
45	2.8233	0.0277
46	2.8507	0.0274
47	2.8777	0.0270
48	2.9044	0.0267
49	2.9308	0.0264
50	2.9569	0.0261
51	2.9827	0.0258
52	3.0082	0.0255
53	3.0335	0.0252
54	3.0585	0.0250
55	3.0832	0.0247
56	3.1077	0.0245
57	3.1319	0.0242
58	3.1559	0.0240
59	3.1797	0.0238
60	3.2032	0.0235
61	3.2265	0.0233
62	3.2496	0.0231
63	3.2725	0.0229
64	3.2952	0.0227
65	3.3177	0.0225
66	3.3400	0.0223
67	3.3621	0.0221
68	3.3840	0.0219
69	3.4058	0.0217
70	3.4274	0.0216
71	3.4488	0.0214
72	3.4700	0.0212
73	3.4910	0.0210
74	3.5119	0.0209
75	3.5326	0.0207
76	3.5532	0.0206
77	3.5736	0.0204
78	3.5939	0.0203
79	3.6140	0.0201
80	3.6339	0.0200
81	3.6538	0.0198
82	3.6735	0.0197
83	3.6930	0.0196
84	3.7125	0.0194
85	3.7318	0.0193
86	3.7509	0.0192
87	3.7700	0.0190

88	3.7889	0.0189
89	3.8077	0.0188
90	3.8264	0.0187
91	3.8450	0.0186
92	3.8634	0.0185
93	3.8818	0.0183
94	3.9000	0.0182
95	3.9182	0.0181
96	3.9362	0.0180
97	3.9541	0.0179
98	3.9719	0.0178
99	3.9896	0.0177
100	4.0072	0.0176
101	4.0247	0.0175
102	4.0421	0.0174
103	4.0595	0.0173
104	4.0767	0.0172
105	4.0938	0.0171
106	4.1108	0.0170
107	4.1278	0.0169
108	4.1447	0.0169
109	4.1614	0.0168
110	4.1781	0.0167
111	4.1947	0.0166
112	4.2112	0.0165
113	4.2277	0.0164
114	4.2440	0.0164
115	4.2603	0.0163
116	4.2765	0.0162
117	4.2926	0.0161
118	4.3086	0.0160
119	4.3246	0.0160
120	4.3405	0.0159
121	4.3563	0.0158
122	4.3720	0.0157
123	4.3877	0.0157
124	4.4033	0.0156
125	4.4188	0.0155
126	4.4343	0.0155
127	4.4497	0.0154
128	4.4650	0.0153
129	4.4802	0.0153
130	4.4954	0.0152
131	4.5105	0.0151
132	4.5256	0.0151
133	4.5406	0.0150
134	4.5555	0.0149
135	4.5704	0.0149
136	4.5852	0.0148
137	4.5999	0.0147

138	4.6146	0.0147
139	4.6292	0.0146
140	4.6438	0.0146
141	4.6583	0.0145
142	4.6727	0.0144
143	4.6871	0.0144
144	4.7015	0.0143
145	4.7157	0.0143
146	4.7300	0.0142
147	4.7441	0.0142
148	4.7583	0.0141
149	4.7723	0.0141
150	4.7863	0.0140
151	4.8003	0.0140
152	4.8142	0.0139
153	4.8280	0.0139
154	4.8418	0.0138
155	4.8556	0.0138
156	4.8693	0.0137
157	4.8829	0.0137
158	4.8965	0.0136
159	4.9101	0.0136
160	4.9236	0.0135
161	4.9371	0.0135
162	4.9505	0.0134
163	4.9639	0.0134
164	4.9772	0.0133
165	4.9904	0.0133
166	5.0037	0.0132
167	5.0169	0.0132
168	5.0300	0.0131
169	5.0431	0.0131
170	5.0562	0.0131
171	5.0692	0.0130
172	5.0821	0.0130
173	5.0951	0.0129
174	5.1079	0.0129
175	5.1208	0.0128
176	5.1336	0.0128
177	5.1463	0.0128
178	5.1591	0.0127
179	5.1717	0.0127
180	5.1844	0.0126
181	5.1970	0.0126
182	5.2096	0.0126
183	5.2221	0.0125
184	5.2346	0.0125
185	5.2470	0.0124
186	5.2594	0.0124
187	5.2718	0.0124

188	5.2841	0.0123
189	5.2964	0.0123
190	5.3087	0.0123
191	5.3209	0.0122
192	5.3331	0.0122
193	5.3452	0.0122
194	5.3574	0.0121
195	5.3694	0.0121
196	5.3815	0.0120
197	5.3935	0.0120
198	5.4055	0.0120
199	5.4174	0.0119
200	5.4293	0.0119
201	5.4412	0.0119
202	5.4531	0.0118
203	5.4649	0.0118
204	5.4767	0.0118
205	5.4884	0.0117
206	5.5001	0.0117
207	5.5118	0.0117
208	5.5235	0.0117
209	5.5351	0.0116
210	5.5467	0.0116
211	5.5582	0.0116
212	5.5698	0.0115
213	5.5813	0.0115
214	5.5927	0.0115
215	5.6042	0.0114
216	5.6156	0.0114
217	5.6269	0.0114
218	5.6383	0.0113
219	5.6496	0.0113
220	5.6609	0.0113
221	5.6722	0.0113
222	5.6834	0.0112
223	5.6946	0.0112
224	5.7058	0.0112
225	5.7169	0.0111
226	5.7280	0.0111
227	5.7391	0.0111
228	5.7502	0.0111
229	5.7612	0.0110
230	5.7722	0.0110
231	5.7832	0.0110
232	5.7942	0.0110
233	5.8051	0.0109
234	5.8160	0.0109
235	5.8269	0.0109
236	5.8377	0.0109
237	5.8486	0.0108

238	5.8594	0.0108
239	5.8701	0.0108
240	5.8809	0.0107
241	5.8916	0.0107
242	5.9023	0.0107
243	5.9130	0.0107
244	5.9236	0.0107
245	5.9343	0.0106
246	5.9449	0.0106
247	5.9554	0.0106
248	5.9660	0.0106
249	5.9765	0.0105
250	5.9870	0.0105
251	5.9975	0.0105
252	6.0080	0.0105
253	6.0184	0.0104
254	6.0288	0.0104
255	6.0392	0.0104
256	6.0496	0.0104
257	6.0599	0.0103
258	6.0702	0.0103
259	6.0805	0.0103
260	6.0908	0.0103
261	6.1011	0.0103
262	6.1113	0.0102
263	6.1215	0.0102
264	6.1317	0.0102
265	6.1419	0.0102
266	6.1520	0.0101
267	6.1621	0.0101
268	6.1722	0.0101
269	6.1823	0.0101
270	6.1924	0.0101
271	6.2024	0.0100
272	6.2124	0.0100
273	6.2224	0.0100
274	6.2324	0.0100
275	6.2424	0.0100
276	6.2523	0.0099
277	6.2622	0.0099
278	6.2721	0.0099
279	6.2820	0.0099
280	6.2918	0.0099
281	6.3017	0.0098
282	6.3115	0.0098
283	6.3213	0.0098
284	6.3311	0.0098
285	6.3408	0.0098
286	6.3506	0.0097
287	6.3603	0.0097

288 6.3700 0.0097

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0097	0.0019	0.0078
2	0.0097	0.0019	0.0078
3	0.0098	0.0019	0.0078
4	0.0098	0.0019	0.0079
5	0.0098	0.0019	0.0079
6	0.0098	0.0019	0.0079
7	0.0099	0.0019	0.0079
8	0.0099	0.0019	0.0080
9	0.0099	0.0019	0.0080
10	0.0100	0.0020	0.0080
11	0.0100	0.0020	0.0080
12	0.0100	0.0020	0.0081
13	0.0101	0.0020	0.0081
14	0.0101	0.0020	0.0081
15	0.0101	0.0020	0.0081
16	0.0101	0.0020	0.0082
17	0.0102	0.0020	0.0082
18	0.0102	0.0020	0.0082
19	0.0103	0.0020	0.0082
20	0.0103	0.0020	0.0083
21	0.0103	0.0020	0.0083
22	0.0103	0.0020	0.0083
23	0.0104	0.0020	0.0084
24	0.0104	0.0020	0.0084
25	0.0105	0.0021	0.0084
26	0.0105	0.0021	0.0084
27	0.0105	0.0021	0.0085
28	0.0106	0.0021	0.0085
29	0.0106	0.0021	0.0085
30	0.0106	0.0021	0.0085
31	0.0107	0.0021	0.0086
32	0.0107	0.0021	0.0086
33	0.0107	0.0021	0.0086
34	0.0108	0.0021	0.0087
35	0.0108	0.0021	0.0087
36	0.0109	0.0021	0.0087
37	0.0109	0.0021	0.0088
38	0.0109	0.0021	0.0088
39	0.0110	0.0022	0.0088
40	0.0110	0.0022	0.0089
41	0.0111	0.0022	0.0089
42	0.0111	0.0022	0.0089
43	0.0111	0.0022	0.0090
44	0.0112	0.0022	0.0090

45	0.0112	0.0022	0.0090
46	0.0113	0.0022	0.0091
47	0.0113	0.0022	0.0091
48	0.0113	0.0022	0.0091
49	0.0114	0.0022	0.0092
50	0.0114	0.0022	0.0092
51	0.0115	0.0023	0.0092
52	0.0115	0.0023	0.0093
53	0.0116	0.0023	0.0093
54	0.0116	0.0023	0.0093
55	0.0117	0.0023	0.0094
56	0.0117	0.0023	0.0094
57	0.0118	0.0023	0.0095
58	0.0118	0.0023	0.0095
59	0.0119	0.0023	0.0095
60	0.0119	0.0023	0.0096
61	0.0120	0.0023	0.0096
62	0.0120	0.0024	0.0097
63	0.0121	0.0024	0.0097
64	0.0121	0.0024	0.0097
65	0.0122	0.0024	0.0098
66	0.0122	0.0024	0.0098
67	0.0123	0.0024	0.0099
68	0.0123	0.0024	0.0099
69	0.0124	0.0024	0.0100
70	0.0124	0.0024	0.0100
71	0.0125	0.0025	0.0101
72	0.0126	0.0025	0.0101
73	0.0126	0.0025	0.0102
74	0.0127	0.0025	0.0102
75	0.0128	0.0025	0.0103
76	0.0128	0.0025	0.0103
77	0.0129	0.0025	0.0104
78	0.0129	0.0025	0.0104
79	0.0130	0.0026	0.0105
80	0.0131	0.0026	0.0105
81	0.0131	0.0026	0.0106
82	0.0132	0.0026	0.0106
83	0.0133	0.0026	0.0107
84	0.0133	0.0026	0.0107
85	0.0134	0.0026	0.0108
86	0.0135	0.0026	0.0108
87	0.0136	0.0027	0.0109
88	0.0136	0.0027	0.0109
89	0.0137	0.0027	0.0110
90	0.0138	0.0027	0.0111
91	0.0139	0.0027	0.0111
92	0.0139	0.0027	0.0112
93	0.0140	0.0027	0.0113
94	0.0141	0.0028	0.0113

95	0.0142	0.0028	0.0114
96	0.0142	0.0028	0.0114
97	0.0143	0.0028	0.0115
98	0.0144	0.0028	0.0116
99	0.0145	0.0028	0.0117
100	0.0146	0.0029	0.0117
101	0.0147	0.0029	0.0118
102	0.0147	0.0029	0.0119
103	0.0149	0.0029	0.0120
104	0.0149	0.0029	0.0120
105	0.0151	0.0030	0.0121
106	0.0151	0.0030	0.0122
107	0.0153	0.0030	0.0123
108	0.0153	0.0030	0.0123
109	0.0155	0.0030	0.0124
110	0.0155	0.0030	0.0125
111	0.0157	0.0031	0.0126
112	0.0157	0.0031	0.0127
113	0.0159	0.0031	0.0128
114	0.0160	0.0031	0.0128
115	0.0161	0.0032	0.0130
116	0.0162	0.0032	0.0130
117	0.0164	0.0032	0.0131
118	0.0164	0.0032	0.0132
119	0.0166	0.0033	0.0133
120	0.0167	0.0033	0.0134
121	0.0169	0.0033	0.0136
122	0.0169	0.0033	0.0136
123	0.0171	0.0034	0.0138
124	0.0172	0.0034	0.0138
125	0.0174	0.0034	0.0140
126	0.0175	0.0034	0.0141
127	0.0177	0.0035	0.0142
128	0.0178	0.0035	0.0143
129	0.0180	0.0035	0.0145
130	0.0181	0.0036	0.0146
131	0.0183	0.0036	0.0147
132	0.0185	0.0036	0.0148
133	0.0187	0.0037	0.0150
134	0.0188	0.0037	0.0151
135	0.0190	0.0037	0.0153
136	0.0192	0.0038	0.0154
137	0.0194	0.0038	0.0156
138	0.0196	0.0038	0.0157
139	0.0198	0.0039	0.0159
140	0.0200	0.0039	0.0161
141	0.0203	0.0040	0.0163
142	0.0204	0.0040	0.0164
143	0.0207	0.0041	0.0167
144	0.0209	0.0041	0.0168

145	0.0212	0.0042	0.0171
146	0.0214	0.0042	0.0172
147	0.0217	0.0043	0.0175
148	0.0219	0.0043	0.0176
149	0.0223	0.0044	0.0179
150	0.0225	0.0044	0.0181
151	0.0229	0.0045	0.0184
152	0.0231	0.0045	0.0186
153	0.0235	0.0046	0.0189
154	0.0238	0.0047	0.0191
155	0.0242	0.0048	0.0195
156	0.0245	0.0048	0.0197
157	0.0250	0.0049	0.0201
158	0.0252	0.0050	0.0203
159	0.0258	0.0051	0.0207
160	0.0261	0.0051	0.0210
161	0.0267	0.0052	0.0215
162	0.0270	0.0053	0.0217
163	0.0277	0.0054	0.0223
164	0.0281	0.0055	0.0226
165	0.0288	0.0057	0.0232
166	0.0292	0.0057	0.0235
167	0.0300	0.0059	0.0242
168	0.0305	0.0060	0.0245
169	0.0357	0.0070	0.0287
170	0.0362	0.0071	0.0291
171	0.0373	0.0073	0.0300
172	0.0379	0.0074	0.0305
173	0.0392	0.0077	0.0315
174	0.0399	0.0078	0.0321
175	0.0414	0.0081	0.0332
176	0.0422	0.0083	0.0339
177	0.0439	0.0086	0.0353
178	0.0449	0.0088	0.0361
179	0.0470	0.0092	0.0378
180	0.0482	0.0095	0.0388
181	0.0509	0.0100	0.0409
182	0.0524	0.0103	0.0422
183	0.0560	0.0110	0.0450
184	0.0580	0.0114	0.0466
185	0.0736	0.0144	0.0591
186	0.0764	0.0150	0.0614
187	0.0834	0.0163	0.0670
188	0.0878	0.0163	0.0715
189	0.0916	0.0163	0.0753
190	0.1007	0.0163	0.0843
191	0.1327	0.0163	0.1164
192	0.1697	0.0163	0.1534
193	0.3780	0.0163	0.3616
194	0.1132	0.0163	0.0969

195	0.0932	0.0163	0.0769
196	0.0796	0.0156	0.0640
197	0.0603	0.0118	0.0485
198	0.0541	0.0106	0.0435
199	0.0495	0.0097	0.0398
200	0.0459	0.0090	0.0369
201	0.0430	0.0084	0.0346
202	0.0406	0.0080	0.0326
203	0.0385	0.0076	0.0310
204	0.0368	0.0072	0.0296
205	0.0310	0.0061	0.0249
206	0.0296	0.0058	0.0238
207	0.0284	0.0056	0.0229
208	0.0274	0.0054	0.0220
209	0.0264	0.0052	0.0212
210	0.0255	0.0050	0.0205
211	0.0247	0.0048	0.0199
212	0.0240	0.0047	0.0193
213	0.0233	0.0046	0.0187
214	0.0227	0.0045	0.0182
215	0.0221	0.0043	0.0178
216	0.0216	0.0042	0.0173
217	0.0210	0.0041	0.0169
218	0.0206	0.0040	0.0165
219	0.0201	0.0039	0.0162
220	0.0197	0.0039	0.0158
221	0.0193	0.0038	0.0155
222	0.0189	0.0037	0.0152
223	0.0186	0.0036	0.0149
224	0.0182	0.0036	0.0147
225	0.0179	0.0035	0.0144
226	0.0176	0.0035	0.0142
227	0.0173	0.0034	0.0139
228	0.0170	0.0033	0.0137
229	0.0168	0.0033	0.0135
230	0.0165	0.0032	0.0133
231	0.0163	0.0032	0.0131
232	0.0160	0.0031	0.0129
233	0.0158	0.0031	0.0127
234	0.0156	0.0031	0.0125
235	0.0154	0.0030	0.0124
236	0.0152	0.0030	0.0122
237	0.0150	0.0029	0.0121
238	0.0148	0.0029	0.0119
239	0.0146	0.0029	0.0118
240	0.0144	0.0028	0.0116
241	0.0143	0.0028	0.0115
242	0.0141	0.0028	0.0113
243	0.0140	0.0027	0.0112
244	0.0138	0.0027	0.0111

245	0.0137	0.0027	0.0110
246	0.0135	0.0026	0.0109
247	0.0134	0.0026	0.0107
248	0.0132	0.0026	0.0106
249	0.0131	0.0026	0.0105
250	0.0130	0.0025	0.0104
251	0.0128	0.0025	0.0103
252	0.0127	0.0025	0.0102
253	0.0126	0.0025	0.0101
254	0.0125	0.0024	0.0100
255	0.0124	0.0024	0.0099
256	0.0123	0.0024	0.0099
257	0.0122	0.0024	0.0098
258	0.0120	0.0024	0.0097
259	0.0119	0.0023	0.0096
260	0.0118	0.0023	0.0095
261	0.0117	0.0023	0.0094
262	0.0117	0.0023	0.0094
263	0.0116	0.0023	0.0093
264	0.0115	0.0022	0.0092
265	0.0114	0.0022	0.0091
266	0.0113	0.0022	0.0091
267	0.0112	0.0022	0.0090
268	0.0111	0.0022	0.0089
269	0.0110	0.0022	0.0089
270	0.0110	0.0021	0.0088
271	0.0109	0.0021	0.0087
272	0.0108	0.0021	0.0087
273	0.0107	0.0021	0.0086
274	0.0107	0.0021	0.0086
275	0.0106	0.0021	0.0085
276	0.0105	0.0021	0.0084
277	0.0104	0.0020	0.0084
278	0.0104	0.0020	0.0083
279	0.0103	0.0020	0.0083
280	0.0102	0.0020	0.0082
281	0.0102	0.0020	0.0082
282	0.0101	0.0020	0.0081
283	0.0100	0.0020	0.0081
284	0.0100	0.0020	0.0080
285	0.0099	0.0019	0.0080
286	0.0099	0.0019	0.0079
287	0.0098	0.0019	0.0079
288	0.0097	0.0019	0.0078

Total soil rain loss = 1.15(In)
Total effective rainfall = 5.22(In)
Peak flow rate in flood hydrograph = 2.83(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

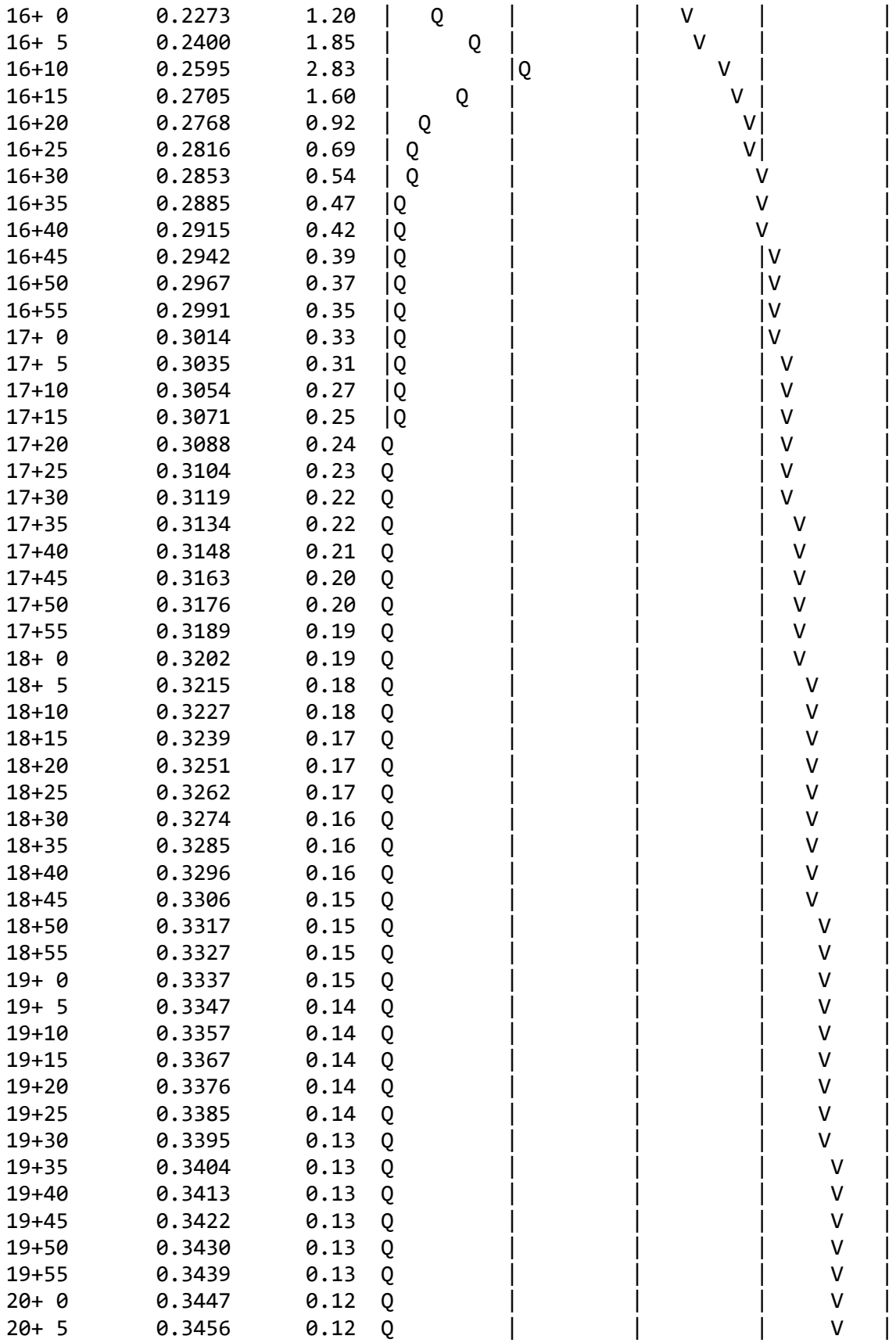
Hydrograph in 5 Minute intervals ((CFS))

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	0.0005	0.06	Q				
0+15	0.0011	0.08	Q				
0+20	0.0016	0.08	Q				
0+25	0.0022	0.08	Q				
0+30	0.0028	0.08	Q				
0+35	0.0033	0.08	Q				
0+40	0.0039	0.08	Q				
0+45	0.0045	0.08	Q				
0+50	0.0051	0.08	Q				
0+55	0.0057	0.08	Q				
1+ 0	0.0062	0.08	Q				
1+ 5	0.0068	0.08	Q				
1+10	0.0074	0.09	Q				
1+15	0.0080	0.09	Q				
1+20	0.0086	0.09	Q				
1+25	0.0092	0.09	Q				
1+30	0.0098	0.09	QV				
1+35	0.0104	0.09	QV				
1+40	0.0110	0.09	QV				
1+45	0.0116	0.09	QV				
1+50	0.0122	0.09	QV				
1+55	0.0128	0.09	QV				
2+ 0	0.0134	0.09	QV				
2+ 5	0.0140	0.09	QV				
2+10	0.0146	0.09	QV				
2+15	0.0152	0.09	QV				
2+20	0.0158	0.09	QV				
2+25	0.0164	0.09	QV				
2+30	0.0170	0.09	QV				
2+35	0.0177	0.09	QV				
2+40	0.0183	0.09	QV				
2+45	0.0189	0.09	QV				
2+50	0.0195	0.09	Q V				
2+55	0.0202	0.09	Q V				
3+ 0	0.0208	0.09	Q V				
3+ 5	0.0214	0.09	Q V				
3+10	0.0221	0.09	Q V				
3+15	0.0227	0.09	Q V				
3+20	0.0233	0.09	Q V				
3+25	0.0240	0.09	Q V				

3+30	0.0246	0.09	Q V	|	|	|	|
3+35	0.0253	0.09	Q V	|	|	|	|
3+40	0.0259	0.09	Q V	|	|	|	|
3+45	0.0266	0.09	Q V	|	|	|	|
3+50	0.0272	0.09	Q V	|	|	|	|
3+55	0.0279	0.10	Q V	|	|	|	|
4+ 0	0.0285	0.10	Q V	|	|	|	|
4+ 5	0.0292	0.10	Q V	|	|	|	|
4+10	0.0299	0.10	Q V	|	|	|	|
4+15	0.0305	0.10	Q V	|	|	|	|
4+20	0.0312	0.10	Q V	|	|	|	|
4+25	0.0319	0.10	Q V	|	|	|	|
4+30	0.0325	0.10	Q V	|	|	|	|
4+35	0.0332	0.10	Q V	|	|	|	|
4+40	0.0339	0.10	Q V	|	|	|	|
4+45	0.0346	0.10	Q V	|	|	|	|
4+50	0.0353	0.10	Q V	|	|	|	|
4+55	0.0359	0.10	Q V	|	|	|	|
5+ 0	0.0366	0.10	Q V	|	|	|	|
5+ 5	0.0373	0.10	Q V	|	|	|	|
5+10	0.0380	0.10	Q V	|	|	|	|
5+15	0.0387	0.10	Q V	|	|	|	|
5+20	0.0394	0.10	Q V	|	|	|	|
5+25	0.0401	0.10	Q V	|	|	|	|
5+30	0.0408	0.10	Q V	|	|	|	|
5+35	0.0416	0.10	Q V	|	|	|	|
5+40	0.0423	0.10	Q V	|	|	|	|
5+45	0.0430	0.10	Q V	|	|	|	|
5+50	0.0437	0.10	Q V	|	|	|	|
5+55	0.0444	0.11	Q V	|	|	|	|
6+ 0	0.0452	0.11	Q V	|	|	|	|
6+ 5	0.0459	0.11	Q V	|	|	|	|
6+10	0.0466	0.11	Q V	|	|	|	|
6+15	0.0474	0.11	Q V	|	|	|	|
6+20	0.0481	0.11	Q V	|	|	|	|
6+25	0.0489	0.11	Q V	|	|	|	|
6+30	0.0496	0.11	Q V	|	|	|	|
6+35	0.0504	0.11	Q V	|	|	|	|
6+40	0.0511	0.11	Q V	|	|	|	|
6+45	0.0519	0.11	Q V	|	|	|	|
6+50	0.0527	0.11	Q V	|	|	|	|
6+55	0.0534	0.11	Q V	|	|	|	|
7+ 0	0.0542	0.11	Q V	|	|	|	|
7+ 5	0.0550	0.11	Q V	|	|	|	|
7+10	0.0557	0.11	Q V	|	|	|	|
7+15	0.0565	0.11	Q V	|	|	|	|
7+20	0.0573	0.11	Q V	|	|	|	|
7+25	0.0581	0.12	Q V	|	|	|	|
7+30	0.0589	0.12	Q V	|	|	|	|
7+35	0.0597	0.12	Q V	|	|	|	|

7+40	0.0605	0.12	Q	V	|	|	|	|
7+45	0.0613	0.12	Q	V	|	|	|	|
7+50	0.0621	0.12	Q	V	|	|	|	|
7+55	0.0630	0.12	Q	V	|	|	|	|
8+ 0	0.0638	0.12	Q	V	|	|	|	|
8+ 5	0.0646	0.12	Q	V	|	|	|	|
8+10	0.0654	0.12	Q	V	|	|	|	|
8+15	0.0663	0.12	Q	V	|	|	|	|
8+20	0.0671	0.12	Q	V	|	|	|	|
8+25	0.0680	0.12	Q	V	|	|	|	|
8+30	0.0688	0.12	Q	V	|	|	|	|
8+35	0.0697	0.12	Q	V	|	|	|	|
8+40	0.0706	0.13	Q	V	|	|	|	|
8+45	0.0714	0.13	Q	V	|	|	|	|
8+50	0.0723	0.13	Q	V	|	|	|	|
8+55	0.0732	0.13	Q	V	|	|	|	|
9+ 0	0.0741	0.13	Q	V	|	|	|	|
9+ 5	0.0750	0.13	Q	V	|	|	|	|
9+10	0.0759	0.13	Q	V	|	|	|	|
9+15	0.0768	0.13	Q	V	|	|	|	|
9+20	0.0777	0.13	Q	V	|	|	|	|
9+25	0.0786	0.13	Q	V	|	|	|	|
9+30	0.0795	0.13	Q	V	|	|	|	|
9+35	0.0804	0.14	Q	V	|	|	|	|
9+40	0.0814	0.14	Q	V	|	|	|	|
9+45	0.0823	0.14	Q	V	|	|	|	|
9+50	0.0833	0.14	Q	V	|	|	|	|
9+55	0.0842	0.14	Q	V	|	|	|	|
10+ 0	0.0852	0.14	Q	V	|	|	|	|
10+ 5	0.0862	0.14	Q	V	|	|	|	|
10+10	0.0872	0.14	Q	V	|	|	|	|
10+15	0.0881	0.14	Q	V	|	|	|	|
10+20	0.0891	0.14	Q	V	|	|	|	|
10+25	0.0901	0.15	Q	V	|	|	|	|
10+30	0.0912	0.15	Q	V	|	|	|	|
10+35	0.0922	0.15	Q	V	|	|	|	|
10+40	0.0932	0.15	Q	V	|	|	|	|
10+45	0.0942	0.15	Q	V	|	|	|	|
10+50	0.0953	0.15	Q	V	|	|	|	|
10+55	0.0963	0.15	Q	V	|	|	|	|
11+ 0	0.0974	0.15	Q	V	|	|	|	|
11+ 5	0.0985	0.16	Q	V	|	|	|	|
11+10	0.0996	0.16	Q	V	|	|	|	|
11+15	0.1007	0.16	Q	V	|	|	|	|
11+20	0.1018	0.16	Q	V	|	|	|	|
11+25	0.1029	0.16	Q	V	|	|	|	|
11+30	0.1040	0.16	Q	V	|	|	|	|
11+35	0.1052	0.17	Q	V	|	|	|	|
11+40	0.1063	0.17	Q	V	|	|	|	|
11+45	0.1075	0.17	Q	V	|	|	|	|

```
11+50       0.1087      0.17  Q         |V        |         |         |
11+55       0.1098      0.17  Q         |V        |         |         |
12+ 0       0.1110      0.17  Q         |V        |         |         |
12+ 5       0.1123      0.18  Q         |V        |         |         |
12+10       0.1135      0.18  Q         | V       |         |         |
12+15       0.1147      0.18  Q         | V       |         |         |
12+20       0.1160      0.18  Q         | V       |         |         |
12+25       0.1173      0.19  Q         | V       |         |         |
12+30       0.1186      0.19  Q         | V       |         |         |
12+35       0.1199      0.19  Q         | V       |         |         |
12+40       0.1212      0.19  Q         | V       |         |         |
12+45       0.1226      0.20  Q         | V       |         |         |
12+50       0.1239      0.20  Q         |  V      |         |         |
12+55       0.1253      0.20  Q         |  V      |         |         |
13+ 0       0.1267      0.20  Q         |  V      |         |         |
13+ 5       0.1282      0.21  Q         |  V      |         |         |
13+10       0.1296      0.21  Q         |  V      |         |         |
13+15       0.1311      0.21  Q         |  V      |         |         |
13+20       0.1326      0.22  Q         |   V     |         |         |
13+25       0.1341      0.22  Q         |   V     |         |         |
13+30       0.1356      0.23  Q         |   V     |         |         |
13+35       0.1372      0.23  Q         |   V     |         |         |
13+40       0.1388      0.23  Q         |   V     |         |         |
13+45       0.1405      0.24  Q         |   V     |         |         |
13+50       0.1421      0.24  Q         |    V    |         |         |
13+55       0.1438      0.25  Q         |    V    |         |         |
14+ 0       0.1456      0.25  |Q        |    V    |         |         |
14+ 5       0.1474      0.26  |Q        |    V    |         |         |
14+10       0.1494      0.29  |Q        |    V    |         |         |
14+15       0.1515      0.31  |Q        |     V   |         |         |
14+20       0.1537      0.31  |Q        |     V   |         |         |
14+25       0.1559      0.32  |Q        |     V   |         |         |
14+30       0.1582      0.33  |Q        |     V   |         |         |
14+35       0.1605      0.34  |Q        |     V   |         |         |
14+40       0.1629      0.35  |Q        |      V  |         |         |
14+45       0.1653      0.36  |Q        |      V  |         |         |
14+50       0.1679      0.37  |Q        |      V  |         |         |
14+55       0.1705      0.38  |Q        |       V |         |         |
15+ 0       0.1732      0.39  |Q        |       V |         |         |
15+ 5       0.1760      0.41  |Q        |       V |         |         |
15+10       0.1790      0.43  |Q        |       V |         |         |
15+15       0.1820      0.44  |Q        |        V|         |         |
15+20       0.1852      0.47  |Q        |        V|         |         |
15+25       0.1887      0.51  | Q       |        V|         |         |
15+30       0.1928      0.59  | Q       |         V         |         |
15+35       0.1973      0.65  | Q       |         V         |         |
15+40       0.2021      0.70  | Q       |          |V       |         |
15+45       0.2072      0.75  | Q       |          |V       |         |
15+50       0.2127      0.80  |  Q      |          | V      |         |
15+55       0.2190      0.92  |  Q      |          |  V     |         |
```



```
   20+10       0.3464      0.12  Q         |          |          |     V    |
   20+15       0.3472      0.12  Q         |          |          |     V    |
   20+20       0.3481      0.12  Q         |          |          |     V    |
   20+25       0.3489      0.12  Q         |          |          |     V    |
   20+30       0.3497      0.12  Q         |          |          |     V    |
   20+35       0.3504      0.11  Q         |          |          |      V   |
   20+40       0.3512      0.11  Q         |          |          |      V   |
   20+45       0.3520      0.11  Q         |          |          |      V   |
   20+50       0.3528      0.11  Q         |          |          |      V   |
   20+55       0.3535      0.11  Q         |          |          |      V   |
   21+ 0       0.3543      0.11  Q         |          |          |      V   |
   21+ 5       0.3550      0.11  Q         |          |          |      V   |
   21+10       0.3557      0.11  Q         |          |          |      V   |
   21+15       0.3565      0.11  Q         |          |          |      V   |
   21+20       0.3572      0.10  Q         |          |          |      V   |
   21+25       0.3579      0.10  Q         |          |          |      V   |
   21+30       0.3586      0.10  Q         |          |          |      V   |
   21+35       0.3593      0.10  Q         |          |          |       V  |
   21+40       0.3600      0.10  Q         |          |          |       V  |
   21+45       0.3607      0.10  Q         |          |          |       V  |
   21+50       0.3614      0.10  Q         |          |          |       V  |
   21+55       0.3621      0.10  Q         |          |          |       V  |
   22+ 0       0.3627      0.10  Q         |          |          |       V  |
   22+ 5       0.3634      0.10  Q         |          |          |       V  |
   22+10       0.3641      0.10  Q         |          |          |       V  |
   22+15       0.3647      0.10  Q         |          |          |       V  |
   22+20       0.3654      0.09  Q         |          |          |       V  |
   22+25       0.3660      0.09  Q         |          |          |       V  |
   22+30       0.3667      0.09  Q         |          |          |       V  |
   22+35       0.3673      0.09  Q         |          |          |       V  |
   22+40       0.3680      0.09  Q         |          |          |       V  |
   22+45       0.3686      0.09  Q         |          |          |       V  |
   22+50       0.3692      0.09  Q         |          |          |        V |
   22+55       0.3698      0.09  Q         |          |          |        V |
   23+ 0       0.3704      0.09  Q         |          |          |        V |
   23+ 5       0.3711      0.09  Q         |          |          |        V |
   23+10       0.3717      0.09  Q         |          |          |        V |
   23+15       0.3723      0.09  Q         |          |          |        V |
   23+20       0.3729      0.09  Q         |          |          |        V |
   23+25       0.3735      0.09  Q         |          |          |        V |
   23+30       0.3741      0.09  Q         |          |          |        V |
   23+35       0.3747      0.09  Q         |          |          |        V |
   23+40       0.3752      0.08  Q         |          |          |        V |
   23+45       0.3758      0.08  Q         |          |          |        V |
   23+50       0.3764      0.08  Q         |          |          |        V |
   23+55       0.3770      0.08  Q         |          |          |        V |
   24+ 0       0.3775      0.08  Q         |          |          |        V |
-------------------------------------------------------------------------
```

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: 03/26/25

5885 SCHAEFER PROPOSED DRAINAGE AREA A 100YR HYDROLOGY

Program License Serial Number 6683

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

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.925(In.)
100 Year storm 1 hour rainfall = 1.480(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.480 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 0.000(Ft.) to Point/Station 294.000(Ft.)
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 294.000(Ft.)
Top (of initial area) elevation = 700.390(Ft.)
Bottom (of initial area) elevation = 695.010(Ft.)
Difference in elevation = 5.380(Ft.)
Slope = 0.01830 s(%)= 1.83

TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.572 min.
Rainfall intensity = 5.578(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.891
Subarea runoff = 4.325(CFS)
Total initial stream area = 0.870(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)
End of computations, Total Study Area = 0.87 (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 = 69.0

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

Study date 03/26/25

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

Program License Serial Number 6683

5885 Schaefer Proposed Drainage Area B 2 Yr Hydrograph

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 2		
2.44	1	0.59
Rainfall data for year 2		
2.44	6	1.55
Rainfall data for year 2		
2.44	24	2.63

++

******** 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)
69.0	49.8	2.44	1.000	0.812	0.780	0.633

Area-averaged adjusted loss rate Fm (In/Hr) = 0.633

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
1.90	0.780	69.0	49.8	10.08	0.013
0.54	0.220	98.0	98.0	0.20	0.913

Area-averaged catchment yield fraction, Y = 0.211
Area-averaged low loss fraction, Yb = 0.789
User entry of time of concentration = 0.160 (hours)
++
Watershed area = 2.44(Ac.)
Catchment Lag time = 0.128 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 65.1042
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.633(In/Hr)
Average low loss rate fraction (Yb) = 0.789 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.150(In)
Computed peak 30-minute rainfall = 0.392(In)
Specified peak 1-hour rainfall = 0.588(In)
Computed peak 3-hour rainfall = 1.120(In)
Specified peak 6-hour rainfall = 1.550(In)
Specified peak 24-hour rainfall = 2.630(In)

Note: user specified rainfall values used.
Rainfall depth area reduction factors:
Using a total area of 2.44(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.150(In)
30-minute factor = 1.000 Adjusted rainfall = 0.392(In)
1-hour factor = 1.000 Adjusted rainfall = 0.588(In)
3-hour factor = 1.000 Adjusted rainfall = 1.120(In)
6-hour factor = 1.000 Adjusted rainfall = 1.550(In)
24-hour factor = 1.000 Adjusted rainfall = 2.630(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 = 29.51 (CFS))	
1	7.634	2.253
2	47.879	11.876
3	85.995	11.247
4	97.049	3.262
5	99.073	0.597
6	100.000	0.273

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1500	0.1500
2	0.2175	0.0675
3	0.2703	0.0528
4	0.3154	0.0451
5	0.3555	0.0401
6	0.3920	0.0365
7	0.4289	0.0370
8	0.4638	0.0348
9	0.4969	0.0331
10	0.5285	0.0316
11	0.5588	0.0303
12	0.5879	0.0292
13	0.6162	0.0283
14	0.6436	0.0274
15	0.6702	0.0266
16	0.6960	0.0259
17	0.7212	0.0252
18	0.7458	0.0246
19	0.7698	0.0240
20	0.7934	0.0235
21	0.8164	0.0230
22	0.8390	0.0226
23	0.8611	0.0222
24	0.8829	0.0218
25	0.9043	0.0214
26	0.9254	0.0210
27	0.9461	0.0207
28	0.9665	0.0204
29	0.9866	0.0201
30	1.0064	0.0198
31	1.0259	0.0195
32	1.0452	0.0193
33	1.0643	0.0190
34	1.0831	0.0188
35	1.1016	0.0186

36	1.1200	0.0184
37	1.1345	0.0145
38	1.1487	0.0143
39	1.1628	0.0141
40	1.1767	0.0139
41	1.1904	0.0137
42	1.2039	0.0135
43	1.2173	0.0134
44	1.2305	0.0132
45	1.2435	0.0130
46	1.2564	0.0129
47	1.2691	0.0127
48	1.2817	0.0126
49	1.2941	0.0124
50	1.3064	0.0123
51	1.3186	0.0122
52	1.3307	0.0121
53	1.3426	0.0119
54	1.3544	0.0118
55	1.3661	0.0117
56	1.3777	0.0116
57	1.3892	0.0115
58	1.4006	0.0114
59	1.4118	0.0113
60	1.4230	0.0112
61	1.4341	0.0111
62	1.4451	0.0110
63	1.4559	0.0109
64	1.4667	0.0108
65	1.4774	0.0107
66	1.4880	0.0106
67	1.4986	0.0105
68	1.5090	0.0104
69	1.5194	0.0104
70	1.5297	0.0103
71	1.5399	0.0102
72	1.5500	0.0101
73	1.5582	0.0082
74	1.5663	0.0081
75	1.5743	0.0080
76	1.5823	0.0080
77	1.5902	0.0079
78	1.5980	0.0078
79	1.6058	0.0078
80	1.6135	0.0077
81	1.6212	0.0077
82	1.6288	0.0076
83	1.6364	0.0075
84	1.6438	0.0075
85	1.6513	0.0074

86	1.6587	0.0074
87	1.6660	0.0073
88	1.6733	0.0073
89	1.6805	0.0072
90	1.6877	0.0072
91	1.6948	0.0071
92	1.7019	0.0071
93	1.7089	0.0070
94	1.7159	0.0070
95	1.7228	0.0069
96	1.7297	0.0069
97	1.7366	0.0069
98	1.7434	0.0068
99	1.7502	0.0068
100	1.7569	0.0067
101	1.7636	0.0067
102	1.7702	0.0066
103	1.7768	0.0066
104	1.7834	0.0066
105	1.7899	0.0065
106	1.7964	0.0065
107	1.8028	0.0064
108	1.8092	0.0064
109	1.8156	0.0064
110	1.8219	0.0063
111	1.8282	0.0063
112	1.8345	0.0063
113	1.8407	0.0062
114	1.8469	0.0062
115	1.8531	0.0062
116	1.8592	0.0061
117	1.8653	0.0061
118	1.8714	0.0061
119	1.8774	0.0060
120	1.8834	0.0060
121	1.8894	0.0060
122	1.8953	0.0059
123	1.9012	0.0059
124	1.9071	0.0059
125	1.9129	0.0059
126	1.9188	0.0058
127	1.9246	0.0058
128	1.9303	0.0058
129	1.9361	0.0057
130	1.9418	0.0057
131	1.9475	0.0057
132	1.9531	0.0057
133	1.9587	0.0056
134	1.9644	0.0056
135	1.9699	0.0056

136	1.9755	0.0056
137	1.9810	0.0055
138	1.9865	0.0055
139	1.9920	0.0055
140	1.9974	0.0055
141	2.0029	0.0054
142	2.0083	0.0054
143	2.0137	0.0054
144	2.0190	0.0054
145	2.0244	0.0053
146	2.0297	0.0053
147	2.0350	0.0053
148	2.0402	0.0053
149	2.0455	0.0052
150	2.0507	0.0052
151	2.0559	0.0052
152	2.0611	0.0052
153	2.0663	0.0052
154	2.0714	0.0051
155	2.0765	0.0051
156	2.0816	0.0051
157	2.0867	0.0051
158	2.0918	0.0051
159	2.0968	0.0050
160	2.1018	0.0050
161	2.1068	0.0050
162	2.1118	0.0050
163	2.1168	0.0050
164	2.1217	0.0049
165	2.1266	0.0049
166	2.1315	0.0049
167	2.1364	0.0049
168	2.1413	0.0049
169	2.1461	0.0049
170	2.1510	0.0048
171	2.1558	0.0048
172	2.1606	0.0048
173	2.1654	0.0048
174	2.1701	0.0048
175	2.1749	0.0047
176	2.1796	0.0047
177	2.1843	0.0047
178	2.1890	0.0047
179	2.1937	0.0047
180	2.1984	0.0047
181	2.2030	0.0047
182	2.2077	0.0046
183	2.2123	0.0046
184	2.2169	0.0046
185	2.2215	0.0046

