EXHIBIT “C”

EXHIBIT C

Final Drainage Report

Waterman Industrial Center
San Bernardino, California

February 2017

Prepared for:
Newcastle Partners, Inc.

Prepared by:
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Project No. 095956002

Kimley»Horn

This Drainage Report has been prepared by Kimley-Horn and Associates, Inc. under the direct supervision of the following Registered Civil engineer. The undersigned attests to the technical data contained in this study, and to the qualifications of technical specialists providing engineering computations upon which the recommendations and conclusions are based.

Registered Civil Engineer

2-16-17
Date

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TABLE OF CONTENTS

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TABLE OF CONTENTS

List of Figures

List of Tables

List of Appendices

Exhibits

Section 1 Introduction

1.1 Project Description and Purpose

This Drainage Report is provided in support of the proposed Waterman Industrial Center in San Bernardino, California. The 25.25 acre site is located southwest of the intersection of Waterman Avenue and Dumas Street. See **Figure 1-1** below for a project location map. The existing site is a combination of residential properties, vacant lots, a church site and a golf driving range. Although the existing land use is comprised of light industrial and open space, the project site will be revised for light industrial land use. The proposed site development will include an industrial building with mezzanine space, loading docks and parking and drive isles for auto and truck traffic. This drainage report includes the existing and proposed conditions hydrologic analyses, onsite underground infiltration basin analysis, and design of the onsite drainage systems.

The project location is shown below in **Figure 1-1**.

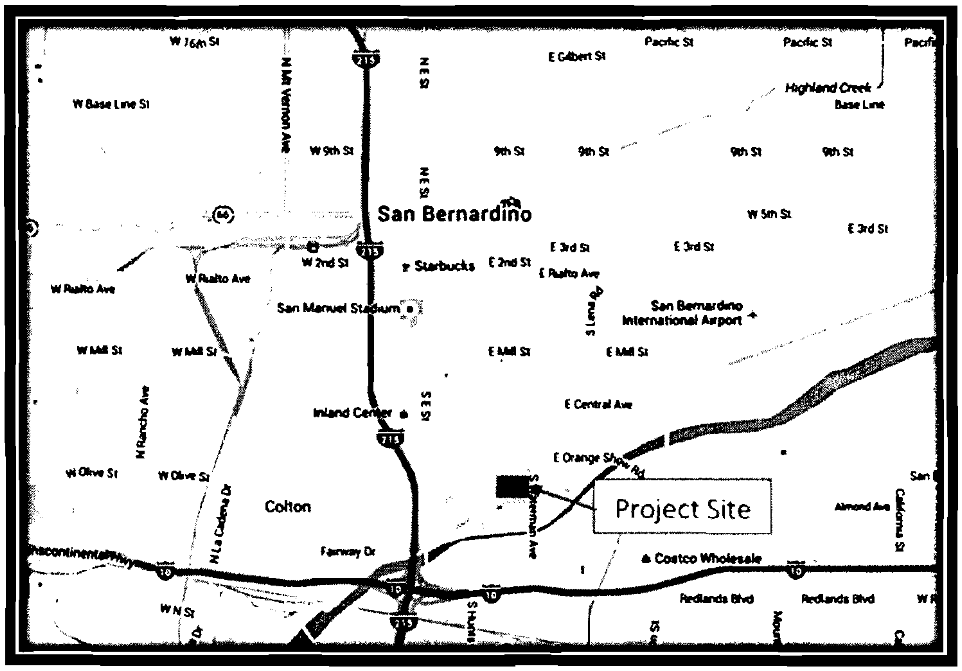

Figure 1-1

1.2 Watershed Description

The project is located in moderately sloped terrain that generally slopes from the northeast towards the south and southwest. Existing drainage flows are primarily shallow sheet flow, which discharges onto the golf course property to the west and southwest. Runoff within the public street sections remains in the curb and gutter along Waterman Avenue and within the curb and gutter, asphalt concrete dike or shoulder of Dumas Street. The proposed onsite tributary area is approximately 25.25 acres.

Section 2 Project Setting

2.1 Topography

The project area is part of a primarily urban watershed that eventually drains to Twin Creek Channel and to the Santa Ana River. The project site does not contain significant hills or depressions. The onsite watershed slopes gradually from the northeastern corner of the site near the intersection of Waterman Avenue and Dumas Street (approximately elevation 1,014.0) to the west and southwestern corner of the site (approximately elevation 1,004.5). Overland flows exit the site along the west and southwest project boundary. Dumas Street which borders on the north slopes to the west and Waterman Avenue which borders on the east slopes to the south. Existing site topography was created from aerial mapping performed on April 9, 2015 by the Photo Geodetic Corporation.

2.2 Precipitation

Precipitation values for the hydrologic analysis were determined from site specific precipitation frequency estimates published online in the National Oceanic and Atmospheric Administration (NOAA) Atlas 14. For this site, within the City of San Bernardino, California, the 100-year, 1-hour storm precipitation value used in the calculations was 1.59 inches. Per the *County of San Bernardino Hydrology Manual Addendum for Arid Regions* (April 2010), estimates of higher frequency and smaller duration events were also taken directly from NOAA Atlas 14. **Appendix A** contains the site specific tabular output from NOAA Atlas 14.

2.3 Soil Types

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

The Hydrologic Soils Group Map from the County of San Bernardino's Hydrology Manual was utilized to obtain the soil type for the project site. From Figure C-14, it was determined that the entire project site is comprised of Hydrologic soil group A. Group A soils typically have high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well-drained sands or gravels. These sandy silt soils have low runoff potential and a high rate of water transmission. Initial geotechnical tests of the site conducted by NorCal Engineering Soils and Geotechnical Consultants in April 2015, indicate that the site contains soils with infiltration rates of approximately 2.5 inches per hour.

2.4 Land Use

The current site is contains a combination of residential homes, a church and a golf driving range to the south. The land use as defined by the City of San Bernardino is a combination of industrial and open space, which will be revised to be a comprehensive industrial for the purpose of this project.

2.5 Groundwater

Groundwater levels in the project area were measured during initial geotechnical testing performed in April 2015 by NorCal Engineering Soils and Geotechnical Consultants. Borehole investigations indicated groundwater at a depth approximately 40 feet below the ground surface. The proposed drainage facilities are not expected to be impacted by groundwater due to the large measured depth below the surface.

2.6 FEMA Mapping

The project site is covered by Map Numbers 06071C8683H and 06071C8684H of the FEMA Flood Insurance Rate Map (FIRM) for San Bernardino County, California and Incorporated Areas. A majority of the project site is located within Flood Zone A, while a smaller portion in the southeast corner is located in Flood Zone X. Flood Zone A has a 1% annual change of flood hazard and Flood Zone X has a 0.2% annual chance of flood hazard. The effective FEMA maps is dated November 28, 2008 and are provided in **Appendix B.** A Letter of Map Amendment (LOMA) for removal of the project from Zone X has been filed and approved with FEMA, see Appendix B for documentation

Section 3 Existing Drainage Facilities

3.1 Existing Drainage Facilities Summary

The project site overland flows from the northeast/east to west/southwest. There are no existing drainage facilities on the project site.

Runoff within Waterman Avenue is conveyed south towards the Santa Ana River within the curb and gutter and runoff within Dumas Street is conveyed to the west towards Twin Creek channel through a variety of roadside improvements such as curb and gutter, asphalt concrete dike and earthen shoulders. Waterman Avenue has an existing 36-inch storm drain main conveying flows to the south towards the Santa Ana River. The City has indicated that this storm drain system is under capacity. There is no additional drainage systems in the area or on site.

3.2 Erosion and Sedimentation

The proposed commercial site will be approximately 90% impervious with landscaped slopes and parkway landscaped areas. Graded and disturbed areas will be re-vegetated and landscaped to minimize erosion. The post construction site will have minimal risks of erosion occurring given proper plant establishment and transport of sediments downstream will be significantly reduced by means of pretreatment and an onsite underground infiltration/retention basin with no offsite discharge location. It will be critical to maintain construction site BMP's throughout the construction duration.

Section 4 Hydrologic Analysis

4.1 Methodology

A Modified Rational Method analysis was used to calculate peak flows for the 2-year, 10-year, 25-year, and 100-year storm events under existing and proposed conditions. This method follows the procedure described in Section D of the *San Bernardino County Hydrology Manual* (November 1986). Advanced Engineering Software (AES) was used to estimate times of concentration and peak flow rates with the Modified Rational Method.

The Unit Hydrograph method was also prepared for the 100 year storm event for the purpose of infiltration basin sizing. Methods within Section E of the *San Bernardino County Hydrology Manual* were followed. A hydrograph was prepared using the Civil Design Computer Program (San Bernardino module).

Geometry

Sub-basin boundaries, initial subareas, and flow paths were delineated for each sub-basin with AutoCAD Civil 3D software. These hydrologic parameters are shown for existing conditions and proposed conditions in **Exhibit C-1** and **Exhibit C-2** of **Appendix C**. Point elevations and surfaces within Civil 3D were also used to determine flow path slopes and estimate the shape of routing reaches. A summary of the existing condition and proposed condition inputs into the AES models are included in **Appendix D.** The proposed condition sub-basins were each given a sub-basin ID. The sub-basin routing nodes in AES are based on the sub-basin ID plus an increment of 1 as flows are routed downstream. For example, the AES input for the existing condition sub-basin 1.0 is an initial sub-area from node 100 to 101 and overland flow from 101 to 102. The flow output from AES for each sub-basin was entered into the hydraulic model which is a conservative approach.

Intensity and Time of Concentration

Rainfall amounts for 5-minute, 10-minute, 15-minute, 30-minute, and 60-minute duration events were taken from NOAA Atlas 14 output and the corresponding intensities simply calculated as point precipitation over duration. This Intensity-Duration table was then input directly into AES for each storm frequency. AES software was used to calculate the appropriate time of concentration for each sub-basin, except for the rooftop sub-basins. These are small, impervious sub-basins that have short travel times, so the minimum time of concentration, 5 minutes, was used without inputting the geometry into AES.

The time of concentration calculated in the AES software was used in the Civil Design software for the unit hydrograph method. The Tc was directly input into the software allowing it to calculate the lag time to use in the analysis of the hydrograph development.

Runoff Coefficient and Loss Rates

AES software was used to calculate loss rates and subsequent runoff coefficients for each sub-basin based on land use type, hydrologic soil group, and Antecedent Moisture Condition (AMC). The existing conditions land utilized for the model was residential, one dwelling unit per acre for the north residential areas, and natural grass with good cover for the south driving range area. The proposed conditions land use is industrial, which is defined as 90% impervious. Hydrologic soil group A was used for the entire site. The AMC is a commonly used index used to describe how saturated a soil is before the design storm occurs. AMC III, when the watershed is assumed to already be saturated, was used for the 100-year storm analysis. AMC II, a moderately wet condition, was used for the 25-year and 10-year analyses and AMC 1, a moderately dry condition, was used for the 2-year analysis (as defined in the San Bernardino County

Hydrology Manual). The unit hydrograph method uses the same loss rates as the AES software for the Rational Method.

4.2 Hydrologic Results

The Existing Conditions Drainage Map, **Exhibit C-1** that corresponds to the existing condition rational method can be located in **Appendix C**. Full output from the existing condition hydrology AES models are provided in **Appendix D**. A summary of the existing conditions peak flows is shown in **Table 4-1.**

Table 4-1: Existing Conditions Hydrology Results

Sub-basin ID	Sub-basin Area (ac)	Q_2 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
1.0	0.57	0.1	0.5	0.8	1.3
1.1	13.10	1.7	5.0	9.2	20.1
2.0	0.92	0.0	0.4	0.7	1.4
2.1	10.72	<0.1	0.7	4.4	13.6
Total	**25.31**	**N/A**	**6.6**	**15.1**	**36.5**

* The total Q's shown above are the combined peak discharge values at the west property limits and not the sum of the discharge values for each sub area. Refer to **Appendix D** for the AES output.

Note that existing condition sub-basin boundaries were delineated independently of proposed conditions boundaries: for instance, existing conditions subbasin 1.0 is not the same area as proposed conditions subbasin 1.0.

The Proposed Conditions Drainage Map, **Exhibit C-2** that corresponds to the proposed condition rational method can be located in **Appendix C**. Full output from the proposed conditions hydrology AES models are provided in **Appendix E**. A summary of the AES models onsite proposed conditions 100-year peak flows is shown in **Table 4-2.**

Table 4-2: Onsite Proposed Conditions Hydrology Results:

Sub-basin ID	Sub-basin Area (ac)	Q_2 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{100} (cfs)
1.0	2.56	3.6	5.9	7.5	10.4
1.1	3.42	7.1	11.9	15.4	21.6
2.0	6.08	7.6	12.6	16.1	22.3
2.1	4.17	8.1	14.0	18.3	26.2
3.0	1.05	1.1	1.8	2.3	3.3
3.1	0.94	1.9	3.1	4.0	5.7
4.0	0.08	0.1	0.2	0.2	0.3
4.1	0.41	0.6	1.0	1.3	1.8
5.0	0.08	0.1	0.2	0.2	0.3
5.1	0.53	0.7	1.2	1.6	2.2
6.0	1.70	1.6	2.6	3.3	4.6
6.1	1.01	2.3	3.8	4.9	6.9
7.0	0.84	0.9	1.5	1.9	2.7
7.1	0.72	1.6	2.6	3.4	4.7
8.0	0.21	0.3	0.5	0.6	0.9
9.0	0.41	0.6	1.0	1.2	1.7
9.1	0.35	1.0	1.7	2.1	3.0
10.0	0.11	0.2	0.3	0.3	0.5
10.1	0.39	0.6	1.0	1.3	1.8
Total*	**25.06**	**40.0**	**66.9**	**85.9**	**120.9**

* The total Q's shown above are the sum of the discharge values for each sub area. Refer to **Appendix E** for the AES output.

Results are presented for all four of the studied storm event frequencies, but onsite hydraulic drainage design is performed using the 100-year peak flows to provide adequate conveyance for onsite infiltration and retention requirements. For modeling simplicity, roof areas were modeled to drain to one location, however, there will be several roof drain outlets along the north and south sides of the proposed building. Thus, the warnings within the AES output regarding the maximum channel depth be reached should be disregarded since the total discharge is not following the flowpath as shown on the hydrology map.

The total project area was used in the Unit Hydrograph method for calculating the sites runoff hydrograph. Results from the 24-hour Unit Hydrograph analyses for all onsite basins are prepared in **Appendix H**.

Section 5 Hydraulic Analysis

Drainage structures were designed for the Waterman development according to the procedures and methodologies outlined in the *San Bernardino County Flood Control District Standard Plans* and *Detention Basin Design Criteria for San Bernardino County* (1987). Onsite flows will be conveyed to five vegetated infiltration basins and two underground infiltration basins. The proposed drainage network is provided on the Proposed Conditions Drainage Map, **Exhibit C-2** located within **Appendix C**.