186	2.2260	0.0046
187	2.2306	0.0046
188	2.2351	0.0045
189	2.2397	0.0045
190	2.2442	0.0045
191	2.2487	0.0045
192	2.2532	0.0045
193	2.2576	0.0045
194	2.2621	0.0045
195	2.2665	0.0044
196	2.2710	0.0044
197	2.2754	0.0044
198	2.2798	0.0044
199	2.2841	0.0044
200	2.2885	0.0044
201	2.2929	0.0044
202	2.2972	0.0043
203	2.3016	0.0043
204	2.3059	0.0043
205	2.3102	0.0043
206	2.3145	0.0043
207	2.3187	0.0043
208	2.3230	0.0043
209	2.3273	0.0043
210	2.3315	0.0042
211	2.3357	0.0042
212	2.3399	0.0042
213	2.3442	0.0042
214	2.3483	0.0042
215	2.3525	0.0042
216	2.3567	0.0042
217	2.3608	0.0042
218	2.3650	0.0041
219	2.3691	0.0041
220	2.3732	0.0041
221	2.3774	0.0041
222	2.3814	0.0041
223	2.3855	0.0041
224	2.3896	0.0041
225	2.3937	0.0041
226	2.3977	0.0041
227	2.4018	0.0040
228	2.4058	0.0040
229	2.4098	0.0040
230	2.4138	0.0040
231	2.4178	0.0040
232	2.4218	0.0040
233	2.4258	0.0040
234	2.4297	0.0040
235	2.4337	0.0040

236	2.4376	0.0039
237	2.4416	0.0039
238	2.4455	0.0039
239	2.4494	0.0039
240	2.4533	0.0039
241	2.4572	0.0039
242	2.4611	0.0039
243	2.4650	0.0039
244	2.4688	0.0039
245	2.4727	0.0039
246	2.4765	0.0038
247	2.4804	0.0038
248	2.4842	0.0038
249	2.4880	0.0038
250	2.4918	0.0038
251	2.4956	0.0038
252	2.4994	0.0038
253	2.5032	0.0038
254	2.5070	0.0038
255	2.5107	0.0038
256	2.5145	0.0038
257	2.5182	0.0037
258	2.5219	0.0037
259	2.5257	0.0037
260	2.5294	0.0037
261	2.5331	0.0037
262	2.5368	0.0037
263	2.5405	0.0037
264	2.5441	0.0037
265	2.5478	0.0037
266	2.5515	0.0037
267	2.5551	0.0037
268	2.5588	0.0036
269	2.5624	0.0036
270	2.5660	0.0036
271	2.5697	0.0036
272	2.5733	0.0036
273	2.5769	0.0036
274	2.5805	0.0036
275	2.5841	0.0036
276	2.5876	0.0036
277	2.5912	0.0036
278	2.5948	0.0036
279	2.5983	0.0036
280	2.6019	0.0035
281	2.6054	0.0035
282	2.6090	0.0035
283	2.6125	0.0035
284	2.6160	0.0035
285	2.6195	0.0035

286	2.6230	0.0035
287	2.6265	0.0035
288	2.6300	0.0035

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0035	0.0028	0.0007
2	0.0035	0.0028	0.0007
3	0.0035	0.0028	0.0007
4	0.0035	0.0028	0.0007
5	0.0035	0.0028	0.0007
6	0.0035	0.0028	0.0007
7	0.0036	0.0028	0.0008
8	0.0036	0.0028	0.0008
9	0.0036	0.0028	0.0008
10	0.0036	0.0028	0.0008
11	0.0036	0.0028	0.0008
12	0.0036	0.0028	0.0008
13	0.0036	0.0029	0.0008
14	0.0036	0.0029	0.0008
15	0.0037	0.0029	0.0008
16	0.0037	0.0029	0.0008
17	0.0037	0.0029	0.0008
18	0.0037	0.0029	0.0008
19	0.0037	0.0029	0.0008
20	0.0037	0.0029	0.0008
21	0.0037	0.0029	0.0008
22	0.0037	0.0030	0.0008
23	0.0038	0.0030	0.0008
24	0.0038	0.0030	0.0008
25	0.0038	0.0030	0.0008
26	0.0038	0.0030	0.0008
27	0.0038	0.0030	0.0008
28	0.0038	0.0030	0.0008
29	0.0038	0.0030	0.0008
30	0.0039	0.0030	0.0008
31	0.0039	0.0031	0.0008
32	0.0039	0.0031	0.0008
33	0.0039	0.0031	0.0008
34	0.0039	0.0031	0.0008
35	0.0039	0.0031	0.0008
36	0.0039	0.0031	0.0008
37	0.0040	0.0031	0.0008
38	0.0040	0.0031	0.0008
39	0.0040	0.0032	0.0008
40	0.0040	0.0032	0.0008
41	0.0040	0.0032	0.0009
42	0.0040	0.0032	0.0009

43	0.0041	0.0032	0.0009
44	0.0041	0.0032	0.0009
45	0.0041	0.0032	0.0009
46	0.0041	0.0032	0.0009
47	0.0041	0.0033	0.0009
48	0.0041	0.0033	0.0009
49	0.0042	0.0033	0.0009
50	0.0042	0.0033	0.0009
51	0.0042	0.0033	0.0009
52	0.0042	0.0033	0.0009
53	0.0042	0.0033	0.0009
54	0.0043	0.0034	0.0009
55	0.0043	0.0034	0.0009
56	0.0043	0.0034	0.0009
57	0.0043	0.0034	0.0009
58	0.0043	0.0034	0.0009
59	0.0044	0.0034	0.0009
60	0.0044	0.0034	0.0009
61	0.0044	0.0035	0.0009
62	0.0044	0.0035	0.0009
63	0.0044	0.0035	0.0009
64	0.0045	0.0035	0.0009
65	0.0045	0.0035	0.0009
66	0.0045	0.0035	0.0009
67	0.0045	0.0036	0.0010
68	0.0045	0.0036	0.0010
69	0.0046	0.0036	0.0010
70	0.0046	0.0036	0.0010
71	0.0046	0.0036	0.0010
72	0.0046	0.0037	0.0010
73	0.0047	0.0037	0.0010
74	0.0047	0.0037	0.0010
75	0.0047	0.0037	0.0010
76	0.0047	0.0037	0.0010
77	0.0048	0.0038	0.0010
78	0.0048	0.0038	0.0010
79	0.0048	0.0038	0.0010
80	0.0048	0.0038	0.0010
81	0.0049	0.0038	0.0010
82	0.0049	0.0039	0.0010
83	0.0049	0.0039	0.0010
84	0.0049	0.0039	0.0010
85	0.0050	0.0039	0.0011
86	0.0050	0.0039	0.0011
87	0.0050	0.0040	0.0011
88	0.0051	0.0040	0.0011
89	0.0051	0.0040	0.0011
90	0.0051	0.0040	0.0011
91	0.0052	0.0041	0.0011
92	0.0052	0.0041	0.0011

93	0.0052	0.0041	0.0011
94	0.0052	0.0041	0.0011
95	0.0053	0.0042	0.0011
96	0.0053	0.0042	0.0011
97	0.0054	0.0042	0.0011
98	0.0054	0.0042	0.0011
99	0.0054	0.0043	0.0011
100	0.0055	0.0043	0.0012
101	0.0055	0.0043	0.0012
102	0.0055	0.0044	0.0012
103	0.0056	0.0044	0.0012
104	0.0056	0.0044	0.0012
105	0.0057	0.0045	0.0012
106	0.0057	0.0045	0.0012
107	0.0057	0.0045	0.0012
108	0.0058	0.0045	0.0012
109	0.0058	0.0046	0.0012
110	0.0059	0.0046	0.0012
111	0.0059	0.0047	0.0012
112	0.0059	0.0047	0.0013
113	0.0060	0.0047	0.0013
114	0.0060	0.0048	0.0013
115	0.0061	0.0048	0.0013
116	0.0061	0.0048	0.0013
117	0.0062	0.0049	0.0013
118	0.0062	0.0049	0.0013
119	0.0063	0.0050	0.0013
120	0.0063	0.0050	0.0013
121	0.0064	0.0051	0.0014
122	0.0064	0.0051	0.0014
123	0.0065	0.0051	0.0014
124	0.0066	0.0052	0.0014
125	0.0066	0.0052	0.0014
126	0.0067	0.0053	0.0014
127	0.0068	0.0053	0.0014
128	0.0068	0.0054	0.0014
129	0.0069	0.0054	0.0015
130	0.0069	0.0055	0.0015
131	0.0070	0.0055	0.0015
132	0.0071	0.0056	0.0015
133	0.0072	0.0057	0.0015
134	0.0072	0.0057	0.0015
135	0.0073	0.0058	0.0015
136	0.0074	0.0058	0.0016
137	0.0075	0.0059	0.0016
138	0.0075	0.0060	0.0016
139	0.0077	0.0060	0.0016
140	0.0077	0.0061	0.0016
141	0.0078	0.0062	0.0017
142	0.0079	0.0062	0.0017

143	0.0080	0.0063	0.0017
144	0.0081	0.0064	0.0017
145	0.0101	0.0080	0.0021
146	0.0102	0.0080	0.0022
147	0.0104	0.0082	0.0022
148	0.0104	0.0082	0.0022
149	0.0106	0.0084	0.0022
150	0.0107	0.0084	0.0023
151	0.0109	0.0086	0.0023
152	0.0110	0.0087	0.0023
153	0.0112	0.0088	0.0024
154	0.0113	0.0089	0.0024
155	0.0115	0.0091	0.0024
156	0.0116	0.0091	0.0024
157	0.0118	0.0093	0.0025
158	0.0119	0.0094	0.0025
159	0.0122	0.0096	0.0026
160	0.0123	0.0097	0.0026
161	0.0126	0.0099	0.0027
162	0.0127	0.0100	0.0027
163	0.0130	0.0103	0.0028
164	0.0132	0.0104	0.0028
165	0.0135	0.0107	0.0029
166	0.0137	0.0108	0.0029
167	0.0141	0.0111	0.0030
168	0.0143	0.0113	0.0030
169	0.0184	0.0145	0.0039
170	0.0186	0.0147	0.0039
171	0.0190	0.0150	0.0040
172	0.0193	0.0152	0.0041
173	0.0198	0.0156	0.0042
174	0.0201	0.0159	0.0042
175	0.0207	0.0163	0.0044
176	0.0210	0.0166	0.0044
177	0.0218	0.0172	0.0046
178	0.0222	0.0175	0.0047
179	0.0230	0.0182	0.0049
180	0.0235	0.0185	0.0050
181	0.0246	0.0194	0.0052
182	0.0252	0.0199	0.0053
183	0.0266	0.0210	0.0056
184	0.0274	0.0216	0.0058
185	0.0292	0.0230	0.0062
186	0.0303	0.0239	0.0064
187	0.0331	0.0261	0.0070
188	0.0348	0.0275	0.0074
189	0.0365	0.0288	0.0077
190	0.0401	0.0316	0.0085
191	0.0528	0.0417	0.0112
192	0.0675	0.0528	0.0147

193	0.1500	0.0528	0.0972
194	0.0451	0.0356	0.0095
195	0.0370	0.0292	0.0078
196	0.0316	0.0249	0.0067
197	0.0283	0.0223	0.0060
198	0.0259	0.0204	0.0055
199	0.0240	0.0190	0.0051
200	0.0226	0.0178	0.0048
201	0.0214	0.0169	0.0045
202	0.0204	0.0161	0.0043
203	0.0195	0.0154	0.0041
204	0.0188	0.0148	0.0040
205	0.0145	0.0114	0.0031
206	0.0139	0.0110	0.0029
207	0.0134	0.0105	0.0028
208	0.0129	0.0102	0.0027
209	0.0124	0.0098	0.0026
210	0.0121	0.0095	0.0025
211	0.0117	0.0092	0.0025
212	0.0114	0.0090	0.0024
213	0.0111	0.0087	0.0023
214	0.0108	0.0085	0.0023
215	0.0105	0.0083	0.0022
216	0.0103	0.0081	0.0022
217	0.0082	0.0064	0.0017
218	0.0080	0.0063	0.0017
219	0.0078	0.0061	0.0016
220	0.0076	0.0060	0.0016
221	0.0074	0.0059	0.0016
222	0.0073	0.0057	0.0015
223	0.0071	0.0056	0.0015
224	0.0070	0.0055	0.0015
225	0.0069	0.0054	0.0014
226	0.0067	0.0053	0.0014
227	0.0066	0.0052	0.0014
228	0.0065	0.0051	0.0014
229	0.0064	0.0050	0.0013
230	0.0063	0.0049	0.0013
231	0.0062	0.0049	0.0013
232	0.0061	0.0048	0.0013
233	0.0060	0.0047	0.0013
234	0.0059	0.0046	0.0012
235	0.0058	0.0046	0.0012
236	0.0057	0.0045	0.0012
237	0.0056	0.0044	0.0012
238	0.0056	0.0044	0.0012
239	0.0055	0.0043	0.0012
240	0.0054	0.0043	0.0011
241	0.0053	0.0042	0.0011
242	0.0053	0.0042	0.0011

243	0.0052	0.0041	0.0011
244	0.0051	0.0041	0.0011
245	0.0051	0.0040	0.0011
246	0.0050	0.0040	0.0011
247	0.0050	0.0039	0.0010
248	0.0049	0.0039	0.0010
249	0.0049	0.0038	0.0010
250	0.0048	0.0038	0.0010
251	0.0047	0.0037	0.0010
252	0.0047	0.0037	0.0010
253	0.0047	0.0037	0.0010
254	0.0046	0.0036	0.0010
255	0.0046	0.0036	0.0010
256	0.0045	0.0036	0.0010
257	0.0045	0.0035	0.0009
258	0.0044	0.0035	0.0009
259	0.0044	0.0035	0.0009
260	0.0043	0.0034	0.0009
261	0.0043	0.0034	0.0009
262	0.0043	0.0034	0.0009
263	0.0042	0.0033	0.0009
264	0.0042	0.0033	0.0009
265	0.0042	0.0033	0.0009
266	0.0041	0.0032	0.0009
267	0.0041	0.0032	0.0009
268	0.0041	0.0032	0.0009
269	0.0040	0.0032	0.0008
270	0.0040	0.0031	0.0008
271	0.0040	0.0031	0.0008
272	0.0039	0.0031	0.0008
273	0.0039	0.0031	0.0008
274	0.0039	0.0030	0.0008
275	0.0038	0.0030	0.0008
276	0.0038	0.0030	0.0008
277	0.0038	0.0030	0.0008
278	0.0038	0.0030	0.0008
279	0.0037	0.0029	0.0008
280	0.0037	0.0029	0.0008
281	0.0037	0.0029	0.0008
282	0.0036	0.0029	0.0008
283	0.0036	0.0029	0.0008
284	0.0036	0.0028	0.0008
285	0.0036	0.0028	0.0008
286	0.0035	0.0028	0.0007
287	0.0035	0.0028	0.0007
288	0.0035	0.0028	0.0007

Total soil rain loss = 2.01(In)
Total effective rainfall = 0.62(In)

Peak flow rate in flood hydrograph = 1.39(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	0.0000	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	0.0007	0.02	Q				
0+35	0.0008	0.02	Q				
0+40	0.0010	0.02	Q				
0+45	0.0011	0.02	Q				
0+50	0.0013	0.02	Q				
0+55	0.0014	0.02	Q				
1+ 0	0.0016	0.02	Q				
1+ 5	0.0017	0.02	Q				
1+10	0.0019	0.02	Q				
1+15	0.0020	0.02	Q				
1+20	0.0022	0.02	Q				
1+25	0.0024	0.02	Q				
1+30	0.0025	0.02	Q				
1+35	0.0027	0.02	Q				
1+40	0.0028	0.02	Q				
1+45	0.0030	0.02	Q				
1+50	0.0031	0.02	Q				
1+55	0.0033	0.02	QV				
2+ 0	0.0035	0.02	QV				
2+ 5	0.0036	0.02	QV				
2+10	0.0038	0.02	QV				
2+15	0.0040	0.02	QV				
2+20	0.0041	0.02	QV				
2+25	0.0043	0.02	QV				
2+30	0.0044	0.02	QV				
2+35	0.0046	0.02	QV				
2+40	0.0048	0.02	QV				
2+45	0.0049	0.02	QV				
2+50	0.0051	0.02	QV				
2+55	0.0053	0.02	QV				
3+ 0	0.0054	0.02	QV				
3+ 5	0.0056	0.02	QV				
3+10	0.0058	0.02	QV				
3+15	0.0060	0.02	QV				

3+20	0.0061	0.02	QV	|	|	|	|
3+25	0.0063	0.02	QV	|	|	|	|
3+30	0.0065	0.03	Q V	|	|	|	|
3+35	0.0066	0.03	Q V	|	|	|	|
3+40	0.0068	0.03	Q V	|	|	|	|
3+45	0.0070	0.03	Q V	|	|	|	|
3+50	0.0072	0.03	Q V	|	|	|	|
3+55	0.0073	0.03	Q V	|	|	|	|
4+ 0	0.0075	0.03	Q V	|	|	|	|
4+ 5	0.0077	0.03	Q V	|	|	|	|
4+10	0.0079	0.03	Q V	|	|	|	|
4+15	0.0081	0.03	Q V	|	|	|	|
4+20	0.0082	0.03	Q V	|	|	|	|
4+25	0.0084	0.03	Q V	|	|	|	|
4+30	0.0086	0.03	Q V	|	|	|	|
4+35	0.0088	0.03	Q V	|	|	|	|
4+40	0.0090	0.03	Q V	|	|	|	|
4+45	0.0091	0.03	Q V	|	|	|	|
4+50	0.0093	0.03	Q V	|	|	|	|
4+55	0.0095	0.03	Q V	|	|	|	|
5+ 0	0.0097	0.03	Q V	|	|	|	|
5+ 5	0.0099	0.03	Q V	|	|	|	|
5+10	0.0101	0.03	Q V	|	|	|	|
5+15	0.0103	0.03	Q V	|	|	|	|
5+20	0.0105	0.03	Q V	|	|	|	|
5+25	0.0107	0.03	Q V	|	|	|	|
5+30	0.0108	0.03	Q V	|	|	|	|
5+35	0.0110	0.03	Q V	|	|	|	|
5+40	0.0112	0.03	Q V	|	|	|	|
5+45	0.0114	0.03	Q V	|	|	|	|
5+50	0.0116	0.03	Q V	|	|	|	|
5+55	0.0118	0.03	Q V	|	|	|	|
6+ 0	0.0120	0.03	Q V	|	|	|	|
6+ 5	0.0122	0.03	Q V	|	|	|	|
6+10	0.0124	0.03	Q V	|	|	|	|
6+15	0.0126	0.03	Q V	|	|	|	|
6+20	0.0128	0.03	Q V	|	|	|	|
6+25	0.0130	0.03	Q V	|	|	|	|
6+30	0.0132	0.03	Q V	|	|	|	|
6+35	0.0134	0.03	Q V	|	|	|	|
6+40	0.0136	0.03	Q V	|	|	|	|
6+45	0.0138	0.03	Q V	|	|	|	|
6+50	0.0140	0.03	Q V	|	|	|	|
6+55	0.0143	0.03	Q V	|	|	|	|
7+ 0	0.0145	0.03	Q V	|	|	|	|
7+ 5	0.0147	0.03	Q V	|	|	|	|
7+10	0.0149	0.03	Q V	|	|	|	|
7+15	0.0151	0.03	Q V	|	|	|	|
7+20	0.0153	0.03	Q V	|	|	|	|
7+25	0.0155	0.03	Q V	|	|	|	|

7+30	0.0158	0.03	Q	V	|	|	|	|
7+35	0.0160	0.03	Q	V	|	|	|	|
7+40	0.0162	0.03	Q	V	|	|	|	|
7+45	0.0164	0.03	Q	V	|	|	|	|
7+50	0.0166	0.03	Q	V	|	|	|	|
7+55	0.0169	0.03	Q	V	|	|	|	|
8+ 0	0.0171	0.03	Q	V	|	|	|	|
8+ 5	0.0173	0.03	Q	V	|	|	|	|
8+10	0.0175	0.03	Q	V	|	|	|	|
8+15	0.0178	0.03	Q	V	|	|	|	|
8+20	0.0180	0.03	Q	V	|	|	|	|
8+25	0.0182	0.03	Q	V	|	|	|	|
8+30	0.0185	0.03	Q	V	|	|	|	|
8+35	0.0187	0.03	Q	V	|	|	|	|
8+40	0.0189	0.03	Q	V	|	|	|	|
8+45	0.0192	0.03	Q	V	|	|	|	|
8+50	0.0194	0.04	Q	V	|	|	|	|
8+55	0.0197	0.04	Q	V	|	|	|	|
9+ 0	0.0199	0.04	Q	V	|	|	|	|
9+ 5	0.0202	0.04	Q	V	|	|	|	|
9+10	0.0204	0.04	Q	V	|	|	|	|
9+15	0.0207	0.04	Q	V	|	|	|	|
9+20	0.0209	0.04	Q	V	|	|	|	|
9+25	0.0212	0.04	Q	V	|	|	|	|
9+30	0.0214	0.04	Q	V	|	|	|	|
9+35	0.0217	0.04	Q	V	|	|	|	|
9+40	0.0219	0.04	Q	V	|	|	|	|
9+45	0.0222	0.04	Q	V	|	|	|	|
9+50	0.0225	0.04	Q	V	|	|	|	|
9+55	0.0227	0.04	Q	V	|	|	|	|
10+ 0	0.0230	0.04	Q	V	|	|	|	|
10+ 5	0.0233	0.04	Q	V	|	|	|	|
10+10	0.0236	0.04	Q	V	|	|	|	|
10+15	0.0238	0.04	Q	V	|	|	|	|
10+20	0.0241	0.04	Q	V	|	|	|	|
10+25	0.0244	0.04	Q	V	|	|	|	|
10+30	0.0247	0.04	Q	V	|	|	|	|
10+35	0.0250	0.04	Q	V	|	|	|	|
10+40	0.0252	0.04	Q	V	|	|	|	|
10+45	0.0255	0.04	Q	V	|	|	|	|
10+50	0.0258	0.04	Q	V	|	|	|	|
10+55	0.0261	0.04	Q	V	|	|	|	|
11+ 0	0.0264	0.04	Q	V	|	|	|	|
11+ 5	0.0267	0.04	Q	V	|	|	|	|
11+10	0.0270	0.04	Q	V	|	|	|	|
11+15	0.0273	0.04	Q	V	|	|	|	|
11+20	0.0277	0.05	Q	V	|	|	|	|
11+25	0.0280	0.05	Q	V	|	|	|	|
11+30	0.0283	0.05	Q	V	|	|	|	|
11+35	0.0286	0.05	Q	V	|	|	|	|

```
11+40       0.0289      0.05  Q        V|          |          |          |
11+45       0.0293      0.05  Q        V|          |          |          |
11+50       0.0296      0.05  Q        V|          |          |          |
11+55       0.0299      0.05  Q        V|          |          |          |
12+ 0       0.0303      0.05  Q        V|          |          |          |
12+ 5       0.0306      0.05  Q        V|          |          |          |
12+10       0.0310      0.06  Q        V|          |          |          |
12+15       0.0314      0.06  Q        V|          |          |          |
12+20       0.0319      0.06  Q         V          |          |          |
12+25       0.0323      0.06  Q         V          |          |          |
12+30       0.0328      0.07  Q         V          |          |          |
12+35       0.0332      0.07  Q         V          |          |          |
12+40       0.0337      0.07  Q         V          |          |          |
12+45       0.0342      0.07  Q         V          |          |          |
12+50       0.0346      0.07  Q         V          |          |          |
12+55       0.0351      0.07  Q         |V         |          |          |
13+ 0       0.0356      0.07  Q         |V         |          |          |
13+ 5       0.0361      0.07  Q         |V         |          |          |
13+10       0.0366      0.07  Q         |V         |          |          |
13+15       0.0371      0.07  Q         |V         |          |          |
13+20       0.0376      0.08  Q         |V         |          |          |
13+25       0.0382      0.08  Q         | V        |          |          |
13+30       0.0387      0.08  Q         | V        |          |          |
13+35       0.0392      0.08  Q         | V        |          |          |
13+40       0.0398      0.08  Q         | V        |          |          |
13+45       0.0403      0.08  Q         | V        |          |          |
13+50       0.0409      0.08  Q         | V        |          |          |
13+55       0.0415      0.08  Q         |  V       |          |          |
14+ 0       0.0421      0.09  Q         |  V       |          |          |
14+ 5       0.0427      0.09  Q         |  V       |          |          |
14+10       0.0434      0.10  Q         |  V       |          |          |
14+15       0.0442      0.11  Q         |  V       |          |          |
14+20       0.0450      0.12  Q         |   V      |          |          |
14+25       0.0458      0.12  Q         |   V      |          |          |
14+30       0.0466      0.12  Q         |   V      |          |          |
14+35       0.0475      0.12  Q         |    V     |          |          |
14+40       0.0484      0.13  Q         |    V     |          |          |
14+45       0.0493      0.13  Q         |    V     |          |          |
14+50       0.0502      0.13  Q         |    V     |          |          |
14+55       0.0511      0.14  Q         |     V    |          |          |
15+ 0       0.0521      0.14  Q         |     V    |          |          |
15+ 5       0.0531      0.14  Q         |     V    |          |          |
15+10       0.0541      0.15  Q         |      V   |          |          |
15+15       0.0552      0.15  Q         |      V   |          |          |
15+20       0.0563      0.16  Q         |      V   |          |          |
15+25       0.0574      0.17  Q         |       V  |          |          |
15+30       0.0586      0.18  Q         |       V  |          |          |
15+35       0.0599      0.18  Q         |       V  |          |          |
15+40       0.0613      0.20  Q         |        V |          |          |
15+45       0.0627      0.21  Q         |        V |          |          |
```

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15+50       0.0642      0.22  Q          |          V          |          |
15+55       0.0659      0.24  Q          |          V          |          |
16+ 0       0.0679      0.29  |Q         |          |V         |          |
16+ 5       0.0717      0.55  | Q        |          | V        |          |
16+10       0.0813      1.39  |    Q     |          |    V     |          |
16+15       0.0901      1.28  |    Q     |          |       V  |          |
16+20       0.0938      0.54  | Q        |          |        V |          |
16+25       0.0957      0.27  |Q         |          |          V          |
16+30       0.0972      0.22  Q          |          |          V          |
16+35       0.0984      0.17  Q          |          |          |V         |
16+40       0.0995      0.16  Q          |          |          |V         |
16+45       0.1005      0.15  Q          |          |          |V         |
16+50       0.1015      0.14  Q          |          |          | V        |
16+55       0.1024      0.13  Q          |          |          | V        |
17+ 0       0.1032      0.13  Q          |          |          | V        |
17+ 5       0.1040      0.12  Q          |          |          | V        |
17+10       0.1048      0.10  Q          |          |          |  V       |
17+15       0.1054      0.09  Q          |          |          |  V       |
17+20       0.1060      0.09  Q          |          |          |  V       |
17+25       0.1066      0.08  Q          |          |          |  V       |
17+30       0.1071      0.08  Q          |          |          |  V       |
17+35       0.1076      0.08  Q          |          |          |   V      |
17+40       0.1081      0.07  Q          |          |          |   V      |
17+45       0.1086      0.07  Q          |          |          |   V      |
17+50       0.1091      0.07  Q          |          |          |   V      |
17+55       0.1096      0.07  Q          |          |          |   V      |
18+ 0       0.1101      0.07  Q          |          |          |   V      |
18+ 5       0.1105      0.06  Q          |          |          |   V      |
18+10       0.1109      0.06  Q          |          |          |    V     |
18+15       0.1113      0.05  Q          |          |          |    V     |
18+20       0.1116      0.05  Q          |          |          |    V     |
18+25       0.1119      0.05  Q          |          |          |    V     |
18+30       0.1123      0.05  Q          |          |          |    V     |
18+35       0.1126      0.05  Q          |          |          |    V     |
18+40       0.1129      0.05  Q          |          |          |    V     |
18+45       0.1132      0.04  Q          |          |          |    V     |
18+50       0.1135      0.04  Q          |          |          |    V     |
18+55       0.1138      0.04  Q          |          |          |     V    |
19+ 0       0.1141      0.04  Q          |          |          |     V    |
19+ 5       0.1143      0.04  Q          |          |          |     V    |
19+10       0.1146      0.04  Q          |          |          |     V    |
19+15       0.1149      0.04  Q          |          |          |     V    |
19+20       0.1152      0.04  Q          |          |          |     V    |
19+25       0.1154      0.04  Q          |          |          |     V    |
19+30       0.1157      0.04  Q          |          |          |     V    |
19+35       0.1159      0.04  Q          |          |          |     V    |
19+40       0.1162      0.04  Q          |          |          |     V    |
19+45       0.1164      0.04  Q          |          |          |     V    |
19+50       0.1167      0.04  Q          |          |          |     V    |
19+55       0.1169      0.03  Q          |          |          |      V   |
```

20+ 0	0.1172	0.03	Q	|	|	|	V |
20+ 5	0.1174	0.03	Q	|	|	|	V |
20+10	0.1176	0.03	Q	|	|	|	V |
20+15	0.1178	0.03	Q	|	|	|	V |
20+20	0.1181	0.03	Q	|	|	|	V |
20+25	0.1183	0.03	Q	|	|	|	V |
20+30	0.1185	0.03	Q	|	|	|	V |
20+35	0.1187	0.03	Q	|	|	|	V |
20+40	0.1189	0.03	Q	|	|	|	V |
20+45	0.1192	0.03	Q	|	|	|	V |
20+50	0.1194	0.03	Q	|	|	|	V |
20+55	0.1196	0.03	Q	|	|	|	V |
21+ 0	0.1198	0.03	Q	|	|	|	V |
21+ 5	0.1200	0.03	Q	|	|	|	V |
21+10	0.1202	0.03	Q	|	|	|	V |
21+15	0.1204	0.03	Q	|	|	|	V |
21+20	0.1206	0.03	Q	|	|	|	V |
21+25	0.1208	0.03	Q	|	|	|	V |
21+30	0.1210	0.03	Q	|	|	|	V |
21+35	0.1212	0.03	Q	|	|	|	V |
21+40	0.1214	0.03	Q	|	|	|	V |
21+45	0.1215	0.03	Q	|	|	|	V |
21+50	0.1217	0.03	Q	|	|	|	V |
21+55	0.1219	0.03	Q	|	|	|	V |
22+ 0	0.1221	0.03	Q	|	|	|	V |
22+ 5	0.1223	0.03	Q	|	|	|	V |
22+10	0.1225	0.03	Q	|	|	|	V |
22+15	0.1226	0.03	Q	|	|	|	V |
22+20	0.1228	0.03	Q	|	|	|	V |
22+25	0.1230	0.03	Q	|	|	|	V |
22+30	0.1232	0.03	Q	|	|	|	V|
22+35	0.1233	0.02	Q	|	|	|	V|
22+40	0.1235	0.02	Q	|	|	|	V|
22+45	0.1237	0.02	Q	|	|	|	V|
22+50	0.1238	0.02	Q	|	|	|	V|
22+55	0.1240	0.02	Q	|	|	|	V|
23+ 0	0.1242	0.02	Q	|	|	|	V|
23+ 5	0.1243	0.02	Q	|	|	|	V|
23+10	0.1245	0.02	Q	|	|	|	V|
23+15	0.1247	0.02	Q	|	|	|	V|
23+20	0.1248	0.02	Q	|	|	|	V|
23+25	0.1250	0.02	Q	|	|	|	V|
23+30	0.1251	0.02	Q	|	|	|	V|
23+35	0.1253	0.02	Q	|	|	|	V|
23+40	0.1254	0.02	Q	|	|	|	V|
23+45	0.1256	0.02	Q	|	|	|	V|
23+50	0.1258	0.02	Q	|	|	|	V|
23+55	0.1259	0.02	Q	|	|	|	V|
24+ 0	0.1261	0.02	Q	|	|	|	V|

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: 03/26/25

5885 SCHAEFER PROPOSED DRAINAGE AREA B 2YR HYDROLOGY

Program License Serial Number 6683

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

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.925(In.)
100 Year storm 1 hour rainfall = 1.480(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.537 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 0.000(Ft.) to Point/Station 742.000(Ft.)
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 742.000(Ft.)
Top (of initial area) elevation = 699.440(Ft.)
Bottom (of initial area) elevation = 688.150(Ft.)
Difference in elevation = 11.290(Ft.)
Slope = 0.01522 s(%)= 1.52

TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.876 min.
Rainfall intensity = 1.586(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.869
Subarea runoff = 3.362(CFS)
Total initial stream area = 2.440(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)
End of computations, Total Study Area = 2.44 (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 = 69.0

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

Study date 03/26/25

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

Program License Serial Number 6683

5885 Schaefer Proposed Drainage Area B 10 Yr Hydrograph

Storm Event Year = 10

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		
2.44	1	0.93
Rainfall data for year 10		
2.44	6	2.35
Rainfall data for year 10		
2.44	24	4.10

++

******** 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)
69.0	69.0	2.44	1.000	0.548	0.780	0.427

Area-averaged adjusted loss rate Fm (In/Hr) = 0.427

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
1.90	0.780	69.0	69.0	4.49	0.325
0.54	0.220	98.0	98.0	0.20	0.943

Area-averaged catchment yield fraction, Y = 0.461
Area-averaged low loss fraction, Yb = 0.539
User entry of time of concentration = 0.160 (hours)
++
Watershed area = 2.44(Ac.)
Catchment Lag time = 0.128 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 65.1042
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.427(In/Hr)
Average low loss rate fraction (Yb) = 0.539 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.237(In)
Computed peak 30-minute rainfall = 0.617(In)
Specified peak 1-hour rainfall = 0.925(In)
Computed peak 3-hour rainfall = 1.720(In)
Specified peak 6-hour rainfall = 2.350(In)
Specified peak 24-hour rainfall = 4.100(In)

Note: user specified rainfall values used.
Rainfall depth area reduction factors:
Using a total area of 2.44(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.237(In)
30-minute factor = 1.000 Adjusted rainfall = 0.617(In)
1-hour factor = 1.000 Adjusted rainfall = 0.925(In)
3-hour factor = 1.000 Adjusted rainfall = 1.720(In)
6-hour factor = 1.000 Adjusted rainfall = 2.350(In)
24-hour factor = 1.000 Adjusted rainfall = 4.100(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 = 29.51 (CFS))	
1	7.634	2.253
2	47.879	11.876
3	85.995	11.247
4	97.049	3.262
5	99.073	0.597
6	100.000	0.273

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2370	0.2370
2	0.3431	0.1062
3	0.4261	0.0829
4	0.4968	0.0708
5	0.5597	0.0629
6	0.6169	0.0572
7	0.6751	0.0581
8	0.7298	0.0548
9	0.7818	0.0520
10	0.8314	0.0496
11	0.8791	0.0476
12	0.9249	0.0458
13	0.9677	0.0428
14	1.0090	0.0414
15	1.0491	0.0401
16	1.0880	0.0389
17	1.1259	0.0379
18	1.1629	0.0369
19	1.1989	0.0361
20	1.2342	0.0352
21	1.2686	0.0345
22	1.3024	0.0338
23	1.3355	0.0331
24	1.3680	0.0325
25	1.3999	0.0319
26	1.4312	0.0314
27	1.4621	0.0308
28	1.4924	0.0303
29	1.5223	0.0299
30	1.5517	0.0294
31	1.5807	0.0290
32	1.6093	0.0286
33	1.6375	0.0282
34	1.6653	0.0278
35	1.6928	0.0275

36	1.7200	0.0271
37	1.7413	0.0214
38	1.7624	0.0210
39	1.7831	0.0207
40	1.8035	0.0204
41	1.8237	0.0202
42	1.8436	0.0199
43	1.8632	0.0196
44	1.8826	0.0194
45	1.9018	0.0191
46	1.9207	0.0189
47	1.9394	0.0187
48	1.9578	0.0185
49	1.9761	0.0183
50	1.9942	0.0181
51	2.0120	0.0179
52	2.0297	0.0177
53	2.0472	0.0175
54	2.0645	0.0173
55	2.0816	0.0171
56	2.0986	0.0170
57	2.1153	0.0168
58	2.1320	0.0166
59	2.1485	0.0165
60	2.1648	0.0163
61	2.1809	0.0162
62	2.1970	0.0160
63	2.2129	0.0159
64	2.2286	0.0157
65	2.2442	0.0156
66	2.2597	0.0155
67	2.2750	0.0154
68	2.2903	0.0152
69	2.3054	0.0151
70	2.3204	0.0150
71	2.3352	0.0149
72	2.3500	0.0148
73	2.3630	0.0130
74	2.3760	0.0129
75	2.3888	0.0128
76	2.4016	0.0127
77	2.4142	0.0126
78	2.4267	0.0125
79	2.4392	0.0124
80	2.4515	0.0123
81	2.4638	0.0123
82	2.4759	0.0122
83	2.4880	0.0121
84	2.5000	0.0120
85	2.5119	0.0119

86	2.5237	0.0118
87	2.5355	0.0117
88	2.5471	0.0117
89	2.5587	0.0116
90	2.5702	0.0115
91	2.5817	0.0114
92	2.5930	0.0114
93	2.6043	0.0113
94	2.6155	0.0112
95	2.6266	0.0111
96	2.6377	0.0111
97	2.6487	0.0110
98	2.6596	0.0109
99	2.6705	0.0109
100	2.6813	0.0108
101	2.6920	0.0107
102	2.7027	0.0107
103	2.7133	0.0106
104	2.7238	0.0105
105	2.7343	0.0105
106	2.7448	0.0104
107	2.7551	0.0104
108	2.7654	0.0103
109	2.7757	0.0103
110	2.7859	0.0102
111	2.7960	0.0101
112	2.8061	0.0101
113	2.8161	0.0100
114	2.8261	0.0100
115	2.8360	0.0099
116	2.8459	0.0099
117	2.8557	0.0098
118	2.8655	0.0098
119	2.8752	0.0097
120	2.8849	0.0097
121	2.8945	0.0096
122	2.9041	0.0096
123	2.9137	0.0095
124	2.9231	0.0095
125	2.9326	0.0094
126	2.9420	0.0094
127	2.9513	0.0094
128	2.9606	0.0093
129	2.9699	0.0093
130	2.9791	0.0092
131	2.9883	0.0092
132	2.9975	0.0091
133	3.0065	0.0091
134	3.0156	0.0091
135	3.0246	0.0090

136	3.0336	0.0090
137	3.0425	0.0089
138	3.0514	0.0089
139	3.0603	0.0089
140	3.0691	0.0088
141	3.0779	0.0088
142	3.0866	0.0087
143	3.0953	0.0087
144	3.1040	0.0087
145	3.1126	0.0086
146	3.1213	0.0086
147	3.1298	0.0086
148	3.1383	0.0085
149	3.1468	0.0085
150	3.1553	0.0085
151	3.1637	0.0084
152	3.1721	0.0084
153	3.1805	0.0084
154	3.1888	0.0083
155	3.1971	0.0083
156	3.2054	0.0083
157	3.2136	0.0082
158	3.2218	0.0082
159	3.2300	0.0082
160	3.2381	0.0081
161	3.2462	0.0081
162	3.2543	0.0081
163	3.2624	0.0081
164	3.2704	0.0080
165	3.2784	0.0080
166	3.2863	0.0080
167	3.2943	0.0079
168	3.3022	0.0079
169	3.3101	0.0079
170	3.3179	0.0078
171	3.3257	0.0078
172	3.3335	0.0078
173	3.3413	0.0078
174	3.3490	0.0077
175	3.3568	0.0077
176	3.3644	0.0077
177	3.3721	0.0077
178	3.3797	0.0076
179	3.3873	0.0076
180	3.3949	0.0076
181	3.4025	0.0076
182	3.4100	0.0075
183	3.4175	0.0075
184	3.4250	0.0075
185	3.4325	0.0075

186	3.4399	0.0074
187	3.4473	0.0074
188	3.4547	0.0074
189	3.4621	0.0074
190	3.4694	0.0073
191	3.4768	0.0073
192	3.4841	0.0073
193	3.4913	0.0073
194	3.4986	0.0073
195	3.5058	0.0072
196	3.5130	0.0072
197	3.5202	0.0072
198	3.5274	0.0072
199	3.5345	0.0071
200	3.5416	0.0071
201	3.5487	0.0071
202	3.5558	0.0071
203	3.5629	0.0071
204	3.5699	0.0070
205	3.5769	0.0070
206	3.5839	0.0070
207	3.5909	0.0070
208	3.5978	0.0070
209	3.6048	0.0069
210	3.6117	0.0069
211	3.6186	0.0069
212	3.6255	0.0069
213	3.6323	0.0069
214	3.6391	0.0068
215	3.6460	0.0068
216	3.6528	0.0068
217	3.6595	0.0068
218	3.6663	0.0068
219	3.6730	0.0067
220	3.6798	0.0067
221	3.6865	0.0067
222	3.6932	0.0067
223	3.6998	0.0067
224	3.7065	0.0067
225	3.7131	0.0066
226	3.7197	0.0066
227	3.7263	0.0066
228	3.7329	0.0066
229	3.7395	0.0066
230	3.7460	0.0065
231	3.7526	0.0065
232	3.7591	0.0065
233	3.7656	0.0065
234	3.7721	0.0065
235	3.7785	0.0065

236	3.7850	0.0064
237	3.7914	0.0064
238	3.7978	0.0064
239	3.8042	0.0064
240	3.8106	0.0064
241	3.8170	0.0064
242	3.8233	0.0064
243	3.8296	0.0063
244	3.8360	0.0063
245	3.8423	0.0063
246	3.8486	0.0063
247	3.8548	0.0063
248	3.8611	0.0063
249	3.8673	0.0062
250	3.8736	0.0062
251	3.8798	0.0062
252	3.8860	0.0062
253	3.8922	0.0062
254	3.8983	0.0062
255	3.9045	0.0062
256	3.9106	0.0061
257	3.9167	0.0061
258	3.9229	0.0061
259	3.9290	0.0061
260	3.9350	0.0061
261	3.9411	0.0061
262	3.9472	0.0061
263	3.9532	0.0060
264	3.9592	0.0060
265	3.9652	0.0060
266	3.9712	0.0060
267	3.9772	0.0060
268	3.9832	0.0060
269	3.9892	0.0060
270	3.9951	0.0059
271	4.0011	0.0059
272	4.0070	0.0059
273	4.0129	0.0059
274	4.0188	0.0059
275	4.0247	0.0059
276	4.0305	0.0059
277	4.0364	0.0059
278	4.0422	0.0058
279	4.0481	0.0058
280	4.0539	0.0058
281	4.0597	0.0058
282	4.0655	0.0058
283	4.0713	0.0058
284	4.0770	0.0058
285	4.0828	0.0058

286	4.0885	0.0057	
287	4.0943	0.0057	
288	4.1000	0.0057	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0031	0.0026
2	0.0057	0.0031	0.0026
3	0.0058	0.0031	0.0027
4	0.0058	0.0031	0.0027
5	0.0058	0.0031	0.0027
6	0.0058	0.0031	0.0027
7	0.0058	0.0031	0.0027
8	0.0058	0.0032	0.0027
9	0.0059	0.0032	0.0027
10	0.0059	0.0032	0.0027
11	0.0059	0.0032	0.0027
12	0.0059	0.0032	0.0027
13	0.0059	0.0032	0.0027
14	0.0060	0.0032	0.0027
15	0.0060	0.0032	0.0028
16	0.0060	0.0032	0.0028
17	0.0060	0.0033	0.0028
18	0.0060	0.0033	0.0028
19	0.0061	0.0033	0.0028
20	0.0061	0.0033	0.0028
21	0.0061	0.0033	0.0028
22	0.0061	0.0033	0.0028
23	0.0062	0.0033	0.0028
24	0.0062	0.0033	0.0028
25	0.0062	0.0033	0.0029
26	0.0062	0.0034	0.0029
27	0.0062	0.0034	0.0029
28	0.0063	0.0034	0.0029
29	0.0063	0.0034	0.0029
30	0.0063	0.0034	0.0029
31	0.0063	0.0034	0.0029
32	0.0064	0.0034	0.0029
33	0.0064	0.0034	0.0029
34	0.0064	0.0035	0.0029
35	0.0064	0.0035	0.0030
36	0.0064	0.0035	0.0030
37	0.0065	0.0035	0.0030
38	0.0065	0.0035	0.0030
39	0.0065	0.0035	0.0030
40	0.0065	0.0035	0.0030
41	0.0066	0.0035	0.0030
42	0.0066	0.0036	0.0030

43	0.0066	0.0036	0.0031
44	0.0067	0.0036	0.0031
45	0.0067	0.0036	0.0031
46	0.0067	0.0036	0.0031
47	0.0067	0.0036	0.0031
48	0.0068	0.0036	0.0031
49	0.0068	0.0037	0.0031
50	0.0068	0.0037	0.0031
51	0.0069	0.0037	0.0032
52	0.0069	0.0037	0.0032
53	0.0069	0.0037	0.0032
54	0.0069	0.0037	0.0032
55	0.0070	0.0038	0.0032
56	0.0070	0.0038	0.0032
57	0.0070	0.0038	0.0032
58	0.0071	0.0038	0.0033
59	0.0071	0.0038	0.0033
60	0.0071	0.0038	0.0033
61	0.0072	0.0039	0.0033
62	0.0072	0.0039	0.0033
63	0.0072	0.0039	0.0033
64	0.0073	0.0039	0.0033
65	0.0073	0.0039	0.0034
66	0.0073	0.0039	0.0034
67	0.0074	0.0040	0.0034
68	0.0074	0.0040	0.0034
69	0.0074	0.0040	0.0034
70	0.0075	0.0040	0.0034
71	0.0075	0.0040	0.0035
72	0.0075	0.0041	0.0035
73	0.0076	0.0041	0.0035
74	0.0076	0.0041	0.0035
75	0.0077	0.0041	0.0035
76	0.0077	0.0041	0.0035
77	0.0077	0.0042	0.0036
78	0.0078	0.0042	0.0036
79	0.0078	0.0042	0.0036
80	0.0078	0.0042	0.0036
81	0.0079	0.0043	0.0036
82	0.0079	0.0043	0.0037
83	0.0080	0.0043	0.0037
84	0.0080	0.0043	0.0037
85	0.0081	0.0044	0.0037
86	0.0081	0.0044	0.0037
87	0.0082	0.0044	0.0038
88	0.0082	0.0044	0.0038
89	0.0083	0.0045	0.0038
90	0.0083	0.0045	0.0038
91	0.0084	0.0045	0.0039
92	0.0084	0.0045	0.0039

93	0.0085	0.0046	0.0039
94	0.0085	0.0046	0.0039
95	0.0086	0.0046	0.0039
96	0.0086	0.0046	0.0040
97	0.0087	0.0047	0.0040
98	0.0087	0.0047	0.0040
99	0.0088	0.0047	0.0040
100	0.0088	0.0048	0.0041
101	0.0089	0.0048	0.0041
102	0.0089	0.0048	0.0041
103	0.0090	0.0049	0.0042
104	0.0091	0.0049	0.0042
105	0.0091	0.0049	0.0042
106	0.0092	0.0049	0.0042
107	0.0093	0.0050	0.0043
108	0.0093	0.0050	0.0043
109	0.0094	0.0051	0.0043
110	0.0094	0.0051	0.0044
111	0.0095	0.0051	0.0044
112	0.0096	0.0052	0.0044
113	0.0097	0.0052	0.0045
114	0.0097	0.0052	0.0045
115	0.0098	0.0053	0.0045
116	0.0099	0.0053	0.0046
117	0.0100	0.0054	0.0046
118	0.0100	0.0054	0.0046
119	0.0101	0.0055	0.0047
120	0.0102	0.0055	0.0047
121	0.0103	0.0056	0.0048
122	0.0104	0.0056	0.0048
123	0.0105	0.0057	0.0048
124	0.0105	0.0057	0.0049
125	0.0107	0.0058	0.0049
126	0.0107	0.0058	0.0049
127	0.0109	0.0059	0.0050
128	0.0109	0.0059	0.0050
129	0.0111	0.0060	0.0051
130	0.0111	0.0060	0.0051
131	0.0113	0.0061	0.0052
132	0.0114	0.0061	0.0052
133	0.0115	0.0062	0.0053
134	0.0116	0.0062	0.0053
135	0.0117	0.0063	0.0054
136	0.0118	0.0064	0.0054
137	0.0120	0.0065	0.0055
138	0.0121	0.0065	0.0056
139	0.0123	0.0066	0.0056
140	0.0123	0.0067	0.0057
141	0.0125	0.0068	0.0058
142	0.0126	0.0068	0.0058

143	0.0128	0.0069	0.0059
144	0.0129	0.0070	0.0060
145	0.0148	0.0080	0.0068
146	0.0149	0.0080	0.0069
147	0.0151	0.0081	0.0070
148	0.0152	0.0082	0.0070
149	0.0155	0.0083	0.0071
150	0.0156	0.0084	0.0072
151	0.0159	0.0086	0.0073
152	0.0160	0.0086	0.0074
153	0.0163	0.0088	0.0075
154	0.0165	0.0089	0.0076
155	0.0168	0.0091	0.0077
156	0.0170	0.0091	0.0078
157	0.0173	0.0093	0.0080
158	0.0175	0.0094	0.0081
159	0.0179	0.0096	0.0082
160	0.0181	0.0097	0.0083
161	0.0185	0.0100	0.0085
162	0.0187	0.0101	0.0086
163	0.0191	0.0103	0.0088
164	0.0194	0.0105	0.0089
165	0.0199	0.0107	0.0092
166	0.0202	0.0109	0.0093
167	0.0207	0.0112	0.0096
168	0.0210	0.0113	0.0097
169	0.0271	0.0146	0.0125
170	0.0275	0.0148	0.0127
171	0.0282	0.0152	0.0130
172	0.0286	0.0154	0.0132
173	0.0294	0.0159	0.0136
174	0.0299	0.0161	0.0138
175	0.0308	0.0166	0.0142
176	0.0314	0.0169	0.0144
177	0.0325	0.0175	0.0150
178	0.0331	0.0179	0.0153
179	0.0345	0.0186	0.0159
180	0.0352	0.0190	0.0162
181	0.0369	0.0199	0.0170
182	0.0379	0.0204	0.0175
183	0.0401	0.0216	0.0185
184	0.0414	0.0223	0.0191
185	0.0458	0.0247	0.0211
186	0.0476	0.0257	0.0219
187	0.0520	0.0280	0.0240
188	0.0548	0.0295	0.0252
189	0.0572	0.0309	0.0264
190	0.0629	0.0339	0.0290
191	0.0829	0.0356	0.0473
192	0.1062	0.0356	0.0705

193	0.2370	0.0356	0.2014
194	0.0708	0.0356	0.0351
195	0.0581	0.0313	0.0268
196	0.0496	0.0268	0.0229
197	0.0428	0.0231	0.0197
198	0.0389	0.0210	0.0179
199	0.0361	0.0194	0.0166
200	0.0338	0.0182	0.0156
201	0.0319	0.0172	0.0147
202	0.0303	0.0164	0.0140
203	0.0290	0.0156	0.0134
204	0.0278	0.0150	0.0128
205	0.0214	0.0115	0.0098
206	0.0204	0.0110	0.0094
207	0.0196	0.0106	0.0090
208	0.0189	0.0102	0.0087
209	0.0183	0.0098	0.0084
210	0.0177	0.0095	0.0081
211	0.0171	0.0092	0.0079
212	0.0166	0.0090	0.0077
213	0.0162	0.0087	0.0075
214	0.0157	0.0085	0.0073
215	0.0154	0.0083	0.0071
216	0.0150	0.0081	0.0069
217	0.0130	0.0070	0.0060
218	0.0127	0.0069	0.0059
219	0.0124	0.0067	0.0057
220	0.0122	0.0066	0.0056
221	0.0119	0.0064	0.0055
222	0.0117	0.0063	0.0054
223	0.0114	0.0062	0.0053
224	0.0112	0.0060	0.0052
225	0.0110	0.0059	0.0051
226	0.0108	0.0058	0.0050
227	0.0106	0.0057	0.0049
228	0.0104	0.0056	0.0048
229	0.0103	0.0055	0.0047
230	0.0101	0.0054	0.0046
231	0.0099	0.0054	0.0046
232	0.0098	0.0053	0.0045
233	0.0096	0.0052	0.0044
234	0.0095	0.0051	0.0044
235	0.0094	0.0050	0.0043
236	0.0092	0.0050	0.0042
237	0.0091	0.0049	0.0042
238	0.0090	0.0048	0.0041
239	0.0089	0.0048	0.0041
240	0.0087	0.0047	0.0040
241	0.0086	0.0047	0.0040
242	0.0085	0.0046	0.0039

243	0.0084	0.0045	0.0039
244	0.0083	0.0045	0.0038
245	0.0082	0.0044	0.0038
246	0.0081	0.0044	0.0038
247	0.0081	0.0043	0.0037
248	0.0080	0.0043	0.0037
249	0.0079	0.0042	0.0036
250	0.0078	0.0042	0.0036
251	0.0077	0.0042	0.0036
252	0.0076	0.0041	0.0035
253	0.0076	0.0041	0.0035
254	0.0075	0.0040	0.0034
255	0.0074	0.0040	0.0034
256	0.0073	0.0040	0.0034
257	0.0073	0.0039	0.0034
258	0.0072	0.0039	0.0033
259	0.0071	0.0039	0.0033
260	0.0071	0.0038	0.0033
261	0.0070	0.0038	0.0032
262	0.0070	0.0037	0.0032
263	0.0069	0.0037	0.0032
264	0.0068	0.0037	0.0032
265	0.0068	0.0037	0.0031
266	0.0067	0.0036	0.0031
267	0.0067	0.0036	0.0031
268	0.0066	0.0036	0.0030
269	0.0066	0.0035	0.0030
270	0.0065	0.0035	0.0030
271	0.0065	0.0035	0.0030
272	0.0064	0.0035	0.0030
273	0.0064	0.0034	0.0029
274	0.0063	0.0034	0.0029
275	0.0063	0.0034	0.0029
276	0.0062	0.0034	0.0029
277	0.0062	0.0033	0.0028
278	0.0061	0.0033	0.0028
279	0.0061	0.0033	0.0028
280	0.0061	0.0033	0.0028
281	0.0060	0.0032	0.0028
282	0.0060	0.0032	0.0028
283	0.0059	0.0032	0.0027
284	0.0059	0.0032	0.0027
285	0.0059	0.0032	0.0027
286	0.0058	0.0031	0.0027
287	0.0058	0.0031	0.0027
288	0.0057	0.0031	0.0026

Total soil rain loss = 2.09(In)
Total effective rainfall = 2.01(In)

Peak flow rate in flood hydrograph = 3.44(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

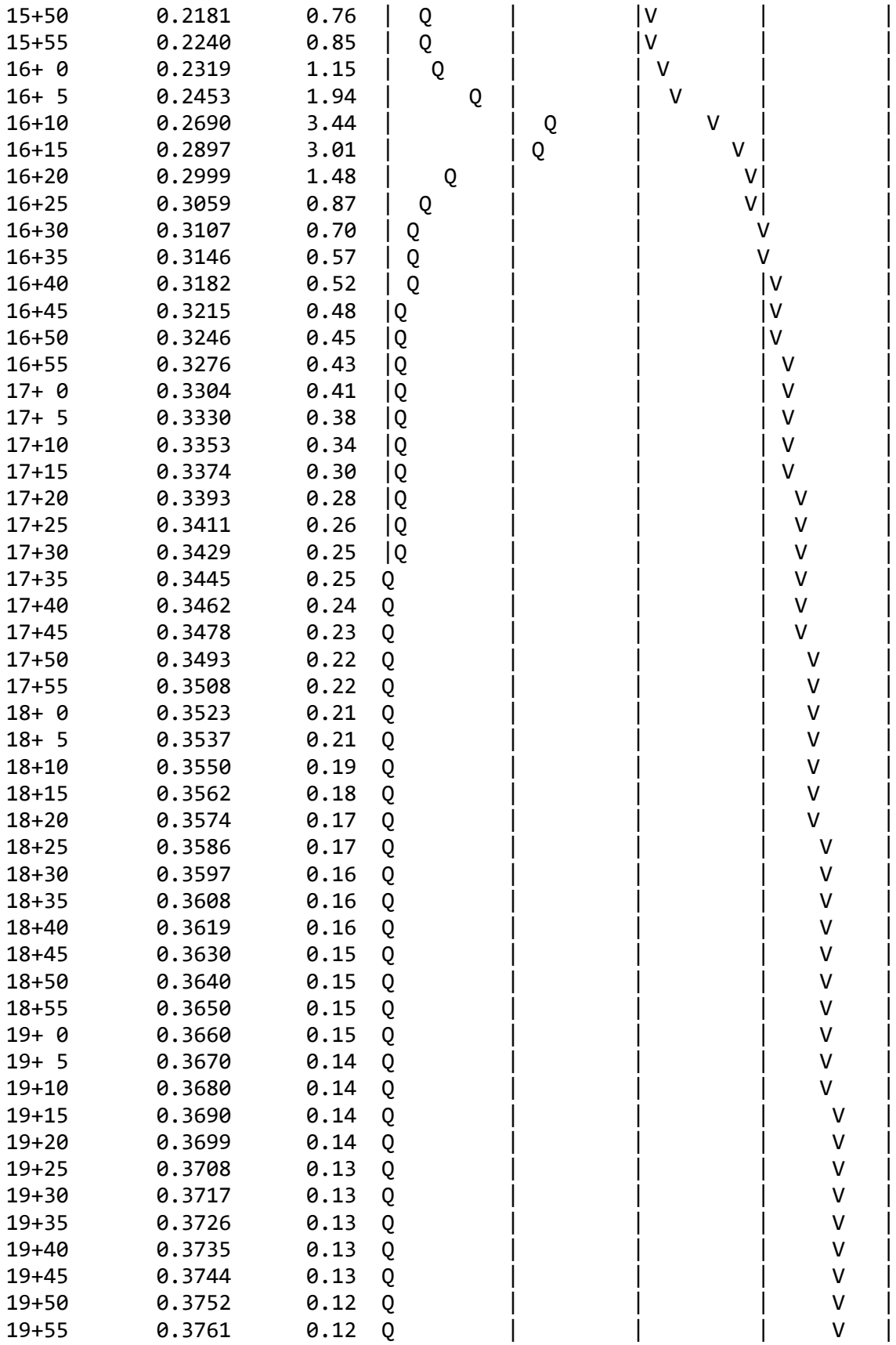
Hydrograph in 5 Minute intervals ((CFS))

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	0.0003	0.04	Q				
0+15	0.0008	0.07	Q				
0+20	0.0013	0.08	Q				
0+25	0.0018	0.08	Q				
0+30	0.0024	0.08	Q				
0+35	0.0029	0.08	Q				
0+40	0.0034	0.08	Q				
0+45	0.0040	0.08	Q				
0+50	0.0045	0.08	Q				
0+55	0.0051	0.08	Q				
1+ 0	0.0056	0.08	Q				
1+ 5	0.0062	0.08	Q				
1+10	0.0068	0.08	Q				
1+15	0.0073	0.08	Q				
1+20	0.0079	0.08	Q				
1+25	0.0084	0.08	Q				
1+30	0.0090	0.08	Q				
1+35	0.0096	0.08	Q				
1+40	0.0101	0.08	Q				
1+45	0.0107	0.08	QV				
1+50	0.0113	0.08	QV				
1+55	0.0118	0.08	QV				
2+ 0	0.0124	0.08	QV				
2+ 5	0.0130	0.08	QV				
2+10	0.0136	0.08	QV				
2+15	0.0141	0.08	QV				
2+20	0.0147	0.08	QV				
2+25	0.0153	0.08	QV				
2+30	0.0159	0.09	QV				
2+35	0.0165	0.09	QV				
2+40	0.0171	0.09	QV				
2+45	0.0177	0.09	QV				
2+50	0.0183	0.09	QV				
2+55	0.0189	0.09	QV				
3+ 0	0.0195	0.09	QV				
3+ 5	0.0201	0.09	QV				
3+10	0.0207	0.09	Q V				
3+15	0.0213	0.09	Q V				

3+20	0.0219	0.09	Q V	|	|	|	|
3+25	0.0225	0.09	Q V	|	|	|	|
3+30	0.0231	0.09	Q V	|	|	|	|
3+35	0.0237	0.09	Q V	|	|	|	|
3+40	0.0244	0.09	Q V	|	|	|	|
3+45	0.0250	0.09	Q V	|	|	|	|
3+50	0.0256	0.09	Q V	|	|	|	|
3+55	0.0262	0.09	Q V	|	|	|	|
4+ 0	0.0269	0.09	Q V	|	|	|	|
4+ 5	0.0275	0.09	Q V	|	|	|	|
4+10	0.0281	0.09	Q V	|	|	|	|
4+15	0.0288	0.09	Q V	|	|	|	|
4+20	0.0294	0.09	Q V	|	|	|	|
4+25	0.0300	0.09	Q V	|	|	|	|
4+30	0.0307	0.09	Q V	|	|	|	|
4+35	0.0313	0.09	Q V	|	|	|	|
4+40	0.0320	0.09	Q V	|	|	|	|
4+45	0.0326	0.09	Q V	|	|	|	|
4+50	0.0333	0.10	Q V	|	|	|	|
4+55	0.0340	0.10	Q V	|	|	|	|
5+ 0	0.0346	0.10	Q V	|	|	|	|
5+ 5	0.0353	0.10	Q V	|	|	|	|
5+10	0.0360	0.10	Q V	|	|	|	|
5+15	0.0366	0.10	Q V	|	|	|	|
5+20	0.0373	0.10	Q V	|	|	|	|
5+25	0.0380	0.10	Q V	|	|	|	|
5+30	0.0387	0.10	Q V	|	|	|	|
5+35	0.0393	0.10	Q V	|	|	|	|
5+40	0.0400	0.10	Q V	|	|	|	|
5+45	0.0407	0.10	Q V	|	|	|	|
5+50	0.0414	0.10	Q V	|	|	|	|
5+55	0.0421	0.10	Q V	|	|	|	|
6+ 0	0.0428	0.10	Q V	|	|	|	|
6+ 5	0.0435	0.10	Q V	|	|	|	|
6+10	0.0442	0.10	Q V	|	|	|	|
6+15	0.0449	0.10	Q V	|	|	|	|
6+20	0.0457	0.10	Q V	|	|	|	|
6+25	0.0464	0.10	Q V	|	|	|	|
6+30	0.0471	0.10	Q V	|	|	|	|
6+35	0.0478	0.11	Q V	|	|	|	|
6+40	0.0485	0.11	Q V	|	|	|	|
6+45	0.0493	0.11	Q V	|	|	|	|
6+50	0.0500	0.11	Q V	|	|	|	|
6+55	0.0508	0.11	Q V	|	|	|	|
7+ 0	0.0515	0.11	Q V	|	|	|	|
7+ 5	0.0523	0.11	Q V	|	|	|	|
7+10	0.0530	0.11	Q V	|	|	|	|
7+15	0.0538	0.11	Q V	|	|	|	|
7+20	0.0545	0.11	Q V	|	|	|	|
7+25	0.0553	0.11	Q V	|	|	|	|

7+30	0.0561	0.11	Q	V	|	|	|	|
7+35	0.0568	0.11	Q	V	|	|	|	|
7+40	0.0576	0.11	Q	V	|	|	|	|
7+45	0.0584	0.11	Q	V	|	|	|	|
7+50	0.0592	0.11	Q	V	|	|	|	|
7+55	0.0600	0.12	Q	V	|	|	|	|
8+ 0	0.0608	0.12	Q	V	|	|	|	|
8+ 5	0.0616	0.12	Q	V	|	|	|	|
8+10	0.0624	0.12	Q	V	|	|	|	|
8+15	0.0632	0.12	Q	V	|	|	|	|
8+20	0.0640	0.12	Q	V	|	|	|	|
8+25	0.0649	0.12	Q	V	|	|	|	|
8+30	0.0657	0.12	Q	V	|	|	|	|
8+35	0.0665	0.12	Q	V	|	|	|	|
8+40	0.0674	0.12	Q	V	|	|	|	|
8+45	0.0682	0.12	Q	V	|	|	|	|
8+50	0.0691	0.12	Q	V	|	|	|	|
8+55	0.0699	0.12	Q	V	|	|	|	|
9+ 0	0.0708	0.13	Q	V	|	|	|	|
9+ 5	0.0716	0.13	Q	V	|	|	|	|
9+10	0.0725	0.13	Q	V	|	|	|	|
9+15	0.0734	0.13	Q	V	|	|	|	|
9+20	0.0743	0.13	Q	V	|	|	|	|
9+25	0.0752	0.13	Q	V	|	|	|	|
9+30	0.0761	0.13	Q	V	|	|	|	|
9+35	0.0770	0.13	Q	V	|	|	|	|
9+40	0.0779	0.13	Q	V	|	|	|	|
9+45	0.0788	0.13	Q	V	|	|	|	|
9+50	0.0798	0.13	Q	V	|	|	|	|
9+55	0.0807	0.14	Q	V	|	|	|	|
10+ 0	0.0816	0.14	Q	V	|	|	|	|
10+ 5	0.0826	0.14	Q	V	|	|	|	|
10+10	0.0835	0.14	Q	V	|	|	|	|
10+15	0.0845	0.14	Q	V	|	|	|	|
10+20	0.0855	0.14	Q	V	|	|	|	|
10+25	0.0865	0.14	Q	V	|	|	|	|
10+30	0.0875	0.14	Q	V	|	|	|	|
10+35	0.0885	0.15	Q	V	|	|	|	|
10+40	0.0895	0.15	Q	V	|	|	|	|
10+45	0.0905	0.15	Q	V	|	|	|	|
10+50	0.0915	0.15	Q	V	|	|	|	|
10+55	0.0926	0.15	Q	V	|	|	|	|
11+ 0	0.0936	0.15	Q	V	|	|	|	|
11+ 5	0.0947	0.15	Q	V	|	|	|	|
11+10	0.0957	0.16	Q	V	|	|	|	|
11+15	0.0968	0.16	Q	V	|	|	|	|
11+20	0.0979	0.16	Q	V	|	|	|	|
11+25	0.0990	0.16	Q	V	|	|	|	|
11+30	0.1001	0.16	Q	V	|	|	|	|
11+35	0.1012	0.16	Q	V	|	|	|	|

```
11+40       0.1024      0.17  Q         V         |         |         |
11+45       0.1035      0.17  Q         V         |         |         |
11+50       0.1047      0.17  Q         V         |         |         |
11+55       0.1059      0.17  Q         V         |         |         |
12+ 0       0.1071      0.17  Q         V         |         |         |
12+ 5       0.1083      0.18  Q         V         |         |         |
12+10       0.1096      0.19  Q         V         |         |         |
12+15       0.1109      0.20  Q         V         |         |         |
12+20       0.1123      0.20  Q         V         |         |         |
12+25       0.1138      0.21  Q         |V        |         |         |
12+30       0.1152      0.21  Q         |V        |         |         |
12+35       0.1166      0.21  Q         |V        |         |         |
12+40       0.1181      0.21  Q         |V        |         |         |
12+45       0.1196      0.22  Q         |V        |         |         |
12+50       0.1211      0.22  Q         |V        |         |         |
12+55       0.1227      0.22  Q         |V        |         |         |
13+ 0       0.1242      0.23  Q         | V       |         |         |
13+ 5       0.1258      0.23  Q         | V       |         |         |
13+10       0.1274      0.23  Q         | V       |         |         |
13+15       0.1290      0.24  Q         | V       |         |         |
13+20       0.1307      0.24  Q         | V       |         |         |
13+25       0.1323      0.24  Q         | V       |         |         |
13+30       0.1341      0.25  Q         |  V      |         |         |
13+35       0.1358      0.25  |Q        |  V      |         |         |
13+40       0.1376      0.26  |Q        |  V      |         |         |
13+45       0.1394      0.26  |Q        |  V      |         |         |
13+50       0.1412      0.27  |Q        |  V      |         |         |
13+55       0.1431      0.27  |Q        |  V      |         |         |
14+ 0       0.1450      0.28  |Q        |   V     |         |         |
14+ 5       0.1470      0.29  |Q        |   V     |         |         |
14+10       0.1492      0.33  |Q        |   V     |         |         |
14+15       0.1517      0.36  |Q        |   V     |         |         |
14+20       0.1543      0.38  |Q        |    V    |         |         |
14+25       0.1569      0.38  |Q        |    V    |         |         |
14+30       0.1596      0.39  |Q        |    V    |         |         |
14+35       0.1624      0.40  |Q        |    V    |         |         |
14+40       0.1652      0.41  |Q        |     V   |         |         |
14+45       0.1681      0.42  |Q        |     V   |         |         |
14+50       0.1711      0.43  |Q        |     V   |         |         |
14+55       0.1742      0.44  |Q        |      V  |         |         |
15+ 0       0.1773      0.46  |Q        |      V  |         |         |
15+ 5       0.1806      0.47  |Q        |      V  |         |         |
15+10       0.1840      0.49  |Q        |      V  |         |         |
15+15       0.1875      0.51  | Q       |       V |         |         |
15+20       0.1911      0.53  | Q       |       V |         |         |
15+25       0.1949      0.55  | Q       |        V|         |         |
15+30       0.1990      0.59  | Q       |        V|         |         |
15+35       0.2033      0.63  | Q       |        V|         |         |
15+40       0.2079      0.67  | Q       |         V         |         |
15+45       0.2129      0.72  | Q       |         V         |         |
```


15+50 0.2181 0.76
15+55 0.2240 0.85
16+ 0 0.2319 1.15
16+ 5 0.2453 1.94
16+10 0.2690 3.44
16+15 0.2897 3.01
16+20 0.2999 1.48
16+25 0.3059 0.87
16+30 0.3107 0.70
16+35 0.3146 0.57
16+40 0.3182 0.52
16+45 0.3215 0.48
16+50 0.3246 0.45
16+55 0.3276 0.43
17+ 0 0.3304 0.41
17+ 5 0.3330 0.38
17+10 0.3353 0.34
17+15 0.3374 0.30
17+20 0.3393 0.28
17+25 0.3411 0.26
17+30 0.3429 0.25
17+35 0.3445 0.25
17+40 0.3462 0.24
17+45 0.3478 0.23
17+50 0.3493 0.22
17+55 0.3508 0.22
18+ 0 0.3523 0.21
18+ 5 0.3537 0.21
18+10 0.3550 0.19
18+15 0.3562 0.18
18+20 0.3574 0.17
18+25 0.3586 0.17
18+30 0.3597 0.16
18+35 0.3608 0.16
18+40 0.3619 0.16
18+45 0.3630 0.15
18+50 0.3640 0.15
18+55 0.3650 0.15
19+ 0 0.3660 0.15
19+ 5 0.3670 0.14
19+10 0.3680 0.14
19+15 0.3690 0.14
19+20 0.3699 0.14
19+25 0.3708 0.13
19+30 0.3717 0.13
19+35 0.3726 0.13
19+40 0.3735 0.13
19+45 0.3744 0.13
19+50 0.3752 0.12
19+55 0.3761 0.12

20+ 0	0.3769	0.12	Q	|	|	|	V |
20+ 5	0.3778	0.12	Q	|	|	|	V |
20+10	0.3786	0.12	Q	|	|	|	V |
20+15	0.3794	0.12	Q	|	|	|	V |
20+20	0.3802	0.12	Q	|	|	|	V |
20+25	0.3810	0.11	Q	|	|	|	V |
20+30	0.3817	0.11	Q	|	|	|	V |
20+35	0.3825	0.11	Q	|	|	|	V |
20+40	0.3833	0.11	Q	|	|	|	V |
20+45	0.3840	0.11	Q	|	|	|	V |
20+50	0.3848	0.11	Q	|	|	|	V |
20+55	0.3855	0.11	Q	|	|	|	V |
21+ 0	0.3862	0.11	Q	|	|	|	V |
21+ 5	0.3869	0.10	Q	|	|	|	V |
21+10	0.3876	0.10	Q	|	|	|	V |
21+15	0.3883	0.10	Q	|	|	|	V |
21+20	0.3890	0.10	Q	|	|	|	V |
21+25	0.3897	0.10	Q	|	|	|	V |
21+30	0.3904	0.10	Q	|	|	|	V |
21+35	0.3911	0.10	Q	|	|	|	V |
21+40	0.3918	0.10	Q	|	|	|	V |
21+45	0.3924	0.10	Q	|	|	|	V |
21+50	0.3931	0.10	Q	|	|	|	V |
21+55	0.3938	0.10	Q	|	|	|	V |
22+ 0	0.3944	0.09	Q	|	|	|	V |
22+ 5	0.3951	0.09	Q	|	|	|	V |
22+10	0.3957	0.09	Q	|	|	|	V |
22+15	0.3963	0.09	Q	|	|	|	V |
22+20	0.3970	0.09	Q	|	|	|	V |
22+25	0.3976	0.09	Q	|	|	|	V |
22+30	0.3982	0.09	Q	|	|	|	V |
22+35	0.3988	0.09	Q	|	|	|	V |
22+40	0.3994	0.09	Q	|	|	|	V|
22+45	0.4000	0.09	Q	|	|	|	V|
22+50	0.4006	0.09	Q	|	|	|	V|
22+55	0.4012	0.09	Q	|	|	|	V|
23+ 0	0.4018	0.09	Q	|	|	|	V|
23+ 5	0.4024	0.09	Q	|	|	|	V|
23+10	0.4030	0.08	Q	|	|	|	V|
23+15	0.4035	0.08	Q	|	|	|	V|
23+20	0.4041	0.08	Q	|	|	|	V|
23+25	0.4047	0.08	Q	|	|	|	V|
23+30	0.4053	0.08	Q	|	|	|	V|
23+35	0.4058	0.08	Q	|	|	|	V|
23+40	0.4064	0.08	Q	|	|	|	V|
23+45	0.4069	0.08	Q	|	|	|	V|
23+50	0.4075	0.08	Q	|	|	|	V|
23+55	0.4080	0.08	Q	|	|	|	V|
24+ 0	0.4086	0.08	Q	|	|	|	V|

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: 03/26/25

5885 SCHAEFER PROPOSED DRINAGE AREA B 10YR HYDROLOGY

Program License Serial Number 6683

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.925 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

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Process from Point/Station 0.000(Ft.) to Point/Station 742.000(Ft.)
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 742.000(Ft.)
Top (of initial area) elevation = 699.440(Ft.)
Bottom (of initial area) elevation = 688.150(Ft.)
Difference in elevation = 11.290(Ft.)
Slope = 0.01522 s(%)= 1.52
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.876 min.
Rainfall intensity = 2.731(In/Hr) for a 10.0 year storm

Effective runoff coefficient used for area (Q=KCIA) is C = 0.882
Subarea runoff = 5.876(CFS)
Total initial stream area = 2.440(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)
End of computations, Total Study Area = 2.44 (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 = 69.0

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

Study date 03/26/25

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

Program License Serial Number 6683

5885 Schaefer Proposed Drainage Area B 100 Yr Hydrograph

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 100		
2.44	1	1.48
Rainfall data for year 100		
2.44	6	3.47
Rainfall data for year 100		
2.44	24	6.37

++

******** 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)
69.0	86.2	2.44	1.000	0.262	0.780	0.204

Area-averaged adjusted loss rate Fm (In/Hr) = 0.204

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
1.90	0.780	69.0	86.2	1.60	0.751
0.54	0.220	98.0	98.0	0.20	0.963

Area-averaged catchment yield fraction, Y = 0.798
Area-averaged low loss fraction, Yb = 0.202
User entry of time of concentration = 0.160 (hours)
++
Watershed area = 2.44(Ac.)
Catchment Lag time = 0.128 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 65.1042
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.204(In/Hr)
Average low loss rate fraction (Yb) = 0.202 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.378(In)
Computed peak 30-minute rainfall = 0.986(In)
Specified peak 1-hour rainfall = 1.480(In)
Computed peak 3-hour rainfall = 2.560(In)
Specified peak 6-hour rainfall = 3.470(In)
Specified peak 24-hour rainfall = 6.370(In)

Note: user specified rainfall values used.
Rainfall depth area reduction factors:
Using a total area of 2.44(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.378(In)
30-minute factor = 1.000 Adjusted rainfall = 0.986(In)
1-hour factor = 1.000 Adjusted rainfall = 1.480(In)
3-hour factor = 1.000 Adjusted rainfall = 2.560(In)
6-hour factor = 1.000 Adjusted rainfall = 3.470(In)
24-hour factor = 1.000 Adjusted rainfall = 6.370(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 = 29.51 (CFS))	
1	7.634	2.253
2	47.879	11.876
3	85.995	11.247
4	97.049	3.262
5	99.073	0.597
6	100.000	0.273

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3780	0.3780
2	0.5477	0.1697
3	0.6804	0.1327
4	0.7936	0.1132
5	0.8942	0.1006
6	0.9859	0.0916
7	1.0791	0.0932
8	1.1669	0.0878
9	1.2503	0.0834
10	1.3299	0.0796
11	1.4063	0.0764
12	1.4798	0.0736
13	1.5401	0.0603
14	1.5981	0.0580
15	1.6541	0.0560
16	1.7082	0.0541
17	1.7607	0.0525
18	1.8116	0.0509
19	1.8611	0.0495
20	1.9094	0.0482
21	1.9564	0.0470
22	2.0023	0.0459
23	2.0472	0.0449
24	2.0912	0.0439
25	2.1342	0.0430
26	2.1764	0.0422
27	2.2177	0.0414
28	2.2583	0.0406
29	2.2982	0.0399
30	2.3374	0.0392
31	2.3759	0.0385
32	2.4139	0.0379
33	2.4512	0.0373
34	2.4880	0.0368
35	2.5242	0.0362

36	2.5600	0.0357
37	2.5909	0.0310
38	2.6214	0.0305
39	2.6515	0.0301
40	2.6811	0.0296
41	2.7103	0.0292
42	2.7391	0.0288
43	2.7675	0.0284
44	2.7956	0.0281
45	2.8233	0.0277
46	2.8507	0.0274
47	2.8777	0.0270
48	2.9044	0.0267
49	2.9308	0.0264
50	2.9569	0.0261
51	2.9827	0.0258
52	3.0082	0.0255
53	3.0335	0.0252
54	3.0585	0.0250
55	3.0832	0.0247
56	3.1077	0.0245
57	3.1319	0.0242
58	3.1559	0.0240
59	3.1796	0.0238
60	3.2032	0.0235
61	3.2265	0.0233
62	3.2496	0.0231
63	3.2725	0.0229
64	3.2952	0.0227
65	3.3177	0.0225
66	3.3400	0.0223
67	3.3621	0.0221
68	3.3840	0.0219
69	3.4058	0.0217
70	3.4273	0.0216
71	3.4487	0.0214
72	3.4700	0.0212
73	3.4910	0.0210
74	3.5119	0.0209
75	3.5326	0.0207
76	3.5532	0.0206
77	3.5736	0.0204
78	3.5938	0.0203
79	3.6140	0.0201
80	3.6339	0.0200
81	3.6538	0.0198
82	3.6735	0.0197
83	3.6930	0.0196
84	3.7125	0.0194
85	3.7318	0.0193

86	3.7509	0.0192
87	3.7700	0.0190
88	3.7889	0.0189
89	3.8077	0.0188
90	3.8264	0.0187
91	3.8450	0.0186
92	3.8634	0.0185
93	3.8818	0.0183
94	3.9000	0.0182
95	3.9181	0.0181
96	3.9362	0.0180
97	3.9541	0.0179
98	3.9719	0.0178
99	3.9896	0.0177
100	4.0072	0.0176
101	4.0247	0.0175
102	4.0421	0.0174
103	4.0594	0.0173
104	4.0767	0.0172
105	4.0938	0.0171
106	4.1108	0.0170
107	4.1278	0.0169
108	4.1446	0.0169
109	4.1614	0.0168
110	4.1781	0.0167
111	4.1947	0.0166
112	4.2112	0.0165
113	4.2276	0.0164
114	4.2440	0.0164
115	4.2603	0.0163
116	4.2765	0.0162
117	4.2926	0.0161
118	4.3086	0.0160
119	4.3246	0.0160
120	4.3405	0.0159
121	4.3563	0.0158
122	4.3720	0.0157
123	4.3877	0.0157
124	4.4033	0.0156
125	4.4188	0.0155
126	4.4343	0.0155
127	4.4496	0.0154
128	4.4650	0.0153
129	4.4802	0.0153
130	4.4954	0.0152
131	4.5105	0.0151
132	4.5256	0.0151
133	4.5406	0.0150
134	4.5555	0.0149
135	4.5704	0.0149

136	4.5852	0.0148
137	4.5999	0.0147
138	4.6146	0.0147
139	4.6292	0.0146
140	4.6438	0.0146
141	4.6583	0.0145
142	4.6727	0.0144
143	4.6871	0.0144
144	4.7015	0.0143
145	4.7157	0.0143
146	4.7300	0.0142
147	4.7441	0.0142
148	4.7582	0.0141
149	4.7723	0.0141
150	4.7863	0.0140
151	4.8003	0.0140
152	4.8142	0.0139
153	4.8280	0.0139
154	4.8418	0.0138
155	4.8556	0.0138
156	4.8693	0.0137
157	4.8829	0.0137
158	4.8965	0.0136
159	4.9101	0.0136
160	4.9236	0.0135
161	4.9371	0.0135
162	4.9505	0.0134
163	4.9638	0.0134
164	4.9772	0.0133
165	4.9904	0.0133
166	5.0037	0.0132
167	5.0168	0.0132
168	5.0300	0.0131
169	5.0431	0.0131
170	5.0561	0.0131
171	5.0692	0.0130
172	5.0821	0.0130
173	5.0950	0.0129
174	5.1079	0.0129
175	5.1208	0.0128
176	5.1336	0.0128
177	5.1463	0.0128
178	5.1591	0.0127
179	5.1717	0.0127
180	5.1844	0.0126
181	5.1970	0.0126
182	5.2095	0.0126
183	5.2221	0.0125
184	5.2345	0.0125
185	5.2470	0.0124

186	5.2594	0.0124
187	5.2718	0.0124
188	5.2841	0.0123
189	5.2964	0.0123
190	5.3087	0.0123
191	5.3209	0.0122
192	5.3331	0.0122
193	5.3452	0.0122
194	5.3574	0.0121
195	5.3694	0.0121
196	5.3815	0.0120
197	5.3935	0.0120
198	5.4055	0.0120
199	5.4174	0.0119
200	5.4293	0.0119
201	5.4412	0.0119
202	5.4531	0.0118
203	5.4649	0.0118
204	5.4766	0.0118
205	5.4884	0.0117
206	5.5001	0.0117
207	5.5118	0.0117
208	5.5234	0.0117
209	5.5351	0.0116
210	5.5467	0.0116
211	5.5582	0.0116
212	5.5697	0.0115
213	5.5812	0.0115
214	5.5927	0.0115
215	5.6041	0.0114
216	5.6155	0.0114
217	5.6269	0.0114
218	5.6383	0.0113
219	5.6496	0.0113
220	5.6609	0.0113
221	5.6721	0.0113
222	5.6834	0.0112
223	5.6946	0.0112
224	5.7058	0.0112
225	5.7169	0.0111
226	5.7280	0.0111
227	5.7391	0.0111
228	5.7502	0.0111
229	5.7612	0.0110
230	5.7722	0.0110
231	5.7832	0.0110
232	5.7942	0.0110
233	5.8051	0.0109
234	5.8160	0.0109
235	5.8269	0.0109

236	5.8377	0.0109
237	5.8486	0.0108
238	5.8594	0.0108
239	5.8701	0.0108
240	5.8809	0.0107
241	5.8916	0.0107
242	5.9023	0.0107
243	5.9130	0.0107
244	5.9236	0.0107
245	5.9343	0.0106
246	5.9449	0.0106
247	5.9554	0.0106
248	5.9660	0.0106
249	5.9765	0.0105
250	5.9870	0.0105
251	5.9975	0.0105
252	6.0080	0.0105
253	6.0184	0.0104
254	6.0288	0.0104
255	6.0392	0.0104
256	6.0496	0.0104
257	6.0599	0.0103
258	6.0702	0.0103
259	6.0805	0.0103
260	6.0908	0.0103
261	6.1011	0.0103
262	6.1113	0.0102
263	6.1215	0.0102
264	6.1317	0.0102
265	6.1419	0.0102
266	6.1520	0.0101
267	6.1621	0.0101
268	6.1722	0.0101
269	6.1823	0.0101
270	6.1924	0.0101
271	6.2024	0.0100
272	6.2124	0.0100
273	6.2224	0.0100
274	6.2324	0.0100
275	6.2424	0.0100
276	6.2523	0.0099
277	6.2622	0.0099
278	6.2721	0.0099
279	6.2820	0.0099
280	6.2918	0.0099
281	6.3017	0.0098
282	6.3115	0.0098
283	6.3213	0.0098
284	6.3311	0.0098
285	6.3408	0.0098

286	6.3506	0.0097
287	6.3603	0.0097
288	6.3700	0.0097

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0097	0.0020	0.0077
2	0.0097	0.0020	0.0078
3	0.0098	0.0020	0.0078
4	0.0098	0.0020	0.0078
5	0.0098	0.0020	0.0078
6	0.0098	0.0020	0.0078
7	0.0099	0.0020	0.0079
8	0.0099	0.0020	0.0079
9	0.0099	0.0020	0.0079
10	0.0100	0.0020	0.0079
11	0.0100	0.0020	0.0080
12	0.0100	0.0020	0.0080
13	0.0101	0.0020	0.0080
14	0.0101	0.0020	0.0080
15	0.0101	0.0020	0.0081
16	0.0101	0.0021	0.0081
17	0.0102	0.0021	0.0081
18	0.0102	0.0021	0.0081
19	0.0103	0.0021	0.0082
20	0.0103	0.0021	0.0082
21	0.0103	0.0021	0.0082
22	0.0103	0.0021	0.0082
23	0.0104	0.0021	0.0083
24	0.0104	0.0021	0.0083
25	0.0105	0.0021	0.0083
26	0.0105	0.0021	0.0084
27	0.0105	0.0021	0.0084
28	0.0106	0.0021	0.0084
29	0.0106	0.0021	0.0085
30	0.0106	0.0022	0.0085
31	0.0107	0.0022	0.0085
32	0.0107	0.0022	0.0085
33	0.0107	0.0022	0.0086
34	0.0108	0.0022	0.0086
35	0.0108	0.0022	0.0086
36	0.0109	0.0022	0.0087
37	0.0109	0.0022	0.0087
38	0.0109	0.0022	0.0087
39	0.0110	0.0022	0.0088
40	0.0110	0.0022	0.0088
41	0.0111	0.0022	0.0088
42	0.0111	0.0022	0.0088

43	0.0111	0.0023	0.0089
44	0.0112	0.0023	0.0089
45	0.0112	0.0023	0.0090
46	0.0113	0.0023	0.0090
47	0.0113	0.0023	0.0090
48	0.0113	0.0023	0.0091
49	0.0114	0.0023	0.0091
50	0.0114	0.0023	0.0091
51	0.0115	0.0023	0.0092
52	0.0115	0.0023	0.0092
53	0.0116	0.0023	0.0092
54	0.0116	0.0024	0.0093
55	0.0117	0.0024	0.0093
56	0.0117	0.0024	0.0093
57	0.0118	0.0024	0.0094
58	0.0118	0.0024	0.0094
59	0.0119	0.0024	0.0095
60	0.0119	0.0024	0.0095
61	0.0120	0.0024	0.0096
62	0.0120	0.0024	0.0096
63	0.0121	0.0024	0.0096
64	0.0121	0.0025	0.0097
65	0.0122	0.0025	0.0097
66	0.0122	0.0025	0.0097
67	0.0123	0.0025	0.0098
68	0.0123	0.0025	0.0098
69	0.0124	0.0025	0.0099
70	0.0124	0.0025	0.0099
71	0.0125	0.0025	0.0100
72	0.0126	0.0025	0.0100
73	0.0126	0.0026	0.0101
74	0.0127	0.0026	0.0101
75	0.0128	0.0026	0.0102
76	0.0128	0.0026	0.0102
77	0.0129	0.0026	0.0103
78	0.0129	0.0026	0.0103
79	0.0130	0.0026	0.0104
80	0.0131	0.0026	0.0104
81	0.0131	0.0027	0.0105
82	0.0132	0.0027	0.0105
83	0.0133	0.0027	0.0106
84	0.0133	0.0027	0.0106
85	0.0134	0.0027	0.0107
86	0.0135	0.0027	0.0107
87	0.0136	0.0027	0.0108
88	0.0136	0.0028	0.0108
89	0.0137	0.0028	0.0109
90	0.0138	0.0028	0.0110
91	0.0139	0.0028	0.0110
92	0.0139	0.0028	0.0111

93	0.0140	0.0028	0.0112
94	0.0141	0.0028	0.0112
95	0.0142	0.0029	0.0113
96	0.0142	0.0029	0.0113
97	0.0143	0.0029	0.0114
98	0.0144	0.0029	0.0115
99	0.0145	0.0029	0.0116
100	0.0146	0.0029	0.0116
101	0.0147	0.0030	0.0117
102	0.0147	0.0030	0.0118
103	0.0149	0.0030	0.0119
104	0.0149	0.0030	0.0119
105	0.0151	0.0030	0.0120
106	0.0151	0.0031	0.0121
107	0.0153	0.0031	0.0122
108	0.0153	0.0031	0.0122
109	0.0155	0.0031	0.0123
110	0.0155	0.0031	0.0124
111	0.0157	0.0032	0.0125
112	0.0157	0.0032	0.0126
113	0.0159	0.0032	0.0127
114	0.0160	0.0032	0.0127
115	0.0161	0.0033	0.0129
116	0.0162	0.0033	0.0129
117	0.0164	0.0033	0.0130
118	0.0164	0.0033	0.0131
119	0.0166	0.0034	0.0132
120	0.0167	0.0034	0.0133
121	0.0169	0.0034	0.0134
122	0.0169	0.0034	0.0135
123	0.0171	0.0035	0.0137
124	0.0172	0.0035	0.0137
125	0.0174	0.0035	0.0139
126	0.0175	0.0035	0.0140
127	0.0177	0.0036	0.0141
128	0.0178	0.0036	0.0142
129	0.0180	0.0036	0.0144
130	0.0181	0.0037	0.0145
131	0.0183	0.0037	0.0146
132	0.0185	0.0037	0.0147
133	0.0187	0.0038	0.0149
134	0.0188	0.0038	0.0150
135	0.0190	0.0039	0.0152
136	0.0192	0.0039	0.0153
137	0.0194	0.0039	0.0155
138	0.0196	0.0040	0.0156
139	0.0198	0.0040	0.0158
140	0.0200	0.0040	0.0159
141	0.0203	0.0041	0.0162
142	0.0204	0.0041	0.0163

143	0.0207	0.0042	0.0165
144	0.0209	0.0042	0.0166
145	0.0212	0.0043	0.0169
146	0.0214	0.0043	0.0171
147	0.0217	0.0044	0.0173
148	0.0219	0.0044	0.0175
149	0.0223	0.0045	0.0178
150	0.0225	0.0046	0.0179
151	0.0229	0.0046	0.0183
152	0.0231	0.0047	0.0184
153	0.0235	0.0048	0.0188
154	0.0238	0.0048	0.0190
155	0.0242	0.0049	0.0193
156	0.0245	0.0050	0.0195
157	0.0250	0.0051	0.0199
158	0.0252	0.0051	0.0201
159	0.0258	0.0052	0.0206
160	0.0261	0.0053	0.0208
161	0.0267	0.0054	0.0213
162	0.0270	0.0055	0.0216
163	0.0277	0.0056	0.0221
164	0.0281	0.0057	0.0224
165	0.0288	0.0058	0.0230
166	0.0292	0.0059	0.0233
167	0.0301	0.0061	0.0240
168	0.0305	0.0062	0.0243
169	0.0357	0.0072	0.0285
170	0.0362	0.0073	0.0289
171	0.0373	0.0076	0.0298
172	0.0379	0.0077	0.0303
173	0.0392	0.0079	0.0313
174	0.0399	0.0081	0.0318
175	0.0414	0.0084	0.0330
176	0.0422	0.0085	0.0336
177	0.0439	0.0089	0.0350
178	0.0449	0.0091	0.0358
179	0.0470	0.0095	0.0375
180	0.0482	0.0098	0.0385
181	0.0509	0.0103	0.0406
182	0.0525	0.0106	0.0418
183	0.0560	0.0113	0.0446
184	0.0580	0.0117	0.0463
185	0.0736	0.0149	0.0587
186	0.0764	0.0155	0.0609
187	0.0834	0.0169	0.0665
188	0.0878	0.0170	0.0708
189	0.0916	0.0170	0.0746
190	0.1006	0.0170	0.0836
191	0.1327	0.0170	0.1157
192	0.1697	0.0170	0.1527

193	0.3780	0.0170	0.3610
194	0.1132	0.0170	0.0962
195	0.0932	0.0170	0.0762
196	0.0796	0.0161	0.0635
197	0.0603	0.0122	0.0481
198	0.0541	0.0110	0.0432
199	0.0495	0.0100	0.0395
200	0.0459	0.0093	0.0366
201	0.0430	0.0087	0.0343
202	0.0406	0.0082	0.0324
203	0.0385	0.0078	0.0307
204	0.0368	0.0074	0.0293
205	0.0310	0.0063	0.0247
206	0.0296	0.0060	0.0236
207	0.0284	0.0058	0.0227
208	0.0274	0.0055	0.0218
209	0.0264	0.0053	0.0211
210	0.0255	0.0052	0.0204
211	0.0247	0.0050	0.0197
212	0.0240	0.0049	0.0191
213	0.0233	0.0047	0.0186
214	0.0227	0.0046	0.0181
215	0.0221	0.0045	0.0176
216	0.0216	0.0044	0.0172
217	0.0210	0.0043	0.0168
218	0.0206	0.0042	0.0164
219	0.0201	0.0041	0.0160
220	0.0197	0.0040	0.0157
221	0.0193	0.0039	0.0154
222	0.0189	0.0038	0.0151
223	0.0186	0.0038	0.0148
224	0.0182	0.0037	0.0145
225	0.0179	0.0036	0.0143
226	0.0176	0.0036	0.0140
227	0.0173	0.0035	0.0138
228	0.0170	0.0034	0.0136
229	0.0168	0.0034	0.0134
230	0.0165	0.0033	0.0132
231	0.0163	0.0033	0.0130
232	0.0160	0.0032	0.0128
233	0.0158	0.0032	0.0126
234	0.0156	0.0032	0.0124
235	0.0154	0.0031	0.0123
236	0.0152	0.0031	0.0121
237	0.0150	0.0030	0.0120
238	0.0148	0.0030	0.0118
239	0.0146	0.0030	0.0117
240	0.0144	0.0029	0.0115
241	0.0143	0.0029	0.0114
242	0.0141	0.0029	0.0113

243	0.0140	0.0028	0.0111
244	0.0138	0.0028	0.0110
245	0.0137	0.0028	0.0109
246	0.0135	0.0027	0.0108
247	0.0134	0.0027	0.0107
248	0.0132	0.0027	0.0106
249	0.0131	0.0027	0.0104
250	0.0130	0.0026	0.0103
251	0.0128	0.0026	0.0102
252	0.0127	0.0026	0.0101
253	0.0126	0.0026	0.0100
254	0.0125	0.0025	0.0100
255	0.0124	0.0025	0.0099
256	0.0123	0.0025	0.0098
257	0.0122	0.0025	0.0097
258	0.0120	0.0024	0.0096
259	0.0119	0.0024	0.0095
260	0.0118	0.0024	0.0094
261	0.0117	0.0024	0.0094
262	0.0117	0.0024	0.0093
263	0.0116	0.0023	0.0092
264	0.0115	0.0023	0.0091
265	0.0114	0.0023	0.0091
266	0.0113	0.0023	0.0090
267	0.0112	0.0023	0.0089
268	0.0111	0.0023	0.0089
269	0.0110	0.0022	0.0088
270	0.0110	0.0022	0.0087
271	0.0109	0.0022	0.0087
272	0.0108	0.0022	0.0086
273	0.0107	0.0022	0.0086
274	0.0107	0.0022	0.0085
275	0.0106	0.0021	0.0084
276	0.0105	0.0021	0.0084
277	0.0104	0.0021	0.0083
278	0.0104	0.0021	0.0083
279	0.0103	0.0021	0.0082
280	0.0102	0.0021	0.0082
281	0.0102	0.0021	0.0081
282	0.0101	0.0020	0.0081
283	0.0100	0.0020	0.0080
284	0.0100	0.0020	0.0080
285	0.0099	0.0020	0.0079
286	0.0099	0.0020	0.0079
287	0.0098	0.0020	0.0078
288	0.0097	0.0020	0.0078

Total soil rain loss = 1.19(In)
Total effective rainfall = 5.18(In)

Peak flow rate in flood hydrograph = 6.67(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	0.11	Q				
0+15	0.0022	0.20	Q				
0+20	0.0038	0.22	Q				
0+25	0.0053	0.23	Q				
0+30	0.0069	0.23	Q				
0+35	0.0085	0.23	Q				
0+40	0.0101	0.23	Q				
0+45	0.0117	0.23	Q				
0+50	0.0133	0.23	Q				
0+55	0.0149	0.23	Q				
1+ 0	0.0165	0.23	Q				
1+ 5	0.0182	0.24	Q				
1+10	0.0198	0.24	Q				
1+15	0.0214	0.24	Q				
1+20	0.0231	0.24	Q				
1+25	0.0247	0.24	Q				
1+30	0.0263	0.24	QV				
1+35	0.0280	0.24	QV				
1+40	0.0297	0.24	QV				
1+45	0.0313	0.24	QV				
1+50	0.0330	0.24	QV				
1+55	0.0347	0.24	QV				
2+ 0	0.0363	0.24	QV				
2+ 5	0.0380	0.24	QV				
2+10	0.0397	0.25	QV				
2+15	0.0414	0.25	QV				
2+20	0.0431	0.25	QV				
2+25	0.0448	0.25	QV				
2+30	0.0465	0.25	QV				
2+35	0.0483	0.25	QV				
2+40	0.0500	0.25	|Q				
2+45	0.0517	0.25	|Q				
2+50	0.0535	0.25	|QV				
2+55	0.0552	0.25	|QV				
3+ 0	0.0569	0.25	|QV				
3+ 5	0.0587	0.25	|QV				
3+10	0.0605	0.26	|QV				
3+15	0.0622	0.26	|QV				

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3+20       0.0640      0.26  |QV        |          |          |          |
3+25       0.0658      0.26  |QV        |          |          |          |
3+30       0.0676      0.26  |QV        |          |          |          |
3+35       0.0694      0.26  |QV        |          |          |          |
3+40       0.0712      0.26  |QV        |          |          |          |
3+45       0.0730      0.26  |QV        |          |          |          |
3+50       0.0748      0.26  |QV        |          |          |          |
3+55       0.0766      0.26  |QV        |          |          |          |
4+ 0       0.0784      0.27  |QV        |          |          |          |
4+ 5       0.0803      0.27  |Q V       |          |          |          |
4+10       0.0821      0.27  |Q V       |          |          |          |
4+15       0.0840      0.27  |Q V       |          |          |          |
4+20       0.0858      0.27  |Q V       |          |          |          |
4+25       0.0877      0.27  |Q V       |          |          |          |
4+30       0.0896      0.27  |Q V       |          |          |          |
4+35       0.0915      0.27  |Q V       |          |          |          |
4+40       0.0933      0.27  |Q V       |          |          |          |
4+45       0.0952      0.28  |Q V       |          |          |          |
4+50       0.0971      0.28  |Q V       |          |          |          |
4+55       0.0990      0.28  |Q V       |          |          |          |
5+ 0       0.1010      0.28  |Q V       |          |          |          |
5+ 5       0.1029      0.28  |Q V       |          |          |          |
5+10       0.1048      0.28  |Q V       |          |          |          |
5+15       0.1068      0.28  |Q  V      |          |          |          |
5+20       0.1087      0.28  |Q  V      |          |          |          |
5+25       0.1107      0.28  |Q  V      |          |          |          |
5+30       0.1127      0.29  |Q  V      |          |          |          |
5+35       0.1146      0.29  |Q  V      |          |          |          |
5+40       0.1166      0.29  |Q  V      |          |          |          |
5+45       0.1186      0.29  |Q  V      |          |          |          |
5+50       0.1206      0.29  |Q  V      |          |          |          |
5+55       0.1226      0.29  |Q  V      |          |          |          |
6+ 0       0.1247      0.29  |Q  V      |          |          |          |
6+ 5       0.1267      0.30  |Q  V      |          |          |          |
6+10       0.1287      0.30  |Q  V      |          |          |          |
6+15       0.1308      0.30  |Q  V      |          |          |          |
6+20       0.1328      0.30  |Q   V     |          |          |          |
6+25       0.1349      0.30  |Q   V     |          |          |          |
6+30       0.1370      0.30  |Q   V     |          |          |          |
6+35       0.1391      0.30  |Q   V     |          |          |          |
6+40       0.1412      0.31  |Q   V     |          |          |          |
6+45       0.1433      0.31  |Q   V     |          |          |          |
6+50       0.1454      0.31  |Q   V     |          |          |          |
6+55       0.1475      0.31  |Q   V     |          |          |          |
7+ 0       0.1497      0.31  |Q   V     |          |          |          |
7+ 5       0.1518      0.31  |Q   V     |          |          |          |
7+10       0.1540      0.31  |Q   V     |          |          |          |
7+15       0.1562      0.32  |Q   V     |          |          |          |
7+20       0.1584      0.32  |Q    V    |          |          |          |
7+25       0.1606      0.32  |Q    V    |          |          |          |
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7+30	0.1628	0.32	Q V				
7+35	0.1650	0.32	Q V				
7+40	0.1672	0.32	Q V				
7+45	0.1695	0.33	Q V				
7+50	0.1718	0.33	Q V				
7+55	0.1740	0.33	Q V				
8+ 0	0.1763	0.33	Q V				
8+ 5	0.1786	0.33	Q V				
8+10	0.1809	0.34	Q V				
8+15	0.1832	0.34	Q V				
8+20	0.1856	0.34	Q V				
8+25	0.1879	0.34	Q V				
8+30	0.1903	0.34	Q V				
8+35	0.1927	0.35	Q V				
8+40	0.1951	0.35	Q V				
8+45	0.1975	0.35	Q V				
8+50	0.1999	0.35	Q V				
8+55	0.2024	0.35	Q V				
9+ 0	0.2048	0.36	Q V				
9+ 5	0.2073	0.36	Q V				
9+10	0.2098	0.36	Q V				
9+15	0.2123	0.36	Q V				
9+20	0.2148	0.37	Q V				
9+25	0.2174	0.37	Q V				
9+30	0.2199	0.37	Q V				
9+35	0.2225	0.37	Q V				
9+40	0.2251	0.38	Q V				
9+45	0.2277	0.38	Q V				
9+50	0.2304	0.38	Q V				
9+55	0.2330	0.39	Q V				
10+ 0	0.2357	0.39	Q V				
10+ 5	0.2384	0.39	Q V				
10+10	0.2411	0.39	Q V				
10+15	0.2438	0.40	Q V				
10+20	0.2466	0.40	Q V				
10+25	0.2494	0.40	Q V				
10+30	0.2522	0.41	Q V				
10+35	0.2550	0.41	Q V				
10+40	0.2579	0.41	Q V				
10+45	0.2607	0.42	Q V				
10+50	0.2636	0.42	Q V				
10+55	0.2666	0.42	Q V				
11+ 0	0.2695	0.43	Q V				
11+ 5	0.2725	0.43	Q V				
11+10	0.2755	0.44	Q V				
11+15	0.2785	0.44	Q V				
11+20	0.2816	0.44	Q V				
11+25	0.2847	0.45	Q V				
11+30	0.2878	0.45	Q V				
11+35	0.2910	0.46	Q V				

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11+40       0.2942      0.46  |Q        |V        |         |         |
11+45       0.2974      0.47  |Q        |V        |         |         |
11+50       0.3007      0.47  |Q        |V        |         |         |
11+55       0.3039      0.48  |Q        |V        |         |         |
12+ 0       0.3073      0.48  |Q        |V        |         |         |
12+ 5       0.3106      0.49  |Q        |V        |         |         |
12+10       0.3141      0.49  |Q        |V        |         |         |
12+15       0.3175      0.50  | Q       | V       |         |         |
12+20       0.3210      0.51  | Q       | V       |         |         |
12+25       0.3245      0.51  | Q       | V       |         |         |
12+30       0.3281      0.52  | Q       | V       |         |         |
12+35       0.3317      0.53  | Q       | V       |         |         |
12+40       0.3354      0.53  | Q       | V       |         |         |
12+45       0.3391      0.54  | Q       | V       |         |         |
12+50       0.3429      0.55  | Q       |  V      |         |         |
12+55       0.3467      0.56  | Q       |  V      |         |         |
13+ 0       0.3506      0.56  | Q       |  V      |         |         |
13+ 5       0.3546      0.57  | Q       |  V      |         |         |
13+10       0.3586      0.58  | Q       |  V      |         |         |
13+15       0.3626      0.59  | Q       |  V      |         |         |
13+20       0.3667      0.60  | Q       |  V      |         |         |
13+25       0.3709      0.61  | Q       |   V     |         |         |
13+30       0.3752      0.62  | Q       |   V     |         |         |
13+35       0.3796      0.63  | Q       |   V     |         |         |
13+40       0.3840      0.64  | Q       |   V     |         |         |
13+45       0.3885      0.65  | Q       |   V     |         |         |
13+50       0.3931      0.67  | Q       |   V     |         |         |
13+55       0.3978      0.68  | Q       |    V    |         |         |
14+ 0       0.4026      0.70  | Q       |    V    |         |         |
14+ 5       0.4075      0.72  | Q       |    V    |         |         |
14+10       0.4129      0.78  |  Q      |    V    |         |         |
14+15       0.4186      0.83  |  Q      |    V    |         |         |
14+20       0.4245      0.86  |  Q      |     V   |         |         |
14+25       0.4306      0.88  |  Q      |     V   |         |         |
14+30       0.4368      0.91  |  Q      |     V   |         |         |
14+35       0.4432      0.93  |  Q      |     V   |         |         |
14+40       0.4498      0.95  |  Q      |      V  |         |         |
14+45       0.4565      0.98  |  Q      |      V  |         |         |
14+50       0.4635      1.01  |   Q     |      V  |         |         |
14+55       0.4707      1.04  |   Q     |      V  |         |         |
15+ 0       0.4781      1.08  |   Q     |       V |         |         |
15+ 5       0.4858      1.12  |   Q     |       V |         |         |
15+10       0.4938      1.16  |   Q     |       V |         |         |
15+15       0.5022      1.21  |   Q     |        V|         |         |
15+20       0.5109      1.27  |    Q    |        V|         |         |
15+25       0.5202      1.35  |    Q    |        V|         |         |
15+30       0.5308      1.54  |     Q   |         V         |         |
15+35       0.5427      1.72  |     Q   |         V         |         |
15+40       0.5555      1.87  |      Q  |         |V        |         |
15+45       0.5693      2.00  |       Q |         |V        |         |
```