5.1 Methodology

Infiltration Basin Standards

The proposed onsite underground infiltration basins have been sized to capture and infiltrate the proposed peak 100-year storm event to existing conditions. The following San Bernardino County standards were used in the design of the proposed basin:

- Local detention basins shall not be fed by natural drainage areas greater than 0.5 square mile.
- Detention basin outlets shall be sized so the basin will drain within 24 hours after the basin reaches its 100-year peak depth/volume.
- The basin's maximum water depth for 100-year design should be 6 feet or less.
- Inletting storm drains shall be at minimum 18 inch pipe diameter.

Storm Drain Design

The storm drain system has been design to store water on the surface in the 100-year storm event Storm drain hydraulic calculations have been prepared for the storm drain facilities.

- On site storm drains will be designed to convey the 100 year storm event's peak flow rates to the onsite underground infiltration basin.
- Storm drain designed for the 100 year storm event that are under pressure will be designed with water tight joints to operate under pressurized flow.

Inlet Design

Inlets are required onsite at low points and a couple on grade where water will be collected in a corner parking stall or before a potential rolling screen gate.

- On site inlets will be designed to intercept the 100 year storm event's peak flow rates to the onsite underground infiltration basin.
- A clogging factor of 50% will be applied to on-site grated inlet locations, both on grade and sump inlet conditions.

5.2 Hydraulic Analysis

Storm drains have been analyzed using manning's equation for full flow capacity, these calculations are provided in **Appendix F**.

5.3 Infiltration Basin Analysis

Multiple onsite vegetated infiltration basins and underground infiltration basin will be constructed with the project to infiltrate flow from the project area. Hydrographs were created using the *Civil-Design* software for the 100 year 24-hr storm event. This software generates a hydrograph from user defined input variables per the *San Bernardino County Hydrology Manual* (November 1986). The 24-hr storm event produces the largest volume and was used for the purposes of sizing the infiltration basins.

The volume of the infiltration basin was determined based on the inflow hydrograph and the rate of infiltration. An infiltration rate of 2.5 in/hr was determined based on infiltration tests performed per San Bernardino County Department of Environmental Health Services (Soil Infiltration Study, prepared by NorCal Engineering, dated April 29, 2015); and a factor of safety of 2.1875 has been applied to the results to yield an infiltration rate of 1.143 in/hr (Worksheet H from the County of San Bernardino's WQMP Technical Guidance Document). The overall surface area of infiltration was used for the stage storage discharge curve.

The inflow hydrograph was routed through the software program *Civil-Design* to determine volume of infiltration basin size. Pretreatment facilities have been designed to reduce the risk of silts and sediments reducing the effectiveness of the infiltration facility. Results of the infiltration tests and retention analysis are presented in **Appendix H**. Peak flows from basin 8, 9 and 10 will sheet flow to the west. An emergency overflow weir is located on the southwest corner of the project. A downstream letter of drainage acceptance is being coordinated with the downstream property owner.

Discharge Summary Drainage Area 1

Node	Q10 (cfs)	Q25 (cfs)	Q100 (cfs)	Total Discharge Q100 (cfs)	ΔQ100 (cfs)
Existing 102	5.0	9.2	20.1	**20.1**	**14.4**
Proposed 801	0.5	0.6	0.9	**5.7**	
Proposed 902	1.7	2.1	3.0		
Proposed 1002	1.0	1.3	1.8		

Discharge Summary Drainage Area 2

Node	Q10 (cfs)	Q25 (cfs)	Q100 (cfs)	Total Discharge Q100 (cfs)	ΔQ100 (cfs)
Existing 202	0.7	4.4	13.6	**13.6**	**13.6**
Proposed Emergency Weir	0.0	0.0	0.0	**0.0**	

Section 6 Water Quality

6.1 Stormwater Treatment

The proposed project will provide water quality by means of infiltration, see project specific water quality management plan for details.

Section 7 Stormwater Improvements

7.1 Proposed Improvements

Improvements required for this project include one grate inlet, one curb inlets, cleanouts, varying sizes of storm drain pipe (12" and 24"), five vegetated infiltration basins, and two onsite underground infiltration basins. The minimum volume for the Basin 1 underground chambers is 78,200 cf, while the minimum volume for Basin 2 is 121,000 cf. The proposed storm drain improvements are shown on the Hydrology Workmap Proposed Conditions within **Appendix C.**

7.2 Stormwater Maintenance

Stormwater facilities require routine maintenance to operate efficiently. It is recommended that facilities be inspected prior to the rainy season (fall) and after each runoff producing storm event. Sediment and debris shall be removed from the pre-treatment system to maintain the systems effectiveness. The retention basin shall be routinely inspected and sediment/debris build up removed to maintain efficient operation of the basin.

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APPENDICES

APPENDIX A

- NOAA Atlas 14 Precipitation Estimates

DEPARTMENT OF PUBLIC WORKS

FLOOD CONTROL • LAND DEVELOPMENT & CONSTRUCTION
SOLID WASTE MANAGEMENT • SURVEYOR • TRANSPORTATION

COUNTY OF SAN BERNARDINO

825 East Third Street • San Bernardino, CA 92415-0835 • (909) 387-8104
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GRANVILLE M. "BOW" BOWMAN, P.E., P.L.S.
Director of Public Works

April 6, 2010

File: 1(FC)-27.09-01

Hydrology Manual User:

Our San Bernardino County Hydrology Manual was developed in 1983 and revised in 1986 by our consultant Dr. Ted Hromadka. The best available data at the time was the National Oceanic and Atmospheric Administration (NOAA) Atlas II rainfall records and statistics published in 1973; it was the basis of our manual. The County participated with NOAA by providing a portion of the funding to study an additional 30 years of rainfall records. NOAA Atlas XIV was published in 2004 and revised 2006. We asked Dr. Hromadka to review the new rainfall numbers and assess any impacts to our manual. We looked at all areas of the County to see if any changes or revisions were justified. Only the arid desert regions were affected.

We are pleased to announce the new rainfall numbers led to updating our manual with an addendum. Briefly, this addendum addresses the Antecedent Moisture Condition (AMC) for arid regions of the County. The attached map, ADD-1, identifies where AMC I may now be used.

Please use the attached link to our website to access the addendum (March 2010); also included is a list of Frequently Asked Questions (FAQ's) and a map of the affected area. A GIS version of the map is also available.

If you have any questions, please contact Mike Fox, Chief-Water Resources Division at (909) 387-8213.

Sincerely,

KEVIN B. BLAKESLEE, P.E.
Deputy Director-Flood Control

KBB:MJF:bfb

NOAA Atlas 14, Volume 6, Version 2 SAN BERNARDINO F S 226
Station ID: 04-7723
Location name: San Bernardino, California, US*
Latitude: 34.1344°, Longitude: -117.2539°
Elevation:
Elevation (station metadata): 1140 ft*
* source: Google Maps

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	0.106 (0.088-0.129)	0.137 (0.114-0.167)	0.182 (0.151-0.222)	0.222 (0.182-0.273)	0.282 (0.224-0.359)	0.333 (0.258-0.433)	0.389 (0.295-0.519)	0.452 (0.333-0.621)	0.547 (0.386-0.783)	0.628 (0.428-0.931)
10-min	0.153 (0.127-0.185)	0.197 (0.163-0.239)	0.261 (0.216-0.318)	0.318 (0.261-0.391)	0.404 (0.321-0.514)	0.477 (0.371-0.620)	0.558 (0.423-0.744)	0.648 (0.477-0.889)	0.784 (0.553-1.12)	0.900 (0.613-1.34)
15-min	0.184 (0.153-0.224)	0.238 (0.198-0.289)	0.315 (0.261-0.385)	0.385 (0.316-0.473)	0.488 (0.388-0.622)	0.577 (0.448-0.750)	0.675 (0.511-0.899)	0.784 (0.577-1.08)	0.948 (0.669-1.36)	1.09 (0.742-1.62)
30-min	0.290 (0.241-0.353)	0.374 (0.311-0.455)	0.496 (0.411-0.605)	0.605 (0.497-0.744)	0.768 (0.610-0.978)	0.907 (0.705-1.18)	1.06 (0.804-1.42)	1.23 (0.908-1.69)	1.49 (1.05-2.14)	1.71 (1.17-2.54)
60-min	0.435 (0.362-0.529)	0.561 (0.466-0.683)	0.744 (0.616-0.908)	0.907 (0.745-1.12)	1.15 (0.915-1.47)	1.36 (1.06-1.77)	1.59 (1.21-2.12)	1.85 (1.36-2.54)	2.24 (1.58-3.20)	2.57 (1.75-3.81)
2-hr	0.623 (0.518-0.757)	0.788 (0.655-0.959)	1.02 (0.842-1.24)	1.21 (0.996-1.49)	1.50 (1.19-1.90)	1.73 (1.34-2.25)	1.97 (1.50-2.63)	2.24 (1.65-3.07)	2.62 (1.85-3.75)	2.94 (2.00-4.35)
3-hr	0.760 (0.632-0.923)	0.956 (0.794-1.16)	1.22 (1.01-1.49)	1.45 (1.19-1.78)	1.76 (1.40-2.25)	2.02 (1.57-2.62)	2.28 (1.73-3.04)	2.57 (1.89-3.52)	2.96 (2.09-4.24)	3.28 (2.24-4.87)
6-hr	1.05 (0.873-1.28)	1.33 (1.10-1.61)	1.69 (1.40-2.06)	1.99 (1.63-2.44)	2.40 (1.90-3.05)	2.71 (2.11-3.53)	3.04 (2.30-4.05)	3.37 (2.48-4.63)	3.83 (2.71-5.49)	4.19 (2.86-6.22)
12-hr	1.37 (1.14-1.66)	1.78 (1.48-2.17)	2.31 (1.92-2.82)	2.74 (2.25-3.37)	3.31 (2.63-4.21)	3.74 (2.90-4.86)	4.17 (3.16-5.56)	4.61 (3.39-6.32)	5.19 (3.66-7.42)	5.63 (3.84-8.35)
24-hr	1.91 (1.69-2.20)	2.56 (2.27-2.96)	3.40 (3.00-3.93)	4.06 (3.56-4.74)	4.94 (4.19-5.96)	5.60 (4.65-6.89)	6.26 (5.07-7.88)	6.92 (5.45-8.96)	7.79 (5.89-10.5)	8.45 (6.18-11.8)
2-day	2.41 (2.13-2.78)	3.23 (2.85-3.72)	4.29 (3.78-4.96)	5.14 (4.50-5.99)	6.29 (5.33-7.58)	7.17 (5.95-8.81)	8.05 (6.52-10.1)	8.95 (7.06-11.6)	10.2 (7.69-13.7)	11.1 (8.12-15.5)
3-day	2.68 (2.37-3.08)	3.57 (3.16-4.12)	4.74 (4.18-5.48)	5.70 (4.99-6.65)	7.01 (5.94-8.44)	8.02 (6.65-9.86)	9.05 (7.33-11.4)	10.1 (7.97-13.1)	11.6 (8.75-15.6)	12.7 (9.28-17.7)
4-day	2.88 (2.55-3.32)	3.85 (3.41-4.44)	5.13 (4.53-5.94)	6.19 (5.42-7.21)	7.64 (6.47-9.20)	8.76 (7.27-10.8)	9.92 (8.04-12.5)	11.1 (8.77-14.4)	12.8 (9.66-17.2)	14.1 (10.3-19.6)
7-day	3.27 (2.89-3.76)	4.44 (3.93-5.13)	6.01 (5.30-6.95)	7.30 (6.39-8.51)	9.08 (7.69-10.9)	10.5 (8.69-12.9)	11.9 (9.64-15.0)	13.4 (10.6-17.3)	15.4 (11.7-20.8)	17.1 (12.5-23.8)
10-day	3.54 (3.13-4.08)	4.88 (4.32-5.63)	6.66 (5.88-7.71)	8.13 (7.12-9.49)	10.2 (8.61-12.2)	11.8 (9.75-14.5)	13.4 (10.8-16.9)	15.1 (11.9-19.5)	17.4 (13.2-23.5)	19.3 (14.1-26.9)
20-day	4.39 (3.89-5.05)	6.13 (5.42-7.07)	8.45 (7.46-9.78)	10.4 (9.08-12.1)	13.0 (11.0-15.7)	15.1 (12.6-18.6)	17.3 (14.0-21.8)	19.5 (15.4-25.3)	22.6 (17.1-30.5)	25.1 (18.4-35.0)
30-day	5.15 (4.56-5.94)	7.18 (6.35-8.29)	9.89 (8.73-11.4)	12.1 (10.6-14.2)	15.3 (12.9-18.4)	17.7 (14.7-21.8)	20.2 (16.4-25.5)	22.9 (18.0-29.6)	26.6 (20.1-35.8)	29.5 (21.6-41.1)
45-day	6.19 (5.48-7.13)	8.51 (7.53-9.82)	11.6 (10.3-13.4)	14.2 (12.4-16.6)	17.8 (15.1-21.5)	20.6 (17.1-25.4)	23.6 (19.1-29.7)	26.6 (21.0-34.5)	30.9 (23.4-41.7)	34.3 (25.1-47.8)
60-day	7.31 (6.47-8.42)	9.88 (8.74-11.4)	13.3 (11.8-15.4)	16.2 (14.2-18.9)	20.2 (17.1-24.3)	23.4 (19.4-28.7)	26.6 (21.6-33.5)	30.1 (23.7-38.9)	34.8 (26.4-47.0)	38.6 (28.3-53.9)

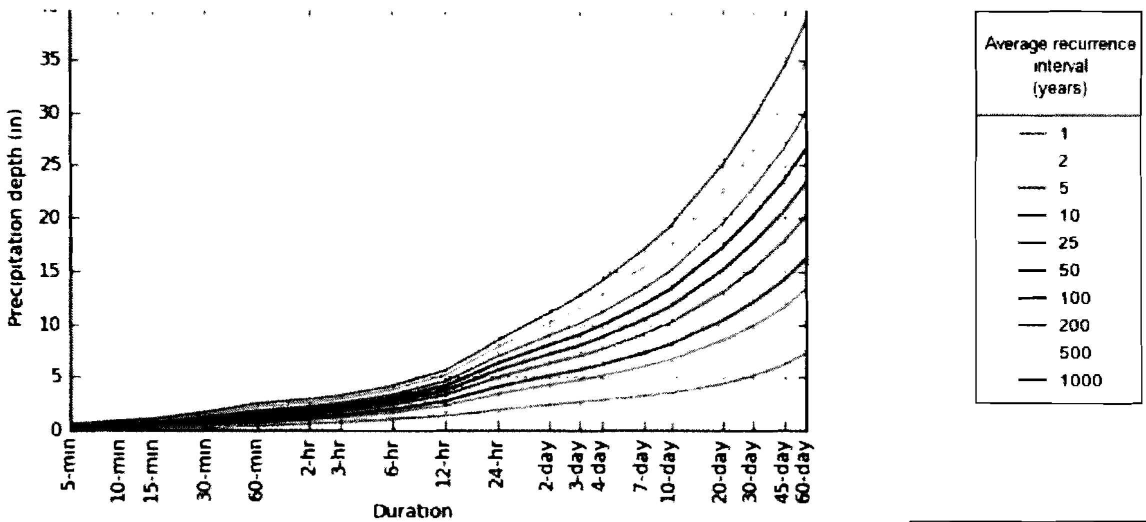
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

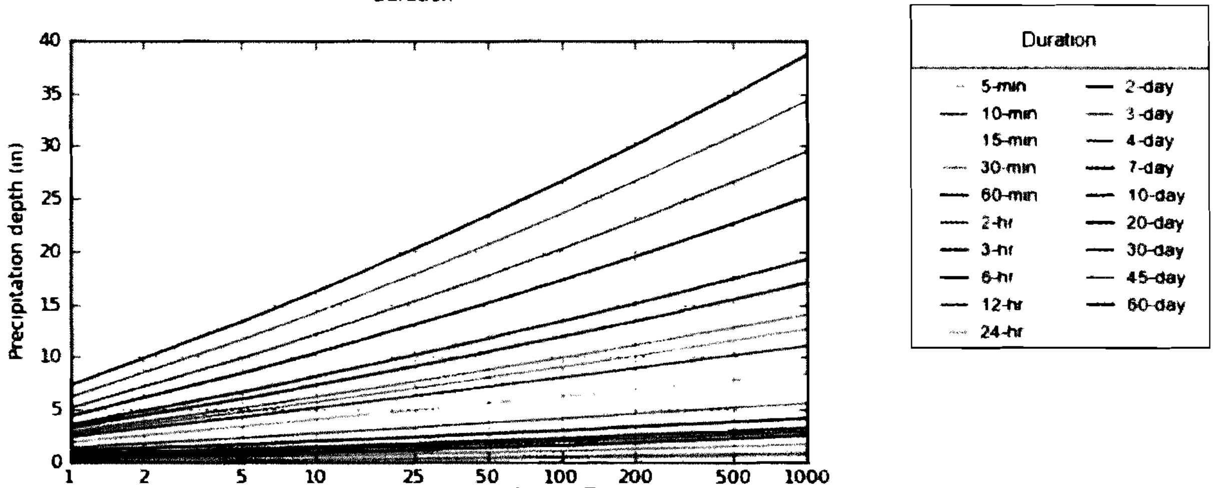
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper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

Please refer to NOAA Atlas 14 document for more information.

Back to Top

PF graphical



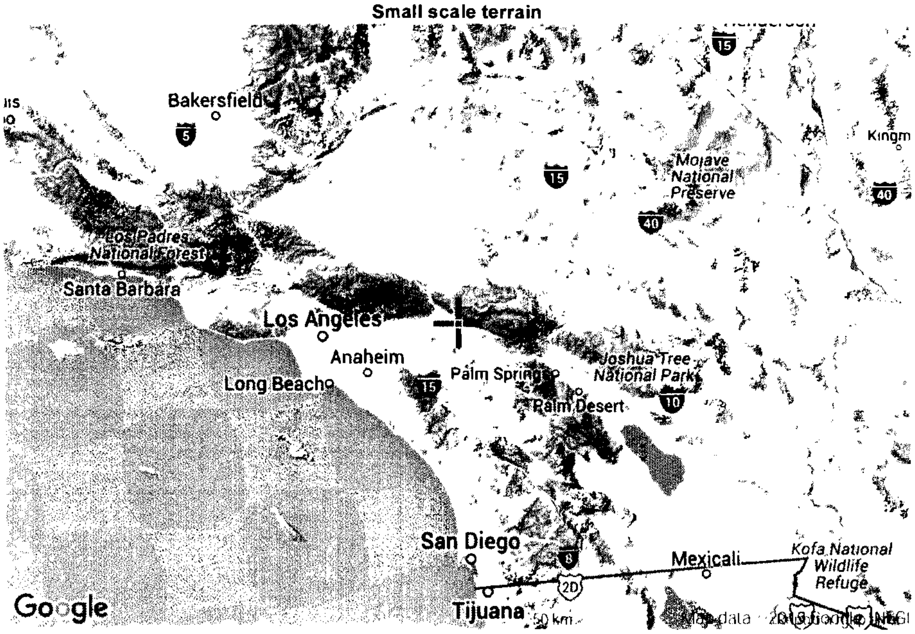


Back to Top

NOAA Atlas 14, Volume 6, Version 2 Created (GMT) Wed Sep 23 22 18 21 2015

Maps & aerials

Small scale terrain



Large scale terrain

Large scale map

Large scale aerial

Back to Top

Questions? HDSC.Questions@noaa.gov

Disclaimer

Waterman Industrial Center - Rainfall Intensity

	Precipitation (inches)*						
Storm Event	**5-Min**	**10-Min**	**15-Min**	**30-Min**	**60-Min**	**6-Hrs**	**24-Hrs**
2-Year	0.137	0.197	0.238	0.374	0.561	1.33	2.56
10-Year	0.222	0.318	0.385	0.605	0.907	1.99	4.06
25-Year	0.282	0.404	0.488	0.768	1.15	2.40	4.94
100-Year	0.389	0.558	0.675	1.06	1.59	3.04	6.26

	Intensity (inches/hour)						
Storm Event	**5-Min**	**10-Min**	**15-Min**	**30-Min**	**60-Min**	**6-Hrs**	**24-Hrs**
2-Year	1.644	1.182	0.952	0.748	0.561	0.222	0.107
10-Year	2.664	1.908	1.54	1.21	0.907	0.332	0.169
25-Year	3.384	2.424	1.952	1.536	1.15	0.400	0.206
100-Year	4.668	3.348	2.7	2.12	1.59	0.507	0.261

* From NOAA Atlas 14, volume 6, version 2

County of San Bernardino Hydrology Manual Addendum for Arid Regions

April 2010

I. INTRODUCTION

After publication of the NOAA Atlas 14 rainfall atlas and the associated data base (NOAA, 2004, revised 2006), the County of San Bernardino Water Resources Division assessed the new publication towards the possibility of updating its Hydrology Manual (1983, revised 1986), particularly in the arid regions of the County. NOAA Atlas 2 (NOAA, 1973) served as the basis for the San Bernardino Hydrology Manual dated 1986. The updated NOAA Atlas 14 publication includes data from several rain gages which were not available at the time of the prior publication of NOAA Atlas 2, as well as 25 years of additional data at several of the rain gages used in NOAA Atlas 2. Consequently, thousands of additional station years of data are included in the updated NOAA Atlas 14. Upon assessing the new NOAA Atlas 14 rainfall statistics and mapping, the County updated their Hydrology Manual criteria to reflect the changes in rainfall statistics and trends developed with NOAA Atlas 14. This Addendum provides a summary of these updated criteria.

It is noted that numerous rain gages found in the NOAA Atlas 14 study area are not included in the NOAA Atlas 14 update and therefore care is needed when applying the updated Hydrology Manual criteria. Hydrology studies need to consider all available rainfall data by identifying rain gages located near or in the vicinity of the study area and need to obtain and review the relevant rainfall data. Such additional rainfall information includes, but is by no means limited to: NOAA (http://www.nws.noaa.gov/), CA-DWR (http://cdec.water.ca.gov/), CIMIS (http://wwwcimis.water.ca.gov/cimis/welcome.jsp), as well as gage data available from San Bernardino County. The results of such a review should be compared with the NOAA Atlas 14 results and a determination made as to the appropriateness in using the NOAA Atlas 14 results or whether a re-assessment of all rainfall data relevant to the study area should be made. Such determinations and reviews must be coordinated with the County in order to conclude the most appropriate rainfall statistics to use, including assessments of station record length and quality, among other factors.

The primary topics considered in the Addendum are:

1. Rainfall quantities for various peak durations of rainfall, and related return periods;
2. Antecedent Moisture Conditions (or "AMC") used in hydrology studies for design and planning;
3. Soil Grouping designations and related maps.

II. RAINFALL STATISTICS

The County of San Bernardino Hydrology Manual (1986) contains isohyetal curves developed for estimating the 2-year return frequency values for the peak 6- and 24-hour durations of rainfall, the 10-year 1-hour rainfalls, and the 100-year 1-hour, 6-hour and 24-hour rainfalls. These isohyetal maps are based upon use of the NOAA Atlas 2 (1973) information. The NOAA Atlas 14 provides information for various peak durations of rainfall depths and for various return periods (return frequencies), including all of the key durations and return periods detailed in the Hydrology Manual.

Access to the NOAA Atlas 14 information is found at http://hdsc.nws.noaa.gov/hdsc/pfds/.

Another resource available for assessing rainfall for hydrology studies is the depth duration frequency studies developed by the California Department of Water Resources (DWR). Some of the gages analyzed by DWR are not included in the NOAA Atlas 14 and should be considered for appropriateness in studies submitted to the county. The depth-duration frequency tables can be obtained as Microsoft Excel files from the DWR website at the following address:

http://www.water.ca.gov/floodmgmt/hafoo/csc/climate_data/.

It is noted that the Hydrology Manual provides interpolation methods for development of rainfall estimates for the 5-minute, 30-minute, 1-, 3-, 6-, and 24-hours of peak rainfall, including recommendations regarding log-log slopes of the relevant mass rainfall plots (for example, see Hydrology Manual Figures E-36 through E-45). The NOAA Atlas 14 provides estimates for these peak durations of rainfall depths directly in tabular form, on a rain gage by rain gage basis (for those gages used in the NOAA Atlas 14 analysis). Hydrology studies prepared using this Addendum should develop the relevant rainfall quantities required for the Hydrology Manual using the newer NOAA Atlas 14 estimates and, if available, the DWR estimates to assess the appropriate rainfall quantities to be used. Additionally, the study should consider all other rain gage information available in the proximity of the study watershed. The submittal should consider these several forms of rainfall information and provide a recommendation as to the appropriate rainfall information to use.

III. ANTECEDENT MOISTURE CONDITIONS (AMC)

The Antecedent Moisture Condition (AMC) concept is a classification of the watershed runoff conditions and is related to the prior five-day precipitation. By examining this prior five-day rainfall, the watershed can be categorized as being wet, average or dry. This classification of the watershed impacts the runoff which can be expected during a particular storm event. Original literature regarding AMC conditions were published by the Soil Conservation Service (SCS) in 1964 in the National Engineering Handbook, Section 4. (The SCS had since changed to be the Natural Resources Conservation Service (NRSC).) In the 1993 update to the National Engineering handbook, the NRSC revised the AMC concept to that of Antecedent Runoff Condition (ARC), where ARC values correspond to statistical envelopments of the relevant rainfall-runoff information, versus the AMC concept correlating to contemplated prior moisture conditions of the watershed. Similar to many other agencies, the County continues to use the AMC approach in order to determine runoff quantities appropriate for design and planning purposes. The AMC approach should be used in all hydrologic studies prepared for County review or approval as presented in the Hydrology Manual (1986), without modification.

Based on the NOAA Atlas 14 statistical data, updated AMC designations for use in arid region hydrology studies are as shown in Addendum Figures ADD-1. It is noted that the NOAA Atlas 14 did not include all available rain gages, and therefore the hydrology study should examine other relevant rainfall gages to assess the appropriateness of the AMC designations shown in Addendum Figures ADD-1. Regional or Master Plan studies should consider all sources of information. The AMC condition used for these studies must be approved by the County.

IV. SOIL GROUPING DESIGNATIONS

The soil grouping information contained in Section C of the Hydrology Manual (1986) has been updated and can be accessed at http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Use of this information follows the directions provided in the Hydrology Manual (1986).

V. REFERENCES

Bonnin, Geoffrey M., et.al., **NOAA Atlas 14 Precipitation-Frequency Atlas of the United States, Volume 1 Version 4.0 Semiarid Southwest (Arizona, Southeast California, Nevada, New Mexico, Utah)**, U.S Department of Commerce - National Oceanic and Atmospheric Administration - National Weather Service, Silver Spring, Maryland 2004 (revised 2006)
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Hromadka II, T.V. and Guymon, G.L.. 1983, San Bernardino County Hydrology Manual, County of San Bernardino, California.

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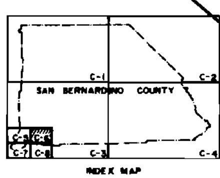
Hromadka II, T.V., 1998, Hydrology Manual for the County of San Joaquin, County of San Joaquin, California

Miller, J.F., et.al., **NOAA Atlas 2 Precipitation-Frequency Atlas of the Western United States Volume XI-California**, U.S Department of Commerce - National Oceanic and Atmospheric Administration - National Weather Service, Silver Spring, Maryland 1973 www.nws.noaa.gov/oh/hdsc/PF_documents/Atlas2_Volume11.pdf

Riverside County Flood Control and Water Conservation District Hydrology Manual, 1978, Riverside County, California

Sholders, Mike, 2003, San Diego County Hydrology Manual, County of San Diego, California



Project Site
(soil type A)

LEGEND

SOIL GROUP BOUNDARY

A SOIL GROUP DESIGNATION

BOUNDARY OF INDICATED SOURCE

SCALE REDUCED BY 1/2

SAN BERNARDINO COUNTY

HYDROLOGY MANUAL

HYDROLOGIC SOILS GROUP MAP
FOR
SOUTHWEST-B AREA

FIGURE C-14

APPENDIX B

- FEMA FIRMette

Federal Emergency Management Agency
Washington, D.C. 20472

DR. DODD ANNJANETTE
KIMLEY HORN AND ASSOCIATES
555 CAPITOL MALL
SUITE 300
SACRAMENTO, CA 95814

CASE NO.: 17-09-0424A
COMMUNITY: CITY OF SAN BERNARDINO, SAN BERNARDINO COUNTY, CALIFORNIA
COMMUNITY NO.: 060281

DEAR DR. ANNJANETTE:

This is in reference to a request that the Federal Emergency Management Agency (FEMA) determine if the property described in the enclosed document is located within an identified Special Flood Hazard Area, the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), on the effective National Flood Insurance Program (NFIP) map. Using the information submitted and the effective NFIP map, our determination is shown on the attached Letter of Map Amendment (LOMA) Determination Document. This determination document provides additional information regarding the effective NFIP map, the legal description of the property and our determination.

Additional documents are enclosed which provide information regarding the subject property and LOMAs. Please see the List of Enclosures below to determine which documents are enclosed. Other attachments specific to this request may be included as referenced in the Determination/Comment document. If you have any questions about this letter or any of the enclosures, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, Attn: North Wind Resource Partners (NWRP) eLOMA Coordinator, NWRP eLOMA Coordinator, 3601 Eisenhower Ave., Alexandria, VA 22304-6439, Fax: 703-751-7415.

Sincerely,

Luis V. Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration

LIST OF ENCLOSURES:
LOMA DETERMINATION DOCUMENT (REMOVAL)

cc: State/Commonwealth NFIP Coordinator
Community Map Repository
Region

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION		LEGAL PROPERTY DESCRIPTION
COMMUNITY	CITY OF SAN BERNARDINO, SAN BERNARDINO COUNTY, CALIFORNIA	Lot 25, Block 54, Rancho San Bernardino as shown on the Plat recorded in Book 7, Page 2, in the Office of the Recorder, San Bernardino County, California
	COMMUNITY NO: 060281	
AFFECTED MAP PANEL	NUMBER: 06071C8683J; 06071C8684J	
	DATE: 9/2/2016: 9/2/2016	
FLOODING SOURCE: TWIN CREEK CHANNEL (FORMERLY WARM CREEK); TWIN CREEK		APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 34.077595, -117.283106 SOURCE OF LAT & LONG: GOOGLE EARTH DATUM: NAD 83

DETERMINATION

LOT	BLOCK/ SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
25	54	Rancho San Bernardino	173 East Dumas Street	Property	X (unshaded)	--	--	1005.0 feet

Special Flood Hazard Area (SFHA) - The SFHA is an area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood).