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15+50       0.5841      2.14  |       Q |         | V       |         |
15+55       0.6005      2.38  |        Q|         | V       |         |
16+ 0       0.6209      2.96  |         |Q        |  V      |         |
16+ 5       0.6502      4.26  |         |      Q  |   V     |         |
16+10       0.6962      6.67  |         |         |     Q   |         |
16+15       0.7372      5.96  |         |         |  Q    V |         |
16+20       0.7609      3.43  |         |  Q      |       V |         |
16+25       0.7766      2.29  |        Q|         |        V|         |
16+30       0.7890      1.79  |      Q  |         |        V|         |
16+35       0.7987      1.42  |    Q    |         |         V         |
16+40       0.8074      1.25  |    Q    |         |         V         |
16+45       0.8152      1.14  |   Q     |         |         V         |
16+50       0.8225      1.06  |   Q     |         |         |V        |
16+55       0.8294      0.99  |  Q      |         |         |V        |
17+ 0       0.8359      0.94  |  Q      |         |         |V        |
17+ 5       0.8420      0.89  |  Q      |         |         |V        |
17+10       0.8475      0.81  |  Q      |         |         | V       |
17+15       0.8526      0.73  | Q       |         |         | V       |
17+20       0.8573      0.69  | Q       |         |         | V       |
17+25       0.8619      0.66  | Q       |         |         | V       |
17+30       0.8663      0.64  | Q       |         |         | V       |
17+35       0.8705      0.61  | Q       |         |         |  V      |
17+40       0.8746      0.59  | Q       |         |         |  V      |
17+45       0.8785      0.58  | Q       |         |         |  V      |
17+50       0.8824      0.56  | Q       |         |         |  V      |
17+55       0.8861      0.54  | Q       |         |         |  V      |
18+ 0       0.8898      0.53  | Q       |         |         |  V      |
18+ 5       0.8933      0.52  | Q       |         |         |  V      |
18+10       0.8968      0.50  | Q       |         |         |   V     |
18+15       0.9002      0.49  |Q        |         |         |   V     |
18+20       0.9035      0.48  |Q        |         |         |   V     |
18+25       0.9067      0.47  |Q        |         |         |   V     |
18+30       0.9099      0.46  |Q        |         |         |   V     |
18+35       0.9130      0.45  |Q        |         |         |   V     |
18+40       0.9161      0.44  |Q        |         |         |   V     |
18+45       0.9190      0.43  |Q        |         |         |   V     |
18+50       0.9220      0.43  |Q        |         |         |    V    |
18+55       0.9249      0.42  |Q        |         |         |    V    |
19+ 0       0.9277      0.41  |Q        |         |         |    V    |
19+ 5       0.9305      0.41  |Q        |         |         |    V    |
19+10       0.9332      0.40  |Q        |         |         |    V    |
19+15       0.9359      0.39  |Q        |         |         |    V    |
19+20       0.9386      0.39  |Q        |         |         |    V    |
19+25       0.9412      0.38  |Q        |         |         |    V    |
19+30       0.9438      0.38  |Q        |         |         |    V    |
19+35       0.9464      0.37  |Q        |         |         |    V    |
19+40       0.9489      0.37  |Q        |         |         |     V   |
19+45       0.9514      0.36  |Q        |         |         |     V   |
19+50       0.9538      0.36  |Q        |         |         |     V   |
19+55       0.9562      0.35  |Q        |         |         |     V   |
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  20+ 0       0.9586      0.35  |Q        |         |         |     V   |
  20+ 5       0.9610      0.34  |Q        |         |         |     V   |
  20+10       0.9633      0.34  |Q        |         |         |     V   |
  20+15       0.9656      0.33  |Q        |         |         |     V   |
  20+20       0.9679      0.33  |Q        |         |         |     V   |
  20+25       0.9701      0.33  |Q        |         |         |     V   |
  20+30       0.9724      0.32  |Q        |         |         |     V   |
  20+35       0.9746      0.32  |Q        |         |         |      V  |
  20+40       0.9768      0.32  |Q        |         |         |      V  |
  20+45       0.9789      0.31  |Q        |         |         |      V  |
  20+50       0.9811      0.31  |Q        |         |         |      V  |
  20+55       0.9832      0.31  |Q        |         |         |      V  |
  21+ 0       0.9853      0.30  |Q        |         |         |      V  |
  21+ 5       0.9873      0.30  |Q        |         |         |      V  |
  21+10       0.9894      0.30  |Q        |         |         |      V  |
  21+15       0.9914      0.30  |Q        |         |         |      V  |
  21+20       0.9934      0.29  |Q        |         |         |      V  |
  21+25       0.9954      0.29  |Q        |         |         |      V  |
  21+30       0.9974      0.29  |Q        |         |         |      V  |
  21+35       0.9994      0.29  |Q        |         |         |      V  |
  21+40       1.0013      0.28  |Q        |         |         |       V |
  21+45       1.0033      0.28  |Q        |         |         |       V |
  21+50       1.0052      0.28  |Q        |         |         |       V |
  21+55       1.0071      0.28  |Q        |         |         |       V |
  22+ 0       1.0090      0.27  |Q        |         |         |       V |
  22+ 5       1.0108      0.27  |Q        |         |         |       V |
  22+10       1.0127      0.27  |Q        |         |         |       V |
  22+15       1.0145      0.27  |Q        |         |         |       V |
  22+20       1.0163      0.26  |Q        |         |         |       V |
  22+25       1.0182      0.26  |Q        |         |         |       V |
  22+30       1.0200      0.26  |Q        |         |         |       V |
  22+35       1.0217      0.26  |Q        |         |         |       V |
  22+40       1.0235      0.26  |Q        |         |         |       V |
  22+45       1.0253      0.26  |Q        |         |         |       V |
  22+50       1.0270      0.25  |Q        |         |         |        V|
  22+55       1.0287      0.25  |Q        |         |         |        V|
  23+ 0       1.0305      0.25  |Q        |         |         |        V|
  23+ 5       1.0322      0.25  Q         |         |         |        V|
  23+10       1.0339      0.25  Q         |         |         |        V|
  23+15       1.0356      0.24  Q         |         |         |        V|
  23+20       1.0372      0.24  Q         |         |         |        V|
  23+25       1.0389      0.24  Q         |         |         |        V|
  23+30       1.0406      0.24  Q         |         |         |        V|
  23+35       1.0422      0.24  Q         |         |         |        V|
  23+40       1.0438      0.24  Q         |         |         |        V|
  23+45       1.0455      0.24  Q         |         |         |        V|
  23+50       1.0471      0.23  Q         |         |         |        V|
  23+55       1.0487      0.23  Q         |         |         |        V|
  24+ 0       1.0503      0.23  Q         |         |         |        V|
-------------------------------------------------------------------------
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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: 03/26/25

5885 SCHAEFER PROPOSED DRINAGE AREA B 100YR HYDROLOGY

Program License Serial Number 6683

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

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.925(In.)
100 Year storm 1 hour rainfall = 1.480(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.480 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 0.000(Ft.) to Point/Station 742.000(Ft.)
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.026(In/Hr)
Initial subarea data:
Initial area flow distance = 742.000(Ft.)
Top (of initial area) elevation = 699.440(Ft.)
Bottom (of initial area) elevation = 688.150(Ft.)
Difference in elevation = 11.290(Ft.)
Slope = 0.01522 s(%)= 1.52

TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.876 min.
Rainfall intensity = 4.369(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.895
Subarea runoff = 9.537(CFS)
Total initial stream area = 2.440(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.026(In/Hr)
End of computations, Total Study Area = 2.44 (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 = 69.0

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

Study date 03/26/25

++

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

Program License Serial Number 6683

5885 Schaefer Proposed Drainage Area C 2 Yr Hydrograph

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 2		
4.04	1	0.59
Rainfall data for year 2		
4.04	6	1.55
Rainfall data for year 2		
4.04	24	2.63

++

******** 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)
69.0	49.8	4.04	1.000	0.812	0.980	0.796

Area-averaged adjusted loss rate Fm (In/Hr) = 0.796

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
3.96	0.980	69.0	49.8	10.08	0.013
0.08	0.020	98.0	98.0	0.20	0.913

Area-averaged catchment yield fraction, Y = 0.031
Area-averaged low loss fraction, Yb = 0.969
User entry of time of concentration = 0.140 (hours)
++
Watershed area = 4.04(Ac.)
Catchment Lag time = 0.112 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 74.4048
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.796(In/Hr)
Average low loss rate fraction (Yb) = 0.969 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.150(In)
Computed peak 30-minute rainfall = 0.392(In)
Specified peak 1-hour rainfall = 0.588(In)
Computed peak 3-hour rainfall = 1.120(In)
Specified peak 6-hour rainfall = 1.550(In)
Specified peak 24-hour rainfall = 2.630(In)

Note: user specified rainfall values used.
Rainfall depth area reduction factors:
Using a total area of 4.04(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.150(In)
30-minute factor = 1.000 Adjusted rainfall = 0.392(In)
1-hour factor = 1.000 Adjusted rainfall = 0.588(In)
3-hour factor = 1.000 Adjusted rainfall = 1.120(In)
6-hour factor = 1.000 Adjusted rainfall = 1.550(In)
24-hour factor = 1.000 Adjusted rainfall = 2.630(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 = 48.86 (CFS))	
1	9.857	4.816
2	58.164	23.602
3	91.715	16.393
4	98.412	3.272
5	100.000	0.776

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.1500	0.1500
2	0.2175	0.0675
3	0.2703	0.0528
4	0.3154	0.0451
5	0.3554	0.0401
6	0.3919	0.0365
7	0.4289	0.0370
8	0.4638	0.0348
9	0.4968	0.0331
10	0.5284	0.0316
11	0.5587	0.0303
12	0.5879	0.0292
13	0.6162	0.0283
14	0.6435	0.0274
15	0.6701	0.0266
16	0.6960	0.0259
17	0.7212	0.0252
18	0.7458	0.0246
19	0.7698	0.0240
20	0.7933	0.0235
21	0.8164	0.0230
22	0.8389	0.0226
23	0.8611	0.0222
24	0.8829	0.0218
25	0.9043	0.0214
26	0.9253	0.0210
27	0.9460	0.0207
28	0.9664	0.0204
29	0.9865	0.0201
30	1.0064	0.0198
31	1.0259	0.0195
32	1.0452	0.0193
33	1.0642	0.0190
34	1.0830	0.0188
35	1.1016	0.0186
36	1.1200	0.0184

37	1.1345	0.0145
38	1.1487	0.0143
39	1.1628	0.0141
40	1.1767	0.0139
41	1.1904	0.0137
42	1.2039	0.0135
43	1.2173	0.0134
44	1.2304	0.0132
45	1.2435	0.0130
46	1.2564	0.0129
47	1.2691	0.0127
48	1.2817	0.0126
49	1.2941	0.0124
50	1.3064	0.0123
51	1.3186	0.0122
52	1.3307	0.0121
53	1.3426	0.0119
54	1.3544	0.0118
55	1.3661	0.0117
56	1.3777	0.0116
57	1.3892	0.0115
58	1.4006	0.0114
59	1.4118	0.0113
60	1.4230	0.0112
61	1.4341	0.0111
62	1.4451	0.0110
63	1.4559	0.0109
64	1.4667	0.0108
65	1.4774	0.0107
66	1.4880	0.0106
67	1.4986	0.0105
68	1.5090	0.0104
69	1.5194	0.0104
70	1.5296	0.0103
71	1.5399	0.0102
72	1.5500	0.0101
73	1.5582	0.0082
74	1.5663	0.0081
75	1.5743	0.0080
76	1.5823	0.0080
77	1.5902	0.0079
78	1.5980	0.0078
79	1.6058	0.0078
80	1.6135	0.0077
81	1.6212	0.0077
82	1.6288	0.0076
83	1.6363	0.0075
84	1.6438	0.0075
85	1.6513	0.0074
86	1.6587	0.0074

87	1.6660	0.0073
88	1.6733	0.0073
89	1.6805	0.0072
90	1.6877	0.0072
91	1.6948	0.0071
92	1.7019	0.0071
93	1.7089	0.0070
94	1.7159	0.0070
95	1.7228	0.0069
96	1.7297	0.0069
97	1.7366	0.0069
98	1.7434	0.0068
99	1.7501	0.0068
100	1.7569	0.0067
101	1.7636	0.0067
102	1.7702	0.0066
103	1.7768	0.0066
104	1.7833	0.0066
105	1.7899	0.0065
106	1.7964	0.0065
107	1.8028	0.0064
108	1.8092	0.0064
109	1.8156	0.0064
110	1.8219	0.0063
111	1.8282	0.0063
112	1.8345	0.0063
113	1.8407	0.0062
114	1.8469	0.0062
115	1.8531	0.0062
116	1.8592	0.0061
117	1.8653	0.0061
118	1.8714	0.0061
119	1.8774	0.0060
120	1.8834	0.0060
121	1.8894	0.0060
122	1.8953	0.0059
123	1.9012	0.0059
124	1.9071	0.0059
125	1.9129	0.0059
126	1.9188	0.0058
127	1.9246	0.0058
128	1.9303	0.0058
129	1.9361	0.0057
130	1.9418	0.0057
131	1.9475	0.0057
132	1.9531	0.0057
133	1.9587	0.0056
134	1.9643	0.0056
135	1.9699	0.0056
136	1.9755	0.0056

137	1.9810	0.0055
138	1.9865	0.0055
139	1.9920	0.0055
140	1.9974	0.0055
141	2.0029	0.0054
142	2.0083	0.0054
143	2.0137	0.0054
144	2.0190	0.0054
145	2.0244	0.0053
146	2.0297	0.0053
147	2.0350	0.0053
148	2.0402	0.0053
149	2.0455	0.0052
150	2.0507	0.0052
151	2.0559	0.0052
152	2.0611	0.0052
153	2.0662	0.0052
154	2.0714	0.0051
155	2.0765	0.0051
156	2.0816	0.0051
157	2.0867	0.0051
158	2.0917	0.0051
159	2.0968	0.0050
160	2.1018	0.0050
161	2.1068	0.0050
162	2.1118	0.0050
163	2.1167	0.0050
164	2.1217	0.0049
165	2.1266	0.0049
166	2.1315	0.0049
167	2.1364	0.0049
168	2.1413	0.0049
169	2.1461	0.0049
170	2.1510	0.0048
171	2.1558	0.0048
172	2.1606	0.0048
173	2.1654	0.0048
174	2.1701	0.0048
175	2.1749	0.0047
176	2.1796	0.0047
177	2.1843	0.0047
178	2.1890	0.0047
179	2.1937	0.0047
180	2.1984	0.0047
181	2.2030	0.0047
182	2.2077	0.0046
183	2.2123	0.0046
184	2.2169	0.0046
185	2.2215	0.0046
186	2.2260	0.0046

187	2.2306	0.0046
188	2.2351	0.0045
189	2.2397	0.0045
190	2.2442	0.0045
191	2.2487	0.0045
192	2.2532	0.0045
193	2.2576	0.0045
194	2.2621	0.0045
195	2.2665	0.0044
196	2.2709	0.0044
197	2.2754	0.0044
198	2.2798	0.0044
199	2.2841	0.0044
200	2.2885	0.0044
201	2.2929	0.0044
202	2.2972	0.0043
203	2.3015	0.0043
204	2.3059	0.0043
205	2.3102	0.0043
206	2.3145	0.0043
207	2.3187	0.0043
208	2.3230	0.0043
209	2.3273	0.0043
210	2.3315	0.0042
211	2.3357	0.0042
212	2.3399	0.0042
213	2.3441	0.0042
214	2.3483	0.0042
215	2.3525	0.0042
216	2.3567	0.0042
217	2.3608	0.0042
218	2.3650	0.0041
219	2.3691	0.0041
220	2.3732	0.0041
221	2.3773	0.0041
222	2.3814	0.0041
223	2.3855	0.0041
224	2.3896	0.0041
225	2.3937	0.0041
226	2.3977	0.0041
227	2.4018	0.0040
228	2.4058	0.0040
229	2.4098	0.0040
230	2.4138	0.0040
231	2.4178	0.0040
232	2.4218	0.0040
233	2.4258	0.0040
234	2.4297	0.0040
235	2.4337	0.0040
236	2.4376	0.0039

237	2.4416	0.0039
238	2.4455	0.0039
239	2.4494	0.0039
240	2.4533	0.0039
241	2.4572	0.0039
242	2.4611	0.0039
243	2.4650	0.0039
244	2.4688	0.0039
245	2.4727	0.0039
246	2.4765	0.0038
247	2.4804	0.0038
248	2.4842	0.0038
249	2.4880	0.0038
250	2.4918	0.0038
251	2.4956	0.0038
252	2.4994	0.0038
253	2.5032	0.0038
254	2.5069	0.0038
255	2.5107	0.0038
256	2.5145	0.0038
257	2.5182	0.0037
258	2.5219	0.0037
259	2.5257	0.0037
260	2.5294	0.0037
261	2.5331	0.0037
262	2.5368	0.0037
263	2.5405	0.0037
264	2.5441	0.0037
265	2.5478	0.0037
266	2.5515	0.0037
267	2.5551	0.0037
268	2.5588	0.0036
269	2.5624	0.0036
270	2.5660	0.0036
271	2.5697	0.0036
272	2.5733	0.0036
273	2.5769	0.0036
274	2.5805	0.0036
275	2.5841	0.0036
276	2.5876	0.0036
277	2.5912	0.0036
278	2.5948	0.0036
279	2.5983	0.0036
280	2.6019	0.0035
281	2.6054	0.0035
282	2.6090	0.0035
283	2.6125	0.0035
284	2.6160	0.0035
285	2.6195	0.0035
286	2.6230	0.0035

287	2.6265	0.0035	
288	2.6300	0.0035	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0035	0.0034	0.0001
2	0.0035	0.0034	0.0001
3	0.0035	0.0034	0.0001
4	0.0035	0.0034	0.0001
5	0.0035	0.0034	0.0001
6	0.0035	0.0034	0.0001
7	0.0036	0.0034	0.0001
8	0.0036	0.0035	0.0001
9	0.0036	0.0035	0.0001
10	0.0036	0.0035	0.0001
11	0.0036	0.0035	0.0001
12	0.0036	0.0035	0.0001
13	0.0036	0.0035	0.0001
14	0.0036	0.0035	0.0001
15	0.0037	0.0035	0.0001
16	0.0037	0.0035	0.0001
17	0.0037	0.0036	0.0001
18	0.0037	0.0036	0.0001
19	0.0037	0.0036	0.0001
20	0.0037	0.0036	0.0001
21	0.0037	0.0036	0.0001
22	0.0037	0.0036	0.0001
23	0.0038	0.0036	0.0001
24	0.0038	0.0037	0.0001
25	0.0038	0.0037	0.0001
26	0.0038	0.0037	0.0001
27	0.0038	0.0037	0.0001
28	0.0038	0.0037	0.0001
29	0.0038	0.0037	0.0001
30	0.0039	0.0037	0.0001
31	0.0039	0.0038	0.0001
32	0.0039	0.0038	0.0001
33	0.0039	0.0038	0.0001
34	0.0039	0.0038	0.0001
35	0.0039	0.0038	0.0001
36	0.0039	0.0038	0.0001
37	0.0040	0.0038	0.0001
38	0.0040	0.0039	0.0001
39	0.0040	0.0039	0.0001
40	0.0040	0.0039	0.0001
41	0.0040	0.0039	0.0001
42	0.0040	0.0039	0.0001
43	0.0041	0.0039	0.0001

44	0.0041	0.0039	0.0001
45	0.0041	0.0040	0.0001
46	0.0041	0.0040	0.0001
47	0.0041	0.0040	0.0001
48	0.0041	0.0040	0.0001
49	0.0042	0.0040	0.0001
50	0.0042	0.0040	0.0001
51	0.0042	0.0041	0.0001
52	0.0042	0.0041	0.0001
53	0.0042	0.0041	0.0001
54	0.0043	0.0041	0.0001
55	0.0043	0.0041	0.0001
56	0.0043	0.0042	0.0001
57	0.0043	0.0042	0.0001
58	0.0043	0.0042	0.0001
59	0.0044	0.0042	0.0001
60	0.0044	0.0042	0.0001
61	0.0044	0.0043	0.0001
62	0.0044	0.0043	0.0001
63	0.0044	0.0043	0.0001
64	0.0045	0.0043	0.0001
65	0.0045	0.0043	0.0001
66	0.0045	0.0044	0.0001
67	0.0045	0.0044	0.0001
68	0.0045	0.0044	0.0001
69	0.0046	0.0044	0.0001
70	0.0046	0.0044	0.0001
71	0.0046	0.0045	0.0001
72	0.0046	0.0045	0.0001
73	0.0047	0.0045	0.0001
74	0.0047	0.0045	0.0001
75	0.0047	0.0046	0.0001
76	0.0047	0.0046	0.0001
77	0.0048	0.0046	0.0001
78	0.0048	0.0046	0.0002
79	0.0048	0.0047	0.0002
80	0.0048	0.0047	0.0002
81	0.0049	0.0047	0.0002
82	0.0049	0.0047	0.0002
83	0.0049	0.0048	0.0002
84	0.0049	0.0048	0.0002
85	0.0050	0.0048	0.0002
86	0.0050	0.0048	0.0002
87	0.0050	0.0049	0.0002
88	0.0051	0.0049	0.0002
89	0.0051	0.0049	0.0002
90	0.0051	0.0050	0.0002
91	0.0052	0.0050	0.0002
92	0.0052	0.0050	0.0002
93	0.0052	0.0051	0.0002

94	0.0052	0.0051	0.0002
95	0.0053	0.0051	0.0002
96	0.0053	0.0051	0.0002
97	0.0054	0.0052	0.0002
98	0.0054	0.0052	0.0002
99	0.0054	0.0053	0.0002
100	0.0055	0.0053	0.0002
101	0.0055	0.0053	0.0002
102	0.0055	0.0054	0.0002
103	0.0056	0.0054	0.0002
104	0.0056	0.0054	0.0002
105	0.0057	0.0055	0.0002
106	0.0057	0.0055	0.0002
107	0.0057	0.0056	0.0002
108	0.0058	0.0056	0.0002
109	0.0058	0.0056	0.0002
110	0.0059	0.0057	0.0002
111	0.0059	0.0057	0.0002
112	0.0059	0.0058	0.0002
113	0.0060	0.0058	0.0002
114	0.0060	0.0058	0.0002
115	0.0061	0.0059	0.0002
116	0.0061	0.0059	0.0002
117	0.0062	0.0060	0.0002
118	0.0062	0.0060	0.0002
119	0.0063	0.0061	0.0002
120	0.0063	0.0061	0.0002
121	0.0064	0.0062	0.0002
122	0.0064	0.0062	0.0002
123	0.0065	0.0063	0.0002
124	0.0066	0.0064	0.0002
125	0.0066	0.0064	0.0002
126	0.0067	0.0065	0.0002
127	0.0068	0.0066	0.0002
128	0.0068	0.0066	0.0002
129	0.0069	0.0067	0.0002
130	0.0069	0.0067	0.0002
131	0.0070	0.0068	0.0002
132	0.0071	0.0069	0.0002
133	0.0072	0.0070	0.0002
134	0.0072	0.0070	0.0002
135	0.0073	0.0071	0.0002
136	0.0074	0.0072	0.0002
137	0.0075	0.0073	0.0002
138	0.0075	0.0073	0.0002
139	0.0077	0.0074	0.0002
140	0.0077	0.0075	0.0002
141	0.0078	0.0076	0.0002
142	0.0079	0.0077	0.0002
143	0.0080	0.0078	0.0003

144	0.0081	0.0079	0.0003
145	0.0101	0.0098	0.0003
146	0.0102	0.0099	0.0003
147	0.0104	0.0100	0.0003
148	0.0104	0.0101	0.0003
149	0.0106	0.0103	0.0003
150	0.0107	0.0104	0.0003
151	0.0109	0.0105	0.0003
152	0.0110	0.0106	0.0003
153	0.0112	0.0108	0.0004
154	0.0113	0.0109	0.0004
155	0.0115	0.0111	0.0004
156	0.0116	0.0112	0.0004
157	0.0118	0.0114	0.0004
158	0.0119	0.0116	0.0004
159	0.0122	0.0118	0.0004
160	0.0123	0.0119	0.0004
161	0.0126	0.0122	0.0004
162	0.0127	0.0123	0.0004
163	0.0130	0.0126	0.0004
164	0.0132	0.0128	0.0004
165	0.0135	0.0131	0.0004
166	0.0137	0.0133	0.0004
167	0.0141	0.0136	0.0004
168	0.0143	0.0138	0.0004
169	0.0184	0.0178	0.0006
170	0.0186	0.0180	0.0006
171	0.0190	0.0184	0.0006
172	0.0193	0.0187	0.0006
173	0.0198	0.0192	0.0006
174	0.0201	0.0195	0.0006
175	0.0207	0.0201	0.0007
176	0.0210	0.0204	0.0007
177	0.0218	0.0211	0.0007
178	0.0222	0.0215	0.0007
179	0.0230	0.0223	0.0007
180	0.0235	0.0228	0.0007
181	0.0246	0.0238	0.0008
182	0.0252	0.0244	0.0008
183	0.0266	0.0257	0.0008
184	0.0274	0.0265	0.0009
185	0.0292	0.0283	0.0009
186	0.0303	0.0293	0.0010
187	0.0331	0.0320	0.0010
188	0.0348	0.0338	0.0011
189	0.0365	0.0354	0.0011
190	0.0401	0.0388	0.0013
191	0.0528	0.0511	0.0017
192	0.0675	0.0654	0.0021
193	0.1500	0.0663	0.0837

194	0.0451	0.0437	0.0014
195	0.0370	0.0358	0.0012
196	0.0316	0.0306	0.0010
197	0.0283	0.0274	0.0009
198	0.0259	0.0250	0.0008
199	0.0240	0.0233	0.0008
200	0.0226	0.0219	0.0007
201	0.0214	0.0207	0.0007
202	0.0204	0.0198	0.0006
203	0.0195	0.0189	0.0006
204	0.0188	0.0182	0.0006
205	0.0145	0.0140	0.0005
206	0.0139	0.0134	0.0004
207	0.0134	0.0129	0.0004
208	0.0129	0.0125	0.0004
209	0.0124	0.0121	0.0004
210	0.0121	0.0117	0.0004
211	0.0117	0.0113	0.0004
212	0.0114	0.0110	0.0004
213	0.0111	0.0107	0.0003
214	0.0108	0.0104	0.0003
215	0.0105	0.0102	0.0003
216	0.0103	0.0100	0.0003
217	0.0082	0.0079	0.0003
218	0.0080	0.0077	0.0003
219	0.0078	0.0075	0.0002
220	0.0076	0.0074	0.0002
221	0.0074	0.0072	0.0002
222	0.0073	0.0070	0.0002
223	0.0071	0.0069	0.0002
224	0.0070	0.0068	0.0002
225	0.0069	0.0066	0.0002
226	0.0067	0.0065	0.0002
227	0.0066	0.0064	0.0002
228	0.0065	0.0063	0.0002
229	0.0064	0.0062	0.0002
230	0.0063	0.0061	0.0002
231	0.0062	0.0060	0.0002
232	0.0061	0.0059	0.0002
233	0.0060	0.0058	0.0002
234	0.0059	0.0057	0.0002
235	0.0058	0.0056	0.0002
236	0.0057	0.0055	0.0002
237	0.0056	0.0055	0.0002
238	0.0056	0.0054	0.0002
239	0.0055	0.0053	0.0002
240	0.0054	0.0052	0.0002
241	0.0053	0.0052	0.0002
242	0.0053	0.0051	0.0002
243	0.0052	0.0050	0.0002

244	0.0051	0.0050	0.0002
245	0.0051	0.0049	0.0002
246	0.0050	0.0049	0.0002
247	0.0050	0.0048	0.0002
248	0.0049	0.0048	0.0002
249	0.0049	0.0047	0.0002
250	0.0048	0.0046	0.0002
251	0.0047	0.0046	0.0001
252	0.0047	0.0046	0.0001
253	0.0047	0.0045	0.0001
254	0.0046	0.0045	0.0001
255	0.0046	0.0044	0.0001
256	0.0045	0.0044	0.0001
257	0.0045	0.0043	0.0001
258	0.0044	0.0043	0.0001
259	0.0044	0.0042	0.0001
260	0.0043	0.0042	0.0001
261	0.0043	0.0042	0.0001
262	0.0043	0.0041	0.0001
263	0.0042	0.0041	0.0001
264	0.0042	0.0041	0.0001
265	0.0042	0.0040	0.0001
266	0.0041	0.0040	0.0001
267	0.0041	0.0040	0.0001
268	0.0041	0.0039	0.0001
269	0.0040	0.0039	0.0001
270	0.0040	0.0039	0.0001
271	0.0040	0.0038	0.0001
272	0.0039	0.0038	0.0001
273	0.0039	0.0038	0.0001
274	0.0039	0.0037	0.0001
275	0.0038	0.0037	0.0001
276	0.0038	0.0037	0.0001
277	0.0038	0.0037	0.0001
278	0.0038	0.0036	0.0001
279	0.0037	0.0036	0.0001
280	0.0037	0.0036	0.0001
281	0.0037	0.0036	0.0001
282	0.0036	0.0035	0.0001
283	0.0036	0.0035	0.0001
284	0.0036	0.0035	0.0001
285	0.0036	0.0035	0.0001
286	0.0035	0.0034	0.0001
287	0.0035	0.0034	0.0001
288	0.0035	0.0034	0.0001