ADDITIONAL CONSIDERATIONS (Please refer to the appropriate section on Attachment 1 for the additional considerations listed below.)

ZONE A
eLOMA DETERMINATION

This document provides the Federal Emergency Management Agency's determination regarding a request for a Letter of Map Amendment for the property described above. Using the information submitted and the effective National Flood Insurance Program (NFIP) map, we have determined that the property(ies) is/are not located in the SFHA, an area inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This document amends the effective NFIP map to remove the subject property from the SFHA located on the effective NFIP map; therefore, the Federal mandatory flood insurance requirement does not apply. However, the lender has the option to continue the flood insurance requirement to protect its financial risk on the loan. A Preferred Risk Policy (PRP) is available for buildings located outside the SFHA. Information about the PRP and how one can apply is enclosed.

This determination is based on the flood data presently available. If there are any errors on this eLOMA Determination Letter that cause FEMA to rescind and/or nullify the determination the property owner should consult the Licensed Professional that submitted this eLOMA. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, Attn: North Wind Resource Partners (NWRP) eLOMA Coordinator, 3601 Eisenhower Avenue, Alexandria, VA 22304-4605, Fax: 703-751-7415.

Luis V. Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration

eLOMA

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

Property Removal:

The following considerations may or may not apply to the determination for your Property:

ZONE A - The National Flood Insurance Program map affecting this property depicts a Special Flood Hazard Area that was determined using the best flood hazard data available to FEMA, but without performing a detailed engineering analysis. The flood elevation used to make this determination is based on approximate methods and has not been formalized through the standard process for establishing base flood elevations published in the Flood Insurance Study. This flood elevation is subject to change.

STUDY UNDERWAY - This determination is based on the flood data presently available. However, the Federal Emergency Management Agency may be currently revising the National Flood Insurance Program (NFIP) map for the community. New flood data could be generated that may affect this property. When the new NFIP map is issued it will supersede this determination. The Federal requirement for the purchase of flood insurance will then be based on the newly revised NFIP map.

EXTRATERRITORIAL JURISDICTION - The subject of the determination is shown on the National Flood Insurance Program map and may be located in an Extraterritorial Jurisdiction area for the community indicated on the Determination Document.

GREAT LAKES - The Federal Emergency Management Agency (FEMA) has based this determination on elevation data which is published in the current Flood Insurance Study for the community. However, the elevations established in the U.S. Army Corps of Engineers (USACE) reports on the Great Lakes are the best available data known to us. If in the future there are any subsequent map revisions to the National Flood Insurance Program map and the USACE reports remain the best available data known, FEMA will use those elevations for any such revisions. Further, be advised that the elevations on the Flood Insurance Rate Map (FIRM) may only reflect the Stillwater elevation for the lake and may not account for the effects of wind driven waves or wave run-up. On-site conditions such as wind speed, wind direction, fetch distance, water depth and the slope of the beach or bluff may result in significant increases to the base flood elevation. Therefore, it is strongly recommended that the requestor be aware of these circumstances and, if warranted, evaluate the effects of wind driven waves along the shoreline of the property.

STATE AND LOCAL CONSIDERATIONS - Please note that this document does not override or supersede any State or local procedural or substantive provisions which may apply to floodplain management requirements associated with amendments to State or local floodplain zoning ordinances, maps, or State or local procedures adopted under the National Flood Insurance Program.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, Attn: North Wind Resource Partners (NWRP) eLOMA Coordinator, NWRP eLOMA Coordinator, 3601 Eisenhower Ave., Alexandria, VA 22304-6439, Fax: 703-751-7415

Luis V. Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (REMOVAL)

ATTACHMENT 1 (ADDITIONAL CONSIDERATIONS)

COASTAL BARRIER RESOURCE SYSTEM - The subject of this Determination Document may be located within the Coastal Barrier Resource System (CBRS). Federal financial assistance, including Federal flood insurance, is not available in CBRS areas for new construction or substantial improvements occurring after the date on which the area was declared by Congress to be part of the CBRS or otherwise protected area as required by the Coastal Barrier Resources Act (Public Law 97-348) and the Coastal Barrier Improvement Act 1990 (Public Law 101-591). This date is indicated on the National Flood Insurance Program map. For further information on this property and the CBRS or otherwise protected area designation, contact the U.S. Department of the Interior.

This attachment provides additional information regarding this request. If you have any questions about this attachment, please contact the FEMA Map Assistance Center toll free at (877) 336-2627 (877-FEMA MAP) or by letter addressed to the Federal Emergency Management Agency, Attn: North Wind Resource Partners (NWRP) eLOMA Coordinator, NWRP eLOMA Coordinator, 3601 Eisenhower Ave., Alexandria, VA 22304-6439, Fax: 703-751-7415

Luis V. Rodriguez, P.E., Director
Engineering and Modeling Division
Federal Insurance and Mitigation Administration

eLOMA

Federal Emergency Management Agency

Washington, D.C. 20472

ADDITIONAL INFORMATION REGARDING LETTERS OF MAP AMENDMENT

When making determinations on requests for Letters of Map Amendment (LOMAs), the Department of Homeland Security's Federal Emergency Management Agency (FEMA) bases its determination on the flood hazard information available at the time of the determination. Requesters should be aware that flood conditions may change or new information may be generated that would supersede FEMA's determination. In such cases, the community will be informed by letter.

Requesters also should be aware that removal of a property (parcel of land or structure) from the Special Flood Hazard Area (SFHA) means FEMA has determined the property is not subject to inundation by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood). This does not mean the property is not subject to other flood hazards. The property could be inundated by a flood with a magnitude greater than the base flood or by localized flooding not shown on the effective National Flood Insurance Program (NFIP) map.

The effect of a LOMA is it removes the Federal requirement for the lender to require flood insurance coverage for the property described. The LOMA *is not* a waiver of the condition that the property owner maintain flood insurance coverage for the property. *Only* the lender can waive the flood insurance purchase requirement because the lender imposed the requirement. *The property owner must request and receive a written waiver from the lender before canceling the policy.* The lender may determine, on its own as a business decision that it wishes to continue the flood insurance requirement to protect its financial risk on the loan.

The LOMA provides FEMA's comment on the mandatory flood insurance requirements of the NFIP as they apply to a particular property. A LOMA is not a building permit, nor should it be construed as such. Any development, new construction, or substantial improvement of a property impacted by a LOMA must comply with all applicable State and local criteria and other Federal criteria.

If a lender releases a property owner from the flood insurance requirement, and the property owner decides to cancel the policy and seek a refund, the NFIP will refund the premium paid for the current policy year, provided that no claim is pending or has been paid on the policy during the current policy year. The property owner must provide a written waiver of the insurance requirement from the lender to the property insurance agent or company servicing his or her policy. The agent or company will then process the refund request.

Even though structures are not located in an SFHA, as mentioned above, they could be flooded by a flooding event with a greater magnitude than the base flood. In fact, more than 25 percent of all claims paid by the NFIP are for policies for structures located outside the SFHA in Zones B, C, X (shaded), or X (unshaded). More than one-fourth of all policies purchased under the NFIP protect structures located in these zones. The risk to structures located outside SFHAs is just not as great as the risk to structures located in SFHAs. Finally, approximately 90 percent of all federally declared disasters are caused by flooding, and homeowners insurance does not provide financial protection from this flooding. Therefore, FEMA encourages the widest possible coverage under the NFIP.

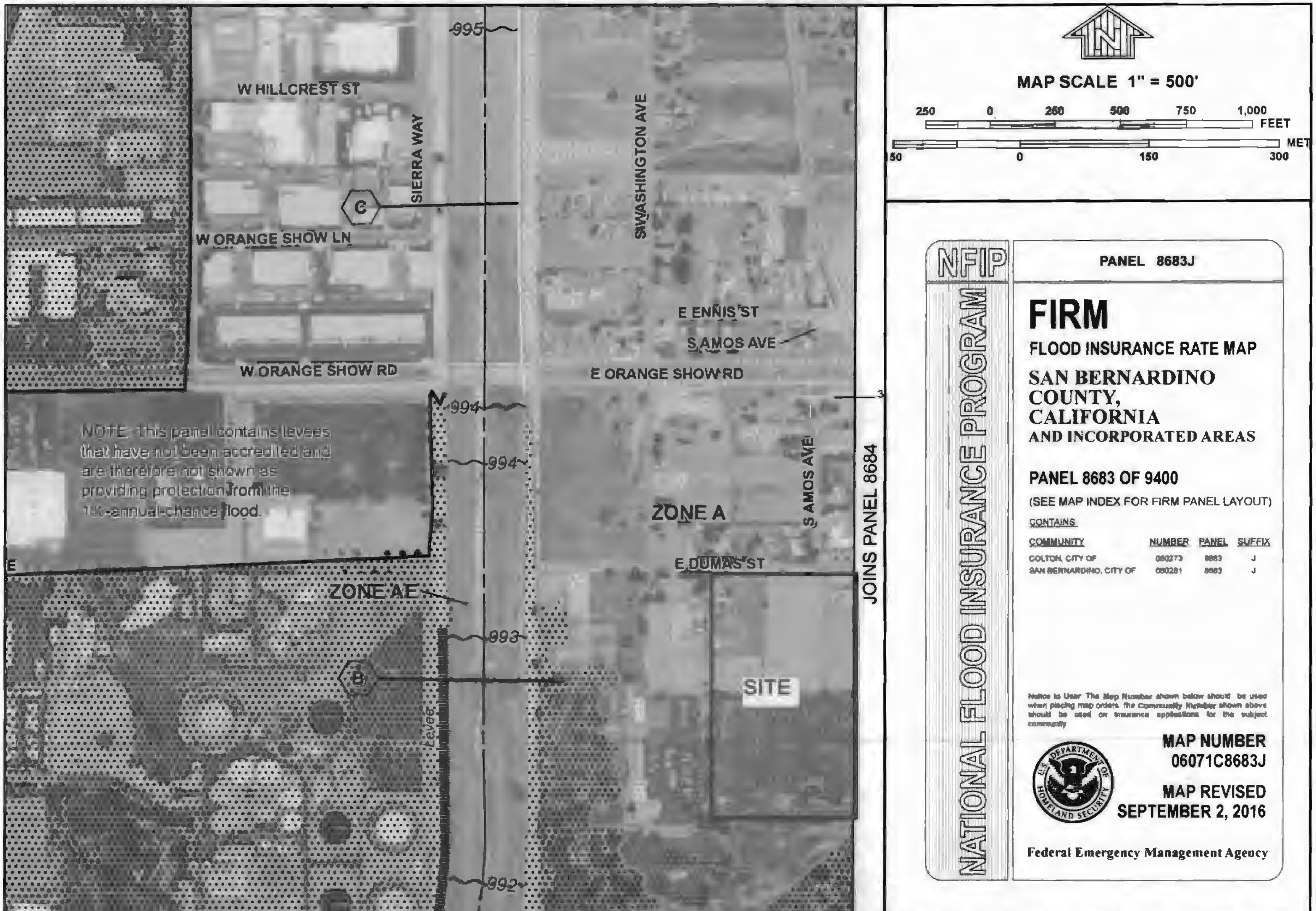
The NFIP offers two types of flood insurance policies to property owners: the low-cost Preferred Risk Policy (PRP) and the Standard Flood Insurance Policy (SFIP). The PRP is available for 1- to 4-family residential structures located outside the SFHA with little or no loss history. The PRP is available for townhouse/rowhouse-type structures, but is not available for other types of condominium units. The SFIP is available for all other structures. Additional information on the PRP and how a property owner can quality for this type of policy may be obtained by calling the Flood Insurance Information Hotline, toll free, at 1-800-427-4661. Before making a final decision about flood insurance coverage, FEMA strongly encourages property owners to discuss their individual flood risk situations and insurance needs with an insurance agent or company.

FEMA has established "Grandfather" rules to benefit flood insurance policyholders who have maintained continuous coverage. Property owners may wish to note also that, if they live outside but on the fringe of the SFHA shown on an effective NFIP map and the map is revised to expand the SFHA to include their structure(s), their flood insurance policy rates will not increase as long as the coverage for the affected structure(s) has been continuous. Property owners would continue to receive the lower insurance policy rates.

LOMAs are based on minimum criteria established by the NFIP. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If a State, county, or community has adopted more restrictive and comprehensive floodplain management criteria, these criteria take precedence over the minimum Federal criteria.

In accordance with regulations adopted by the community when it made application to join the NFIP, letters issued to amend an NFIP map must be attached to the community's official record copy of the map. That map is available for public inspection at the community's official map repository. Therefore, FEMA sends copies of all such letters to the affected community's official map repository.

When a restudy is undertaken, or when a sufficient number of revisions or amendments occur on particular map panels, FEMA initiates the printing and distribution process for the affected panels. FEMA notifies community officials in writing when affected map panels are being physically revised and distributed. In such cases, FEMA attempts to reflect the results of the LOMA on the new map panel. If the results of particular LOMAs cannot be reflected on the new map panel because of scale limitations, FEMA notifies the community in writing and revalidates the LOMAs in that letter. LOMAs revalidated in this way usually will become effective 1 day after the effective date of the revised map.



This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

0 150 300 METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 8684J

FIRM

FLOOD INSURANCE RATE MAP

SAN BERNARDINO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 8684 OF 9400

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

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

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

MAP NUMBER 06071C8684J

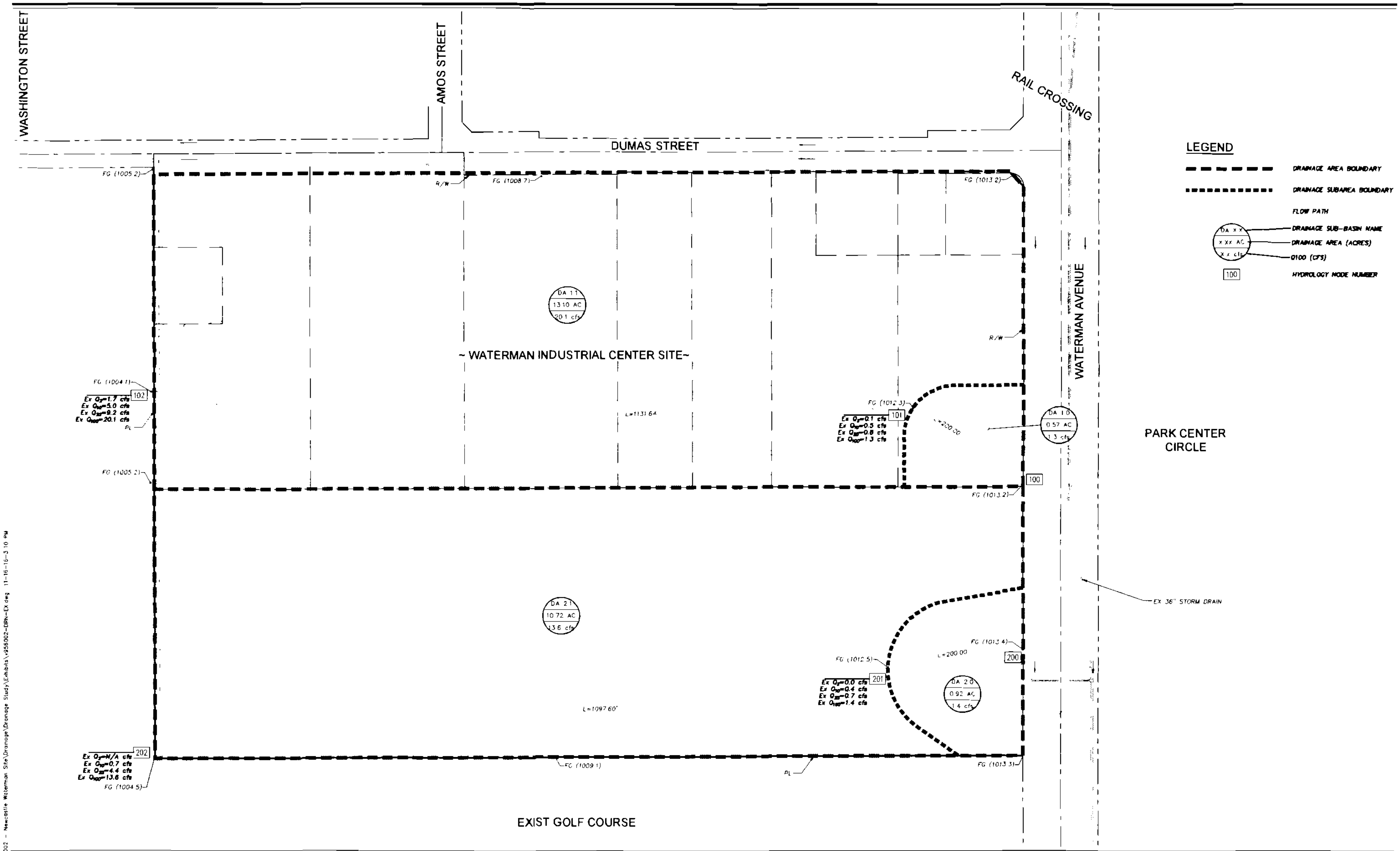
MAP REVISED SEPTEMBER 2, 2016

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX C

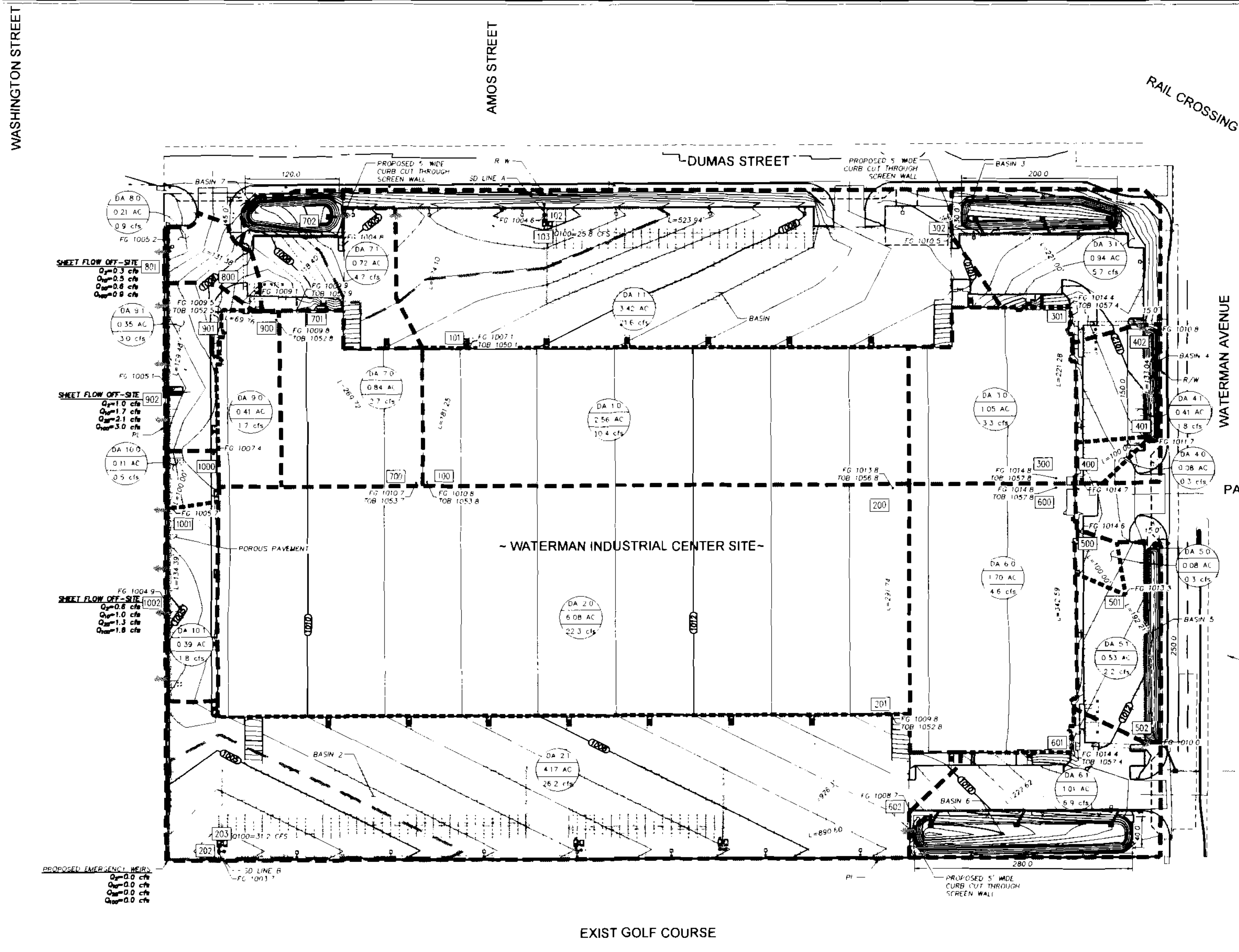
- Hydrology Maps



Kimley»Horn

City of San Bernardino
EXHIBIT C-1: EXISTING CONDITIONS DRAINAGE MAP
WATERMAN INDUSTRIAL CENTER

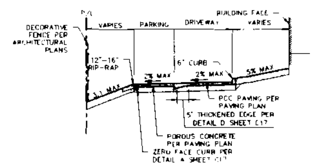
November 16, 2016



LEGEND

- DRAINAGE AREA BOUNDARY
- DRAINAGE INITIAL SUBAREA
- Q100 PARKING LOT SURFACE PONDING AREA
- FLOW PATH
- DIRECTION OF OVERFLOW PATH
- DRAINAGE SUB-BASIN NAME
- DRAINAGE AREA (ACRES)
- Q100 (CFS)
- HYDROLOGY NODE NUMBER

PROPOSED FLOWS (CFS)				
$NODE_{START}$	$NODE_{END}$	Q_2	Q_{10}	Q_{25}
100	101	3.6	5.9	7.5
101	102	7.1	11.9	15.4
200	201	7.6	12.6	16.1
201	202	8.1	14.0	18.3
300	301	1.1	1.8	2.3
301	302	1.9	3.1	4.0
400	401	0.1	0.2	0.2
401	402	0.6	1.0	1.3
500	501	0.1	0.2	0.2
501	502	0.7	1.2	1.6
600	601	1.6	2.6	3.3
601	602	2.3	3.8	4.9
700	701	0.9	1.5	1.9
701	702	1.6	2.6	3.4
800	801	0.3	0.5	0.6
900	901	0.6	1.0	1.2
901	902	1.0	1.7	2.1
1000	1001	0.2	0.3	0.3
1001	1002	0.6	1.0	1.3



POROUS PAVEMENT SECTION
NOT TO SCALE

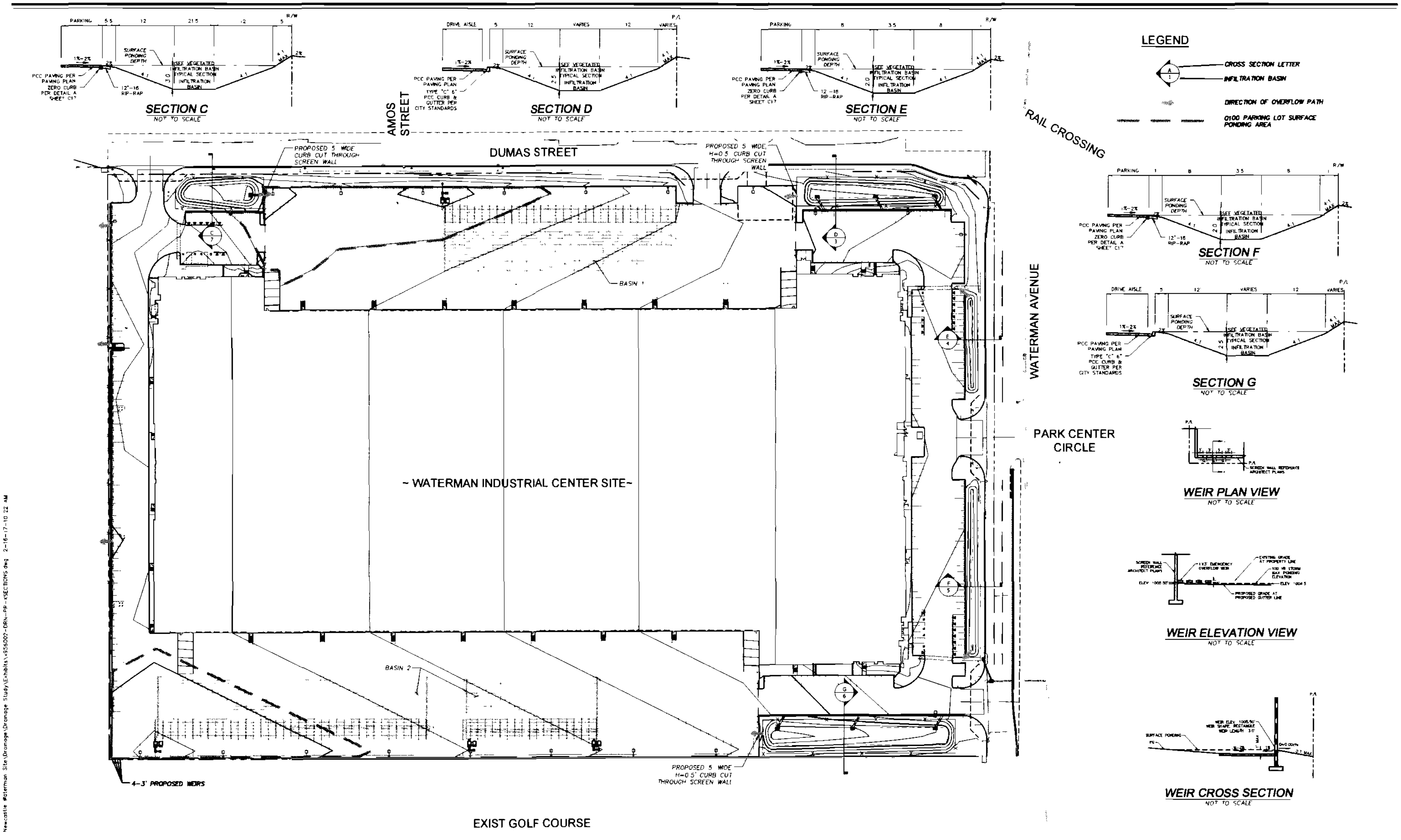
Kimley»Horn

GRAPHIC SCALE IN FEET 0 30 60 120

NORTH

City of San Bernardino
EXHIBIT C-2: PROPOSED CONDITIONS DRAINAGE MAP
WATERMAN INDUSTRIAL CENTER

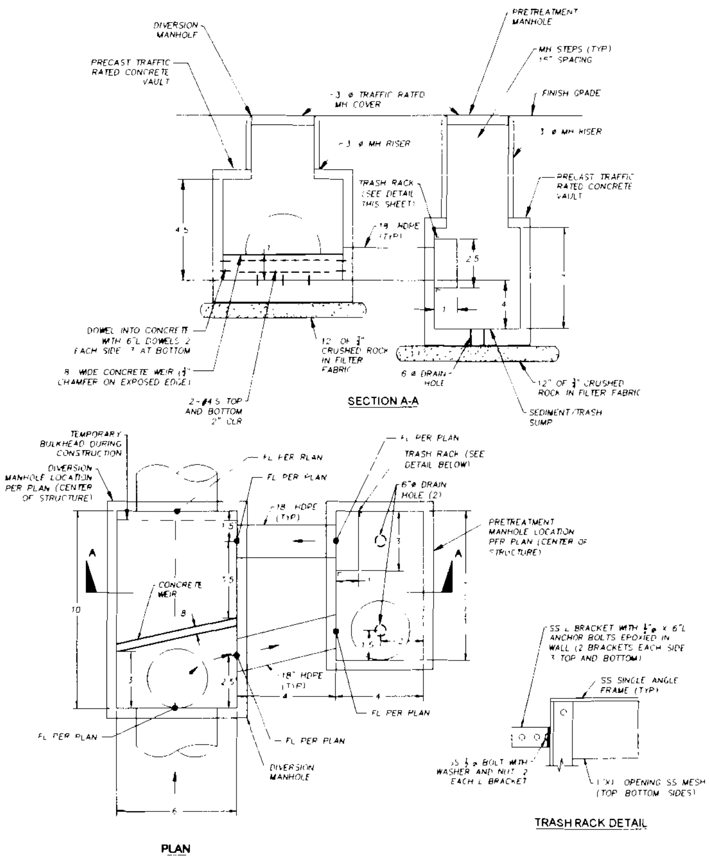
December 15, 2016



Kimley»Horn

City of San Bernardino
INFILTRATION BASIN CROSS SECTIONS
WATERMAN INDUSTRIAL CENTER

January 16, 2017



INFILTRATION BASIN DIVERSION & PRETREATMENT STRUCTURE

NOT TO SCALE

Kimley»Horn

City of San Bernardino
DETAILS
WATERMAN INDUSTRIAL CENTER

January 16, 2017

Project: **Waterman Basin 1**

Chamber Model -	SC-740	
Units -	Imperial	Click Here for Metric
Number of chambers -	[illegible]	
Voids in the stone (porosity) -	[illegible]	
Base of STONE Elevation -	[illegible]	
Amount of Stone Above Chambers -	[illegible]	
Amount of Stone Below Chambers -	[illegible]	
Area of system -	[illegible]	Min. Area - 34277 sf min. area