Total soil rain loss = 2.47(In)
Total effective rainfall = 0.16(In)
Peak flow rate in flood hydrograph = 2.02(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	0.00	Q				
0+20	0.0001	0.01	Q				
0+25	0.0001	0.01	Q				
0+30	0.0002	0.01	Q				
0+35	0.0002	0.01	Q				
0+40	0.0002	0.01	Q				
0+45	0.0003	0.01	Q				
0+50	0.0003	0.01	Q				
0+55	0.0004	0.01	Q				
1+ 0	0.0004	0.01	Q				
1+ 5	0.0004	0.01	Q				
1+10	0.0005	0.01	Q				
1+15	0.0005	0.01	Q				
1+20	0.0005	0.01	Q				
1+25	0.0006	0.01	Q				
1+30	0.0006	0.01	Q				
1+35	0.0007	0.01	Q				
1+40	0.0007	0.01	Q				
1+45	0.0007	0.01	Q				
1+50	0.0008	0.01	Q				
1+55	0.0008	0.01	Q				
2+ 0	0.0009	0.01	Q				
2+ 5	0.0009	0.01	Q				
2+10	0.0009	0.01	Q				
2+15	0.0010	0.01	Q				
2+20	0.0010	0.01	Q				
2+25	0.0011	0.01	Q				
2+30	0.0011	0.01	Q				
2+35	0.0011	0.01	Q				
2+40	0.0012	0.01	Q				
2+45	0.0012	0.01	Q				
2+50	0.0013	0.01	Q				
2+55	0.0013	0.01	Q				
3+ 0	0.0013	0.01	Q				
3+ 5	0.0014	0.01	QV				
3+10	0.0014	0.01	QV				
3+15	0.0015	0.01	QV				
3+20	0.0015	0.01	QV				

3+25	0.0016	0.01	QV				
3+30	0.0016	0.01	QV				
3+35	0.0016	0.01	QV				
3+40	0.0017	0.01	QV				
3+45	0.0017	0.01	QV				
3+50	0.0018	0.01	QV				
3+55	0.0018	0.01	QV				
4+ 0	0.0019	0.01	QV				
4+ 5	0.0019	0.01	QV				
4+10	0.0019	0.01	QV				
4+15	0.0020	0.01	QV				
4+20	0.0020	0.01	QV				
4+25	0.0021	0.01	QV				
4+30	0.0021	0.01	QV				
4+35	0.0022	0.01	QV				
4+40	0.0022	0.01	QV				
4+45	0.0023	0.01	QV				
4+50	0.0023	0.01	QV				
4+55	0.0024	0.01	QV				
5+ 0	0.0024	0.01	QV				
5+ 5	0.0024	0.01	QV				
5+10	0.0025	0.01	QV				
5+15	0.0025	0.01	QV				
5+20	0.0026	0.01	QV				
5+25	0.0026	0.01	QV				
5+30	0.0027	0.01	QV				
5+35	0.0027	0.01	Q V				
5+40	0.0028	0.01	Q V				
5+45	0.0028	0.01	Q V				
5+50	0.0029	0.01	Q V				
5+55	0.0029	0.01	Q V				
6+ 0	0.0030	0.01	Q V				
6+ 5	0.0030	0.01	Q V				
6+10	0.0031	0.01	Q V				
6+15	0.0031	0.01	Q V				
6+20	0.0032	0.01	Q V				
6+25	0.0032	0.01	Q V				
6+30	0.0033	0.01	Q V				
6+35	0.0033	0.01	Q V				
6+40	0.0034	0.01	Q V				
6+45	0.0034	0.01	Q V				
6+50	0.0035	0.01	Q V				
6+55	0.0035	0.01	Q V				
7+ 0	0.0036	0.01	Q V				
7+ 5	0.0036	0.01	Q V				
7+10	0.0037	0.01	Q V				
7+15	0.0037	0.01	Q V				
7+20	0.0038	0.01	Q V				
7+25	0.0038	0.01	Q V				
7+30	0.0039	0.01	Q V				

7+35	0.0039	0.01	Q V	|	|	|	|
7+40	0.0040	0.01	Q V	|	|	|	|
7+45	0.0040	0.01	Q V	|	|	|	|
7+50	0.0041	0.01	Q V	|	|	|	|
7+55	0.0042	0.01	Q V	|	|	|	|
8+ 0	0.0042	0.01	Q V	|	|	|	|
8+ 5	0.0043	0.01	Q V	|	|	|	|
8+10	0.0043	0.01	Q V	|	|	|	|
8+15	0.0044	0.01	Q V	|	|	|	|
8+20	0.0044	0.01	Q V	|	|	|	|
8+25	0.0045	0.01	Q V	|	|	|	|
8+30	0.0046	0.01	Q V	|	|	|	|
8+35	0.0046	0.01	Q V	|	|	|	|
8+40	0.0047	0.01	Q V	|	|	|	|
8+45	0.0047	0.01	Q V	|	|	|	|
8+50	0.0048	0.01	Q V	|	|	|	|
8+55	0.0049	0.01	Q V	|	|	|	|
9+ 0	0.0049	0.01	Q V	|	|	|	|
9+ 5	0.0050	0.01	Q V	|	|	|	|
9+10	0.0050	0.01	Q V	|	|	|	|
9+15	0.0051	0.01	Q V	|	|	|	|
9+20	0.0052	0.01	Q V	|	|	|	|
9+25	0.0052	0.01	Q V	|	|	|	|
9+30	0.0053	0.01	Q V	|	|	|	|
9+35	0.0053	0.01	Q V	|	|	|	|
9+40	0.0054	0.01	Q V	|	|	|	|
9+45	0.0055	0.01	Q V	|	|	|	|
9+50	0.0055	0.01	Q V	|	|	|	|
9+55	0.0056	0.01	Q V	|	|	|	|
10+ 0	0.0057	0.01	Q V	|	|	|	|
10+ 5	0.0057	0.01	Q V	|	|	|	|
10+10	0.0058	0.01	Q V	|	|	|	|
10+15	0.0059	0.01	Q V	|	|	|	|
10+20	0.0059	0.01	Q V	|	|	|	|
10+25	0.0060	0.01	Q V	|	|	|	|
10+30	0.0061	0.01	Q V	|	|	|	|
10+35	0.0062	0.01	Q V	|	|	|	|
10+40	0.0062	0.01	Q V	|	|	|	|
10+45	0.0063	0.01	Q V	|	|	|	|
10+50	0.0064	0.01	Q V	|	|	|	|
10+55	0.0064	0.01	Q V	|	|	|	|
11+ 0	0.0065	0.01	Q V	|	|	|	|
11+ 5	0.0066	0.01	Q V	|	|	|	|
11+10	0.0067	0.01	Q V	|	|	|	|
11+15	0.0067	0.01	Q V	|	|	|	|
11+20	0.0068	0.01	Q V	|	|	|	|
11+25	0.0069	0.01	Q V	|	|	|	|
11+30	0.0070	0.01	Q V	|	|	|	|
11+35	0.0071	0.01	Q V	|	|	|	|
11+40	0.0071	0.01	Q V	|	|	|	|