☑ Include Perimeter Stone in Calculations

StormTech SC-740 Cumulative Storage Volumes

Height of System *(inches)*	Incremental Single Chamber *(cubic feet)*	Incremental Total Chamber *(cubic feet)*	Incremental Stone *(cubic feet)*	Incremental Ch & St *(cubic feet)*	Cumulative Chamber *(cubic feet)*	Elevation *(feet)*
42	0.00	0.00	1198.30	1198.30	78285.09	1001.00
41	0.00	0.00	1198.30	1198.30	77086.79	1000.92
40	0.00	0.00	1198.30	1198.30	75888.49	1000.83
39	0.00	0.00	1198.30	1198.30	74690.19	1000.75
38	0.00	0.00	1198.30	1198.30	73491.89	1000.67
37	0.00	0.00	1198.30	1198.30	72293.59	1000.58
36	0.05	55.76	1175.99	1231.76	71095.29	1000.50
35	0.16	165.20	1132.22	1297.42	69863.53	1000.42
34	0.28	285.89	1083.94	1369.83	68566.11	1000.33
33	0.60	612.42	953.33	1565.75	67196.28	1000.25
32	0.80	812.94	873.13	1686.06	65630.53	1000.17
31	0.95	963.98	812.71	1776.69	63944.47	1000.08
30	1.07	1089.56	762.48	1852.03	62167.78	1000.00
29	1.18	1197.02	719.49	1916.51	60315.74	999.92
28	1.27	1283.38	684.95	1968.33	58399.23	999.83
27	1.36	1373.98	648.71	2022.69	56430.91	999.75
26	1.45	1474.46	608.52	2082.97	54408.22	999.67
25	1.52	1546.07	579.87	2125.94	52325.24	999.58
24	1.58	1604.48	556.51	2160.99	50199.30	999.50
23	1.64	1665.27	532.19	2197.46	48038.31	999.42
22	1.70	1723.31	508.98	2232.28	45840.85	999.33
21	1.75	1777.47	487.31	2264.78	43608.56	999.25
20	1.80	1828.05	467.08	2295.13	41343.78	999.17
19	1.85	1880.97	445.91	2326.88	39048.65	999.08
18	1.89	1919.59	430.46	2350.06	36721.77	999.00
17	1.93	1961.08	413.87	2374.95	34371.71	998.92
16	1.97	2002.65	397.24	2399.89	31996.76	998.83
15	2.01	2038.06	383.08	2421.14	29596.88	998.75
14	2.04	2073.62	368.85	2442.47	27175.74	998.67
13	2.07	2104.01	356.70	2460.71	24733.27	998.58
12	2.10	2134.38	344.55	2478.93	22272.56	998.50
11	2.13	2161.64	333.64	2495.28	19793.63	998.42
10	2.15	2184.01	324.70	2508.70	17298.35	998.33
9	2.18	2207.54	315.28	2522.82	14789.64	998.25
8	2.20	2229.13	306.65	2535.78	12266.82	998.17
7	2.21	2238.23	303.01	2541.24	9731.04	998.08
6	0.00	0.00	1198.30	1198.30	7189.80	998.00
5	0.00	0.00	1198.30	1198.30	5991.50	997.92
4	0.00	0.00	1198.30	1198.30	4793.20	997.83
3	0.00	0.00	1198.30	1198.30	3594.90	997.75
2	0.00	0.00	1198.30	1198.30	2396.60	997.67
1	0.00	0.00	1198.30	1198.30	1198.30	997.58

Project: **Waterman Basin 2.1**

StormTech

Chamber Model - SC-740
Units - Imperial | Click Here for Metric

Number of chambers - 1045
Voids in the stone (porosity) - 40 %
Base of STONE Elevation - 998.50 ft
Amount of Stone Above Chambers - 6 in
Amount of Stone Below Chambers - 6 in
Area of system - 37041 sf Min. Area - 35325 sf min area

☑ Include Perimeter Stone in Calculations

StormTech SC-740 Cumulative Storage Volumes

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Total Chamber (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch & St (cubic feet)	Cumulative Chamber (cubic feet)	Elevation (feet)
42	0.00	0.00	1234.70	1234.70	80668.58	1002.00
41	0.00	0.00	1234.70	1234.70	79433.88	1001.92
40	0.00	0.00	1234.70	1234.70	78199.18	1001.83
39	0.00	0.00	1234.70	1234.70	76964.48	1001.75
38	0.00	0.00	1234.70	1234.70	75729.78	1001.67
37	0.00	0.00	1234.70	1234.70	74495.08	1001.58
36	0.05	57.47	1211.71	1269.18	73260.38	1001.50
35	0.16	170.25	1166.60	1336.85	71991.20	1001.42
34	0.28	294.63	1116.85	1411.48	70654.35	1001.33
33	0.60	631.14	982.24	1613.39	69242.87	1001.25
32	0.80	837.79	899.58	1737.37	67629.48	1001.17
31	0.95	993.45	837.32	1830.77	65892.11	1001.08
30	1.07	1122.87	785.55	1908.42	64061.34	1001.00
29	1.18	1233.61	741.25	1974.87	62152.92	1000.92
28	1.27	1322.61	705.65	2028.27	60178.05	1000.83
27	1.36	1415.99	668.31	2084.29	58149.78	1000.75
26	1.45	1519.53	626.89	2146.42	56065.49	1000.67
25	1.52	1593.34	597.36	2190.70	53919.07	1000.58
24	1.58	1653.53	573.29	2226.82	51728.36	1000.50
23	1.64	1716.18	548.23	2264.41	49501.55	1000.42
22	1.70	1775.99	524.30	2300.30	47237.14	1000.33
21	1.75	1831.81	501.98	2333.79	44936.84	1000.25
20	1.80	1883.94	481.12	2365.06	42603.06	1000.17
19	1.85	1938.47	459.31	2397.78	40237.99	1000.08
18	1.89	1978.28	443.39	2421.67	37840.21	1000.00
17	1.93	2021.03	426.29	2447.32	35418.54	999.92
16	1.97	2063.87	409.15	2473.02	32971.22	999.83
15	2.01	2100.37	394.55	2494.92	30498.19	999.75
14	2.04	2137.02	379.89	2516.91	28003.27	999.67
13	2.07	2168.34	367.37	2535.70	25486.36	999.58
12	2.10	2199.63	354.85	2554.48	22950.66	999.50
11	2.13	2227.73	343.61	2571.34	20396.18	999.42
10	2.15	2250.78	334.39	2585.17	17824.85	999.33
9	2.18	2275.03	324.69	2599.72	15239.68	999.25
8	2.20	2297.28	315.79	2613.07	12639.96	999.17
7	2.21	2306.66	312.04	2618.69	10026.89	999.08
6	0.00	0.00	1234.70	1234.70	7408.20	999.00
5	0.00	0.00	1234.70	1234.70	6173.50	998.92
4	0.00	0.00	1234.70	1234.70	4938.80	998.83
3	0.00	0.00	1234.70	1234.70	3704.10	998.75
2	0.00	0.00	1234.70	1234.70	2469.40	998.67
1	0.00	0.00	1234.70	1234.70	1234.70	998.58

Project: **Waterman Basin 2.2**

StormTech

Chamber Model - SC-740
Units - Imperial | Click Here for Metric

Number of chambers - 513
Voids in the stone (porosity) - 40 %
Base of STONE Elevation - 1000.00 ft
Amount of Stone Above Chambers - 6 in
Amount of Stone Below Chambers - 6 in
Area of system - 18805 sf Min. Area - 17342 sf min. area

☑ Include Perimeter Stone in Calculations

StormTech SC-740 Cumulative Storage Volumes

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Total Chamber (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch & St (cubic feet)	Cumulative Chamber (cubic feet)	Elevation (feet)
42	0.00	0.00	626.83	626.83	40470.67	1003.50
41	0.00	0.00	626.83	626.83	39843.84	1003.42
40	0.00	0.00	626.83	626.83	39217.00	1003.33
39	0.00	0.00	626.83	626.83	38590.17	1003.25
38	0.00	0.00	626.83	626.83	37963.34	1003.17
37	0.00	0.00	626.83	626.83	37336.50	1003.08
36	0.05	28.21	615.55	643.76	36709.67	1003.00
35	0.16	83.58	593.40	676.98	36065.91	1002.92
34	0.28	144.64	568.98	713.62	35388.93	1002.83
33	0.60	309.83	502.90	812.73	34675.31	1002.75
32	0.80	411.28	462.32	873.60	33862.58	1002.67
31	0.95	487.69	431.76	919.45	32988.98	1002.58
30	1.07	551.23	406.34	957.57	32069.53	1002.50
29	1.18	605.59	384.60	990.19	31111.96	1002.42
28	1.27	649.28	367.12	1016.40	30121.77	1002.33
27	1.36	695.12	348.78	1043.91	29105.37	1002.25
26	1.45	745.95	328.45	1074.41	28061.46	1002.17
25	1.52	782.18	313.96	1096.14	26987.06	1002.08
24	1.58	811.73	302.14	1113.87	25890.91	1002.00
23	1.64	842.49	289.84	1132.33	24777.04	1001.92
22	1.70	871.85	278.09	1149.94	23644.71	1001.83
21	1.75	899.25	267.13	1166.38	22494.77	1001.75
20	1.80	924.84	256.90	1181.74	21328.38	1001.67
19	1.85	951.61	246.19	1197.80	20146.65	1001.58
18	1.89	971.16	238.37	1209.53	18948.84	1001.50
17	1.93	992.14	229.98	1222.12	17739.32	1001.42
16	1.97	1013.17	221.56	1234.74	16517.20	1001.33
15	2.01	1031.09	214.40	1245.49	15282.46	1001.25
14	2.04	1049.08	207.20	1256.28	14036.97	1001.17
13	2.07	1064.46	201.05	1265.51	12780.69	1001.08
12	2.10	1079.82	194.91	1274.73	11515.18	1001.00
11	2.13	1093.61	189.39	1283.00	10240.46	1000.92
10	2.15	1104.93	184.86	1289.79	8957.46	1000.83
9	2.18	1116.83	180.10	1296.93	7667.67	1000.75
8	2.20	1127.76	175.73	1303.49	6370.74	1000.67
7	2.21	1132.36	173.89	1306.25	5067.25	1000.58
6	0.00	0.00	626.83	626.83	3761.00	1000.50
5	0.00	0.00	626.83	626.83	3134.17	1000.42
4	0.00	0.00	626.83	626.83	2507.33	1000.33
3	0.00	0.00	626.83	626.83	1880.50	1000.25
2	0.00	0.00	626.83	626.83	1253.67	1000.17
1	0.00	0.00	626.83	626.83	626.83	1000.08

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	BILL DE JONG 714-394-8922 BILL.DEJONG@ADS-PIPE.COM
ADS SALES REP	ROBERT CHARTERS 760-220-9158 ROBERT.CHARTERS@ADS-PIPE.COM
PROJECT NO	155718

ADVANCED DRAINAGE SYSTEMS, INC.

WATERMAN INDUSTRIAL CENTER

SAN BERNARDINO, CA

STORMWATER CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740, SC-310, OR APPROVED EQUAL.
2. CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS.
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET ASTM F2922 (POLYETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   a. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
   b. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 OR ASTM F2922 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
   c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310/SC-740 SYSTEM

1. STORMTECH SC-310 & SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT BASIN 1

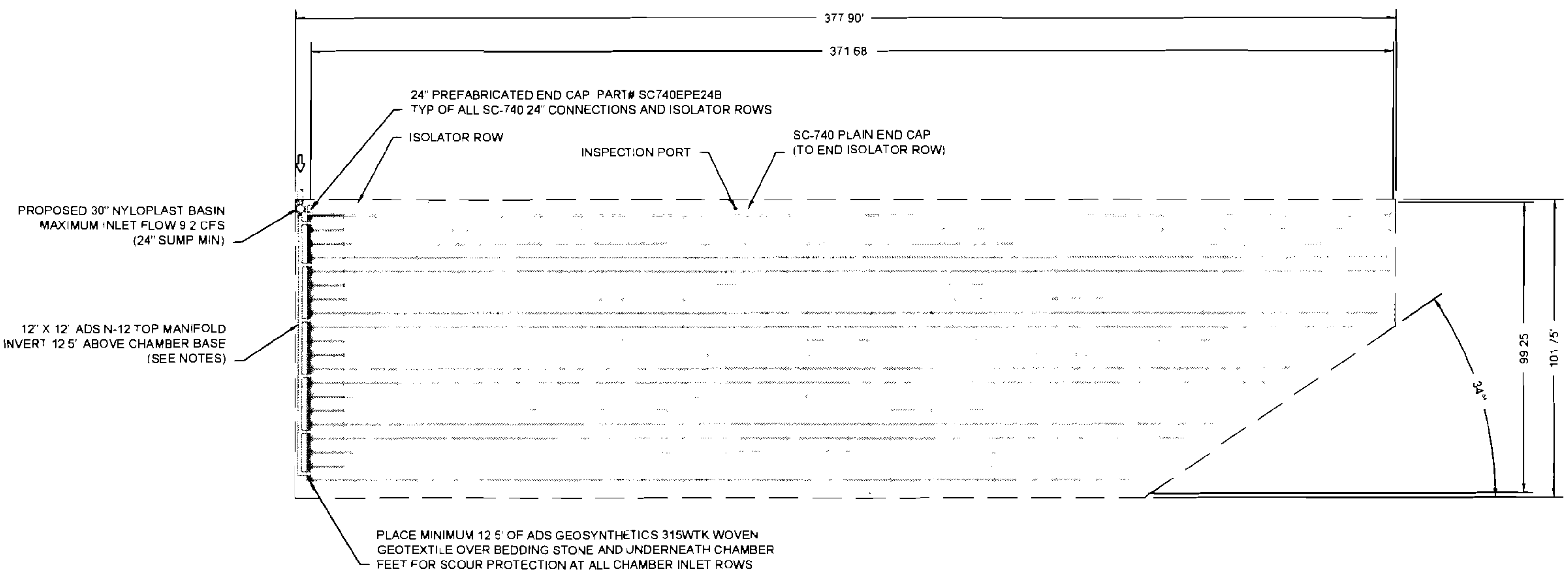
(1014) STORMTECH SC-740 CHAMBERS
(43) STORMTECH SC-740 END CAPS
INSTALLED WITH 6" COVER STONE, 6" BASE STONE, 40% STONE VOID
INSTALLED SYSTEM VOLUME: 78,285 CF (PERIMETER STONE INCLUDED)
AREA OF SYSTEM 35,949 FT²
PERIMETER OF SYSTEM 919 FT

PROPOSED ELEVATIONS BASIN 1

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)	1008 50
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)	1002 50
MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)	1002 00
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)	1002 00
MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT)	1002 00
TOP OF STONE	1001 00
TOP OF CHAMBER	1000 50
12" TOP MANIFOLD INVERT	999 04
24" ISOLATOR ROW INVERT	998 01
BOTTOM OF CHAMBER	998 00
BOTTOM OF STONE	997 50

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD
- THE SITE DESIGN ENGINEER MUST REVIEW THE PROXIMITY OF THE CHAMBERS TO THE BUILDING/STRUCTURE NO FOUNDATION LOADS SHALL BE TRANSMITTED TO THE CHAMBERS THE SITE DESIGN ENGINEER MUST CONSIDER EFFECTS OF POSSIBLE SATURATED SOILS ON BEARING CAPACITY OF SOILS AND SEEPAGE INTO BASEMENTS



REV	DRW	CHK	DESCRIPTION
8/2/16	WCM	KAP	REVISED TO SC-740 CHAMBERS
12-20-16	SLS		SYSTEM ADJUSTMENTS PER ENGINEER

WATERMAN INDUSTRIAL
SAN BERNARDINO, CA

DATE 8/1/16 | DRAWN WCM
PROJECT # 155718 | CHECKED KMS

StormTech
Detention · Retention · Water Quality
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW STORMTECH COM

ADS ADVANCED DRAINAGE SYSTEMS, INC
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

0 40' 80'

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS REGULATIONS AND PROJECT REQUIREMENTS

SHEET
2 OF 8

PROPOSED LAYOUT BASIN 2.1

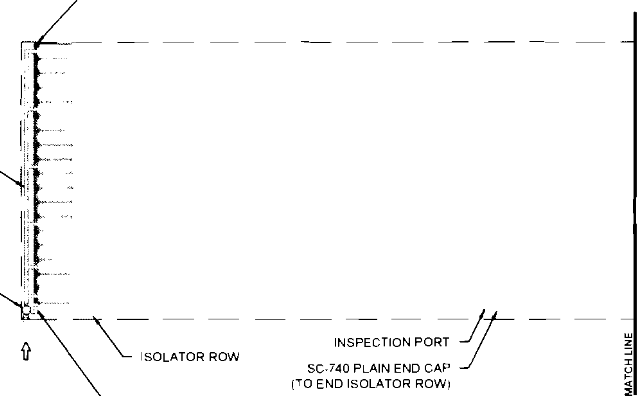
(1045) STORMTECH SC-740 CHAMBERS
(39) STORMTECH SC-740 END CAPS
INSTALLED WITH 6" COVER STONE, 6" BASE STONE, 40% STONE VOID
INSTALLED SYSTEM VOLUME: 80,668 CF (PERIMETER STONE INCLUDED)
AREA OF SYSTEM 37,041 FT²
PERIMETER OF SYSTEM 990 FT

PROPOSED ELEVATIONS BASIN 2.1

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)	1009 50
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)	1003 50
MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)	1003 00
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)	1003 00
MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT)	1003 00
TOP OF STONE	1002 00
TOP OF CHAMBER	1001 50
12" TOP MANIFOLD INVERT	1000 04
24" ISOLATOR ROW INVERT	999 01
BOTTOM OF CHAMBER	999 00
BOTTOM OF STONE	998 50

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET



WATERMAN INDUSTRIAL
SAN BERNARDINO, CA

DATE	8/1/16	DRAWN	WCM
PROJECT #	155718	CHECKED	KMS

REV	DRW	CHK	DESCRIPTION
8/2/16	WCM	KAP	REVISED TO SC-740 CHAMBERS
12-20-16	SLS		SYSTEM ADJUSTMENTS PER ENGINEER

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ADS
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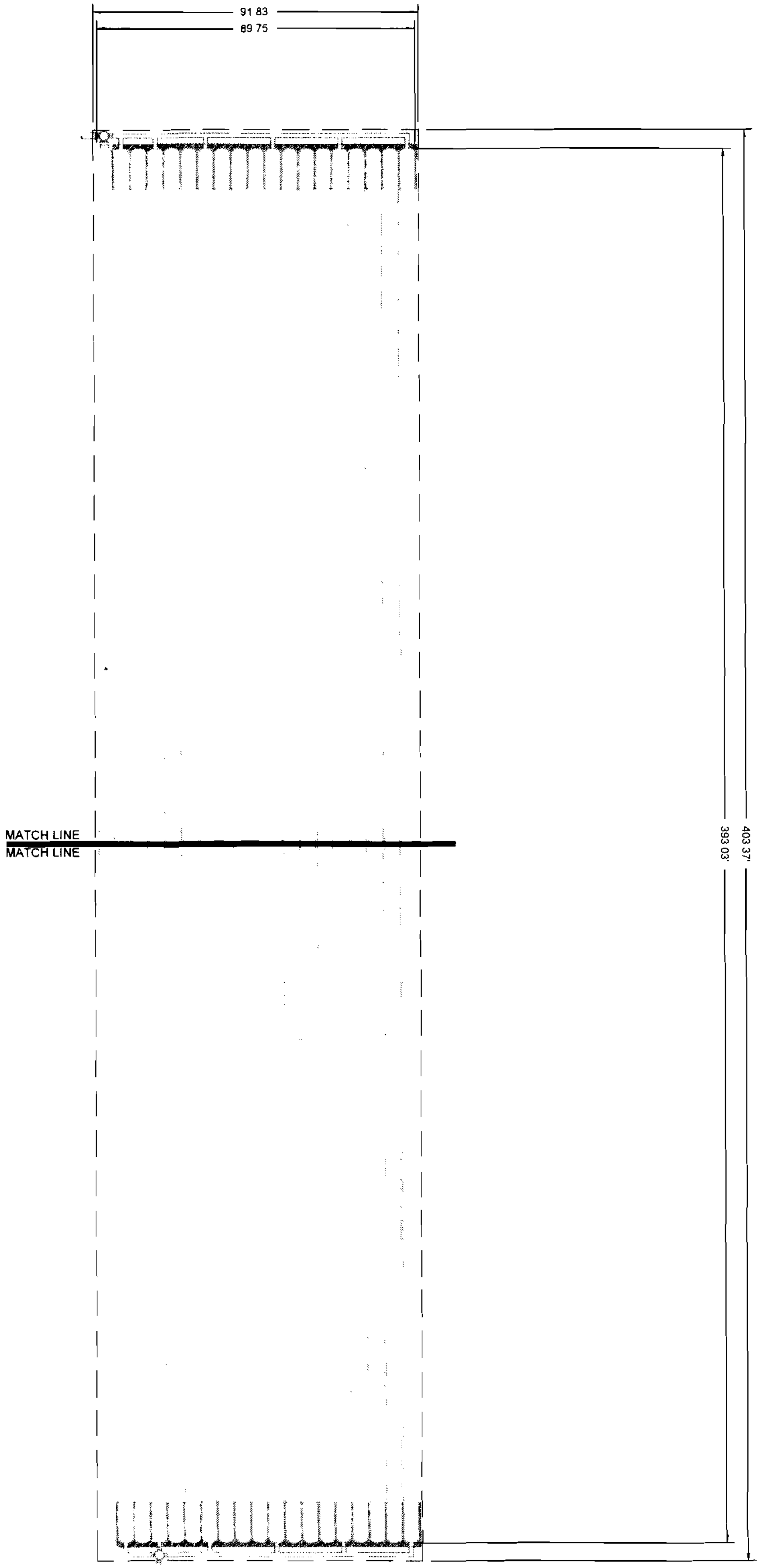
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

0 40' 80'
80 25'

SHEET
3 OF 8



SHEET 4 OF 8

ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

0 30' 60'

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REV	DRW	CHK	DESCRIPTION
8/2/16	WCM	KAP	REVISED TO SC-740 CHAMBERS
12-20-16	SLS		SYSTEM ADJUSTMENTS PER ENGINEER

WATERMAN INDUSTRIAL
SAN BERNARDINO, CA

DATE	8/1/16	DRAWN	WCM
PROJECT #	155718	CHECKED	KMS

PROPOSED LAYOUT BASIN 2.2

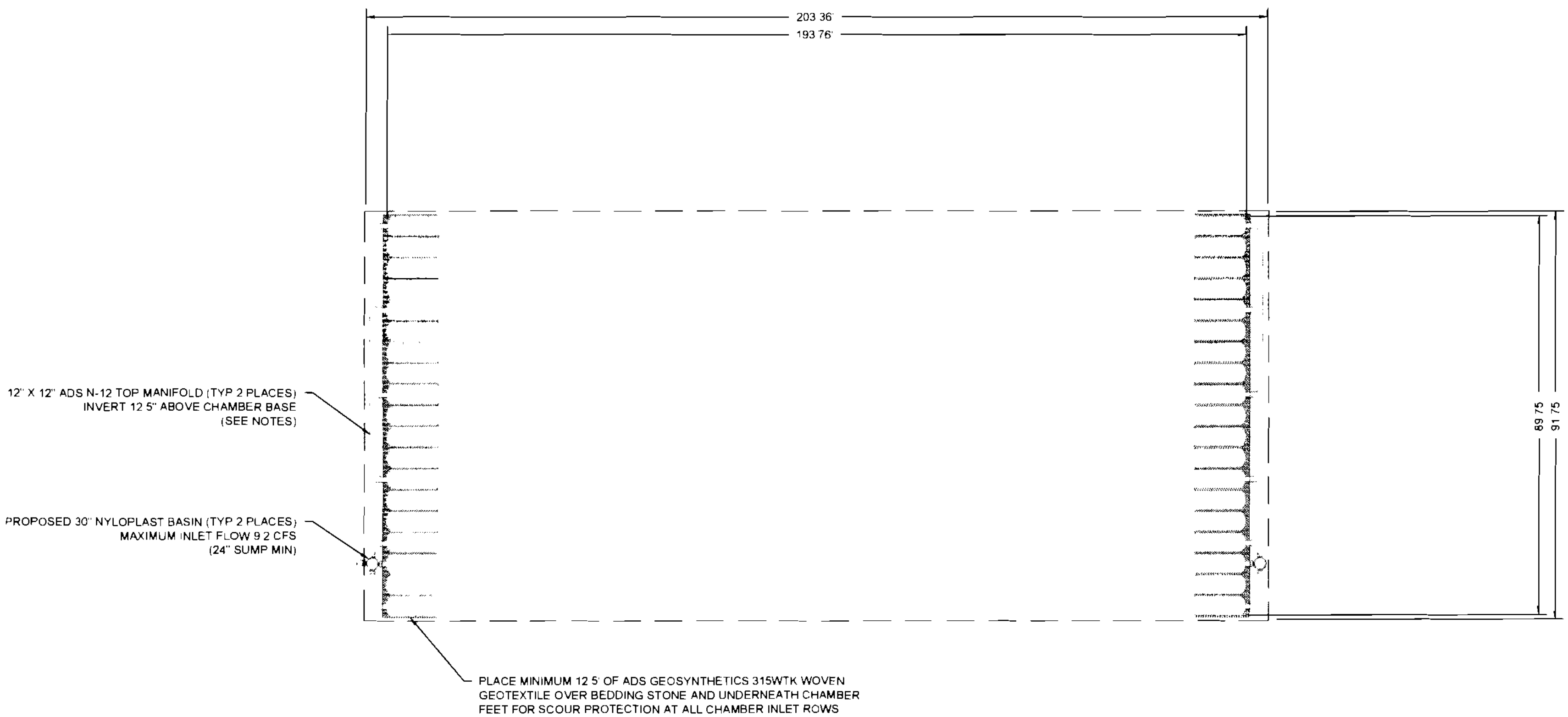
(513) STORMTECH SC-740 CHAMBERS
(38) STORMTECH SC-740 END CAPS
INSTALLED WITH 6" COVER STONE, 6" BASE STONE, 40% STONE VOID
INSTALLED SYSTEM VOLUME: 40,470 CF (PERIMETER STONE INCLUDED)
AREA OF SYSTEM 18,805 FT²
PERIMETER OF SYSTEM 592 FT

PROPOSED ELEVATIONS BASIN 2.2

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)	1011 00
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)	1005 00
MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)	1004 50
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)	1004 50
MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT)	1004 50
TOP OF STONE	1003 50
TOP OF CHAMBER	1003 00
12" TOP MANIFOLD INVERT	1001 54
24" ISOLATOR ROW INVERT	1000 51
BOTTOM OF CHAMBER	1000 50
BOTTOM OF STONE	1000 00

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET



ADS ADVANCED DRAINAGE SYSTEMS INC
4640 TRUEMAN BLVD
HILLIARD OH 43026
1-800-733-7473

0 25' 50'

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REV	DRW	CHK	DESCRIPTION
8/2/16	WCM	KAP	REVISED TO SC-740 CHAMBERS
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WATERMAN INDUSTRIAL
SAN BERNARDINO, CA

DATE 8/1/16	DRAWN WCM
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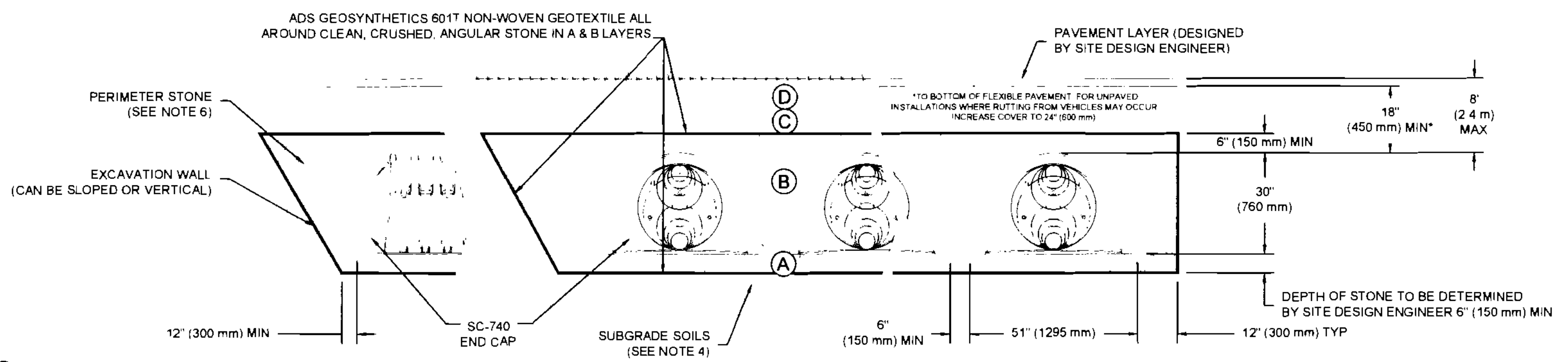
ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN) DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN)
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE [2,3]

PLEASE NOTE

1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE "CLEAN, CRUSHED, ANGULAR NO 4 (AASHTO M43) STONE"
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS



NOTES:

1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS"
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS"
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION