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11+45       0.0072      0.01  Q    V    |          |          |          |
11+50       0.0073      0.01  Q    V    |          |          |          |
11+55       0.0074      0.01  Q    V    |          |          |          |
12+ 0       0.0075      0.01  Q    V    |          |          |          |
12+ 5       0.0076      0.01  Q    V    |          |          |          |
12+10       0.0077      0.01  Q    V    |          |          |          |
12+15       0.0078      0.02  Q    V    |          |          |          |
12+20       0.0079      0.02  Q    V    |          |          |          |
12+25       0.0080      0.02  Q    V    |          |          |          |
12+30       0.0081      0.02  Q    V    |          |          |          |
12+35       0.0082      0.02  Q     V   |          |          |          |
12+40       0.0083      0.02  Q     V   |          |          |          |
12+45       0.0084      0.02  Q     V   |          |          |          |
12+50       0.0085      0.02  Q     V   |          |          |          |
12+55       0.0087      0.02  Q     V   |          |          |          |
13+ 0       0.0088      0.02  Q     V   |          |          |          |
13+ 5       0.0089      0.02  Q     V   |          |          |          |
13+10       0.0090      0.02  Q     V   |          |          |          |
13+15       0.0092      0.02  Q     V   |          |          |          |
13+20       0.0093      0.02  Q     V   |          |          |          |
13+25       0.0094      0.02  Q     V   |          |          |          |
13+30       0.0095      0.02  Q      V  |          |          |          |
13+35       0.0097      0.02  Q      V  |          |          |          |
13+40       0.0098      0.02  Q      V  |          |          |          |
13+45       0.0100      0.02  Q      V  |          |          |          |
13+50       0.0101      0.02  Q      V  |          |          |          |
13+55       0.0102      0.02  Q      V  |          |          |          |
14+ 0       0.0104      0.02  Q      V  |          |          |          |
14+ 5       0.0105      0.02  Q      V  |          |          |          |
14+10       0.0107      0.03  Q      V  |          |          |          |
14+15       0.0109      0.03  Q       V |          |          |          |
14+20       0.0111      0.03  Q       V |          |          |          |
14+25       0.0113      0.03  Q       V |          |          |          |
14+30       0.0115      0.03  Q       V |          |          |          |
14+35       0.0117      0.03  Q       V |          |          |          |
14+40       0.0119      0.03  Q       V |          |          |          |
14+45       0.0122      0.03  Q       V |          |          |          |
14+50       0.0124      0.03  Q        V|          |          |          |
14+55       0.0126      0.03  Q        V|          |          |          |
15+ 0       0.0129      0.03  Q        V|          |          |          |
15+ 5       0.0131      0.04  Q        V|          |          |          |
15+10       0.0134      0.04  Q        V|          |          |          |
15+15       0.0136      0.04  Q         V          |          |          |
15+20       0.0139      0.04  Q         V          |          |          |
15+25       0.0142      0.04  Q         V          |          |          |
15+30       0.0145      0.04  Q         V          |          |          |
15+35       0.0148      0.05  Q         V          |          |          |
15+40       0.0151      0.05  Q         |V         |          |          |
15+45       0.0155      0.05  Q         |V         |          |          |
15+50       0.0159      0.06  Q         |V         |          |          |
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15+55       0.0163      0.06  Q          |V         |          |          |
16+ 0       0.0168      0.07  Q          | V        |          |          |
16+ 5       0.0202      0.49  |Q         |   V      |          |          |
16+10       0.0341      2.02  |        Q |          |    V     |          |
16+15       0.0439      1.42  |    Q     |          |          | V        |
16+20       0.0461      0.33  |Q         |          |          |  V       |
16+25       0.0469      0.12  Q          |          |          |   V      |
16+30       0.0473      0.05  Q          |          |          |   V      |
16+35       0.0475      0.04  Q          |          |          |   V      |
16+40       0.0478      0.04  Q          |          |          |    V     |
16+45       0.0480      0.04  Q          |          |          |    V     |
16+50       0.0483      0.03  Q          |          |          |    V     |
16+55       0.0485      0.03  Q          |          |          |    V     |
17+ 0       0.0487      0.03  Q          |          |          |    V     |
17+ 5       0.0489      0.03  Q          |          |          |    V     |
17+10       0.0491      0.03  Q          |          |          |     V    |
17+15       0.0492      0.02  Q          |          |          |     V    |
17+20       0.0494      0.02  Q          |          |          |     V    |
17+25       0.0495      0.02  Q          |          |          |     V    |
17+30       0.0496      0.02  Q          |          |          |     V    |
17+35       0.0498      0.02  Q          |          |          |     V    |
17+40       0.0499      0.02  Q          |          |          |     V    |
17+45       0.0500      0.02  Q          |          |          |     V    |
17+50       0.0501      0.02  Q          |          |          |     V    |
17+55       0.0503      0.02  Q          |          |          |     V    |
18+ 0       0.0504      0.02  Q          |          |          |      V   |
18+ 5       0.0505      0.02  Q          |          |          |      V   |
18+10       0.0506      0.01  Q          |          |          |      V   |
18+15       0.0507      0.01  Q          |          |          |      V   |
18+20       0.0507      0.01  Q          |          |          |      V   |
18+25       0.0508      0.01  Q          |          |          |      V   |
18+30       0.0509      0.01  Q          |          |          |      V   |
18+35       0.0510      0.01  Q          |          |          |      V   |
18+40       0.0511      0.01  Q          |          |          |      V   |
18+45       0.0511      0.01  Q          |          |          |      V   |
18+50       0.0512      0.01  Q          |          |          |      V   |
18+55       0.0513      0.01  Q          |          |          |      V   |
19+ 0       0.0513      0.01  Q          |          |          |      V   |
19+ 5       0.0514      0.01  Q          |          |          |      V   |
19+10       0.0515      0.01  Q          |          |          |      V   |
19+15       0.0515      0.01  Q          |          |          |      V   |
19+20       0.0516      0.01  Q          |          |          |      V   |
19+25       0.0517      0.01  Q          |          |          |       V  |
19+30       0.0517      0.01  Q          |          |          |       V  |
19+35       0.0518      0.01  Q          |          |          |       V  |
19+40       0.0519      0.01  Q          |          |          |       V  |
19+45       0.0519      0.01  Q          |          |          |       V  |
19+50       0.0520      0.01  Q          |          |          |       V  |
19+55       0.0520      0.01  Q          |          |          |       V  |
20+ 0       0.0521      0.01  Q          |          |          |       V  |
```

20+ 5	0.0522	0.01	Q	|	|	|	V |
20+10	0.0522	0.01	Q	|	|	|	V |
20+15	0.0523	0.01	Q	|	|	|	V |
20+20	0.0523	0.01	Q	|	|	|	V |
20+25	0.0524	0.01	Q	|	|	|	V |
20+30	0.0524	0.01	Q	|	|	|	V |
20+35	0.0525	0.01	Q	|	|	|	V |
20+40	0.0525	0.01	Q	|	|	|	V |
20+45	0.0526	0.01	Q	|	|	|	V |
20+50	0.0526	0.01	Q	|	|	|	V |
20+55	0.0527	0.01	Q	|	|	|	V |
21+ 0	0.0527	0.01	Q	|	|	|	V |
21+ 5	0.0528	0.01	Q	|	|	|	V |
21+10	0.0528	0.01	Q	|	|	|	V |
21+15	0.0529	0.01	Q	|	|	|	V |
21+20	0.0529	0.01	Q	|	|	|	V |
21+25	0.0530	0.01	Q	|	|	|	V|
21+30	0.0530	0.01	Q	|	|	|	V|
21+35	0.0531	0.01	Q	|	|	|	V|
21+40	0.0531	0.01	Q	|	|	|	V|
21+45	0.0532	0.01	Q	|	|	|	V|
21+50	0.0532	0.01	Q	|	|	|	V|
21+55	0.0533	0.01	Q	|	|	|	V|
22+ 0	0.0533	0.01	Q	|	|	|	V|
22+ 5	0.0534	0.01	Q	|	|	|	V|
22+10	0.0534	0.01	Q	|	|	|	V|
22+15	0.0534	0.01	Q	|	|	|	V|
22+20	0.0535	0.01	Q	|	|	|	V|
22+25	0.0535	0.01	Q	|	|	|	V|
22+30	0.0536	0.01	Q	|	|	|	V|
22+35	0.0536	0.01	Q	|	|	|	V|
22+40	0.0537	0.01	Q	|	|	|	V|
22+45	0.0537	0.01	Q	|	|	|	V|
22+50	0.0537	0.01	Q	|	|	|	V|
22+55	0.0538	0.01	Q	|	|	|	V|
23+ 0	0.0538	0.01	Q	|	|	|	V|
23+ 5	0.0539	0.01	Q	|	|	|	V|
23+10	0.0539	0.01	Q	|	|	|	V|
23+15	0.0539	0.01	Q	|	|	|	V|
23+20	0.0540	0.01	Q	|	|	|	V|
23+25	0.0540	0.01	Q	|	|	|	V|
23+30	0.0541	0.01	Q	|	|	|	V|
23+35	0.0541	0.01	Q	|	|	|	V|
23+40	0.0541	0.01	Q	|	|	|	V|
23+45	0.0542	0.01	Q	|	|	|	V|
23+50	0.0542	0.01	Q	|	|	|	V|
23+55	0.0543	0.01	Q	|	|	|	V|
24+ 0	0.0543	0.01	Q	|	|	|	V|

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: 03/26/25

5885 SCHAEFER PROPOSED DRAINAGE AREA C 2YR HYDROLOGY

Program License Serial Number 6683

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

Rational hydrology study storm event year is 2.0
10 Year storm 1 hour rainfall = 0.925(In.)
100 Year storm 1 hour rainfall = 1.480(In.)
Computed rainfall intensity:
Storm year = 2.00 1 hour rainfall = 0.537 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 0.000(Ft.) to Point/Station 578.000(Ft.)
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 578.000(Ft.)
Top (of initial area) elevation = 699.370(Ft.)
Bottom (of initial area) elevation = 687.730(Ft.)
Difference in elevation = 11.640(Ft.)
Slope = 0.02014 s(%)= 2.01

TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.450 min.
Rainfall intensity = 1.741(In/Hr) for a 2.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.872
Subarea runoff = 6.131(CFS)
Total initial stream area = 4.040(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)
End of computations, Total Study Area = 4.04 (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 = 69.0

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

Study date 03/26/25

++

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

Program License Serial Number 6683

5885 Schaefer Proposed Drainage Area C 10 Yr Hydrograph

Storm Event Year = 10

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		
4.04	1	0.93
Rainfall data for year 10		
4.04	6	2.35
Rainfall data for year 10		
4.04	24	4.10

++

******** 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)
69.0	69.0	4.04	1.000	0.548	0.980	0.537

Area-averaged adjusted loss rate Fm (In/Hr) = 0.537

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
3.96	0.980	69.0	69.0	4.49	0.325
0.08	0.020	98.0	98.0	0.20	0.943

Area-averaged catchment yield fraction, Y = 0.337
Area-averaged low loss fraction, Yb = 0.663
User entry of time of concentration = 0.140 (hours)
++
Watershed area = 4.04(Ac.)
Catchment Lag time = 0.112 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 74.4048
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.537(In/Hr)
Average low loss rate fraction (Yb) = 0.663 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.237(In)
Computed peak 30-minute rainfall = 0.617(In)
Specified peak 1-hour rainfall = 0.925(In)
Computed peak 3-hour rainfall = 1.720(In)
Specified peak 6-hour rainfall = 2.350(In)
Specified peak 24-hour rainfall = 4.100(In)

Note: user specified rainfall values used.
Rainfall depth area reduction factors:
Using a total area of 4.04(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.237(In)
30-minute factor = 1.000 Adjusted rainfall = 0.617(In)
1-hour factor = 1.000 Adjusted rainfall = 0.925(In)
3-hour factor = 1.000 Adjusted rainfall = 1.720(In)
6-hour factor = 1.000 Adjusted rainfall = 2.350(In)
24-hour factor = 1.000 Adjusted rainfall = 4.100(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 = 48.86 (CFS))	
1	9.857	4.816
2	58.164	23.602
3	91.715	16.393
4	98.412	3.272
5	100.000	0.776

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2370	0.2370
2	0.3431	0.1061
3	0.4260	0.0829
4	0.4968	0.0707
5	0.5597	0.0629
6	0.6169	0.0572
7	0.6750	0.0581
8	0.7298	0.0548
9	0.7818	0.0520
10	0.8314	0.0496
11	0.8790	0.0476
12	0.9248	0.0458
13	0.9676	0.0428
14	1.0089	0.0414
15	1.0490	0.0401
16	1.0880	0.0389
17	1.1259	0.0379
18	1.1628	0.0369
19	1.1989	0.0361
20	1.2341	0.0352
21	1.2686	0.0345
22	1.3023	0.0338
23	1.3355	0.0331
24	1.3679	0.0325
25	1.3998	0.0319
26	1.4312	0.0314
27	1.4620	0.0308
28	1.4924	0.0303
29	1.5222	0.0299
30	1.5517	0.0294
31	1.5807	0.0290
32	1.6093	0.0286
33	1.6375	0.0282
34	1.6653	0.0278
35	1.6928	0.0275
36	1.7200	0.0271

37	1.7413	0.0214
38	1.7623	0.0210
39	1.7831	0.0207
40	1.8035	0.0204
41	1.8237	0.0202
42	1.8436	0.0199
43	1.8632	0.0196
44	1.8826	0.0194
45	1.9018	0.0191
46	1.9207	0.0189
47	1.9394	0.0187
48	1.9578	0.0185
49	1.9761	0.0183
50	1.9941	0.0181
51	2.0120	0.0179
52	2.0297	0.0177
53	2.0472	0.0175
54	2.0645	0.0173
55	2.0816	0.0171
56	2.0985	0.0170
57	2.1153	0.0168
58	2.1320	0.0166
59	2.1484	0.0165
60	2.1648	0.0163
61	2.1809	0.0162
62	2.1970	0.0160
63	2.2128	0.0159
64	2.2286	0.0157
65	2.2442	0.0156
66	2.2597	0.0155
67	2.2750	0.0154
68	2.2903	0.0152
69	2.3054	0.0151
70	2.3204	0.0150
71	2.3352	0.0149
72	2.3500	0.0148
73	2.3630	0.0130
74	2.3760	0.0129
75	2.3888	0.0128
76	2.4015	0.0127
77	2.4142	0.0126
78	2.4267	0.0125
79	2.4392	0.0124
80	2.4515	0.0123
81	2.4638	0.0123
82	2.4759	0.0122
83	2.4880	0.0121
84	2.5000	0.0120
85	2.5119	0.0119
86	2.5237	0.0118

87	2.5355	0.0117
88	2.5471	0.0117
89	2.5587	0.0116
90	2.5702	0.0115
91	2.5816	0.0114
92	2.5930	0.0114
93	2.6043	0.0113
94	2.6155	0.0112
95	2.6266	0.0111
96	2.6377	0.0111
97	2.6487	0.0110
98	2.6596	0.0109
99	2.6705	0.0109
100	2.6813	0.0108
101	2.6920	0.0107
102	2.7027	0.0107
103	2.7133	0.0106
104	2.7238	0.0105
105	2.7343	0.0105
106	2.7447	0.0104
107	2.7551	0.0104
108	2.7654	0.0103
109	2.7757	0.0103
110	2.7859	0.0102
111	2.7960	0.0101
112	2.8061	0.0101
113	2.8161	0.0100
114	2.8261	0.0100
115	2.8360	0.0099
116	2.8459	0.0099
117	2.8557	0.0098
118	2.8655	0.0098
119	2.8752	0.0097
120	2.8849	0.0097
121	2.8945	0.0096
122	2.9041	0.0096
123	2.9136	0.0095
124	2.9231	0.0095
125	2.9326	0.0094
126	2.9420	0.0094
127	2.9513	0.0094
128	2.9606	0.0093
129	2.9699	0.0093
130	2.9791	0.0092
131	2.9883	0.0092
132	2.9974	0.0091
133	3.0065	0.0091
134	3.0156	0.0091
135	3.0246	0.0090
136	3.0336	0.0090

137	3.0425	0.0089
138	3.0514	0.0089
139	3.0603	0.0089
140	3.0691	0.0088
141	3.0779	0.0088
142	3.0866	0.0087
143	3.0953	0.0087
144	3.1040	0.0087
145	3.1126	0.0086
146	3.1212	0.0086
147	3.1298	0.0086
148	3.1383	0.0085
149	3.1468	0.0085
150	3.1553	0.0085
151	3.1637	0.0084
152	3.1721	0.0084
153	3.1805	0.0084
154	3.1888	0.0083
155	3.1971	0.0083
156	3.2054	0.0083
157	3.2136	0.0082
158	3.2218	0.0082
159	3.2300	0.0082
160	3.2381	0.0081
161	3.2462	0.0081
162	3.2543	0.0081
163	3.2624	0.0081
164	3.2704	0.0080
165	3.2784	0.0080
166	3.2863	0.0080
167	3.2943	0.0079
168	3.3022	0.0079
169	3.3101	0.0079
170	3.3179	0.0078
171	3.3257	0.0078
172	3.3335	0.0078
173	3.3413	0.0078
174	3.3490	0.0077
175	3.3567	0.0077
176	3.3644	0.0077
177	3.3721	0.0077
178	3.3797	0.0076
179	3.3873	0.0076
180	3.3949	0.0076
181	3.4025	0.0076
182	3.4100	0.0075
183	3.4175	0.0075
184	3.4250	0.0075
185	3.4325	0.0075
186	3.4399	0.0074

187	3.4473	0.0074
188	3.4547	0.0074
189	3.4621	0.0074
190	3.4694	0.0073
191	3.4767	0.0073
192	3.4840	0.0073
193	3.4913	0.0073
194	3.4986	0.0073
195	3.5058	0.0072
196	3.5130	0.0072
197	3.5202	0.0072
198	3.5274	0.0072
199	3.5345	0.0071
200	3.5416	0.0071
201	3.5487	0.0071
202	3.5558	0.0071
203	3.5628	0.0071
204	3.5699	0.0070
205	3.5769	0.0070
206	3.5839	0.0070
207	3.5909	0.0070
208	3.5978	0.0070
209	3.6048	0.0069
210	3.6117	0.0069
211	3.6186	0.0069
212	3.6254	0.0069
213	3.6323	0.0069
214	3.6391	0.0068
215	3.6460	0.0068
216	3.6528	0.0068
217	3.6595	0.0068
218	3.6663	0.0068
219	3.6730	0.0067
220	3.6798	0.0067
221	3.6865	0.0067
222	3.6932	0.0067
223	3.6998	0.0067
224	3.7065	0.0067
225	3.7131	0.0066
226	3.7197	0.0066
227	3.7263	0.0066
228	3.7329	0.0066
229	3.7395	0.0066
230	3.7460	0.0065
231	3.7526	0.0065
232	3.7591	0.0065
233	3.7656	0.0065
234	3.7720	0.0065
235	3.7785	0.0065
236	3.7850	0.0064

237	3.7914	0.0064
238	3.7978	0.0064
239	3.8042	0.0064
240	3.8106	0.0064
241	3.8169	0.0064
242	3.8233	0.0064
243	3.8296	0.0063
244	3.8360	0.0063
245	3.8423	0.0063
246	3.8485	0.0063
247	3.8548	0.0063
248	3.8611	0.0063
249	3.8673	0.0062
250	3.8736	0.0062
251	3.8798	0.0062
252	3.8860	0.0062
253	3.8921	0.0062
254	3.8983	0.0062
255	3.9045	0.0062
256	3.9106	0.0061
257	3.9167	0.0061
258	3.9228	0.0061
259	3.9289	0.0061
260	3.9350	0.0061
261	3.9411	0.0061
262	3.9472	0.0061
263	3.9532	0.0060
264	3.9592	0.0060
265	3.9652	0.0060
266	3.9712	0.0060
267	3.9772	0.0060
268	3.9832	0.0060
269	3.9892	0.0060
270	3.9951	0.0059
271	4.0010	0.0059
272	4.0070	0.0059
273	4.0129	0.0059
274	4.0188	0.0059
275	4.0246	0.0059
276	4.0305	0.0059
277	4.0364	0.0059
278	4.0422	0.0058
279	4.0480	0.0058
280	4.0539	0.0058
281	4.0597	0.0058
282	4.0655	0.0058
283	4.0713	0.0058
284	4.0770	0.0058
285	4.0828	0.0058
286	4.0885	0.0057

287	4.0943	0.0057	
288	4.1000	0.0057	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0057	0.0038	0.0019
2	0.0057	0.0038	0.0019
3	0.0058	0.0038	0.0019
4	0.0058	0.0038	0.0019
5	0.0058	0.0038	0.0020
6	0.0058	0.0038	0.0020
7	0.0058	0.0039	0.0020
8	0.0058	0.0039	0.0020
9	0.0059	0.0039	0.0020
10	0.0059	0.0039	0.0020
11	0.0059	0.0039	0.0020
12	0.0059	0.0039	0.0020
13	0.0059	0.0039	0.0020
14	0.0060	0.0040	0.0020
15	0.0060	0.0040	0.0020
16	0.0060	0.0040	0.0020
17	0.0060	0.0040	0.0020
18	0.0060	0.0040	0.0020
19	0.0061	0.0040	0.0020
20	0.0061	0.0040	0.0021
21	0.0061	0.0041	0.0021
22	0.0061	0.0041	0.0021
23	0.0062	0.0041	0.0021
24	0.0062	0.0041	0.0021
25	0.0062	0.0041	0.0021
26	0.0062	0.0041	0.0021
27	0.0062	0.0041	0.0021
28	0.0063	0.0041	0.0021
29	0.0063	0.0042	0.0021
30	0.0063	0.0042	0.0021
31	0.0063	0.0042	0.0021
32	0.0064	0.0042	0.0021
33	0.0064	0.0042	0.0022
34	0.0064	0.0042	0.0022
35	0.0064	0.0043	0.0022
36	0.0064	0.0043	0.0022
37	0.0065	0.0043	0.0022
38	0.0065	0.0043	0.0022
39	0.0065	0.0043	0.0022
40	0.0065	0.0043	0.0022
41	0.0066	0.0044	0.0022
42	0.0066	0.0044	0.0022
43	0.0066	0.0044	0.0022

44	0.0067	0.0044	0.0022
45	0.0067	0.0044	0.0023
46	0.0067	0.0044	0.0023
47	0.0067	0.0045	0.0023
48	0.0068	0.0045	0.0023
49	0.0068	0.0045	0.0023
50	0.0068	0.0045	0.0023
51	0.0069	0.0045	0.0023
52	0.0069	0.0046	0.0023
53	0.0069	0.0046	0.0023
54	0.0069	0.0046	0.0023
55	0.0070	0.0046	0.0024
56	0.0070	0.0046	0.0024
57	0.0070	0.0047	0.0024
58	0.0071	0.0047	0.0024
59	0.0071	0.0047	0.0024
60	0.0071	0.0047	0.0024
61	0.0072	0.0047	0.0024
62	0.0072	0.0048	0.0024
63	0.0072	0.0048	0.0024
64	0.0073	0.0048	0.0024
65	0.0073	0.0048	0.0025
66	0.0073	0.0049	0.0025
67	0.0074	0.0049	0.0025
68	0.0074	0.0049	0.0025
69	0.0074	0.0049	0.0025
70	0.0075	0.0049	0.0025
71	0.0075	0.0050	0.0025
72	0.0075	0.0050	0.0025
73	0.0076	0.0050	0.0026
74	0.0076	0.0050	0.0026
75	0.0077	0.0051	0.0026
76	0.0077	0.0051	0.0026
77	0.0077	0.0051	0.0026
78	0.0078	0.0051	0.0026
79	0.0078	0.0052	0.0026
80	0.0078	0.0052	0.0026
81	0.0079	0.0052	0.0027
82	0.0079	0.0053	0.0027
83	0.0080	0.0053	0.0027
84	0.0080	0.0053	0.0027
85	0.0081	0.0054	0.0027
86	0.0081	0.0054	0.0027
87	0.0082	0.0054	0.0028
88	0.0082	0.0054	0.0028
89	0.0083	0.0055	0.0028
90	0.0083	0.0055	0.0028
91	0.0084	0.0055	0.0028
92	0.0084	0.0056	0.0028
93	0.0085	0.0056	0.0029

94	0.0085	0.0056	0.0029
95	0.0086	0.0057	0.0029
96	0.0086	0.0057	0.0029
97	0.0087	0.0057	0.0029
98	0.0087	0.0058	0.0029
99	0.0088	0.0058	0.0030
100	0.0088	0.0058	0.0030
101	0.0089	0.0059	0.0030
102	0.0089	0.0059	0.0030
103	0.0090	0.0060	0.0030
104	0.0091	0.0060	0.0031
105	0.0091	0.0061	0.0031
106	0.0092	0.0061	0.0031
107	0.0093	0.0061	0.0031
108	0.0093	0.0062	0.0031
109	0.0094	0.0062	0.0032
110	0.0094	0.0063	0.0032
111	0.0095	0.0063	0.0032
112	0.0096	0.0063	0.0032
113	0.0097	0.0064	0.0033
114	0.0097	0.0064	0.0033
115	0.0098	0.0065	0.0033
116	0.0099	0.0065	0.0033
117	0.0100	0.0066	0.0034
118	0.0100	0.0066	0.0034
119	0.0101	0.0067	0.0034
120	0.0102	0.0068	0.0034
121	0.0103	0.0068	0.0035
122	0.0104	0.0069	0.0035
123	0.0105	0.0069	0.0035
124	0.0105	0.0070	0.0036
125	0.0107	0.0071	0.0036
126	0.0107	0.0071	0.0036
127	0.0109	0.0072	0.0037
128	0.0109	0.0072	0.0037
129	0.0111	0.0073	0.0037
130	0.0111	0.0074	0.0038
131	0.0113	0.0075	0.0038
132	0.0114	0.0075	0.0038
133	0.0115	0.0076	0.0039
134	0.0116	0.0077	0.0039
135	0.0117	0.0078	0.0040
136	0.0118	0.0078	0.0040
137	0.0120	0.0079	0.0040
138	0.0121	0.0080	0.0041
139	0.0123	0.0081	0.0041
140	0.0123	0.0082	0.0042
141	0.0125	0.0083	0.0042
142	0.0126	0.0084	0.0043
143	0.0128	0.0085	0.0043

144	0.0129	0.0086	0.0044
145	0.0148	0.0098	0.0050
146	0.0149	0.0099	0.0050
147	0.0151	0.0100	0.0051
148	0.0152	0.0101	0.0051
149	0.0155	0.0103	0.0052
150	0.0156	0.0103	0.0053
151	0.0159	0.0105	0.0054
152	0.0160	0.0106	0.0054
153	0.0163	0.0108	0.0055
154	0.0165	0.0109	0.0056
155	0.0168	0.0111	0.0057
156	0.0170	0.0112	0.0057
157	0.0173	0.0115	0.0058
158	0.0175	0.0116	0.0059
159	0.0179	0.0118	0.0060
160	0.0181	0.0120	0.0061
161	0.0185	0.0122	0.0062
162	0.0187	0.0124	0.0063
163	0.0191	0.0127	0.0065
164	0.0194	0.0128	0.0065
165	0.0199	0.0132	0.0067
166	0.0202	0.0134	0.0068
167	0.0207	0.0137	0.0070
168	0.0210	0.0139	0.0071
169	0.0271	0.0180	0.0092
170	0.0275	0.0182	0.0093
171	0.0282	0.0187	0.0095
172	0.0286	0.0190	0.0096
173	0.0294	0.0195	0.0099
174	0.0299	0.0198	0.0101
175	0.0308	0.0204	0.0104
176	0.0314	0.0208	0.0106
177	0.0325	0.0215	0.0110
178	0.0331	0.0219	0.0112
179	0.0345	0.0229	0.0116
180	0.0352	0.0234	0.0119
181	0.0369	0.0245	0.0125
182	0.0379	0.0251	0.0128
183	0.0401	0.0266	0.0135
184	0.0414	0.0274	0.0139
185	0.0458	0.0304	0.0155
186	0.0476	0.0315	0.0161
187	0.0520	0.0345	0.0175
188	0.0548	0.0363	0.0185
189	0.0572	0.0379	0.0193
190	0.0629	0.0417	0.0212
191	0.0829	0.0447	0.0382
192	0.1061	0.0447	0.0614
193	0.2370	0.0447	0.1922

194	0.0707	0.0447	0.0260
195	0.0581	0.0385	0.0196
196	0.0496	0.0329	0.0167
197	0.0428	0.0283	0.0144
198	0.0389	0.0258	0.0131
199	0.0361	0.0239	0.0122
200	0.0338	0.0224	0.0114
201	0.0319	0.0211	0.0108
202	0.0303	0.0201	0.0102
203	0.0290	0.0192	0.0098
204	0.0278	0.0185	0.0094
205	0.0214	0.0141	0.0072
206	0.0204	0.0135	0.0069
207	0.0196	0.0130	0.0066
208	0.0189	0.0125	0.0064
209	0.0183	0.0121	0.0062
210	0.0177	0.0117	0.0060
211	0.0171	0.0114	0.0058
212	0.0166	0.0110	0.0056
213	0.0162	0.0107	0.0055
214	0.0157	0.0104	0.0053
215	0.0154	0.0102	0.0052
216	0.0150	0.0099	0.0051
217	0.0130	0.0086	0.0044
218	0.0127	0.0084	0.0043
219	0.0124	0.0082	0.0042
220	0.0122	0.0081	0.0041
221	0.0119	0.0079	0.0040
222	0.0117	0.0077	0.0039
223	0.0114	0.0076	0.0039
224	0.0112	0.0074	0.0038
225	0.0110	0.0073	0.0037
226	0.0108	0.0072	0.0036
227	0.0106	0.0070	0.0036
228	0.0104	0.0069	0.0035
229	0.0103	0.0068	0.0035
230	0.0101	0.0067	0.0034
231	0.0099	0.0066	0.0033
232	0.0098	0.0065	0.0033
233	0.0096	0.0064	0.0032
234	0.0095	0.0063	0.0032
235	0.0094	0.0062	0.0032
236	0.0092	0.0061	0.0031
237	0.0091	0.0060	0.0031
238	0.0090	0.0059	0.0030
239	0.0089	0.0059	0.0030
240	0.0087	0.0058	0.0029
241	0.0086	0.0057	0.0029
242	0.0085	0.0057	0.0029
243	0.0084	0.0056	0.0028

244	0.0083	0.0055	0.0028
245	0.0082	0.0055	0.0028
246	0.0081	0.0054	0.0027
247	0.0081	0.0053	0.0027
248	0.0080	0.0053	0.0027
249	0.0079	0.0052	0.0027
250	0.0078	0.0052	0.0026
251	0.0077	0.0051	0.0026
252	0.0076	0.0051	0.0026
253	0.0076	0.0050	0.0025
254	0.0075	0.0050	0.0025
255	0.0074	0.0049	0.0025
256	0.0073	0.0049	0.0025
257	0.0073	0.0048	0.0025
258	0.0072	0.0048	0.0024
259	0.0071	0.0047	0.0024
260	0.0071	0.0047	0.0024
261	0.0070	0.0046	0.0024
262	0.0070	0.0046	0.0023
263	0.0069	0.0046	0.0023
264	0.0068	0.0045	0.0023
265	0.0068	0.0045	0.0023
266	0.0067	0.0045	0.0023
267	0.0067	0.0044	0.0022
268	0.0066	0.0044	0.0022
269	0.0066	0.0044	0.0022
270	0.0065	0.0043	0.0022
271	0.0065	0.0043	0.0022
272	0.0064	0.0043	0.0022
273	0.0064	0.0042	0.0021
274	0.0063	0.0042	0.0021
275	0.0063	0.0042	0.0021
276	0.0062	0.0041	0.0021
277	0.0062	0.0041	0.0021
278	0.0061	0.0041	0.0021
279	0.0061	0.0040	0.0021
280	0.0061	0.0040	0.0020
281	0.0060	0.0040	0.0020
282	0.0060	0.0040	0.0020
283	0.0059	0.0039	0.0020
284	0.0059	0.0039	0.0020
285	0.0059	0.0039	0.0020
286	0.0058	0.0039	0.0020
287	0.0058	0.0038	0.0019
288	0.0057	0.0038	0.0019

Total soil rain loss = 2.57(In)
Total effective rainfall = 1.53(In)
Peak flow rate in flood hydrograph = 5.81(CFS)

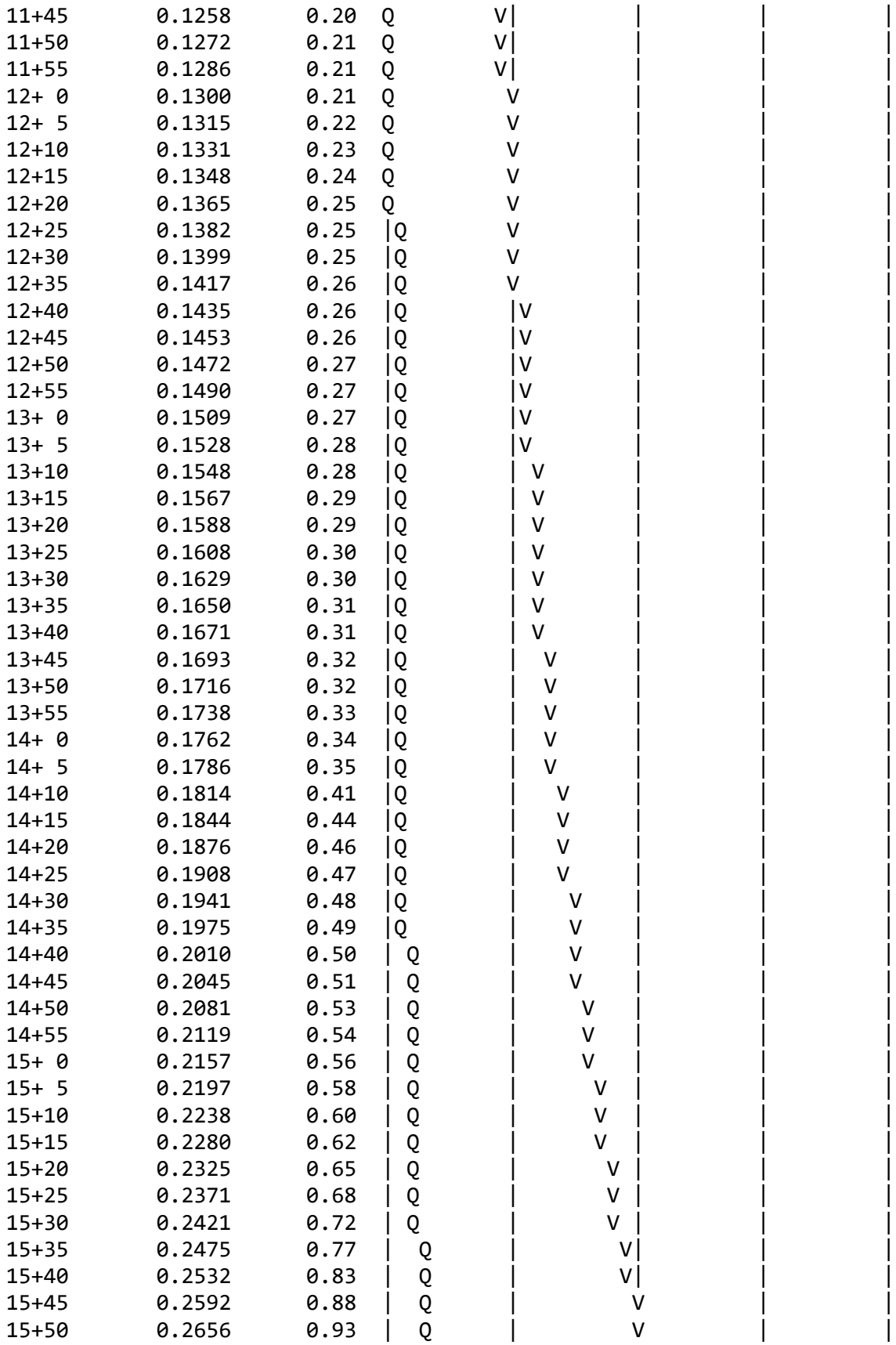
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

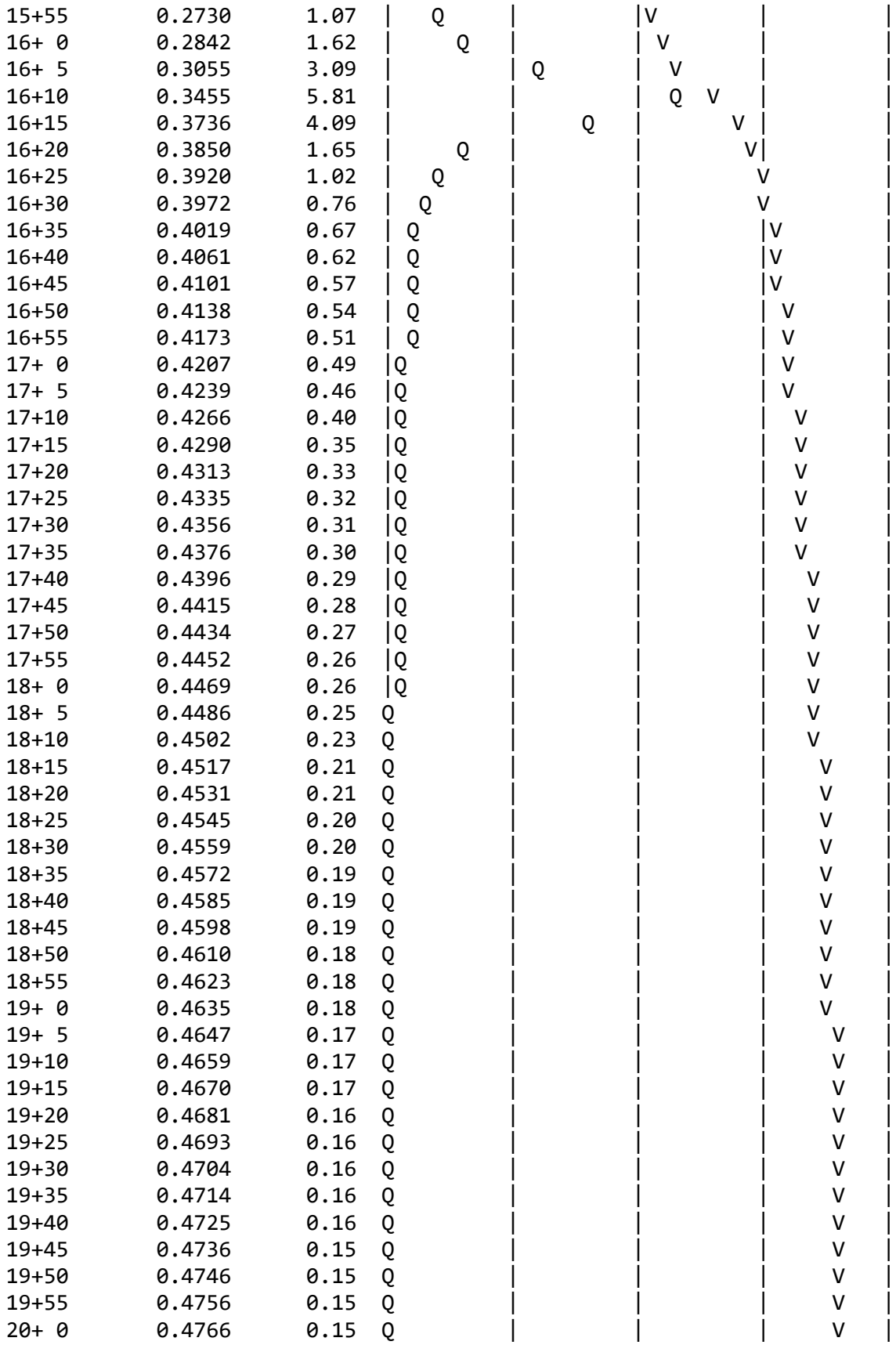
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q				
0+10	0.0004	0.05	Q				
0+15	0.0010	0.09	Q				
0+20	0.0017	0.09	Q				
0+25	0.0023	0.09	Q				
0+30	0.0030	0.10	Q				
0+35	0.0036	0.10	Q				
0+40	0.0043	0.10	Q				
0+45	0.0050	0.10	Q				
0+50	0.0056	0.10	Q				
0+55	0.0063	0.10	Q				
1+ 0	0.0070	0.10	Q				
1+ 5	0.0076	0.10	Q				
1+10	0.0083	0.10	Q				
1+15	0.0090	0.10	Q				
1+20	0.0097	0.10	Q				
1+25	0.0104	0.10	Q				
1+30	0.0110	0.10	Q				
1+35	0.0117	0.10	Q				
1+40	0.0124	0.10	Q				
1+45	0.0131	0.10	QV				
1+50	0.0138	0.10	QV				
1+55	0.0145	0.10	QV				
2+ 0	0.0152	0.10	QV				
2+ 5	0.0159	0.10	QV				
2+10	0.0166	0.10	QV				
2+15	0.0173	0.10	QV				
2+20	0.0180	0.10	QV				
2+25	0.0187	0.10	QV				
2+30	0.0194	0.10	QV				
2+35	0.0201	0.10	QV				
2+40	0.0208	0.10	QV				
2+45	0.0216	0.10	QV				
2+50	0.0223	0.10	QV				
2+55	0.0230	0.11	QV				
3+ 0	0.0237	0.11	QV				
3+ 5	0.0245	0.11	QV				
3+10	0.0252	0.11	QV				
3+15	0.0259	0.11	Q V				
3+20	0.0267	0.11	Q V				

3+25	0.0274	0.11	Q V	|	|	|	|
3+30	0.0282	0.11	Q V	|	|	|	|
3+35	0.0289	0.11	Q V	|	|	|	|
3+40	0.0297	0.11	Q V	|	|	|	|
3+45	0.0304	0.11	Q V	|	|	|	|
3+50	0.0312	0.11	Q V	|	|	|	|
3+55	0.0319	0.11	Q V	|	|	|	|
4+ 0	0.0327	0.11	Q V	|	|	|	|
4+ 5	0.0335	0.11	Q V	|	|	|	|
4+10	0.0342	0.11	Q V	|	|	|	|
4+15	0.0350	0.11	Q V	|	|	|	|
4+20	0.0358	0.11	Q V	|	|	|	|
4+25	0.0366	0.11	Q V	|	|	|	|
4+30	0.0374	0.11	Q V	|	|	|	|
4+35	0.0381	0.11	Q V	|	|	|	|
4+40	0.0389	0.11	Q V	|	|	|	|
4+45	0.0397	0.12	Q V	|	|	|	|
4+50	0.0405	0.12	Q V	|	|	|	|
4+55	0.0413	0.12	Q V	|	|	|	|
5+ 0	0.0421	0.12	Q V	|	|	|	|
5+ 5	0.0429	0.12	Q V	|	|	|	|
5+10	0.0437	0.12	Q V	|	|	|	|
5+15	0.0446	0.12	Q V	|	|	|	|
5+20	0.0454	0.12	Q V	|	|	|	|
5+25	0.0462	0.12	Q V	|	|	|	|
5+30	0.0470	0.12	Q V	|	|	|	|
5+35	0.0479	0.12	Q V	|	|	|	|
5+40	0.0487	0.12	Q V	|	|	|	|
5+45	0.0495	0.12	Q V	|	|	|	|
5+50	0.0504	0.12	Q V	|	|	|	|
5+55	0.0512	0.12	Q V	|	|	|	|
6+ 0	0.0521	0.12	Q V	|	|	|	|
6+ 5	0.0529	0.12	Q V	|	|	|	|
6+10	0.0538	0.12	Q V	|	|	|	|
6+15	0.0546	0.13	Q V	|	|	|	|
6+20	0.0555	0.13	Q V	|	|	|	|
6+25	0.0564	0.13	Q V	|	|	|	|
6+30	0.0572	0.13	Q V	|	|	|	|
6+35	0.0581	0.13	Q V	|	|	|	|
6+40	0.0590	0.13	Q V	|	|	|	|
6+45	0.0599	0.13	Q V	|	|	|	|
6+50	0.0608	0.13	Q V	|	|	|	|
6+55	0.0617	0.13	Q V	|	|	|	|
7+ 0	0.0626	0.13	Q V	|	|	|	|
7+ 5	0.0635	0.13	Q V	|	|	|	|
7+10	0.0644	0.13	Q V	|	|	|	|
7+15	0.0653	0.13	Q V	|	|	|	|
7+20	0.0663	0.13	Q V	|	|	|	|
7+25	0.0672	0.13	Q V	|	|	|	|
7+30	0.0681	0.14	Q V	|	|	|	|

7+35	0.0691	0.14	Q	V	|	|	|	|
7+40	0.0700	0.14	Q	V	|	|	|	|
7+45	0.0710	0.14	Q	V	|	|	|	|
7+50	0.0719	0.14	Q	V	|	|	|	|
7+55	0.0729	0.14	Q	V	|	|	|	|
8+ 0	0.0739	0.14	Q	V	|	|	|	|
8+ 5	0.0748	0.14	Q	V	|	|	|	|
8+10	0.0758	0.14	Q	V	|	|	|	|
8+15	0.0768	0.14	Q	V	|	|	|	|
8+20	0.0778	0.14	Q	V	|	|	|	|
8+25	0.0788	0.15	Q	V	|	|	|	|
8+30	0.0798	0.15	Q	V	|	|	|	|
8+35	0.0808	0.15	Q	V	|	|	|	|
8+40	0.0818	0.15	Q	V	|	|	|	|
8+45	0.0829	0.15	Q	V	|	|	|	|
8+50	0.0839	0.15	Q	V	|	|	|	|
8+55	0.0849	0.15	Q	V	|	|	|	|
9+ 0	0.0860	0.15	Q	V	|	|	|	|
9+ 5	0.0870	0.15	Q	V	|	|	|	|
9+10	0.0881	0.15	Q	V	|	|	|	|
9+15	0.0892	0.16	Q	V	|	|	|	|
9+20	0.0902	0.16	Q	V	|	|	|	|
9+25	0.0913	0.16	Q	V	|	|	|	|
9+30	0.0924	0.16	Q	V	|	|	|	|
9+35	0.0935	0.16	Q	V	|	|	|	|
9+40	0.0946	0.16	Q	V	|	|	|	|
9+45	0.0957	0.16	Q	V	|	|	|	|
9+50	0.0969	0.16	Q	V	|	|	|	|
9+55	0.0980	0.16	Q	V	|	|	|	|
10+ 0	0.0992	0.17	Q	V	|	|	|	|
10+ 5	0.1003	0.17	Q	V	|	|	|	|
10+10	0.1015	0.17	Q	V	|	|	|	|
10+15	0.1026	0.17	Q	V	|	|	|	|
10+20	0.1038	0.17	Q	V	|	|	|	|
10+25	0.1050	0.17	Q	V	|	|	|	|
10+30	0.1062	0.17	Q	V	|	|	|	|
10+35	0.1074	0.18	Q	V	|	|	|	|
10+40	0.1087	0.18	Q	V	|	|	|	|
10+45	0.1099	0.18	Q	V	|	|	|	|
10+50	0.1112	0.18	Q	V	|	|	|	|
10+55	0.1124	0.18	Q	V	|	|	|	|
11+ 0	0.1137	0.18	Q	V	|	|	|	|
11+ 5	0.1150	0.19	Q	V	|	|	|	|
11+10	0.1163	0.19	Q	V	|	|	|	|
11+15	0.1176	0.19	Q	V	|	|	|	|
11+20	0.1189	0.19	Q	V	|	|	|	|
11+25	0.1203	0.19	Q	V	|	|	|	|
11+30	0.1216	0.20	Q	V	|	|	|	|
11+35	0.1230	0.20	Q	V	|	|	|	|
11+40	0.1244	0.20	Q	V	|	|	|	|


11+45 0.1258 0.20
11+50 0.1272 0.21
11+55 0.1286 0.21
12+ 0 0.1300 0.21
12+ 5 0.1315 0.22
12+10 0.1331 0.23
12+15 0.1348 0.24
12+20 0.1365 0.25
12+25 0.1382 0.25
12+30 0.1399 0.25
12+35 0.1417 0.26
12+40 0.1435 0.26
12+45 0.1453 0.26
12+50 0.1472 0.27
12+55 0.1490 0.27
13+ 0 0.1509 0.27
13+ 5 0.1528 0.28
13+10 0.1548 0.28
13+15 0.1567 0.29
13+20 0.1588 0.29
13+25 0.1608 0.30
13+30 0.1629 0.30
13+35 0.1650 0.31
13+40 0.1671 0.31
13+45 0.1693 0.32
13+50 0.1716 0.32
13+55 0.1738 0.33
14+ 0 0.1762 0.34
14+ 5 0.1786 0.35
14+10 0.1814 0.41
14+15 0.1844 0.44
14+20 0.1876 0.46
14+25 0.1908 0.47
14+30 0.1941 0.48
14+35 0.1975 0.49
14+40 0.2010 0.50
14+45 0.2045 0.51
14+50 0.2081 0.53
14+55 0.2119 0.54
15+ 0 0.2157 0.56
15+ 5 0.2197 0.58
15+10 0.2238 0.60
15+15 0.2280 0.62
15+20 0.2325 0.65
15+25 0.2371 0.68
15+30 0.2421 0.72
15+35 0.2475 0.77
15+40 0.2532 0.83
15+45 0.2592 0.88
15+50 0.2656 0.93



20+ 5	0.4776	0.14	Q	|	|	|	V |
20+10	0.4786	0.14	Q	|	|	|	V |
20+15	0.4796	0.14	Q	|	|	|	V |
20+20	0.4806	0.14	Q	|	|	|	V |
20+25	0.4815	0.14	Q	|	|	|	V |
20+30	0.4824	0.14	Q	|	|	|	V |
20+35	0.4834	0.13	Q	|	|	|	V |
20+40	0.4843	0.13	Q	|	|	|	V |
20+45	0.4852	0.13	Q	|	|	|	V |
20+50	0.4861	0.13	Q	|	|	|	V |
20+55	0.4870	0.13	Q	|	|	|	V |
21+ 0	0.4879	0.13	Q	|	|	|	V |
21+ 5	0.4887	0.13	Q	|	|	|	V |
21+10	0.4896	0.13	Q	|	|	|	V |
21+15	0.4904	0.12	Q	|	|	|	V |
21+20	0.4913	0.12	Q	|	|	|	V |
21+25	0.4921	0.12	Q	|	|	|	V |
21+30	0.4930	0.12	Q	|	|	|	V |
21+35	0.4938	0.12	Q	|	|	|	V |
21+40	0.4946	0.12	Q	|	|	|	V |
21+45	0.4954	0.12	Q	|	|	|	V |
21+50	0.4962	0.12	Q	|	|	|	V |
21+55	0.4970	0.12	Q	|	|	|	V |
22+ 0	0.4978	0.11	Q	|	|	|	V |
22+ 5	0.4986	0.11	Q	|	|	|	V |
22+10	0.4993	0.11	Q	|	|	|	V |
22+15	0.5001	0.11	Q	|	|	|	V |
22+20	0.5009	0.11	Q	|	|	|	V |
22+25	0.5016	0.11	Q	|	|	|	V |
22+30	0.5024	0.11	Q	|	|	|	V |
22+35	0.5031	0.11	Q	|	|	|	V|
22+40	0.5038	0.11	Q	|	|	|	V|
22+45	0.5046	0.11	Q	|	|	|	V|
22+50	0.5053	0.11	Q	|	|	|	V|
22+55	0.5060	0.10	Q	|	|	|	V|
23+ 0	0.5067	0.10	Q	|	|	|	V|
23+ 5	0.5074	0.10	Q	|	|	|	V|
23+10	0.5081	0.10	Q	|	|	|	V|
23+15	0.5088	0.10	Q	|	|	|	V|
23+20	0.5095	0.10	Q	|	|	|	V|
23+25	0.5102	0.10	Q	|	|	|	V|
23+30	0.5109	0.10	Q	|	|	|	V|
23+35	0.5116	0.10	Q	|	|	|	V|
23+40	0.5123	0.10	Q	|	|	|	V|
23+45	0.5129	0.10	Q	|	|	|	V|
23+50	0.5136	0.10	Q	|	|	|	V|
23+55	0.5143	0.10	Q	|	|	|	V|
24+ 0	0.5149	0.10	Q	|	|	|	V|

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: 03/26/25

5885 SCHAEFER PROPOSED DRAINAGE AREA C 10YR HYDROLOGY

Program License Serial Number 6683

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.925 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 2

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Process from Point/Station 0.000(Ft.) to Point/Station 578.000(Ft.)
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 578.000(Ft.)
Top (of initial area) elevation = 699.370(Ft.)
Bottom (of initial area) elevation = 687.730(Ft.)
Difference in elevation = 11.640(Ft.)
Slope = 0.02014 s(%)= 2.01
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.450 min.

Rainfall intensity = 2.999(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff = 10.704(CFS)
Total initial stream area = 4.040(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)
End of computations, Total Study Area = 4.04 (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 = 69.0

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

Study date 03/26/25

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

Program License Serial Number 6683

5885 Schaefer Proposed Drainage Area C 100 Yr Hydrograph

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 100		
4.04	1	1.48
Rainfall data for year 100		
4.04	6	3.47
Rainfall data for year 100		
4.04	24	6.37

++

******** 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)
69.0	86.2	4.04	1.000	0.262	0.980	0.256

Area-averaged adjusted loss rate Fm (In/Hr) = 0.256

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
3.96	0.980	69.0	86.2	1.60	0.751
0.08	0.020	98.0	98.0	0.20	0.963

Area-averaged catchment yield fraction, Y = 0.755
Area-averaged low loss fraction, Yb = 0.245
User entry of time of concentration = 0.140 (hours)
++
Watershed area = 4.04(Ac.)
Catchment Lag time = 0.112 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 74.4048
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.256(In/Hr)
Average low loss rate fraction (Yb) = 0.245 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.378(In)
Computed peak 30-minute rainfall = 0.986(In)
Specified peak 1-hour rainfall = 1.480(In)
Computed peak 3-hour rainfall = 2.560(In)
Specified peak 6-hour rainfall = 3.470(In)
Specified peak 24-hour rainfall = 6.370(In)

Note: user specified rainfall values used.
Rainfall depth area reduction factors:
Using a total area of 4.04(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.378(In)
30-minute factor = 1.000 Adjusted rainfall = 0.986(In)
1-hour factor = 1.000 Adjusted rainfall = 1.480(In)
3-hour factor = 1.000 Adjusted rainfall = 2.560(In)
6-hour factor = 1.000 Adjusted rainfall = 3.470(In)
24-hour factor = 1.000 Adjusted rainfall = 6.370(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 = 48.86 (CFS))	
1	9.857	4.816
2	58.164	23.602
3	91.715	16.393
4	98.412	3.272
5	100.000	0.776

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.3779	0.3779
2	0.5476	0.1697
3	0.6803	0.1327
4	0.7935	0.1132
5	0.8942	0.1006
6	0.9858	0.0916
7	1.0790	0.0932
8	1.1668	0.0878
9	1.2502	0.0834
10	1.3298	0.0796
11	1.4062	0.0764
12	1.4797	0.0736
13	1.5400	0.0603
14	1.5980	0.0580
15	1.6540	0.0560
16	1.7081	0.0541
17	1.7606	0.0525
18	1.8115	0.0509
19	1.8610	0.0495
20	1.9093	0.0482
21	1.9563	0.0470
22	2.0023	0.0459
23	2.0472	0.0449
24	2.0911	0.0439
25	2.1341	0.0430
26	2.1763	0.0422
27	2.2177	0.0414
28	2.2583	0.0406
29	2.2981	0.0399
30	2.3373	0.0392
31	2.3759	0.0386
32	2.4138	0.0379
33	2.4512	0.0373
34	2.4880	0.0368
35	2.5242	0.0362
36	2.5599	0.0357

37	2.5909	0.0310
38	2.6214	0.0305
39	2.6515	0.0301
40	2.6811	0.0296
41	2.7103	0.0292
42	2.7391	0.0288
43	2.7675	0.0284
44	2.7956	0.0281
45	2.8233	0.0277
46	2.8506	0.0274
47	2.8777	0.0270
48	2.9044	0.0267
49	2.9308	0.0264
50	2.9569	0.0261
51	2.9827	0.0258
52	3.0082	0.0255
53	3.0335	0.0252
54	3.0584	0.0250
55	3.0832	0.0247
56	3.1076	0.0245
57	3.1319	0.0242
58	3.1559	0.0240
59	3.1796	0.0238
60	3.2032	0.0235
61	3.2265	0.0233
62	3.2496	0.0231
63	3.2725	0.0229
64	3.2952	0.0227
65	3.3177	0.0225
66	3.3400	0.0223
67	3.3621	0.0221
68	3.3840	0.0219
69	3.4058	0.0217
70	3.4273	0.0216
71	3.4487	0.0214
72	3.4700	0.0212
73	3.4910	0.0210
74	3.5119	0.0209
75	3.5326	0.0207
76	3.5531	0.0206
77	3.5736	0.0204
78	3.5938	0.0203
79	3.6139	0.0201
80	3.6339	0.0200
81	3.6537	0.0198
82	3.6734	0.0197
83	3.6930	0.0196
84	3.7124	0.0194
85	3.7317	0.0193
86	3.7509	0.0192

87	3.7700	0.0190
88	3.7889	0.0189
89	3.8077	0.0188
90	3.8264	0.0187
91	3.8450	0.0186
92	3.8634	0.0185
93	3.8818	0.0183
94	3.9000	0.0182
95	3.9181	0.0181
96	3.9361	0.0180
97	3.9541	0.0179
98	3.9719	0.0178
99	3.9896	0.0177
100	4.0072	0.0176
101	4.0247	0.0175
102	4.0421	0.0174
103	4.0594	0.0173
104	4.0766	0.0172
105	4.0938	0.0171
106	4.1108	0.0170
107	4.1278	0.0169
108	4.1446	0.0169
109	4.1614	0.0168
110	4.1781	0.0167
111	4.1947	0.0166
112	4.2112	0.0165
113	4.2276	0.0164
114	4.2440	0.0164
115	4.2603	0.0163
116	4.2764	0.0162
117	4.2926	0.0161
118	4.3086	0.0160
119	4.3246	0.0160
120	4.3404	0.0159
121	4.3563	0.0158
122	4.3720	0.0157
123	4.3877	0.0157
124	4.4033	0.0156
125	4.4188	0.0155
126	4.4342	0.0155
127	4.4496	0.0154
128	4.4649	0.0153
129	4.4802	0.0153
130	4.4954	0.0152
131	4.5105	0.0151
132	4.5256	0.0151
133	4.5406	0.0150
134	4.5555	0.0149
135	4.5703	0.0149
136	4.5851	0.0148

137	4.5999	0.0147
138	4.6146	0.0147
139	4.6292	0.0146
140	4.6438	0.0146
141	4.6583	0.0145
142	4.6727	0.0144
143	4.6871	0.0144
144	4.7014	0.0143
145	4.7157	0.0143
146	4.7299	0.0142
147	4.7441	0.0142
148	4.7582	0.0141
149	4.7723	0.0141
150	4.7863	0.0140
151	4.8002	0.0140
152	4.8142	0.0139
153	4.8280	0.0139
154	4.8418	0.0138
155	4.8556	0.0138
156	4.8693	0.0137
157	4.8829	0.0137
158	4.8965	0.0136
159	4.9101	0.0136
160	4.9236	0.0135
161	4.9370	0.0135
162	4.9505	0.0134
163	4.9638	0.0134
164	4.9771	0.0133
165	4.9904	0.0133
166	5.0036	0.0132
167	5.0168	0.0132
168	5.0300	0.0131
169	5.0431	0.0131
170	5.0561	0.0131
171	5.0691	0.0130
172	5.0821	0.0130
173	5.0950	0.0129
174	5.1079	0.0129
175	5.1208	0.0128
176	5.1336	0.0128
177	5.1463	0.0128
178	5.1590	0.0127
179	5.1717	0.0127
180	5.1844	0.0126
181	5.1970	0.0126
182	5.2095	0.0126
183	5.2220	0.0125
184	5.2345	0.0125
185	5.2470	0.0124
186	5.2594	0.0124

187	5.2718	0.0124
188	5.2841	0.0123
189	5.2964	0.0123
190	5.3087	0.0123
191	5.3209	0.0122
192	5.3331	0.0122
193	5.3452	0.0122
194	5.3573	0.0121
195	5.3694	0.0121
196	5.3815	0.0120
197	5.3935	0.0120
198	5.4055	0.0120
199	5.4174	0.0119
200	5.4293	0.0119
201	5.4412	0.0119
202	5.4530	0.0118
203	5.4649	0.0118
204	5.4766	0.0118
205	5.4884	0.0117
206	5.5001	0.0117
207	5.5118	0.0117
208	5.5234	0.0117
209	5.5351	0.0116
210	5.5466	0.0116
211	5.5582	0.0116
212	5.5697	0.0115
213	5.5812	0.0115
214	5.5927	0.0115
215	5.6041	0.0114
216	5.6155	0.0114
217	5.6269	0.0114
218	5.6383	0.0113
219	5.6496	0.0113
220	5.6609	0.0113
221	5.6721	0.0113
222	5.6834	0.0112
223	5.6946	0.0112
224	5.7057	0.0112
225	5.7169	0.0111
226	5.7280	0.0111
227	5.7391	0.0111
228	5.7502	0.0111
229	5.7612	0.0110
230	5.7722	0.0110
231	5.7832	0.0110
232	5.7942	0.0110
233	5.8051	0.0109
234	5.8160	0.0109
235	5.8269	0.0109
236	5.8377	0.0109

237	5.8485	0.0108
238	5.8593	0.0108
239	5.8701	0.0108
240	5.8809	0.0107
241	5.8916	0.0107
242	5.9023	0.0107
243	5.9130	0.0107
244	5.9236	0.0107
245	5.9342	0.0106
246	5.9448	0.0106
247	5.9554	0.0106
248	5.9660	0.0106
249	5.9765	0.0105
250	5.9870	0.0105
251	5.9975	0.0105
252	6.0079	0.0105
253	6.0184	0.0104
254	6.0288	0.0104
255	6.0392	0.0104
256	6.0495	0.0104
257	6.0599	0.0103
258	6.0702	0.0103
259	6.0805	0.0103
260	6.0908	0.0103
261	6.1010	0.0103
262	6.1113	0.0102
263	6.1215	0.0102
264	6.1317	0.0102
265	6.1418	0.0102
266	6.1520	0.0101
267	6.1621	0.0101
268	6.1722	0.0101
269	6.1823	0.0101
270	6.1923	0.0101
271	6.2024	0.0100
272	6.2124	0.0100
273	6.2224	0.0100
274	6.2324	0.0100
275	6.2423	0.0100
276	6.2523	0.0099
277	6.2622	0.0099
278	6.2721	0.0099
279	6.2820	0.0099
280	6.2918	0.0099
281	6.3017	0.0098
282	6.3115	0.0098
283	6.3213	0.0098
284	6.3310	0.0098
285	6.3408	0.0098
286	6.3505	0.0097

287	6.3603	0.0097	
288	6.3700	0.0097	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0097	0.0024	0.0073
2	0.0097	0.0024	0.0073
3	0.0098	0.0024	0.0074
4	0.0098	0.0024	0.0074
5	0.0098	0.0024	0.0074
6	0.0098	0.0024	0.0074
7	0.0099	0.0024	0.0075
8	0.0099	0.0024	0.0075
9	0.0099	0.0024	0.0075
10	0.0100	0.0024	0.0075
11	0.0100	0.0024	0.0076
12	0.0100	0.0025	0.0076
13	0.0101	0.0025	0.0076
14	0.0101	0.0025	0.0076
15	0.0101	0.0025	0.0076
16	0.0101	0.0025	0.0077
17	0.0102	0.0025	0.0077
18	0.0102	0.0025	0.0077
19	0.0103	0.0025	0.0077
20	0.0103	0.0025	0.0078
21	0.0103	0.0025	0.0078
22	0.0103	0.0025	0.0078
23	0.0104	0.0025	0.0078
24	0.0104	0.0025	0.0079
25	0.0105	0.0026	0.0079
26	0.0105	0.0026	0.0079
27	0.0105	0.0026	0.0080
28	0.0106	0.0026	0.0080
29	0.0106	0.0026	0.0080
30	0.0106	0.0026	0.0080
31	0.0107	0.0026	0.0081
32	0.0107	0.0026	0.0081
33	0.0107	0.0026	0.0081
34	0.0108	0.0026	0.0081
35	0.0108	0.0026	0.0082
36	0.0109	0.0027	0.0082
37	0.0109	0.0027	0.0082
38	0.0109	0.0027	0.0083
39	0.0110	0.0027	0.0083
40	0.0110	0.0027	0.0083
41	0.0111	0.0027	0.0084
42	0.0111	0.0027	0.0084
43	0.0111	0.0027	0.0084

44	0.0112	0.0027	0.0084
45	0.0112	0.0027	0.0085
46	0.0113	0.0028	0.0085
47	0.0113	0.0028	0.0085
48	0.0113	0.0028	0.0086
49	0.0114	0.0028	0.0086
50	0.0114	0.0028	0.0086
51	0.0115	0.0028	0.0087
52	0.0115	0.0028	0.0087
53	0.0116	0.0028	0.0088
54	0.0116	0.0028	0.0088
55	0.0117	0.0029	0.0088
56	0.0117	0.0029	0.0088
57	0.0118	0.0029	0.0089
58	0.0118	0.0029	0.0089
59	0.0119	0.0029	0.0090
60	0.0119	0.0029	0.0090
61	0.0120	0.0029	0.0090
62	0.0120	0.0029	0.0091
63	0.0121	0.0030	0.0091
64	0.0121	0.0030	0.0092
65	0.0122	0.0030	0.0092
66	0.0122	0.0030	0.0092
67	0.0123	0.0030	0.0093
68	0.0123	0.0030	0.0093
69	0.0124	0.0030	0.0094
70	0.0124	0.0030	0.0094
71	0.0125	0.0031	0.0095
72	0.0126	0.0031	0.0095
73	0.0126	0.0031	0.0095
74	0.0127	0.0031	0.0096
75	0.0128	0.0031	0.0096
76	0.0128	0.0031	0.0097
77	0.0129	0.0032	0.0097
78	0.0129	0.0032	0.0098
79	0.0130	0.0032	0.0098
80	0.0131	0.0032	0.0099
81	0.0131	0.0032	0.0099
82	0.0132	0.0032	0.0100
83	0.0133	0.0032	0.0100
84	0.0133	0.0033	0.0101
85	0.0134	0.0033	0.0101
86	0.0135	0.0033	0.0102
87	0.0136	0.0033	0.0102
88	0.0136	0.0033	0.0103
89	0.0137	0.0034	0.0103
90	0.0138	0.0034	0.0104
91	0.0139	0.0034	0.0105
92	0.0139	0.0034	0.0105
93	0.0140	0.0034	0.0106

94	0.0141	0.0034	0.0106
95	0.0142	0.0035	0.0107
96	0.0142	0.0035	0.0107
97	0.0143	0.0035	0.0108
98	0.0144	0.0035	0.0109
99	0.0145	0.0036	0.0110
100	0.0146	0.0036	0.0110
101	0.0147	0.0036	0.0111
102	0.0147	0.0036	0.0111
103	0.0149	0.0036	0.0112
104	0.0149	0.0037	0.0113
105	0.0151	0.0037	0.0114
106	0.0151	0.0037	0.0114
107	0.0153	0.0037	0.0115
108	0.0153	0.0037	0.0116
109	0.0155	0.0038	0.0117
110	0.0155	0.0038	0.0117
111	0.0157	0.0038	0.0118
112	0.0157	0.0039	0.0119
113	0.0159	0.0039	0.0120
114	0.0160	0.0039	0.0121
115	0.0161	0.0039	0.0122
116	0.0162	0.0040	0.0122
117	0.0164	0.0040	0.0124
118	0.0164	0.0040	0.0124
119	0.0166	0.0041	0.0125
120	0.0167	0.0041	0.0126
121	0.0169	0.0041	0.0127
122	0.0169	0.0041	0.0128
123	0.0171	0.0042	0.0129
124	0.0172	0.0042	0.0130
125	0.0174	0.0043	0.0132
126	0.0175	0.0043	0.0132
127	0.0177	0.0043	0.0134
128	0.0178	0.0044	0.0135
129	0.0180	0.0044	0.0136
130	0.0181	0.0044	0.0137
131	0.0183	0.0045	0.0139
132	0.0185	0.0045	0.0139
133	0.0187	0.0046	0.0141
134	0.0188	0.0046	0.0142
135	0.0190	0.0047	0.0144
136	0.0192	0.0047	0.0145
137	0.0194	0.0048	0.0147
138	0.0196	0.0048	0.0148
139	0.0198	0.0049	0.0150
140	0.0200	0.0049	0.0151
141	0.0203	0.0050	0.0153
142	0.0204	0.0050	0.0154
143	0.0207	0.0051	0.0156

144	0.0209	0.0051	0.0158
145	0.0212	0.0052	0.0160
146	0.0214	0.0052	0.0162
147	0.0217	0.0053	0.0164
148	0.0219	0.0054	0.0166
149	0.0223	0.0055	0.0168
150	0.0225	0.0055	0.0170
151	0.0229	0.0056	0.0173
152	0.0231	0.0057	0.0174
153	0.0235	0.0058	0.0178
154	0.0238	0.0058	0.0179
155	0.0242	0.0059	0.0183
156	0.0245	0.0060	0.0185
157	0.0250	0.0061	0.0189
158	0.0252	0.0062	0.0191
159	0.0258	0.0063	0.0195
160	0.0261	0.0064	0.0197
161	0.0267	0.0065	0.0202
162	0.0270	0.0066	0.0204
163	0.0277	0.0068	0.0209
164	0.0281	0.0069	0.0212
165	0.0288	0.0071	0.0218
166	0.0292	0.0071	0.0221
167	0.0301	0.0074	0.0227
168	0.0305	0.0075	0.0230
169	0.0357	0.0087	0.0270
170	0.0362	0.0089	0.0274
171	0.0373	0.0091	0.0282
172	0.0379	0.0093	0.0286
173	0.0392	0.0096	0.0296
174	0.0399	0.0098	0.0301
175	0.0414	0.0101	0.0312
176	0.0422	0.0103	0.0319
177	0.0439	0.0108	0.0332
178	0.0449	0.0110	0.0339
179	0.0470	0.0115	0.0355
180	0.0482	0.0118	0.0364
181	0.0509	0.0125	0.0385
182	0.0525	0.0128	0.0396
183	0.0560	0.0137	0.0423
184	0.0580	0.0142	0.0438
185	0.0736	0.0180	0.0555
186	0.0764	0.0187	0.0577
187	0.0834	0.0204	0.0630
188	0.0878	0.0214	0.0665
189	0.0916	0.0214	0.0703
190	0.1006	0.0214	0.0793
191	0.1327	0.0214	0.1113
192	0.1697	0.0214	0.1483
193	0.3779	0.0214	0.3566

194	0.1132	0.0214	0.0919
195	0.0932	0.0214	0.0718
196	0.0796	0.0195	0.0601
197	0.0603	0.0148	0.0455
198	0.0541	0.0132	0.0409
199	0.0495	0.0121	0.0374
200	0.0459	0.0112	0.0347
201	0.0430	0.0105	0.0325
202	0.0406	0.0099	0.0307
203	0.0386	0.0094	0.0291
204	0.0368	0.0090	0.0278
205	0.0310	0.0076	0.0234
206	0.0296	0.0073	0.0224
207	0.0284	0.0070	0.0215
208	0.0274	0.0067	0.0207
209	0.0264	0.0065	0.0199
210	0.0255	0.0062	0.0193
211	0.0247	0.0061	0.0187
212	0.0240	0.0059	0.0181
213	0.0233	0.0057	0.0176
214	0.0227	0.0056	0.0171
215	0.0221	0.0054	0.0167
216	0.0216	0.0053	0.0163
217	0.0210	0.0051	0.0159
218	0.0206	0.0050	0.0155
219	0.0201	0.0049	0.0152
220	0.0197	0.0048	0.0149
221	0.0193	0.0047	0.0146
222	0.0189	0.0046	0.0143
223	0.0186	0.0045	0.0140
224	0.0182	0.0045	0.0138
225	0.0179	0.0044	0.0135
226	0.0176	0.0043	0.0133
227	0.0173	0.0042	0.0131
228	0.0170	0.0042	0.0129
229	0.0168	0.0041	0.0127
230	0.0165	0.0040	0.0125
231	0.0163	0.0040	0.0123
232	0.0160	0.0039	0.0121
233	0.0158	0.0039	0.0119
234	0.0156	0.0038	0.0118
235	0.0154	0.0038	0.0116
236	0.0152	0.0037	0.0115
237	0.0150	0.0037	0.0113
238	0.0148	0.0036	0.0112
239	0.0146	0.0036	0.0110
240	0.0144	0.0035	0.0109
241	0.0143	0.0035	0.0108
242	0.0141	0.0035	0.0107
243	0.0140	0.0034	0.0105

244	0.0138	0.0034	0.0104
245	0.0137	0.0033	0.0103
246	0.0135	0.0033	0.0102
247	0.0134	0.0033	0.0101
248	0.0132	0.0032	0.0100
249	0.0131	0.0032	0.0099
250	0.0130	0.0032	0.0098
251	0.0128	0.0031	0.0097
252	0.0127	0.0031	0.0096
253	0.0126	0.0031	0.0095
254	0.0125	0.0031	0.0094
255	0.0124	0.0030	0.0093
256	0.0123	0.0030	0.0093
257	0.0122	0.0030	0.0092
258	0.0120	0.0029	0.0091
259	0.0119	0.0029	0.0090
260	0.0118	0.0029	0.0089
261	0.0117	0.0029	0.0089
262	0.0117	0.0029	0.0088
263	0.0116	0.0028	0.0087
264	0.0115	0.0028	0.0087
265	0.0114	0.0028	0.0086
266	0.0113	0.0028	0.0085
267	0.0112	0.0027	0.0085
268	0.0111	0.0027	0.0084
269	0.0110	0.0027	0.0083
270	0.0110	0.0027	0.0083
271	0.0109	0.0027	0.0082
272	0.0108	0.0026	0.0082
273	0.0107	0.0026	0.0081
274	0.0107	0.0026	0.0080
275	0.0106	0.0026	0.0080
276	0.0105	0.0026	0.0079
277	0.0104	0.0026	0.0079
278	0.0104	0.0025	0.0078
279	0.0103	0.0025	0.0078
280	0.0102	0.0025	0.0077
281	0.0102	0.0025	0.0077
282	0.0101	0.0025	0.0076
283	0.0100	0.0025	0.0076
284	0.0100	0.0024	0.0075
285	0.0099	0.0024	0.0075
286	0.0099	0.0024	0.0074
287	0.0098	0.0024	0.0074
288	0.0097	0.0024	0.0074

Total soil rain loss = 1.44(In)
Total effective rainfall = 4.93(In)
Peak flow rate in flood hydrograph = 11.72(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

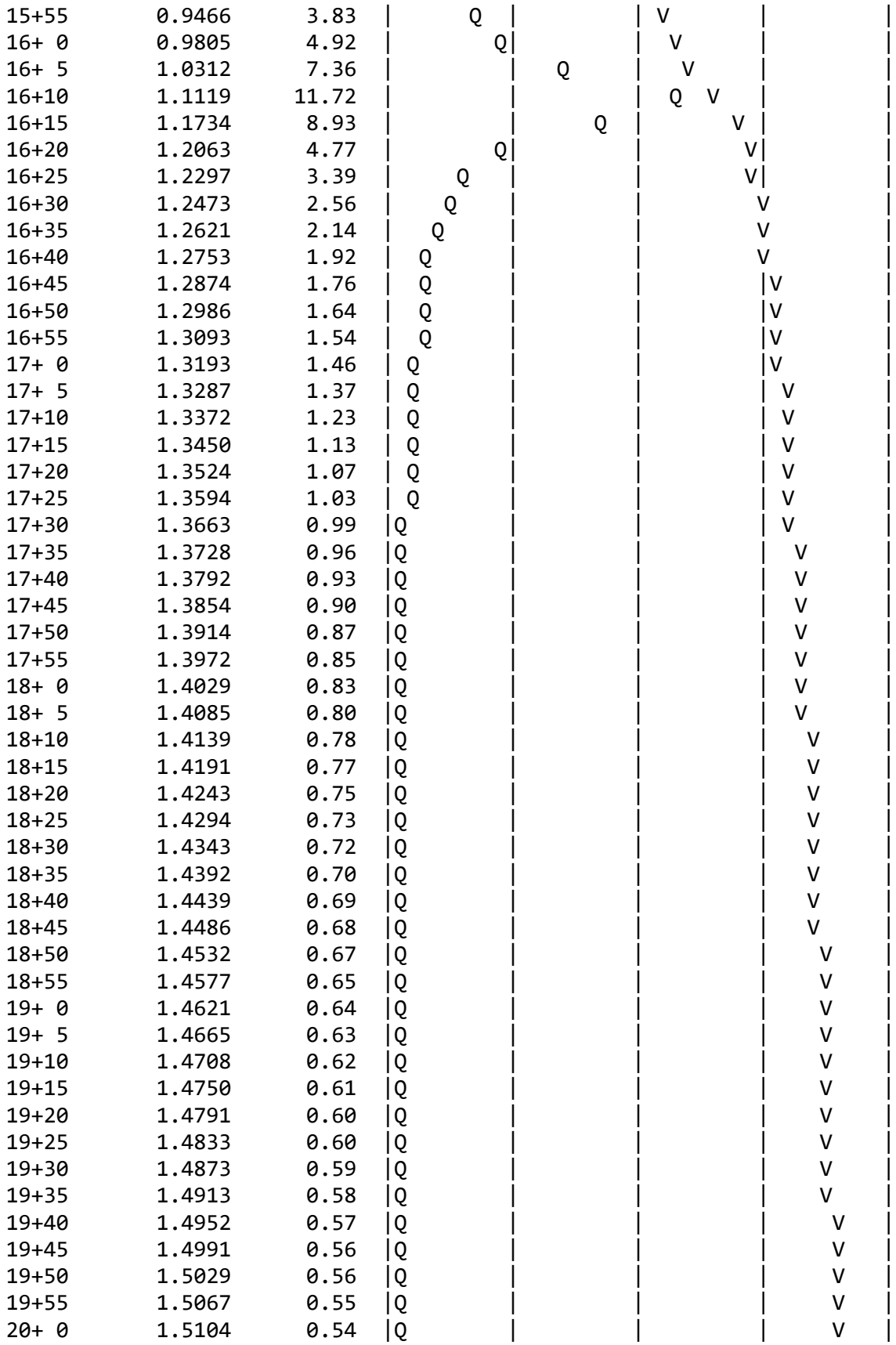
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0002	0.04	Q				
0+10	0.0017	0.21	Q				
0+15	0.0039	0.33	Q				
0+20	0.0064	0.35	Q				
0+25	0.0089	0.36	Q				
0+30	0.0114	0.36	Q				
0+35	0.0139	0.36	Q				
0+40	0.0164	0.36	Q				
0+45	0.0189	0.36	Q				
0+50	0.0214	0.37	Q				
0+55	0.0239	0.37	Q				
1+ 0	0.0265	0.37	Q				
1+ 5	0.0290	0.37	Q				
1+10	0.0315	0.37	Q				
1+15	0.0341	0.37	Q				
1+20	0.0367	0.37	Q				
1+25	0.0393	0.37	Q				
1+30	0.0418	0.38	QV				
1+35	0.0444	0.38	QV				
1+40	0.0470	0.38	QV				
1+45	0.0496	0.38	QV				
1+50	0.0523	0.38	QV				
1+55	0.0549	0.38	QV				
2+ 0	0.0575	0.38	QV				
2+ 5	0.0602	0.38	QV				
2+10	0.0628	0.39	QV				
2+15	0.0655	0.39	QV				
2+20	0.0681	0.39	QV				
2+25	0.0708	0.39	QV				
2+30	0.0735	0.39	QV				
2+35	0.0762	0.39	QV				
2+40	0.0789	0.39	QV				
2+45	0.0816	0.39	QV				
2+50	0.0844	0.40	Q V				
2+55	0.0871	0.40	Q V				
3+ 0	0.0898	0.40	Q V				
3+ 5	0.0926	0.40	Q V				
3+10	0.0954	0.40	Q V				
3+15	0.0981	0.40	Q V				
3+20	0.1009	0.40	Q V				

```
3+25       0.1037      0.41  Q V       |         |         |         |
3+30       0.1065      0.41  Q V       |         |         |         |
3+35       0.1093      0.41  Q V       |         |         |         |
3+40       0.1122      0.41  Q V       |         |         |         |
3+45       0.1150      0.41  Q V       |         |         |         |
3+50       0.1179      0.41  Q V       |         |         |         |
3+55       0.1207      0.42  Q V       |         |         |         |
4+ 0       0.1236      0.42  Q V       |         |         |         |
4+ 5       0.1265      0.42  Q  V      |         |         |         |
4+10       0.1294      0.42  Q  V      |         |         |         |
4+15       0.1323      0.42  Q  V      |         |         |         |
4+20       0.1352      0.42  Q  V      |         |         |         |
4+25       0.1381      0.42  Q  V      |         |         |         |
4+30       0.1410      0.43  Q  V      |         |         |         |
4+35       0.1440      0.43  Q  V      |         |         |         |
4+40       0.1470      0.43  Q  V      |         |         |         |
4+45       0.1499      0.43  Q  V      |         |         |         |
4+50       0.1529      0.43  Q  V      |         |         |         |
4+55       0.1559      0.44  Q  V      |         |         |         |
5+ 0       0.1589      0.44  Q  V      |         |         |         |
5+ 5       0.1620      0.44  Q  V      |         |         |         |
5+10       0.1650      0.44  Q  V      |         |         |         |
5+15       0.1680      0.44  Q   V     |         |         |         |
5+20       0.1711      0.44  Q   V     |         |         |         |
5+25       0.1742      0.45  Q   V     |         |         |         |
5+30       0.1773      0.45  Q   V     |         |         |         |
5+35       0.1804      0.45  Q   V     |         |         |         |
5+40       0.1835      0.45  Q   V     |         |         |         |
5+45       0.1866      0.45  Q   V     |         |         |         |
5+50       0.1898      0.46  Q   V     |         |         |         |
5+55       0.1929      0.46  Q   V     |         |         |         |
6+ 0       0.1961      0.46  Q   V     |         |         |         |
6+ 5       0.1993      0.46  Q   V     |         |         |         |
6+10       0.2025      0.47  Q   V     |         |         |         |
6+15       0.2057      0.47  Q   V     |         |         |         |
6+20       0.2089      0.47  Q    V    |         |         |         |
6+25       0.2122      0.47  Q    V    |         |         |         |
6+30       0.2155      0.47  Q    V    |         |         |         |
6+35       0.2187      0.48  Q    V    |         |         |         |
6+40       0.2220      0.48  Q    V    |         |         |         |
6+45       0.2253      0.48  Q    V    |         |         |         |
6+50       0.2287      0.48  Q    V    |         |         |         |
6+55       0.2320      0.49  Q    V    |         |         |         |
7+ 0       0.2354      0.49  Q    V    |         |         |         |
7+ 5       0.2388      0.49  Q    V    |         |         |         |
7+10       0.2422      0.49  Q    V    |         |         |         |
7+15       0.2456      0.50  Q    V    |         |         |         |
7+20       0.2490      0.50  Q     V   |         |         |         |
7+25       0.2525      0.50  |Q    V   |         |         |         |
7+30       0.2559      0.50  |Q    V   |         |         |         |
```

7+35	0.2594	0.51	Q	V			
7+40	0.2629	0.51	Q	V			
7+45	0.2665	0.51	Q	V			
7+50	0.2700	0.52	Q	V			
7+55	0.2736	0.52	Q	V			
8+ 0	0.2772	0.52	Q	V			
8+ 5	0.2808	0.52	Q	V			
8+10	0.2844	0.53	Q	V			
8+15	0.2881	0.53	Q	V			
8+20	0.2917	0.53	Q	V			
8+25	0.2954	0.54	Q	V			
8+30	0.2992	0.54	Q	V			
8+35	0.3029	0.54	Q	V			
8+40	0.3067	0.55	Q	V			
8+45	0.3104	0.55	Q	V			
8+50	0.3143	0.55	Q	V			
8+55	0.3181	0.56	Q	V			
9+ 0	0.3220	0.56	Q	V			
9+ 5	0.3258	0.56	Q	V			
9+10	0.3298	0.57	Q	V			
9+15	0.3337	0.57	Q	V			
9+20	0.3377	0.58	Q	V			
9+25	0.3417	0.58	Q	V			
9+30	0.3457	0.58	Q	V			
9+35	0.3497	0.59	Q	V			
9+40	0.3538	0.59	Q	V			
9+45	0.3579	0.60	Q	V			
9+50	0.3620	0.60	Q	V			
9+55	0.3662	0.61	Q	V			
10+ 0	0.3704	0.61	Q	V			
10+ 5	0.3746	0.61	Q	V			
10+10	0.3789	0.62	Q	V			
10+15	0.3832	0.62	Q	V			
10+20	0.3875	0.63	Q	V			
10+25	0.3919	0.63	Q	V			
10+30	0.3963	0.64	Q	V			
10+35	0.4008	0.64	Q	V			
10+40	0.4052	0.65	Q	V			
10+45	0.4098	0.66	Q	V			
10+50	0.4143	0.66	Q	V			
10+55	0.4189	0.67	Q	V			
11+ 0	0.4235	0.67	Q	V			
11+ 5	0.4282	0.68	Q	V			
11+10	0.4329	0.69	Q	V			
11+15	0.4377	0.69	Q	V			
11+20	0.4425	0.70	Q	V			
11+25	0.4474	0.71	Q	V			
11+30	0.4523	0.71	Q	V			
11+35	0.4573	0.72	Q	V			
11+40	0.4623	0.73	Q	V			

```
11+45       0.4673      0.74  |Q        |V        |         |         |
11+50       0.4725      0.74  |Q        |V        |         |         |
11+55       0.4776      0.75  |Q        |V        |         |         |
12+ 0       0.4829      0.76  |Q        |V        |         |         |
12+ 5       0.4881      0.77  |Q        |V        |         |         |
12+10       0.4935      0.78  |Q        |V        |         |         |
12+15       0.4989      0.79  |Q        | V       |         |         |
12+20       0.5044      0.80  |Q        | V       |         |         |
12+25       0.5100      0.81  |Q        | V       |         |         |
12+30       0.5156      0.82  |Q        | V       |         |         |
12+35       0.5213      0.83  |Q        | V       |         |         |
12+40       0.5271      0.84  |Q        | V       |         |         |
12+45       0.5329      0.85  |Q        | V       |         |         |
12+50       0.5389      0.86  |Q        |  V      |         |         |
12+55       0.5449      0.87  |Q        |  V      |         |         |
13+ 0       0.5510      0.89  |Q        |  V      |         |         |
13+ 5       0.5572      0.90  |Q        |  V      |         |         |
13+10       0.5635      0.91  |Q        |  V      |         |         |
13+15       0.5699      0.93  |Q        |  V      |         |         |
13+20       0.5764      0.94  |Q        |  V      |         |         |
13+25       0.5830      0.96  |Q        |   V     |         |         |
13+30       0.5897      0.98  |Q        |   V     |         |         |
13+35       0.5965      0.99  |Q        |   V     |         |         |
13+40       0.6035      1.01  | Q       |   V     |         |         |
13+45       0.6106      1.03  | Q       |   V     |         |         |
13+50       0.6178      1.05  | Q       |   V     |         |         |
13+55       0.6252      1.07  | Q       |    V    |         |         |
14+ 0       0.6328      1.10  | Q       |    V    |         |         |
14+ 5       0.6406      1.13  | Q       |    V    |         |         |
14+10       0.6491      1.24  | Q       |    V    |         |         |
14+15       0.6582      1.32  | Q       |    V    |         |         |
14+20       0.6675      1.36  | Q       |     V   |         |         |
14+25       0.6771      1.39  | Q       |     V   |         |         |
14+30       0.6869      1.43  | Q       |     V   |         |         |
14+35       0.6970      1.46  | Q       |     V   |         |         |
14+40       0.7074      1.50  |  Q      |      V  |         |         |
14+45       0.7180      1.55  |  Q      |      V  |         |         |
14+50       0.7290      1.59  |  Q      |      V  |         |         |
14+55       0.7403      1.64  |  Q      |      V  |         |         |
15+ 0       0.7520      1.70  |  Q      |       V |         |         |
15+ 5       0.7642      1.76  |  Q      |       V |         |         |
15+10       0.7768      1.84  |  Q      |       V |         |         |
15+15       0.7900      1.92  |  Q      |        V|         |         |
15+20       0.8039      2.01  |   Q     |        V|         |         |
15+25       0.8187      2.15  |   Q     |        V|         |         |
15+30       0.8358      2.48  |   Q     |         V         |         |
15+35       0.8547      2.75  |    Q    |         V         |         |
15+40       0.8752      2.97  |    Q    |         |V        |         |
15+45       0.8970      3.17  |     Q   |         |V        |         |
15+50       0.9203      3.38  |     Q   |         | V       |         |
```



20+ 5	1.5141	0.54	|Q	|	|	|	V |
20+10	1.5178	0.53	|Q	|	|	|	V |
20+15	1.5214	0.52	|Q	|	|	|	V |
20+20	1.5249	0.52	|Q	|	|	|	V |
20+25	1.5285	0.51	|Q	|	|	|	V |
20+30	1.5320	0.51	|Q	|	|	|	V |
20+35	1.5354	0.50	|Q	|	|	|	V |
20+40	1.5388	0.50	Q	|	|	|	V |
20+45	1.5422	0.49	Q	|	|	|	V |
20+50	1.5455	0.49	Q	|	|	|	V |
20+55	1.5488	0.48	Q	|	|	|	V |
21+ 0	1.5521	0.48	Q	|	|	|	V |
21+ 5	1.5554	0.47	Q	|	|	|	V |
21+10	1.5586	0.47	Q	|	|	|	V |
21+15	1.5618	0.46	Q	|	|	|	V |
21+20	1.5649	0.46	Q	|	|	|	V |
21+25	1.5681	0.45	Q	|	|	|	V |
21+30	1.5712	0.45	Q	|	|	|	V |
21+35	1.5742	0.45	Q	|	|	|	V |
21+40	1.5773	0.44	Q	|	|	|	V |
21+45	1.5803	0.44	Q	|	|	|	V |
21+50	1.5833	0.44	Q	|	|	|	V |
21+55	1.5863	0.43	Q	|	|	|	V |
22+ 0	1.5892	0.43	Q	|	|	|	V |
22+ 5	1.5921	0.42	Q	|	|	|	V |
22+10	1.5950	0.42	Q	|	|	|	V |
22+15	1.5979	0.42	Q	|	|	|	V |
22+20	1.6008	0.41	Q	|	|	|	V |
22+25	1.6036	0.41	Q	|	|	|	V |
22+30	1.6064	0.41	Q	|	|	|	V |
22+35	1.6092	0.41	Q	|	|	|	V |
22+40	1.6120	0.40	Q	|	|	|	V |
22+45	1.6147	0.40	Q	|	|	|	V |
22+50	1.6175	0.40	Q	|	|	|	V|
22+55	1.6202	0.39	Q	|	|	|	V|
23+ 0	1.6229	0.39	Q	|	|	|	V|
23+ 5	1.6256	0.39	Q	|	|	|	V|
23+10	1.6282	0.39	Q	|	|	|	V|
23+15	1.6309	0.38	Q	|	|	|	V|
23+20	1.6335	0.38	Q	|	|	|	V|
23+25	1.6361	0.38	Q	|	|	|	V|
23+30	1.6387	0.38	Q	|	|	|	V|
23+35	1.6413	0.37	Q	|	|	|	V|
23+40	1.6438	0.37	Q	|	|	|	V|
23+45	1.6464	0.37	Q	|	|	|	V|
23+50	1.6489	0.37	Q	|	|	|	V|
23+55	1.6514	0.36	Q	|	|	|	V|
24+ 0	1.6539	0.36	Q	|	|	|	V|

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: 03/26/25

5885 SCHAEFER PROPOSED DRAINAGE AREA C 100YR HYDROLOGY

Program License Serial Number 6683

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

Rational hydrology study storm event year is 100.0
10 Year storm 1 hour rainfall = 0.925(In.)
100 Year storm 1 hour rainfall = 1.480(In.)
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.480 (In.)
Slope used for rainfall intensity curve b = 0.6000
Soil antecedent moisture condition (AMC) = 3

++
Process from Point/Station 0.000(Ft.) to Point/Station 578.000(Ft.)
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Adjusted SCS curve number for AMC 3 = 86.20
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.026(In/Hr)
Initial subarea data:
Initial area flow distance = 578.000(Ft.)
Top (of initial area) elevation = 699.370(Ft.)
Bottom (of initial area) elevation = 687.730(Ft.)
Difference in elevation = 11.640(Ft.)

Slope = 0.02014 s(%)= 2.01
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.450 min.
Rainfall intensity = 4.798(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.895
Subarea runoff = 17.350(CFS)
Total initial stream area = 4.040(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.026(In/Hr)
End of computations, Total Study Area = 4.04 (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 = 69.0

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

Study date 03/26/25

++

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

Program License Serial Number 6683

5885 SCHAEFER PROPOSED UNIT HYDROGRAPH

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 100		
7.35	1	1.48
Rainfall data for year 100		
7.35	6	3.47
Rainfall data for year 100		
7.35	24	6.37

++

******** 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)
69.0	86.2	7.35	1.000	0.262	0.890	0.233

Area-averaged adjusted loss rate Fm (In/Hr) = 0.233

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
6.54	0.890	69.0	86.2	1.60	0.751
0.81	0.110	98.0	98.0	0.20	0.963

Area-averaged catchment yield fraction, Y = 0.774
Area-averaged low loss fraction, Yb = 0.226
User entry of time of concentration = 0.200 (hours)
++
Watershed area = 7.35(Ac.)
Catchment Lag time = 0.160 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 52.0833
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.233(In/Hr)
Average low loss rate fraction (Yb) = 0.226 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.548(In)
Computed peak 30-minute rainfall = 1.122(In)
Specified peak 1-hour rainfall = 1.480(In)
Computed peak 3-hour rainfall = 2.496(In)
Specified peak 6-hour rainfall = 3.470(In)
Specified peak 24-hour rainfall = 6.370(In)

Rainfall depth area reduction factors:
Using a total area of 7.35(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.548(In)
30-minute factor = 1.000 Adjusted rainfall = 1.121(In)
1-hour factor = 1.000 Adjusted rainfall = 1.479(In)
3-hour factor = 1.000 Adjusted rainfall = 2.495(In)
6-hour factor = 1.000 Adjusted rainfall = 3.470(In)
24-hour factor = 1.000 Adjusted rainfall = 6.370(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 = 88.89 (CFS))	
1	4.951	4.401
2	32.173	24.198
3	71.993	35.396
4	91.514	17.352
5	97.565	5.378
6	98.956	1.237
7	100.000	0.928

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5476	0.5476
2	0.7225	0.1750
3	0.8497	0.1272
4	0.9534	0.1036
5	1.0424	0.0890
6	1.1212	0.0789
7	1.1926	0.0713
8	1.2580	0.0654
9	1.3187	0.0607
10	1.3754	0.0568
11	1.4289	0.0534
12	1.4795	0.0506
13	1.5369	0.0574
14	1.5921	0.0552
15	1.6452	0.0531
16	1.6965	0.0513
17	1.7462	0.0497
18	1.7943	0.0481
19	1.8411	0.0468
20	1.8866	0.0455
21	1.9309	0.0443
22	1.9741	0.0432
23	2.0163	0.0422
24	2.0576	0.0413
25	2.0979	0.0404
26	2.1375	0.0395
27	2.1762	0.0387
28	2.2142	0.0380
29	2.2515	0.0373
30	2.2881	0.0366
31	2.3241	0.0360
32	2.3594	0.0354
33	2.3942	0.0348
34	2.4285	0.0343
35	2.4622	0.0337

36	2.4954	0.0332
37	2.5282	0.0327
38	2.5605	0.0323
39	2.5923	0.0318
40	2.6237	0.0314
41	2.6547	0.0310
42	2.6853	0.0306
43	2.7155	0.0302
44	2.7453	0.0299
45	2.7748	0.0295
46	2.8040	0.0292
47	2.8328	0.0288
48	2.8613	0.0285
49	2.8895	0.0282
50	2.9174	0.0279
51	2.9450	0.0276
52	2.9724	0.0273
53	2.9994	0.0271
54	3.0262	0.0268
55	3.0527	0.0265
56	3.0790	0.0263
57	3.1050	0.0260
58	3.1308	0.0258
59	3.1564	0.0256
60	3.1817	0.0253
61	3.2068	0.0251
62	3.2317	0.0249
63	3.2564	0.0247
64	3.2809	0.0245
65	3.3052	0.0243
66	3.3293	0.0241
67	3.3532	0.0239
68	3.3769	0.0237
69	3.4004	0.0235
70	3.4237	0.0233
71	3.4469	0.0232
72	3.4699	0.0230
73	3.4910	0.0210
74	3.5118	0.0209
75	3.5325	0.0207
76	3.5531	0.0206
77	3.5735	0.0204
78	3.5938	0.0203
79	3.6139	0.0201
80	3.6339	0.0200
81	3.6537	0.0198
82	3.6734	0.0197
83	3.6930	0.0196
84	3.7124	0.0194
85	3.7317	0.0193

86	3.7509	0.0192
87	3.7699	0.0190
88	3.7889	0.0189
89	3.8077	0.0188
90	3.8263	0.0187
91	3.8449	0.0186
92	3.8634	0.0185
93	3.8817	0.0183
94	3.9000	0.0182
95	3.9181	0.0181
96	3.9361	0.0180
97	3.9540	0.0179
98	3.9718	0.0178
99	3.9895	0.0177
100	4.0071	0.0176
101	4.0247	0.0175
102	4.0421	0.0174
103	4.0594	0.0173
104	4.0766	0.0172
105	4.0937	0.0171
106	4.1108	0.0170
107	4.1277	0.0169
108	4.1446	0.0169
109	4.1614	0.0168
110	4.1780	0.0167
111	4.1946	0.0166
112	4.2112	0.0165
113	4.2276	0.0164
114	4.2439	0.0164
115	4.2602	0.0163
116	4.2764	0.0162
117	4.2925	0.0161
118	4.3086	0.0160
119	4.3245	0.0160
120	4.3404	0.0159
121	4.3562	0.0158
122	4.3720	0.0157
123	4.3876	0.0157
124	4.4032	0.0156
125	4.4188	0.0155
126	4.4342	0.0155
127	4.4496	0.0154
128	4.4649	0.0153
129	4.4802	0.0153
130	4.4953	0.0152
131	4.5105	0.0151
132	4.5255	0.0151
133	4.5405	0.0150
134	4.5554	0.0149
135	4.5703	0.0149

136	4.5851	0.0148
137	4.5999	0.0147
138	4.6145	0.0147
139	4.6292	0.0146
140	4.6437	0.0146
141	4.6582	0.0145
142	4.6727	0.0144
143	4.6871	0.0144
144	4.7014	0.0143
145	4.7157	0.0143
146	4.7299	0.0142
147	4.7441	0.0142
148	4.7582	0.0141
149	4.7722	0.0141
150	4.7863	0.0140
151	4.8002	0.0140
152	4.8141	0.0139
153	4.8280	0.0139
154	4.8418	0.0138
155	4.8555	0.0138
156	4.8692	0.0137
157	4.8829	0.0137
158	4.8965	0.0136
159	4.9100	0.0136
160	4.9235	0.0135
161	4.9370	0.0135
162	4.9504	0.0134
163	4.9638	0.0134
164	4.9771	0.0133
165	4.9904	0.0133
166	5.0036	0.0132
167	5.0168	0.0132
168	5.0299	0.0131
169	5.0430	0.0131
170	5.0561	0.0131
171	5.0691	0.0130
172	5.0821	0.0130
173	5.0950	0.0129
174	5.1079	0.0129
175	5.1207	0.0128
176	5.1335	0.0128
177	5.1463	0.0128
178	5.1590	0.0127
179	5.1717	0.0127
180	5.1843	0.0126
181	5.1969	0.0126
182	5.2095	0.0126
183	5.2220	0.0125
184	5.2345	0.0125
185	5.2469	0.0124

186	5.2594	0.0124
187	5.2717	0.0124
188	5.2841	0.0123
189	5.2964	0.0123
190	5.3086	0.0123
191	5.3208	0.0122
192	5.3330	0.0122
193	5.3452	0.0122
194	5.3573	0.0121
195	5.3694	0.0121
196	5.3814	0.0120
197	5.3934	0.0120
198	5.4054	0.0120
199	5.4174	0.0119
200	5.4293	0.0119
201	5.4412	0.0119
202	5.4530	0.0118
203	5.4648	0.0118
204	5.4766	0.0118
205	5.4884	0.0117
206	5.5001	0.0117
207	5.5117	0.0117
208	5.5234	0.0117
209	5.5350	0.0116
210	5.5466	0.0116
211	5.5582	0.0116
212	5.5697	0.0115
213	5.5812	0.0115
214	5.5927	0.0115
215	5.6041	0.0114
216	5.6155	0.0114
217	5.6269	0.0114
218	5.6382	0.0113
219	5.6495	0.0113
220	5.6608	0.0113
221	5.6721	0.0113
222	5.6833	0.0112
223	5.6945	0.0112
224	5.7057	0.0112
225	5.7169	0.0111
226	5.7280	0.0111
227	5.7391	0.0111
228	5.7501	0.0111
229	5.7612	0.0110
230	5.7722	0.0110
231	5.7832	0.0110
232	5.7941	0.0110
233	5.8051	0.0109
234	5.8160	0.0109
235	5.8268	0.0109

236	5.8377	0.0109
237	5.8485	0.0108
238	5.8593	0.0108
239	5.8701	0.0108
240	5.8808	0.0107
241	5.8916	0.0107
242	5.9023	0.0107
243	5.9129	0.0107
244	5.9236	0.0107
245	5.9342	0.0106
246	5.9448	0.0106
247	5.9554	0.0106
248	5.9659	0.0106
249	5.9765	0.0105
250	5.9870	0.0105
251	5.9975	0.0105
252	6.0079	0.0105
253	6.0184	0.0104
254	6.0288	0.0104
255	6.0392	0.0104
256	6.0495	0.0104
257	6.0599	0.0103
258	6.0702	0.0103
259	6.0805	0.0103
260	6.0908	0.0103
261	6.1010	0.0103
262	6.1112	0.0102
263	6.1215	0.0102
264	6.1316	0.0102
265	6.1418	0.0102
266	6.1520	0.0101
267	6.1621	0.0101
268	6.1722	0.0101
269	6.1823	0.0101
270	6.1923	0.0101
271	6.2024	0.0100
272	6.2124	0.0100
273	6.2224	0.0100
274	6.2324	0.0100
275	6.2423	0.0100
276	6.2522	0.0099
277	6.2622	0.0099
278	6.2721	0.0099
279	6.2819	0.0099
280	6.2918	0.0099
281	6.3016	0.0098
282	6.3114	0.0098
283	6.3212	0.0098
284	6.3310	0.0098
285	6.3408	0.0098

286	6.3505	0.0097
287	6.3602	0.0097
288	6.3699	0.0097

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0097	0.0022	0.0075
2	0.0097	0.0022	0.0075
3	0.0098	0.0022	0.0076
4	0.0098	0.0022	0.0076
5	0.0098	0.0022	0.0076
6	0.0098	0.0022	0.0076
7	0.0099	0.0022	0.0076
8	0.0099	0.0022	0.0077
9	0.0099	0.0022	0.0077
10	0.0100	0.0022	0.0077
11	0.0100	0.0023	0.0077
12	0.0100	0.0023	0.0078
13	0.0101	0.0023	0.0078
14	0.0101	0.0023	0.0078
15	0.0101	0.0023	0.0078
16	0.0101	0.0023	0.0079
17	0.0102	0.0023	0.0079
18	0.0102	0.0023	0.0079
19	0.0103	0.0023	0.0079
20	0.0103	0.0023	0.0080
21	0.0103	0.0023	0.0080
22	0.0103	0.0023	0.0080
23	0.0104	0.0023	0.0080
24	0.0104	0.0024	0.0081
25	0.0105	0.0024	0.0081
26	0.0105	0.0024	0.0081
27	0.0105	0.0024	0.0082
28	0.0106	0.0024	0.0082
29	0.0106	0.0024	0.0082
30	0.0106	0.0024	0.0082
31	0.0107	0.0024	0.0083
32	0.0107	0.0024	0.0083
33	0.0107	0.0024	0.0083
34	0.0108	0.0024	0.0083
35	0.0108	0.0024	0.0084
36	0.0109	0.0024	0.0084
37	0.0109	0.0025	0.0084
38	0.0109	0.0025	0.0085
39	0.0110	0.0025	0.0085
40	0.0110	0.0025	0.0085
41	0.0111	0.0025	0.0086
42	0.0111	0.0025	0.0086

43	0.0111	0.0025	0.0086
44	0.0112	0.0025	0.0087
45	0.0112	0.0025	0.0087
46	0.0113	0.0025	0.0087
47	0.0113	0.0026	0.0088
48	0.0113	0.0026	0.0088
49	0.0114	0.0026	0.0088
50	0.0114	0.0026	0.0089
51	0.0115	0.0026	0.0089
52	0.0115	0.0026	0.0089
53	0.0116	0.0026	0.0090
54	0.0116	0.0026	0.0090
55	0.0117	0.0026	0.0090
56	0.0117	0.0026	0.0091
57	0.0118	0.0027	0.0091
58	0.0118	0.0027	0.0091
59	0.0119	0.0027	0.0092
60	0.0119	0.0027	0.0092
61	0.0120	0.0027	0.0093
62	0.0120	0.0027	0.0093
63	0.0121	0.0027	0.0094
64	0.0121	0.0027	0.0094
65	0.0122	0.0028	0.0094
66	0.0122	0.0028	0.0095
67	0.0123	0.0028	0.0095
68	0.0123	0.0028	0.0096
69	0.0124	0.0028	0.0096
70	0.0124	0.0028	0.0096
71	0.0125	0.0028	0.0097
72	0.0126	0.0028	0.0097
73	0.0126	0.0029	0.0098
74	0.0127	0.0029	0.0098
75	0.0128	0.0029	0.0099
76	0.0128	0.0029	0.0099
77	0.0129	0.0029	0.0100
78	0.0129	0.0029	0.0100
79	0.0130	0.0029	0.0101
80	0.0131	0.0029	0.0101
81	0.0131	0.0030	0.0102
82	0.0132	0.0030	0.0102
83	0.0133	0.0030	0.0103
84	0.0133	0.0030	0.0103
85	0.0134	0.0030	0.0104
86	0.0135	0.0030	0.0104
87	0.0136	0.0031	0.0105
88	0.0136	0.0031	0.0105
89	0.0137	0.0031	0.0106
90	0.0138	0.0031	0.0106
91	0.0139	0.0031	0.0107
92	0.0139	0.0031	0.0108

93	0.0140	0.0032	0.0108
94	0.0141	0.0032	0.0109
95	0.0142	0.0032	0.0110
96	0.0142	0.0032	0.0110
97	0.0143	0.0032	0.0111
98	0.0144	0.0032	0.0111
99	0.0145	0.0033	0.0112
100	0.0146	0.0033	0.0113
101	0.0147	0.0033	0.0114
102	0.0147	0.0033	0.0114
103	0.0149	0.0034	0.0115
104	0.0149	0.0034	0.0116
105	0.0151	0.0034	0.0117
106	0.0151	0.0034	0.0117
107	0.0153	0.0034	0.0118
108	0.0153	0.0035	0.0119
109	0.0155	0.0035	0.0120
110	0.0155	0.0035	0.0120
111	0.0157	0.0035	0.0121
112	0.0157	0.0036	0.0122
113	0.0159	0.0036	0.0123
114	0.0160	0.0036	0.0124
115	0.0161	0.0036	0.0125
116	0.0162	0.0037	0.0125
117	0.0164	0.0037	0.0127
118	0.0164	0.0037	0.0127
119	0.0166	0.0037	0.0129
120	0.0167	0.0038	0.0129
121	0.0169	0.0038	0.0131
122	0.0169	0.0038	0.0131
123	0.0171	0.0039	0.0133
124	0.0172	0.0039	0.0133
125	0.0174	0.0039	0.0135
126	0.0175	0.0040	0.0136
127	0.0177	0.0040	0.0137
128	0.0178	0.0040	0.0138
129	0.0180	0.0041	0.0140
130	0.0181	0.0041	0.0140
131	0.0183	0.0041	0.0142
132	0.0185	0.0042	0.0143
133	0.0187	0.0042	0.0145
134	0.0188	0.0042	0.0146
135	0.0190	0.0043	0.0147
136	0.0192	0.0043	0.0148
137	0.0194	0.0044	0.0150
138	0.0196	0.0044	0.0151
139	0.0198	0.0045	0.0154
140	0.0200	0.0045	0.0155
141	0.0203	0.0046	0.0157
142	0.0204	0.0046	0.0158

143	0.0207	0.0047	0.0160
144	0.0209	0.0047	0.0162
145	0.0230	0.0052	0.0178
146	0.0232	0.0052	0.0179
147	0.0235	0.0053	0.0182
148	0.0237	0.0054	0.0184
149	0.0241	0.0054	0.0186
150	0.0243	0.0055	0.0188
151	0.0247	0.0056	0.0191
152	0.0249	0.0056	0.0193
153	0.0253	0.0057	0.0196
154	0.0256	0.0058	0.0198
155	0.0260	0.0059	0.0202
156	0.0263	0.0059	0.0203
157	0.0268	0.0060	0.0207
158	0.0271	0.0061	0.0209
159	0.0276	0.0062	0.0214
160	0.0279	0.0063	0.0216
161	0.0285	0.0064	0.0221
162	0.0288	0.0065	0.0223
163	0.0295	0.0067	0.0228
164	0.0299	0.0067	0.0231
165	0.0306	0.0069	0.0237
166	0.0310	0.0070	0.0240
167	0.0318	0.0072	0.0246
168	0.0323	0.0073	0.0250
169	0.0332	0.0075	0.0257
170	0.0337	0.0076	0.0261
171	0.0348	0.0079	0.0269
172	0.0354	0.0080	0.0274
173	0.0366	0.0083	0.0284
174	0.0373	0.0084	0.0289
175	0.0387	0.0087	0.0300
176	0.0395	0.0089	0.0306
177	0.0413	0.0093	0.0319
178	0.0422	0.0095	0.0327
179	0.0443	0.0100	0.0343
180	0.0455	0.0103	0.0352
181	0.0481	0.0109	0.0373
182	0.0497	0.0112	0.0384
183	0.0531	0.0120	0.0411
184	0.0552	0.0125	0.0427
185	0.0506	0.0114	0.0392
186	0.0534	0.0121	0.0414
187	0.0607	0.0137	0.0470
188	0.0654	0.0148	0.0507
189	0.0789	0.0178	0.0611
190	0.0890	0.0194	0.0696
191	0.1272	0.0194	0.1078
192	0.1750	0.0194	0.1556

193	0.5476	0.0194	0.5282
194	0.1036	0.0194	0.0842
195	0.0713	0.0161	0.0552
196	0.0568	0.0128	0.0439
197	0.0574	0.0130	0.0445
198	0.0513	0.0116	0.0397
199	0.0468	0.0106	0.0362
200	0.0432	0.0098	0.0335
201	0.0404	0.0091	0.0312
202	0.0380	0.0086	0.0294
203	0.0360	0.0081	0.0279
204	0.0343	0.0077	0.0265
205	0.0327	0.0074	0.0253
206	0.0314	0.0071	0.0243
207	0.0302	0.0068	0.0234
208	0.0292	0.0066	0.0226
209	0.0282	0.0064	0.0218
210	0.0273	0.0062	0.0212
211	0.0265	0.0060	0.0205
212	0.0258	0.0058	0.0200
213	0.0251	0.0057	0.0194
214	0.0245	0.0055	0.0190
215	0.0239	0.0054	0.0185
216	0.0233	0.0053	0.0181
217	0.0210	0.0047	0.0163
218	0.0206	0.0046	0.0159
219	0.0201	0.0045	0.0156
220	0.0197	0.0044	0.0153
221	0.0193	0.0044	0.0149
222	0.0189	0.0043	0.0147
223	0.0186	0.0042	0.0144
224	0.0182	0.0041	0.0141
225	0.0179	0.0040	0.0139
226	0.0176	0.0040	0.0136
227	0.0173	0.0039	0.0134
228	0.0170	0.0038	0.0132
229	0.0168	0.0038	0.0130
230	0.0165	0.0037	0.0128
231	0.0163	0.0037	0.0126
232	0.0160	0.0036	0.0124
233	0.0158	0.0036	0.0122
234	0.0156	0.0035	0.0121
235	0.0154	0.0035	0.0119
236	0.0152	0.0034	0.0118
237	0.0150	0.0034	0.0116
238	0.0148	0.0033	0.0115
239	0.0146	0.0033	0.0113
240	0.0144	0.0033	0.0112
241	0.0143	0.0032	0.0111
242	0.0141	0.0032	0.0109

243	0.0140	0.0032	0.0108
244	0.0138	0.0031	0.0107
245	0.0137	0.0031	0.0106
246	0.0135	0.0030	0.0105
247	0.0134	0.0030	0.0103
248	0.0132	0.0030	0.0102
249	0.0131	0.0030	0.0101
250	0.0130	0.0029	0.0100
251	0.0128	0.0029	0.0099
252	0.0127	0.0029	0.0098
253	0.0126	0.0028	0.0098
254	0.0125	0.0028	0.0097
255	0.0124	0.0028	0.0096
256	0.0123	0.0028	0.0095
257	0.0122	0.0027	0.0094
258	0.0120	0.0027	0.0093
259	0.0119	0.0027	0.0092
260	0.0118	0.0027	0.0092
261	0.0117	0.0027	0.0091
262	0.0117	0.0026	0.0090
263	0.0116	0.0026	0.0089
264	0.0115	0.0026	0.0089
265	0.0114	0.0026	0.0088
266	0.0113	0.0025	0.0087
267	0.0112	0.0025	0.0087
268	0.0111	0.0025	0.0086
269	0.0110	0.0025	0.0085
270	0.0110	0.0025	0.0085
271	0.0109	0.0025	0.0084
272	0.0108	0.0024	0.0084
273	0.0107	0.0024	0.0083
274	0.0107	0.0024	0.0082
275	0.0106	0.0024	0.0082
276	0.0105	0.0024	0.0081
277	0.0104	0.0024	0.0081
278	0.0104	0.0023	0.0080
279	0.0103	0.0023	0.0080
280	0.0102	0.0023	0.0079
281	0.0102	0.0023	0.0079
282	0.0101	0.0023	0.0078
283	0.0100	0.0023	0.0078
284	0.0100	0.0023	0.0077
285	0.0099	0.0022	0.0077
286	0.0099	0.0022	0.0076
287	0.0098	0.0022	0.0076
288	0.0097	0.0022	0.0075

Total soil rain loss = 1.30(In)
Total effective rainfall = 5.07(In)

Peak flow rate in flood hydrograph = 24.40(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

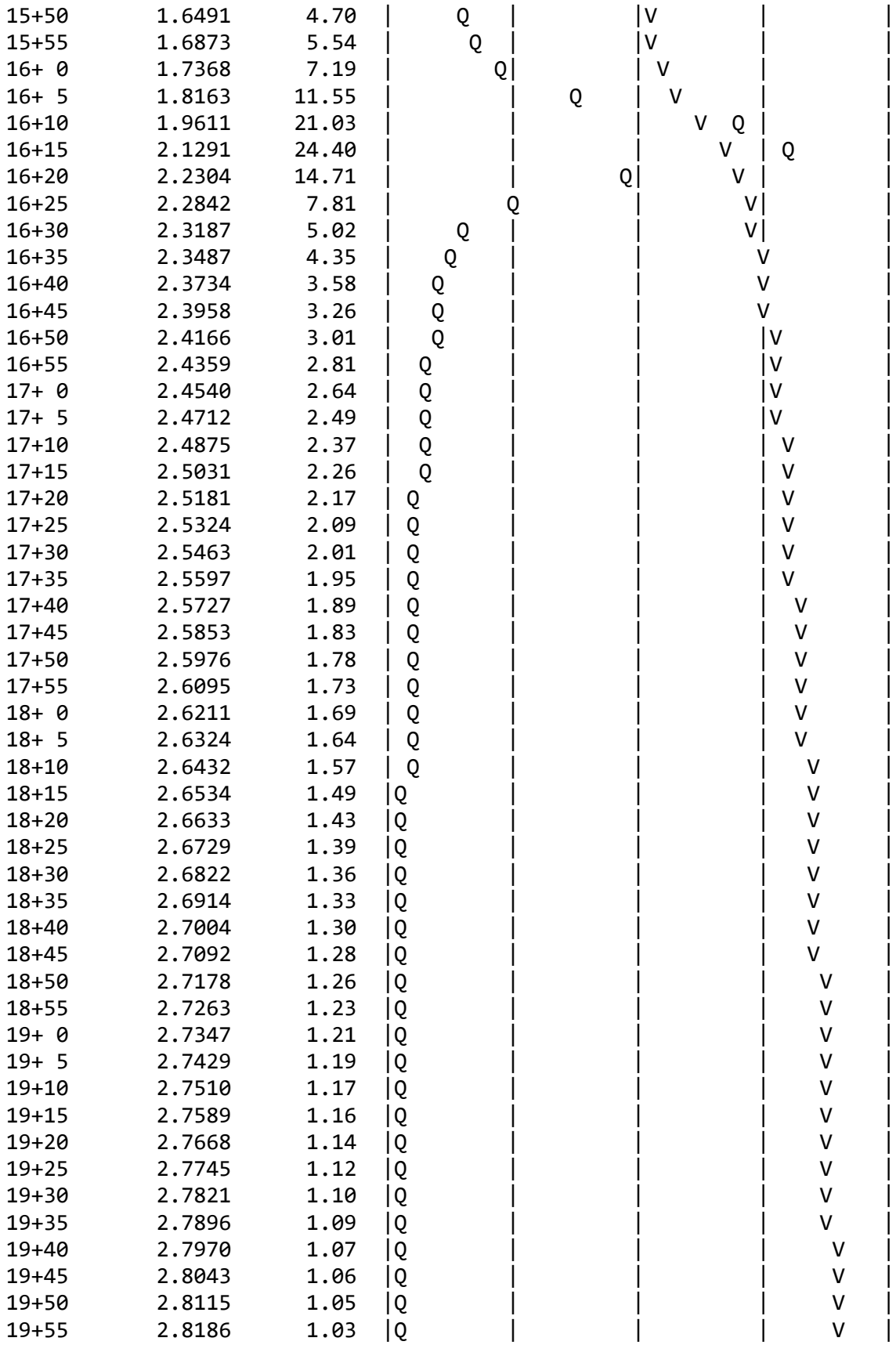
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q				
0+10	0.0017	0.21	Q				
0+15	0.0050	0.48	Q				
0+20	0.0092	0.61	Q				
0+25	0.0138	0.66	Q				
0+30	0.0183	0.67	Q				
0+35	0.0230	0.68	Q				
0+40	0.0277	0.68	Q				
0+45	0.0323	0.68	Q				
0+50	0.0370	0.68	Q				
0+55	0.0417	0.68	Q				
1+ 0	0.0465	0.69	Q				
1+ 5	0.0512	0.69	Q				
1+10	0.0559	0.69	Q				
1+15	0.0607	0.69	Q				
1+20	0.0655	0.69	Q				
1+25	0.0703	0.70	Q				
1+30	0.0751	0.70	Q				
1+35	0.0799	0.70	QV				
1+40	0.0848	0.70	QV				
1+45	0.0896	0.71	QV				
1+50	0.0945	0.71	QV				
1+55	0.0994	0.71	QV				
2+ 0	0.1043	0.71	QV				
2+ 5	0.1092	0.71	QV				
2+10	0.1141	0.72	QV				
2+15	0.1191	0.72	QV				
2+20	0.1241	0.72	QV				
2+25	0.1291	0.72	QV				
2+30	0.1341	0.73	QV				
2+35	0.1391	0.73	QV				
2+40	0.1441	0.73	QV				
2+45	0.1492	0.73	QV				
2+50	0.1543	0.74	QV				
2+55	0.1594	0.74	Q V				
3+ 0	0.1645	0.74	Q V				
3+ 5	0.1696	0.74	Q V				
3+10	0.1747	0.75	Q V				
3+15	0.1799	0.75	Q V				

3+20	0.1851	0.75	QV			
3+25	0.1903	0.76	QV			
3+30	0.1955	0.76	QV			
3+35	0.2007	0.76	QV			
3+40	0.2060	0.76	QV			
3+45	0.2113	0.77	QV			
3+50	0.2166	0.77	QV			
3+55	0.2219	0.77	QV			
4+ 0	0.2272	0.78	QV			
4+ 5	0.2326	0.78	QV			
4+10	0.2380	0.78	Q V			
4+15	0.2434	0.78	Q V			
4+20	0.2488	0.79	Q V			
4+25	0.2543	0.79	Q V			
4+30	0.2597	0.79	Q V			
4+35	0.2652	0.80	Q V			
4+40	0.2707	0.80	Q V			
4+45	0.2763	0.80	Q V			
4+50	0.2818	0.81	Q V			
4+55	0.2874	0.81	Q V			
5+ 0	0.2930	0.81	Q V			
5+ 5	0.2986	0.82	Q V			
5+10	0.3043	0.82	Q V			
5+15	0.3100	0.82	Q V			
5+20	0.3157	0.83	Q V			
5+25	0.3214	0.83	Q V			
5+30	0.3271	0.83	Q V			
5+35	0.3329	0.84	Q V			
5+40	0.3387	0.84	Q V			
5+45	0.3445	0.85	Q V			
5+50	0.3504	0.85	Q V			
5+55	0.3562	0.85	Q V			
6+ 0	0.3621	0.86	Q V			
6+ 5	0.3681	0.86	Q V			
6+10	0.3740	0.87	Q V			
6+15	0.3800	0.87	Q V			
6+20	0.3860	0.87	Q V			
6+25	0.3921	0.88	Q V			
6+30	0.3982	0.88	Q V			
6+35	0.4043	0.89	Q V			
6+40	0.4104	0.89	Q V			
6+45	0.4165	0.89	Q V			
6+50	0.4227	0.90	Q V			
6+55	0.4290	0.90	Q V			
7+ 0	0.4352	0.91	Q V			
7+ 5	0.4415	0.91	Q V			
7+10	0.4478	0.92	Q V			
7+15	0.4542	0.92	Q V			
7+20	0.4606	0.93	Q V			
7+25	0.4670	0.93	Q V			

7+30	0.4734	0.94	Q	V			
7+35	0.4799	0.94	Q	V			
7+40	0.4864	0.95	Q	V			
7+45	0.4930	0.95	Q	V			
7+50	0.4996	0.96	Q	V			
7+55	0.5062	0.96	Q	V			
8+ 0	0.5129	0.97	Q	V			
8+ 5	0.5196	0.97	Q	V			
8+10	0.5264	0.98	Q	V			
8+15	0.5331	0.99	Q	V			
8+20	0.5400	0.99	Q	V			
8+25	0.5468	1.00	Q	V			
8+30	0.5538	1.00	Q	V			
8+35	0.5607	1.01	Q	V			
8+40	0.5677	1.02	Q	V			
8+45	0.5747	1.02	Q	V			
8+50	0.5818	1.03	Q	V			
8+55	0.5889	1.03	Q	V			
9+ 0	0.5961	1.04	Q	V			
9+ 5	0.6033	1.05	Q	V			
9+10	0.6106	1.06	Q	V			
9+15	0.6179	1.06	Q	V			
9+20	0.6253	1.07	Q	V			
9+25	0.6327	1.08	Q	V			
9+30	0.6402	1.08	Q	V			
9+35	0.6477	1.09	Q	V			
9+40	0.6553	1.10	Q	V			
9+45	0.6629	1.11	Q	V			
9+50	0.6706	1.12	Q	V			
9+55	0.6783	1.12	Q	V			
10+ 0	0.6861	1.13	Q	V			
10+ 5	0.6940	1.14	Q	V			
10+10	0.7019	1.15	Q	V			
10+15	0.7099	1.16	Q	V			
10+20	0.7179	1.17	Q	V			
10+25	0.7260	1.18	Q	V			
10+30	0.7342	1.19	Q	V			
10+35	0.7424	1.20	Q	V			
10+40	0.7508	1.21	Q	V			
10+45	0.7591	1.22	Q	V			
10+50	0.7676	1.23	Q	V			
10+55	0.7761	1.24	Q	V			
11+ 0	0.7847	1.25	Q	V			
11+ 5	0.7934	1.26	Q	V			
11+10	0.8022	1.27	Q	V			
11+15	0.8110	1.28	Q	V			
11+20	0.8199	1.30	Q	V			
11+25	0.8289	1.31	Q	V			
11+30	0.8380	1.32	Q	V			
11+35	0.8472	1.34	Q	V			

11+40	0.8565	1.35	Q	V			
11+45	0.8659	1.36	Q	V			
11+50	0.8754	1.38	Q	V			
11+55	0.8850	1.39	Q	V			
12+ 0	0.8947	1.41	Q	V			
12+ 5	0.9045	1.43	Q	V			
12+10	0.9147	1.48	Q	V			
12+15	0.9253	1.55	Q	V			
12+20	0.9363	1.59	Q	V			
12+25	0.9474	1.61	Q	V			
12+30	0.9586	1.63	Q	V			
12+35	0.9700	1.65	Q	V			
12+40	0.9816	1.67	Q	V			
12+45	0.9932	1.70	Q	V			
12+50	1.0051	1.72	Q	V			
12+55	1.0170	1.74	Q	V			
13+ 0	1.0292	1.76	Q	V			
13+ 5	1.0415	1.79	Q	V			
13+10	1.0540	1.81	Q	V			
13+15	1.0666	1.84	Q	V			
13+20	1.0795	1.87	Q	V			
13+25	1.0925	1.90	Q	V			
13+30	1.1058	1.92	Q	V			
13+35	1.1193	1.96	Q	V			
13+40	1.1330	1.99	Q	V			
13+45	1.1469	2.02	Q	V			
13+50	1.1611	2.06	Q	V			
13+55	1.1756	2.10	Q	V			
14+ 0	1.1903	2.14	Q	V			
14+ 5	1.2054	2.18	Q	V			
14+10	1.2207	2.23	Q	V			
14+15	1.2364	2.28	Q	V			
14+20	1.2525	2.33	Q	V			
14+25	1.2689	2.39	Q	V			
14+30	1.2857	2.45	Q	V			
14+35	1.3030	2.51	Q	V			
14+40	1.3208	2.58	Q	V			
14+45	1.3391	2.65	Q	V			
14+50	1.3579	2.74	Q	V			
14+55	1.3774	2.83	Q	V			
15+ 0	1.3975	2.92	Q	V			
15+ 5	1.4184	3.04	Q	V			
15+10	1.4402	3.16	Q	V			
15+15	1.4629	3.30	Q	V			
15+20	1.4867	3.45	Q	V			
15+25	1.5115	3.61	Q	V			
15+30	1.5366	3.64	Q	V			
15+35	1.5616	3.64	Q	V			
15+40	1.5879	3.82	Q	V			
15+45	1.6167	4.18	Q	V			



```
20+ 0       2.8256      1.02  |Q        |         |         |     V   |
20+ 5       2.8326      1.01  |Q        |         |         |     V   |
20+10       2.8394      0.99  |Q        |         |         |     V   |
20+15       2.8462      0.98  |Q        |         |         |     V   |
20+20       2.8529      0.97  |Q        |         |         |     V   |
20+25       2.8595      0.96  |Q        |         |         |     V   |
20+30       2.8660      0.95  |Q        |         |         |     V   |
20+35       2.8725      0.94  |Q        |         |         |      V  |
20+40       2.8789      0.93  |Q        |         |         |      V  |
20+45       2.8853      0.92  |Q        |         |         |      V  |
20+50       2.8915      0.91  |Q        |         |         |      V  |
20+55       2.8977      0.90  |Q        |         |         |      V  |
21+ 0       2.9039      0.89  |Q        |         |         |      V  |
21+ 5       2.9100      0.88  |Q        |         |         |      V  |
21+10       2.9160      0.88  |Q        |         |         |      V  |
21+15       2.9220      0.87  |Q        |         |         |      V  |
21+20       2.9279      0.86  |Q        |         |         |      V  |
21+25       2.9338      0.85  |Q        |         |         |      V  |
21+30       2.9396      0.84  |Q        |         |         |      V  |
21+35       2.9454      0.84  |Q        |         |         |      V  |
21+40       2.9511      0.83  |Q        |         |         |       V |
21+45       2.9567      0.82  |Q        |         |         |       V |
21+50       2.9623      0.82  |Q        |         |         |       V |
21+55       2.9679      0.81  |Q        |         |         |       V |
22+ 0       2.9734      0.80  |Q        |         |         |       V |
22+ 5       2.9789      0.80  |Q        |         |         |       V |
22+10       2.9844      0.79  |Q        |         |         |       V |
22+15       2.9898      0.78  |Q        |         |         |       V |
22+20       2.9951      0.78  |Q        |         |         |       V |
22+25       3.0004      0.77  |Q        |         |         |       V |
22+30       3.0057      0.77  |Q        |         |         |       V |
22+35       3.0109      0.76  |Q        |         |         |       V |
22+40       3.0161      0.75  |Q        |         |         |       V |
22+45       3.0213      0.75  Q        |         |         |       V |
22+50       3.0264      0.74  Q        |         |         |       V |
22+55       3.0315      0.74  Q        |         |         |        V|
23+ 0       3.0365      0.73  Q        |         |         |        V|
23+ 5       3.0415      0.73  Q        |         |         |        V|
23+10       3.0465      0.72  Q        |         |         |        V|
23+15       3.0515      0.72  Q        |         |         |        V|
23+20       3.0564      0.71  Q        |         |         |        V|
23+25       3.0613      0.71  Q        |         |         |        V|
23+30       3.0661      0.70  Q        |         |         |        V|
23+35       3.0709      0.70  Q        |         |         |        V|
23+40       3.0757      0.70  Q        |         |         |        V|
23+45       3.0805      0.69  Q        |         |         |        V|
23+50       3.0852      0.69  Q        |         |         |        V|
23+55       3.0899      0.68  Q        |         |         |        V|
24+ 0       3.0946      0.68  Q        |         |         |        V|
24+ 5       3.0990      0.64  Q        |         |         |        V|
```

24+10	3.1022	0.46	Q				V
24+15	3.1035	0.19	Q				V
24+20	3.1038	0.06	Q				V
24+25	3.1040	0.02	Q				V
24+30	3.1040	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 12/17/24

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

Program License Serial Number 6683

5885 Schaefer Existing Condition Unit Hydrograph

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 100		
7.35	1	1.48
Rainfall data for year 100		
7.35	6	3.47
Rainfall data for year 100		
7.35	24	6.37

++

******** 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)
69.0	86.2	7.35	1.000	0.262	0.300	0.078

Area-averaged adjusted loss rate Fm (In/Hr) = 0.078

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
2.20	0.300	69.0	86.2	1.60	0.751
5.14	0.700	98.0	98.0	0.20	0.963

Area-averaged catchment yield fraction, Y = 0.899
Area-averaged low loss fraction, Yb = 0.101
User entry of time of concentration = 0.250 (hours)
++
Watershed area = 7.35(Ac.)
Catchment Lag time = 0.200 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 41.6667
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.078(In/Hr)
Average low loss rate fraction (Yb) = 0.101 (decimal)
VALLEY DEVELOPED S-Graph Selected
Computed peak 5-minute rainfall = 0.548(In)
Computed peak 30-minute rainfall = 1.122(In)
Specified peak 1-hour rainfall = 1.480(In)
Computed peak 3-hour rainfall = 2.496(In)
Specified peak 6-hour rainfall = 3.470(In)
Specified peak 24-hour rainfall = 6.370(In)

Rainfall depth area reduction factors:
Using a total area of 7.35(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.548(In)
30-minute factor = 1.000 Adjusted rainfall = 1.121(In)
1-hour factor = 1.000 Adjusted rainfall = 1.479(In)
3-hour factor = 1.000 Adjusted rainfall = 2.495(In)
6-hour factor = 1.000 Adjusted rainfall = 3.470(In)
24-hour factor = 1.000 Adjusted rainfall = 6.370(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 = 88.89 (CFS))	
1	3.260	2.898
2	21.153	15.905
3	53.240	28.521
4	80.596	24.317
5	92.540	10.616
6	97.357	4.283
7	98.675	1.171
8	99.425	0.667
9	100.000	0.511

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5476	0.5476
2	0.7225	0.1750
3	0.8497	0.1272
4	0.9534	0.1036
5	1.0424	0.0890
6	1.1212	0.0789
7	1.1926	0.0713
8	1.2580	0.0654
9	1.3187	0.0607
10	1.3754	0.0568
11	1.4289	0.0534
12	1.4795	0.0506
13	1.5369	0.0574
14	1.5921	0.0552
15	1.6452	0.0531
16	1.6965	0.0513
17	1.7462	0.0497
18	1.7943	0.0481
19	1.8411	0.0468
20	1.8866	0.0455
21	1.9309	0.0443
22	1.9741	0.0432
23	2.0163	0.0422
24	2.0576	0.0413
25	2.0979	0.0404
26	2.1375	0.0395
27	2.1762	0.0387
28	2.2142	0.0380
29	2.2515	0.0373
30	2.2881	0.0366
31	2.3241	0.0360
32	2.3594	0.0354
33	2.3942	0.0348

34	2.4285	0.0343
35	2.4622	0.0337
36	2.4954	0.0332
37	2.5282	0.0327
38	2.5605	0.0323
39	2.5923	0.0318
40	2.6237	0.0314
41	2.6547	0.0310
42	2.6853	0.0306
43	2.7155	0.0302
44	2.7453	0.0299
45	2.7748	0.0295
46	2.8040	0.0292
47	2.8328	0.0288
48	2.8613	0.0285
49	2.8895	0.0282
50	2.9174	0.0279
51	2.9450	0.0276
52	2.9724	0.0273
53	2.9994	0.0271
54	3.0262	0.0268
55	3.0527	0.0265
56	3.0790	0.0263
57	3.1050	0.0260
58	3.1308	0.0258
59	3.1564	0.0256
60	3.1817	0.0253
61	3.2068	0.0251
62	3.2317	0.0249
63	3.2564	0.0247
64	3.2809	0.0245
65	3.3052	0.0243
66	3.3293	0.0241
67	3.3532	0.0239
68	3.3769	0.0237
69	3.4004	0.0235
70	3.4237	0.0233
71	3.4469	0.0232
72	3.4699	0.0230
73	3.4910	0.0210
74	3.5118	0.0209
75	3.5325	0.0207
76	3.5531	0.0206
77	3.5735	0.0204
78	3.5938	0.0203
79	3.6139	0.0201
80	3.6339	0.0200
81	3.6537	0.0198
82	3.6734	0.0197
83	3.6930	0.0196

84	3.7124	0.0194
85	3.7317	0.0193
86	3.7509	0.0192
87	3.7699	0.0190
88	3.7889	0.0189
89	3.8077	0.0188
90	3.8263	0.0187
91	3.8449	0.0186
92	3.8634	0.0185
93	3.8817	0.0183
94	3.9000	0.0182
95	3.9181	0.0181
96	3.9361	0.0180
97	3.9540	0.0179
98	3.9718	0.0178
99	3.9895	0.0177
100	4.0071	0.0176
101	4.0247	0.0175
102	4.0421	0.0174
103	4.0594	0.0173
104	4.0766	0.0172
105	4.0937	0.0171
106	4.1108	0.0170
107	4.1277	0.0169
108	4.1446	0.0169
109	4.1614	0.0168
110	4.1780	0.0167
111	4.1946	0.0166
112	4.2112	0.0165
113	4.2276	0.0164
114	4.2439	0.0164
115	4.2602	0.0163
116	4.2764	0.0162
117	4.2925	0.0161
118	4.3086	0.0160
119	4.3245	0.0160
120	4.3404	0.0159
121	4.3562	0.0158
122	4.3720	0.0157
123	4.3876	0.0157
124	4.4032	0.0156
125	4.4188	0.0155
126	4.4342	0.0155
127	4.4496	0.0154
128	4.4649	0.0153
129	4.4802	0.0153
130	4.4953	0.0152
131	4.5105	0.0151
132	4.5255	0.0151
133	4.5405	0.0150

134	4.5554	0.0149
135	4.5703	0.0149
136	4.5851	0.0148
137	4.5999	0.0147
138	4.6145	0.0147
139	4.6292	0.0146
140	4.6437	0.0146
141	4.6582	0.0145
142	4.6727	0.0144
143	4.6871	0.0144
144	4.7014	0.0143
145	4.7157	0.0143
146	4.7299	0.0142
147	4.7441	0.0142
148	4.7582	0.0141
149	4.7722	0.0141
150	4.7863	0.0140
151	4.8002	0.0140
152	4.8141	0.0139
153	4.8280	0.0139
154	4.8418	0.0138
155	4.8555	0.0138
156	4.8692	0.0137
157	4.8829	0.0137
158	4.8965	0.0136
159	4.9100	0.0136
160	4.9235	0.0135
161	4.9370	0.0135
162	4.9504	0.0134
163	4.9638	0.0134
164	4.9771	0.0133
165	4.9904	0.0133
166	5.0036	0.0132
167	5.0168	0.0132
168	5.0299	0.0131
169	5.0430	0.0131
170	5.0561	0.0131
171	5.0691	0.0130
172	5.0821	0.0130
173	5.0950	0.0129
174	5.1079	0.0129
175	5.1207	0.0128
176	5.1335	0.0128
177	5.1463	0.0128
178	5.1590	0.0127
179	5.1717	0.0127
180	5.1843	0.0126
181	5.1969	0.0126
182	5.2095	0.0126
183	5.2220	0.0125

184	5.2345	0.0125
185	5.2469	0.0124
186	5.2594	0.0124
187	5.2717	0.0124
188	5.2841	0.0123
189	5.2964	0.0123
190	5.3086	0.0123
191	5.3208	0.0122
192	5.3330	0.0122
193	5.3452	0.0122
194	5.3573	0.0121
195	5.3694	0.0121
196	5.3814	0.0120
197	5.3934	0.0120
198	5.4054	0.0120
199	5.4174	0.0119
200	5.4293	0.0119
201	5.4412	0.0119
202	5.4530	0.0118
203	5.4648	0.0118
204	5.4766	0.0118
205	5.4884	0.0117
206	5.5001	0.0117
207	5.5117	0.0117
208	5.5234	0.0117
209	5.5350	0.0116
210	5.5466	0.0116
211	5.5582	0.0116
212	5.5697	0.0115
213	5.5812	0.0115
214	5.5927	0.0115
215	5.6041	0.0114
216	5.6155	0.0114
217	5.6269	0.0114
218	5.6382	0.0113
219	5.6495	0.0113
220	5.6608	0.0113
221	5.6721	0.0113
222	5.6833	0.0112
223	5.6945	0.0112
224	5.7057	0.0112
225	5.7169	0.0111
226	5.7280	0.0111
227	5.7391	0.0111
228	5.7501	0.0111
229	5.7612	0.0110
230	5.7722	0.0110
231	5.7832	0.0110
232	5.7941	0.0110
233	5.8051	0.0109

234	5.8160	0.0109
235	5.8268	0.0109
236	5.8377	0.0109
237	5.8485	0.0108
238	5.8593	0.0108
239	5.8701	0.0108
240	5.8808	0.0107
241	5.8916	0.0107
242	5.9023	0.0107
243	5.9129	0.0107
244	5.9236	0.0107
245	5.9342	0.0106
246	5.9448	0.0106
247	5.9554	0.0106
248	5.9659	0.0106
249	5.9765	0.0105
250	5.9870	0.0105
251	5.9975	0.0105
252	6.0079	0.0105
253	6.0184	0.0104
254	6.0288	0.0104
255	6.0392	0.0104
256	6.0495	0.0104
257	6.0599	0.0103
258	6.0702	0.0103
259	6.0805	0.0103
260	6.0908	0.0103
261	6.1010	0.0103
262	6.1112	0.0102
263	6.1215	0.0102
264	6.1316	0.0102
265	6.1418	0.0102
266	6.1520	0.0101
267	6.1621	0.0101
268	6.1722	0.0101
269	6.1823	0.0101
270	6.1923	0.0101
271	6.2024	0.0100
272	6.2124	0.0100
273	6.2224	0.0100
274	6.2324	0.0100
275	6.2423	0.0100
276	6.2522	0.0099
277	6.2622	0.0099
278	6.2721	0.0099
279	6.2819	0.0099
280	6.2918	0.0099
281	6.3016	0.0098
282	6.3114	0.0098
283	6.3212	0.0098

284	6.3310	0.0098	
285	6.3408	0.0098	
286	6.3505	0.0097	
287	6.3602	0.0097	
288	6.3699	0.0097	

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0097	0.0010	0.0087
2	0.0097	0.0010	0.0087
3	0.0098	0.0010	0.0088
4	0.0098	0.0010	0.0088
5	0.0098	0.0010	0.0088
6	0.0098	0.0010	0.0088
7	0.0099	0.0010	0.0089
8	0.0099	0.0010	0.0089
9	0.0099	0.0010	0.0089
10	0.0100	0.0010	0.0090
11	0.0100	0.0010	0.0090
12	0.0100	0.0010	0.0090
13	0.0101	0.0010	0.0090
14	0.0101	0.0010	0.0091
15	0.0101	0.0010	0.0091
16	0.0101	0.0010	0.0091
17	0.0102	0.0010	0.0092
18	0.0102	0.0010	0.0092
19	0.0103	0.0010	0.0092
20	0.0103	0.0010	0.0092
21	0.0103	0.0010	0.0093
22	0.0103	0.0010	0.0093
23	0.0104	0.0010	0.0093
24	0.0104	0.0011	0.0094
25	0.0105	0.0011	0.0094
26	0.0105	0.0011	0.0094
27	0.0105	0.0011	0.0095
28	0.0106	0.0011	0.0095
29	0.0106	0.0011	0.0095
30	0.0106	0.0011	0.0096
31	0.0107	0.0011	0.0096
32	0.0107	0.0011	0.0096
33	0.0107	0.0011	0.0097
34	0.0108	0.0011	0.0097
35	0.0108	0.0011	0.0097
36	0.0109	0.0011	0.0098
37	0.0109	0.0011	0.0098
38	0.0109	0.0011	0.0098
39	0.0110	0.0011	0.0099
40	0.0110	0.0011	0.0099

41	0.0111	0.0011	0.0099
42	0.0111	0.0011	0.0100
43	0.0111	0.0011	0.0100
44	0.0112	0.0011	0.0100
45	0.0112	0.0011	0.0101
46	0.0113	0.0011	0.0101
47	0.0113	0.0011	0.0102
48	0.0113	0.0011	0.0102
49	0.0114	0.0012	0.0103
50	0.0114	0.0012	0.0103
51	0.0115	0.0012	0.0103
52	0.0115	0.0012	0.0104
53	0.0116	0.0012	0.0104
54	0.0116	0.0012	0.0104
55	0.0117	0.0012	0.0105
56	0.0117	0.0012	0.0105
57	0.0118	0.0012	0.0106
58	0.0118	0.0012	0.0106
59	0.0119	0.0012	0.0107
60	0.0119	0.0012	0.0107
61	0.0120	0.0012	0.0108
62	0.0120	0.0012	0.0108
63	0.0121	0.0012	0.0109
64	0.0121	0.0012	0.0109
65	0.0122	0.0012	0.0110
66	0.0122	0.0012	0.0110
67	0.0123	0.0012	0.0111
68	0.0123	0.0012	0.0111
69	0.0124	0.0013	0.0112
70	0.0124	0.0013	0.0112
71	0.0125	0.0013	0.0113
72	0.0126	0.0013	0.0113
73	0.0126	0.0013	0.0114
74	0.0127	0.0013	0.0114
75	0.0128	0.0013	0.0115
76	0.0128	0.0013	0.0115
77	0.0129	0.0013	0.0116
78	0.0129	0.0013	0.0116
79	0.0130	0.0013	0.0117
80	0.0131	0.0013	0.0117
81	0.0131	0.0013	0.0118
82	0.0132	0.0013	0.0119
83	0.0133	0.0013	0.0119
84	0.0133	0.0013	0.0120
85	0.0134	0.0014	0.0121
86	0.0135	0.0014	0.0121
87	0.0136	0.0014	0.0122
88	0.0136	0.0014	0.0122
89	0.0137	0.0014	0.0123
90	0.0138	0.0014	0.0124

91	0.0139	0.0014	0.0125
92	0.0139	0.0014	0.0125
93	0.0140	0.0014	0.0126
94	0.0141	0.0014	0.0126
95	0.0142	0.0014	0.0127
96	0.0142	0.0014	0.0128
97	0.0143	0.0014	0.0129
98	0.0144	0.0015	0.0129
99	0.0145	0.0015	0.0130
100	0.0146	0.0015	0.0131
101	0.0147	0.0015	0.0132
102	0.0147	0.0015	0.0133
103	0.0149	0.0015	0.0134
104	0.0149	0.0015	0.0134
105	0.0151	0.0015	0.0135
106	0.0151	0.0015	0.0136
107	0.0153	0.0015	0.0137
108	0.0153	0.0015	0.0138
109	0.0155	0.0016	0.0139
110	0.0155	0.0016	0.0140
111	0.0157	0.0016	0.0141
112	0.0157	0.0016	0.0142
113	0.0159	0.0016	0.0143
114	0.0160	0.0016	0.0144
115	0.0161	0.0016	0.0145
116	0.0162	0.0016	0.0146
117	0.0164	0.0017	0.0147
118	0.0164	0.0017	0.0148
119	0.0166	0.0017	0.0149
120	0.0167	0.0017	0.0150
121	0.0169	0.0017	0.0152
122	0.0169	0.0017	0.0152
123	0.0171	0.0017	0.0154
124	0.0172	0.0017	0.0155
125	0.0174	0.0018	0.0157
126	0.0175	0.0018	0.0157
127	0.0177	0.0018	0.0159
128	0.0178	0.0018	0.0160
129	0.0180	0.0018	0.0162
130	0.0181	0.0018	0.0163
131	0.0183	0.0019	0.0165
132	0.0185	0.0019	0.0166
133	0.0187	0.0019	0.0168
134	0.0188	0.0019	0.0169
135	0.0190	0.0019	0.0171
136	0.0192	0.0019	0.0172
137	0.0194	0.0020	0.0175
138	0.0196	0.0020	0.0176
139	0.0198	0.0020	0.0178
140	0.0200	0.0020	0.0180

141	0.0203	0.0020	0.0182
142	0.0204	0.0021	0.0184
143	0.0207	0.0021	0.0186
144	0.0209	0.0021	0.0188
145	0.0230	0.0023	0.0207
146	0.0232	0.0023	0.0208
147	0.0235	0.0024	0.0212
148	0.0237	0.0024	0.0213
149	0.0241	0.0024	0.0217
150	0.0243	0.0025	0.0218
151	0.0247	0.0025	0.0222
152	0.0249	0.0025	0.0224
153	0.0253	0.0026	0.0228
154	0.0256	0.0026	0.0230
155	0.0260	0.0026	0.0234
156	0.0263	0.0027	0.0236
157	0.0268	0.0027	0.0241
158	0.0271	0.0027	0.0243
159	0.0276	0.0028	0.0248
160	0.0279	0.0028	0.0251
161	0.0285	0.0029	0.0256
162	0.0288	0.0029	0.0259
163	0.0295	0.0030	0.0265
164	0.0299	0.0030	0.0268
165	0.0306	0.0031	0.0275
166	0.0310	0.0031	0.0279
167	0.0318	0.0032	0.0286
168	0.0323	0.0033	0.0290
169	0.0332	0.0034	0.0299
170	0.0337	0.0034	0.0303
171	0.0348	0.0035	0.0313
172	0.0354	0.0036	0.0318
173	0.0366	0.0037	0.0329
174	0.0373	0.0038	0.0335
175	0.0387	0.0039	0.0348
176	0.0395	0.0040	0.0355
177	0.0413	0.0042	0.0371
178	0.0422	0.0043	0.0379
179	0.0443	0.0045	0.0398
180	0.0455	0.0046	0.0409
181	0.0481	0.0049	0.0433
182	0.0497	0.0050	0.0446
183	0.0531	0.0054	0.0478
184	0.0552	0.0056	0.0496
185	0.0506	0.0051	0.0455
186	0.0534	0.0054	0.0481
187	0.0607	0.0061	0.0546
188	0.0654	0.0065	0.0589
189	0.0789	0.0065	0.0723
190	0.0890	0.0065	0.0825

191	0.1272	0.0065	0.1207
192	0.1750	0.0065	0.1684
193	0.5476	0.0065	0.5410
194	0.1036	0.0065	0.0971
195	0.0713	0.0065	0.0648
196	0.0568	0.0057	0.0510
197	0.0574	0.0058	0.0516
198	0.0513	0.0052	0.0461
199	0.0468	0.0047	0.0420
200	0.0432	0.0044	0.0389
201	0.0404	0.0041	0.0363
202	0.0380	0.0038	0.0342
203	0.0360	0.0036	0.0323
204	0.0343	0.0035	0.0308
205	0.0327	0.0033	0.0294
206	0.0314	0.0032	0.0282
207	0.0302	0.0030	0.0272
208	0.0292	0.0029	0.0262
209	0.0282	0.0028	0.0254
210	0.0273	0.0028	0.0246
211	0.0265	0.0027	0.0238
212	0.0258	0.0026	0.0232
213	0.0251	0.0025	0.0226
214	0.0245	0.0025	0.0220
215	0.0239	0.0024	0.0215
216	0.0233	0.0024	0.0210
217	0.0210	0.0021	0.0189
218	0.0206	0.0021	0.0185
219	0.0201	0.0020	0.0181
220	0.0197	0.0020	0.0177
221	0.0193	0.0019	0.0174
222	0.0189	0.0019	0.0170
223	0.0186	0.0019	0.0167
224	0.0182	0.0018	0.0164
225	0.0179	0.0018	0.0161
226	0.0176	0.0018	0.0158
227	0.0173	0.0017	0.0156
228	0.0170	0.0017	0.0153
229	0.0168	0.0017	0.0151
230	0.0165	0.0017	0.0149
231	0.0163	0.0016	0.0146
232	0.0160	0.0016	0.0144
233	0.0158	0.0016	0.0142
234	0.0156	0.0016	0.0140
235	0.0154	0.0016	0.0138
236	0.0152	0.0015	0.0137
237	0.0150	0.0015	0.0135
238	0.0148	0.0015	0.0133
239	0.0146	0.0015	0.0131
240	0.0144	0.0015	0.0130

241	0.0143	0.0014	0.0128
242	0.0141	0.0014	0.0127
243	0.0140	0.0014	0.0125
244	0.0138	0.0014	0.0124
245	0.0137	0.0014	0.0123
246	0.0135	0.0014	0.0121
247	0.0134	0.0013	0.0120
248	0.0132	0.0013	0.0119
249	0.0131	0.0013	0.0118
250	0.0130	0.0013	0.0117
251	0.0128	0.0013	0.0115
252	0.0127	0.0013	0.0114
253	0.0126	0.0013	0.0113
254	0.0125	0.0013	0.0112
255	0.0124	0.0012	0.0111
256	0.0123	0.0012	0.0110
257	0.0122	0.0012	0.0109
258	0.0120	0.0012	0.0108
259	0.0119	0.0012	0.0107
260	0.0118	0.0012	0.0107
261	0.0117	0.0012	0.0106
262	0.0117	0.0012	0.0105
263	0.0116	0.0012	0.0104
264	0.0115	0.0012	0.0103
265	0.0114	0.0011	0.0102
266	0.0113	0.0011	0.0102
267	0.0112	0.0011	0.0101
268	0.0111	0.0011	0.0100
269	0.0110	0.0011	0.0099
270	0.0110	0.0011	0.0099
271	0.0109	0.0011	0.0098
272	0.0108	0.0011	0.0097
273	0.0107	0.0011	0.0096
274	0.0107	0.0011	0.0096
275	0.0106	0.0011	0.0095
276	0.0105	0.0011	0.0094
277	0.0104	0.0011	0.0094
278	0.0104	0.0010	0.0093
279	0.0103	0.0010	0.0093
280	0.0102	0.0010	0.0092
281	0.0102	0.0010	0.0091
282	0.0101	0.0010	0.0091
283	0.0100	0.0010	0.0090
284	0.0100	0.0010	0.0090
285	0.0099	0.0010	0.0089
286	0.0099	0.0010	0.0089
287	0.0098	0.0010	0.0088
288	0.0097	0.0010	0.0088

Total soil rain loss = 0.57(In)
Total effective rainfall = 5.80(In)
Peak flow rate in flood hydrograph = 23.04(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	7.5	15.0	22.5	30.0
0+ 5	0.0002	0.03	Q				
0+10	0.0013	0.16	Q				
0+15	0.0041	0.41	Q				
0+20	0.0085	0.63	Q				
0+25	0.0134	0.72	Q				
0+30	0.0187	0.76	VQ				
0+35	0.0240	0.77	VQ				
0+40	0.0294	0.78	VQ				
0+45	0.0348	0.79	VQ				
0+50	0.0402	0.79	VQ				
0+55	0.0457	0.79	VQ				
1+ 0	0.0512	0.79	VQ				
1+ 5	0.0567	0.80	VQ				
1+10	0.0622	0.80	VQ				
1+15	0.0677	0.80	VQ				
1+20	0.0732	0.80	VQ				
1+25	0.0788	0.81	VQ				
1+30	0.0844	0.81	VQ				
1+35	0.0900	0.81	|Q				
1+40	0.0956	0.82	|Q				
1+45	0.1012	0.82	|Q				
1+50	0.1069	0.82	|Q				
1+55	0.1125	0.82	|Q				
2+ 0	0.1182	0.83	|Q				
2+ 5	0.1239	0.83	|Q				
2+10	0.1296	0.83	|Q				
2+15	0.1354	0.83	|Q				
2+20	0.1411	0.84	|Q				
2+25	0.1469	0.84	|Q				
2+30	0.1527	0.84	|Q				
2+35	0.1585	0.85	|Q				
2+40	0.1644	0.85	|Q				
2+45	0.1702	0.85	|Q				
2+50	0.1761	0.85	|Q				
2+55	0.1820	0.86	|QV				
3+ 0	0.1880	0.86	|QV				
3+ 5	0.1939	0.86	|QV				

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3+10       0.1999      0.87  |QV        |          |          |          |
3+15       0.2059      0.87  |QV        |          |          |          |
3+20       0.2119      0.87  |QV        |          |          |          |
3+25       0.2179      0.88  |QV        |          |          |          |
3+30       0.2239      0.88  |QV        |          |          |          |
3+35       0.2300      0.88  |QV        |          |          |          |
3+40       0.2361      0.89  |QV        |          |          |          |
3+45       0.2422      0.89  |QV        |          |          |          |
3+50       0.2484      0.89  |QV        |          |          |          |
3+55       0.2545      0.90  |QV        |          |          |          |
4+ 0       0.2607      0.90  |QV        |          |          |          |
4+ 5       0.2669      0.90  |Q V       |          |          |          |
4+10       0.2732      0.91  |Q V       |          |          |          |
4+15       0.2794      0.91  |Q V       |          |          |          |
4+20       0.2857      0.91  |Q V       |          |          |          |
4+25       0.2920      0.92  |Q V       |          |          |          |
4+30       0.2984      0.92  |Q V       |          |          |          |
4+35       0.3047      0.92  |Q V       |          |          |          |
4+40       0.3111      0.93  |Q V       |          |          |          |
4+45       0.3175      0.93  |Q V       |          |          |          |
4+50       0.3240      0.93  |Q V       |          |          |          |
4+55       0.3304      0.94  |Q V       |          |          |          |
5+ 0       0.3369      0.94  |Q V       |          |          |          |
5+ 5       0.3435      0.95  |Q V       |          |          |          |
5+10       0.3500      0.95  |Q V       |          |          |          |
5+15       0.3566      0.95  |Q  V      |          |          |          |
5+20       0.3632      0.96  |Q  V      |          |          |          |
5+25       0.3698      0.96  |Q  V      |          |          |          |
5+30       0.3765      0.97  |Q  V      |          |          |          |
5+35       0.3832      0.97  |Q  V      |          |          |          |
5+40       0.3899      0.98  |Q  V      |          |          |          |
5+45       0.3966      0.98  |Q  V      |          |          |          |
5+50       0.4034      0.98  |Q  V      |          |          |          |
5+55       0.4102      0.99  |Q  V      |          |          |          |
6+ 0       0.4170      0.99  |Q  V      |          |          |          |
6+ 5       0.4239      1.00  |Q  V      |          |          |          |
6+10       0.4308      1.00  |Q  V      |          |          |          |
6+15       0.4378      1.01  |Q  V      |          |          |          |
6+20       0.4447      1.01  |Q   V     |          |          |          |
6+25       0.4517      1.02  |Q   V     |          |          |          |
6+30       0.4588      1.02  |Q   V     |          |          |          |
6+35       0.4658      1.03  |Q   V     |          |          |          |
6+40       0.4729      1.03  |Q   V     |          |          |          |
6+45       0.4801      1.04  |Q   V     |          |          |          |
6+50       0.4872      1.04  |Q   V     |          |          |          |
6+55       0.4944      1.05  |Q   V     |          |          |          |
7+ 0       0.5017      1.05  |Q   V     |          |          |          |
7+ 5       0.5090      1.06  |Q   V     |          |          |          |
7+10       0.5163      1.06  |Q   V     |          |          |          |
7+15       0.5236      1.07  |Q   V     |          |          |          |
```

```
 7+20       0.5310      1.07  |Q   V    |          |          |          |
 7+25       0.5385      1.08  |Q    V   |          |          |          |
 7+30       0.5459      1.09  |Q    V   |          |          |          |
 7+35       0.5535      1.09  |Q    V   |          |          |          |
 7+40       0.5610      1.10  |Q    V   |          |          |          |
 7+45       0.5686      1.10  |Q    V   |          |          |          |
 7+50       0.5762      1.11  |Q    V   |          |          |          |
 7+55       0.5839      1.12  |Q    V   |          |          |          |
 8+ 0       0.5916      1.12  |Q    V   |          |          |          |
 8+ 5       0.5994      1.13  |Q    V   |          |          |          |
 8+10       0.6072      1.13  |Q    V   |          |          |          |
 8+15       0.6151      1.14  |Q    V   |          |          |          |
 8+20       0.6230      1.15  |Q     V  |          |          |          |
 8+25       0.6309      1.15  |Q     V  |          |          |          |
 8+30       0.6389      1.16  |Q     V  |          |          |          |
 8+35       0.6470      1.17  |Q     V  |          |          |          |
 8+40       0.6551      1.18  |Q     V  |          |          |          |
 8+45       0.6632      1.18  |Q     V  |          |          |          |
 8+50       0.6714      1.19  |Q     V  |          |          |          |
 8+55       0.6797      1.20  |Q     V  |          |          |          |
 9+ 0       0.6880      1.21  |Q     V  |          |          |          |
 9+ 5       0.6963      1.21  |Q     V  |          |          |          |
 9+10       0.7048      1.22  |Q     V  |          |          |          |
 9+15       0.7132      1.23  |Q      V |          |          |          |
 9+20       0.7217      1.24  |Q      V |          |          |          |
 9+25       0.7303      1.25  |Q      V |          |          |          |
 9+30       0.7390      1.25  |Q      V |          |          |          |
 9+35       0.7477      1.26  |Q      V |          |          |          |
 9+40       0.7564      1.27  |Q      V |          |          |          |
 9+45       0.7653      1.28  |Q      V |          |          |          |
 9+50       0.7742      1.29  |Q      V |          |          |          |
 9+55       0.7831      1.30  |Q      V |          |          |          |
10+ 0       0.7921      1.31  |Q      V |          |          |          |
10+ 5       0.8012      1.32  |Q       V|          |          |          |
10+10       0.8104      1.33  |Q       V|          |          |          |
10+15       0.8196      1.34  |Q       V|          |          |          |
10+20       0.8289      1.35  |Q       V|          |          |          |
10+25       0.8383      1.36  |Q       V|          |          |          |
10+30       0.8477      1.37  |Q       V|          |          |          |
10+35       0.8573      1.38  |Q       V|          |          |          |
10+40       0.8669      1.40  |Q       V|          |          |          |
10+45       0.8766      1.41  |Q       V|          |          |          |
10+50       0.8863      1.42  |Q       V|          |          |          |
10+55       0.8962      1.43  |Q        V          |          |          |
11+ 0       0.9061      1.44  |Q        V          |          |          |
11+ 5       0.9162      1.46  |Q        V          |          |          |
11+10       0.9263      1.47  |Q        V          |          |          |
11+15       0.9365      1.48  |Q        V          |          |          |
11+20       0.9468      1.50  |Q        V          |          |          |
11+25       0.9573      1.51  | Q       V          |          |          |
```

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11+30       0.9678      1.53  | Q       V         |         |         |
11+35       0.9784      1.54  | Q       |V        |         |         |
11+40       0.9891      1.56  | Q       |V        |         |         |
11+45       1.0000      1.57  | Q       |V        |         |         |
11+50       1.0109      1.59  | Q       |V        |         |         |
11+55       1.0220      1.61  | Q       |V        |         |         |
12+ 0       1.0332      1.63  | Q       |V        |         |         |
12+ 5       1.0445      1.65  | Q       |V        |         |         |
12+10       1.0562      1.69  | Q       |V        |         |         |
12+15       1.0683      1.76  | Q       | V       |         |         |
12+20       1.0808      1.82  | Q       | V       |         |         |
12+25       1.0936      1.86  | Q       | V       |         |         |
12+30       1.1066      1.88  | Q       | V       |         |         |
12+35       1.1197      1.91  | Q       | V       |         |         |
12+40       1.1330      1.93  | Q       | V       |         |         |
12+45       1.1465      1.96  | Q       | V       |         |         |
12+50       1.1601      1.98  | Q       |  V      |         |         |
12+55       1.1739      2.01  | Q       |  V      |         |         |
13+ 0       1.1880      2.03  | Q       |  V      |         |         |
13+ 5       1.2021      2.06  | Q       |  V      |         |         |
13+10       1.2165      2.09  | Q       |  V      |         |         |
13+15       1.2311      2.12  | Q       |  V      |         |         |
13+20       1.2460      2.15  | Q       |   V     |         |         |
13+25       1.2610      2.18  | Q       |   V     |         |         |
13+30       1.2763      2.22  | Q       |   V     |         |         |
13+35       1.2918      2.25  |  Q      |   V     |         |         |
13+40       1.3076      2.29  |  Q      |   V     |         |         |
13+45       1.3236      2.33  |  Q      |   V     |         |         |
13+50       1.3400      2.37  |  Q      |    V    |         |         |
13+55       1.3566      2.42  |  Q      |    V    |         |         |
14+ 0       1.3736      2.46  |  Q      |    V    |         |         |
14+ 5       1.3908      2.51  |  Q      |    V    |         |         |
14+10       1.4085      2.56  |  Q      |    V    |         |         |
14+15       1.4265      2.62  |  Q      |     V   |         |         |
14+20       1.4449      2.68  |  Q      |     V   |         |         |
14+25       1.4638      2.74  |  Q      |     V   |         |         |
14+30       1.4831      2.81  |  Q      |     V   |         |         |
14+35       1.5030      2.88  |  Q      |     V   |         |         |
14+40       1.5233      2.96  |  Q      |      V  |         |         |
14+45       1.5442      3.04  |   Q     |      V  |         |         |
14+50       1.5658      3.13  |   Q     |      V  |         |         |
14+55       1.5880      3.23  |   Q     |      V  |         |         |
15+ 0       1.6110      3.34  |   Q     |       V |         |         |
15+ 5       1.6349      3.46  |   Q     |       V |         |         |
15+10       1.6596      3.60  |   Q     |       V |         |         |
15+15       1.6855      3.75  |   Q     |       V |         |         |
15+20       1.7125      3.92  |    Q    |        V|         |         |
15+25       1.7407      4.09  |    Q    |        V|         |         |
15+30       1.7695      4.19  |    Q    |        V|         |         |
15+35       1.7986      4.22  |    Q    |         V         |         |
```
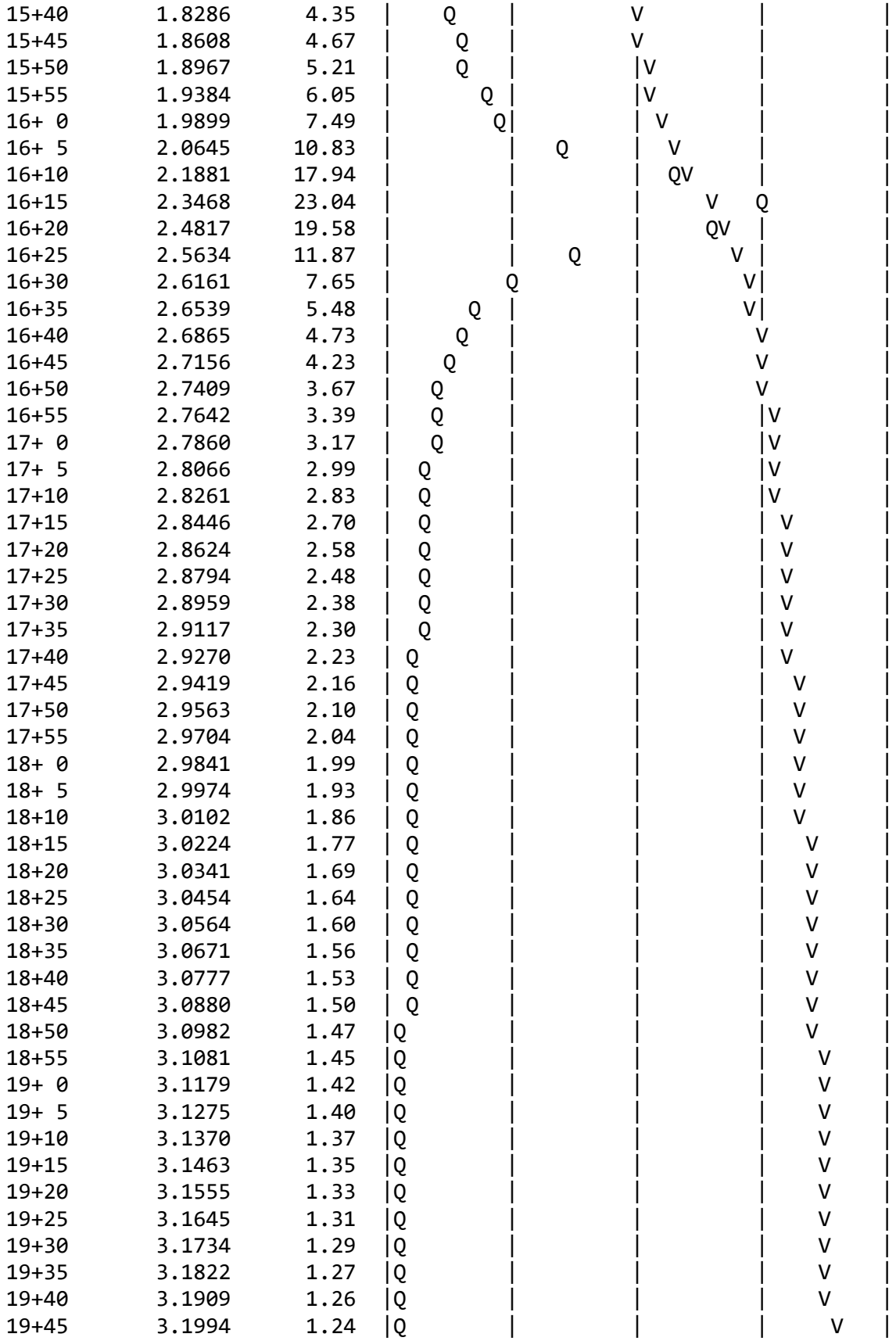



19+50	3.2078	1.22	Q				V
19+55	3.2161	1.21	Q				V
20+ 0	3.2243	1.19	Q				V
20+ 5	3.2324	1.18	Q				V
20+10	3.2404	1.16	Q				V
20+15	3.2483	1.15	Q				V
20+20	3.2562	1.14	Q				V
20+25	3.2639	1.12	Q				V
20+30	3.2715	1.11	Q				V
20+35	3.2791	1.10	Q				V
20+40	3.2866	1.09	Q				V
20+45	3.2940	1.07	Q				V
20+50	3.3013	1.06	Q				V
20+55	3.3086	1.05	Q				V
21+ 0	3.3157	1.04	Q				V
21+ 5	3.3228	1.03	Q				V
21+10	3.3299	1.02	Q				V
21+15	3.3369	1.01	Q				V
21+20	3.3438	1.00	Q				V
21+25	3.3506	0.99	Q				V
21+30	3.3574	0.98	Q				V
21+35	3.3641	0.98	Q				V
21+40	3.3708	0.97	Q				V
21+45	3.3774	0.96	Q				V
21+50	3.3839	0.95	Q				V
21+55	3.3904	0.94	Q				V
22+ 0	3.3969	0.94	Q				V
22+ 5	3.4033	0.93	Q				V
22+10	3.4096	0.92	Q				V
22+15	3.4159	0.91	Q				V
22+20	3.4221	0.91	Q				V
22+25	3.4283	0.90	Q				V
22+30	3.4345	0.89	Q				V
22+35	3.4406	0.89	Q				V
22+40	3.4466	0.88	Q				V
22+45	3.4526	0.87	Q				V
22+50	3.4586	0.87	Q				V
22+55	3.4645	0.86	Q				V
23+ 0	3.4704	0.85	Q				V
23+ 5	3.4763	0.85	Q				V
23+10	3.4821	0.84	Q				V
23+15	3.4878	0.84	Q				V
23+20	3.4936	0.83	Q				V
23+25	3.4992	0.83	Q				V
23+30	3.5049	0.82	Q				V
23+35	3.5105	0.82	Q				V
23+40	3.5161	0.81	Q				V
23+45	3.5216	0.81	Q				V
23+50	3.5271	0.80	Q				V
23+55	3.5326	0.80	Q				V

```
   24+ 0       3.5381      0.79  |Q        |         |         V|
-------------------------------------------------------------------
```

PACIFIC CONSULTING GROUP

INFILTRATION VOLUME CALCULATIONS

Infiltration Trench Area:

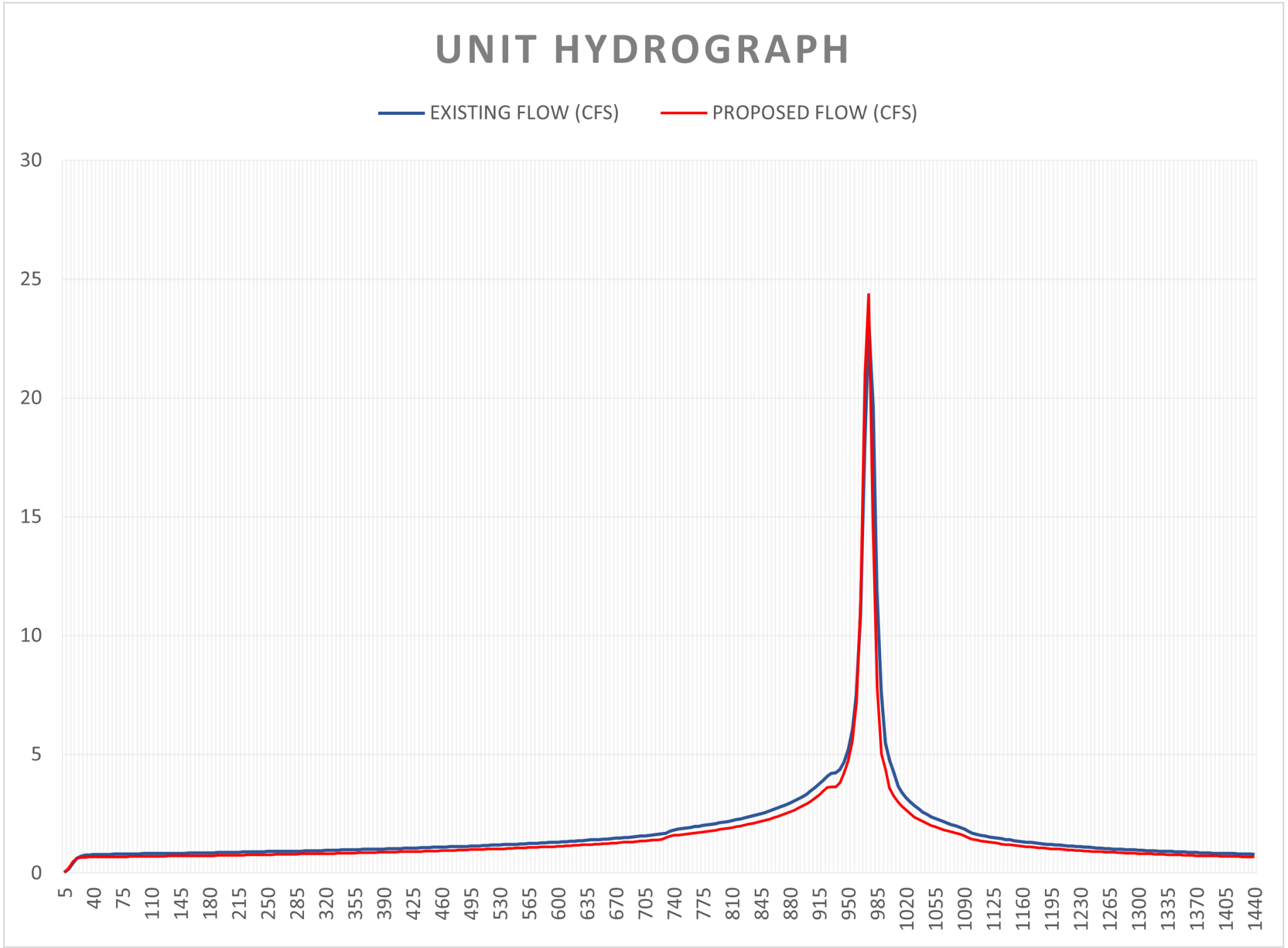
Infiltration Trench 1 = 936 SF
Infiltration Trench 2 = 2,790 SF
Infiltration Trench 3 = 6,975 SF
Total Area = 10,701 SF

Depth of Infiltration Trench = 8 feet

Porosity of Infiltration Trench = 40% or 0.4

Total Retention Volume = 10,701 SF x 8 Ft x 0.4 = 34,243 CF

2239 State Ave, #B
Costa Mesa, California 92627
(818) 800 6991
Kyle@pacificconsultinginc.com


UNIT HYDROGRAPH
EXISTING FLOW (CFS)
PROPOSED FLOW (CFS)
30
25
20
15
10
5
0
5
40
75
110
145
180
215
250
285
320
355
390
425
460
495
530
565
600
635
670
705
740
775
810
845
880
915
950
985
1020
1055
1090
1125
1160
1195
1230
1265
1300
1335
1370
1405
1440