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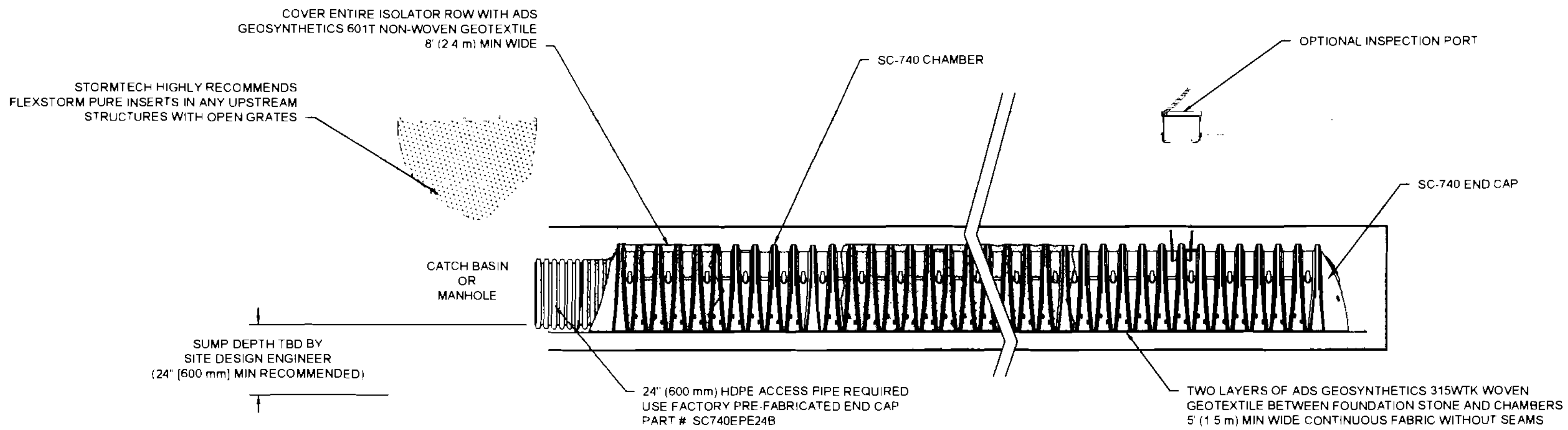
REV	DRW	CHK	DESCRIPTION
8/2/16	WCM	KAP	REVISED TO SC-740 CHAMBERS
12-20-18	SLS		SYSTEM ADJUSTMENTS PER ENGINEER

WATERMAN INDUSTRIAL
SAN BERNARDINO, CA

DATE	8/1/16	DRAWN	WCM
PROJECT #	155718	CHECKED	KMS



SC-740 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A INSPECTION PORTS (IF PRESENT)
  - A.1 REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2 REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3 USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4 LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5 IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B ALL ISOLATOR ROWS
  - B.1 REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2 USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3 IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

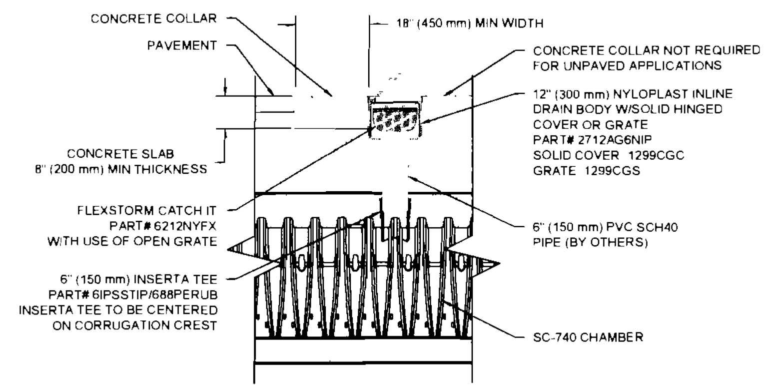
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" INSPECTION PORT DETAIL
NTS

REV	DRW	CHK	DESCRIPTION
8/2/16	WCM	KAP	REVISED TO SC-740 CHAMBERS
12-20-18	SLS		SYSTEM ADJUSTMENTS PER ENGINEER

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WATERMAN INDUSTRIAL
SAN BERNARDINO, CA

DATE	8/1/16	DRAWN	WCM
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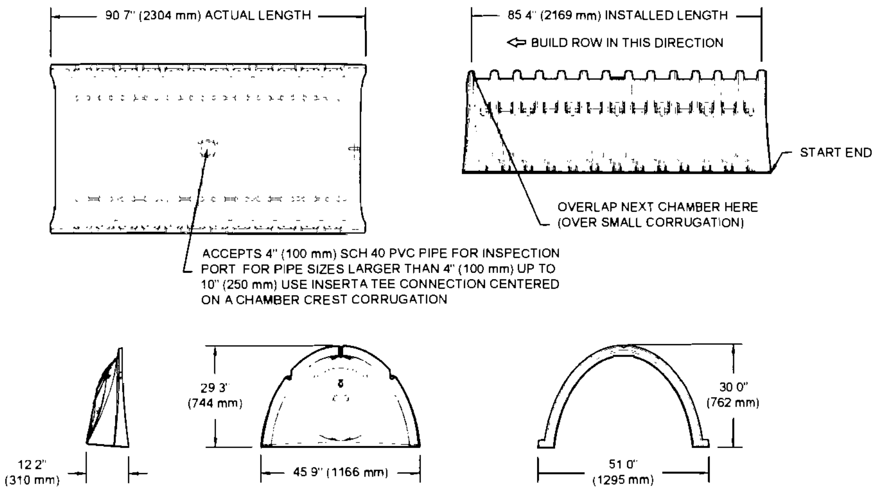
SHEET 7 OF 8

SC-740 TECHNICAL SPECIFICATION

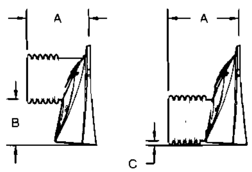
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51 0" X 30 0" X 85 4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45 9 CUBIC FEET	(1 30 m³)
MINIMUM INSTALLED STORAGE*	74 9 CUBIC FEET	(2 12 m³)
WEIGHT	75 0 lbs	(33 6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10 9" (277 mm)	18 5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0 5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12 2" (310 mm)	16 5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0 6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13 4" (340 mm)	14 5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0 7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14 7" (373 mm)	12 5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1 2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18 4" (467 mm)	9 0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1 3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19 7" (500 mm)	5 0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1 6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0 1" (3 mm)

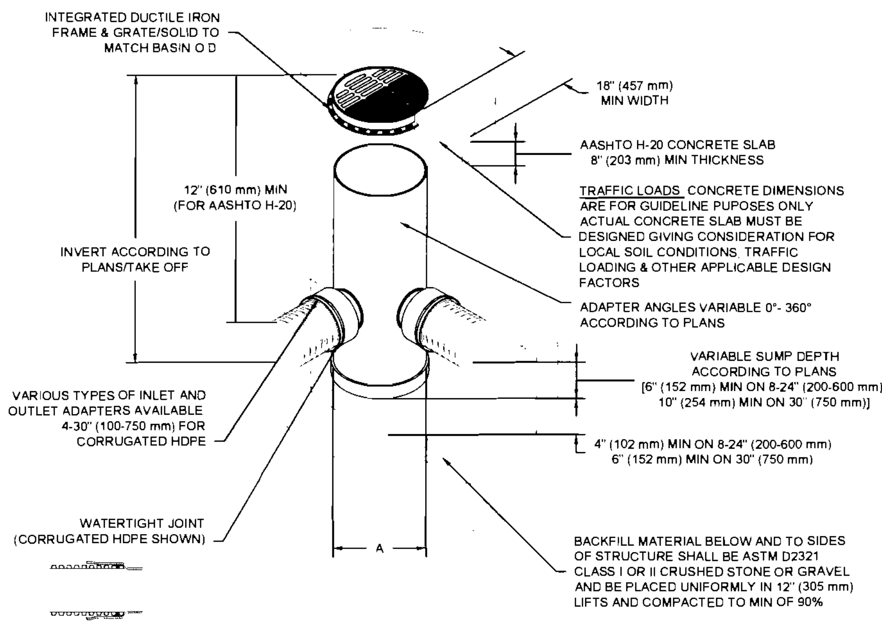
ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1 75" (44 mm) BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL

NOTE ALL DIMENSIONS ARE NOMINAL

NYLOPLAST DRAIN BASIN

NTS



NOTES

1 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3 DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4 DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5 FOR COMPLETE DESIGN AND PRODUCT INFORMATION **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

WATERMAN INDUSTRIAL
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12-20-16	SLS		SYSTEM ADJUSTMENTS PER ENGINEER

Nyloplast
3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

ADS ADVANCED DRAINAGE SYSTEMS INC
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

APPENDIX D

- Existing Conditions Hydrology AES Results

Date 10/27/16

Job No. 95956002

Kimley»Horn

Waterman Industrial Center-Exisiting Condition

Page No. 1

U/S Node	D/S Node	Code	D/S Elev.	U/S Elev.	Length (ft)	Area (acre)	Comments *Soil type A, 90% Imp*
100	101	2	1013.2	1012.3	200.00	0.57	
101	102	5	1012.3	1004.1	1131.64	13.1	Pkg, B=0, Z=99', D=0.5'
					Basin 1 Total	**13.67**	
200	201	2	1013.4	1012.5	200.00	0.92	
201	202	5	1012.5	1004.5	1097.60	10.72	Pkg, B=0, Z=99', D=0.5'
					Basin 2 Total	**11.64**	

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              RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
          (c) Copyright 1983-2011 Advanced Engineering Software (aes)
              Ver. 18.0  Release Date: 07/01/2011  License ID 1499

                            Analysis prepared by:



 ************************** DESCRIPTION OF STUDY **************************
 * WATERMAIN INDUSTRIAL CENTER                                              *
 * 2-YEAR, EXISTING CONDITION RATIONAL METHOD, DA 1.0, 1.1, 2.0, 2.1        *
 * 10.28.16     KV                                                          *
 **************************************************************************

  FILE NAME: W_02EX.DAT
  TIME/DATE OF STUDY: 11:42 10/28/2016
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  5
   1)    5.00;  1.644
   2)   10.00;  1.182
   3)   15.00;  0.952
   4)   30.00;  0.748
   5)   60.00;  0.561
  *ANTECEDENT MOISTURE CONDITION (AMC) I ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:  CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)    (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     100.00 TO NODE     101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    200.00
  ELEVATION DATA: UPSTREAM(FEET) =    1013.20  DOWNSTREAM(FEET) =    1012.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.506
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "1 DWELLING/ACRE"           A         0.57      1.33     0.800    17   11.51
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  1.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA RUNOFF(CFS) =       0.11
  TOTAL AREA(ACRES) =       0.57   PEAK FLOW RATE(CFS) =       0.11

****************************************************************************
  FLOW PROCESS FROM NODE     101.00 TO NODE     102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    1012.30  DOWNSTREAM(FEET) =    1004.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1131.64   CHANNEL SLOPE =  0.0072
  CHANNEL BASE(FEET) =     0.00   "Z" FACTOR =  99.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =    1.00
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.687
  SUBAREA LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/       SCS SOIL   AREA       Fp          Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "1 DWELLING/ACRE"           A        13.10      1.33     0.800    17
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  1.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.67
  AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =  28.30
  Tc(MIN.) =   39.80
  SUBAREA AREA(ACRES) =    13.10       SUBAREA RUNOFF(CFS) =     1.62
  EFFECTIVE AREA(ACRES) =     13.67     AREA-AVERAGED Fm(INCH/HR) =    1.06
  AREA-AVERAGED Fp(INCH/HR) =    1.33  AREA-AVERAGED Ap =    0.80
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =      13.7         PEAK FLOW RATE(CFS) =       1.69
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.15   FLOW VELOCITY(FEET/SEC.) =   0.76
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1331.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
  ELEVATION DATA: UPSTREAM(FEET) =   1013.40  DOWNSTREAM(FEET) =   1012.50

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.939
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.844
  SUBAREA Tc AND LOSS RATE DATA(AMC  I ):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL GOOD COVER
  "GRASS"                    A        0.92      1.19     1.000    21   22.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  1.19
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  SUBAREA RUNOFF(CFS) =      0.00
  TOTAL AREA(ACRES) =      0.92   PEAK FLOW RATE(CFS) =      0.00

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
  ** WARNING: Computed Flowrate is less than 0.1 cfs,
              Routing Algorithm is UNAVAILABLE.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        0.9  TC(MIN.) =     22.94
  EFFECTIVE AREA(ACRES) =      0.92  AREA-AVERAGED Fm(INCH/HR)=  1.19
  AREA-AVERAGED Fp(INCH/HR) =  1.19  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =      0.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
        (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
       (c) Copyright 1983-2011 Advanced Engineering Software (aes)
          Ver. 18.0  Release Date: 07/01/2011  License ID 1499

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
 * WATERMAIN INDUSTRIAL CENTER                                              *
 * 10-YEAR, EXISTING CONDITION RATIONAL METHOD, DA 1.0, 1.1, 2.0, 2.1       *
 * 10.28.16     KV                                                          *
 **************************************************************************

  FILE NAME: W_10EX.DAT
  TIME/DATE OF STUDY: 11:41 10/28/2016
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  5
   1)    5.00;  2.664
   2)   10.00;  1.908
   3)   15.00;  1.540
   4)   30.00;  1.210
   5)   60.00;  0.907
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:  CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT WIDTH  LIP   HIKE  FACTOR
NO.  (FT)     (FT)     SIDE / SIDE/ WAY    (FT)   (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020  0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
  ELEVATION DATA: UPSTREAM(FEET) =   1013.20  DOWNSTREAM(FEET) =   1012.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.506
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.797
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "1 DWELLING/ACRE"          A        0.57      0.98     0.800    32   11.51
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  SUBAREA RUNOFF(CFS) =      0.52
  TOTAL AREA(ACRES) =      0.57   PEAK FLOW RATE(CFS) =      0.52

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1012.30  DOWNSTREAM(FEET) =   1004.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1131.64   CHANNEL SLOPE =  0.0072
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.186
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "1 DWELLING/ACRE"          A       13.10      0.98     0.800    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.90
  AVERAGE FLOW DEPTH(FEET) =   0.19   TRAVEL TIME(MIN.) =  20.90
  Tc(MIN.) =   32.41
  SUBAREA AREA(ACRES) =    13.10       SUBAREA RUNOFF(CFS) =    4.78
  EFFECTIVE AREA(ACRES) =     13.67     AREA-AVERAGED Fm(INCH/HR) =   0.78
  AREA-AVERAGED Fp(INCH/HR) =   0.97  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =       13.7        PEAK FLOW RATE(CFS) =       4.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =   0.99
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1331.64 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
 ELEVATION DATA: UPSTREAM(FEET) =   1013.40  DOWNSTREAM(FEET) =   1012.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.939
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.365
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL GOOD COVER
 "GRASS"                    A       0.92      0.94     1.000    38   22.94
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.94
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =      0.36
 TOTAL AREA(ACRES) =      0.92   PEAK FLOW RATE(CFS) =      0.36

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1012.50  DOWNSTREAM(FEET) =   1004.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1097.60   CHANNEL SLOPE =  0.0073
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.004
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL GOOD COVER
 "GRASS"                    A      10.72      0.94     1.000    38
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.94
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.94
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.67
 AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =  27.44
 Tc(MIN.) =   50.38
 SUBAREA AREA(ACRES) =    10.72       SUBAREA RUNOFF(CFS) =    0.66
 EFFECTIVE AREA(ACRES) =     11.64     AREA-AVERAGED Fm(INCH/HR) =   0.94
 AREA-AVERAGED Fp(INCH/HR) =   0.94  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      11.6         PEAK FLOW RATE(CFS) =      0.71

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.11   FLOW VELOCITY(FEET/SEC.) =   0.60
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =   1297.60 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =       11.6  TC(MIN.) =    50.38
```

```
  EFFECTIVE AREA(ACRES) =      11.64  AREA-AVERAGED Fm(INCH/HR)=  0.94
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)   =       0.71
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
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        (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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                     Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
 * WATERMAIN INDUSTRIAL CENTER                                              *
 * 25-YEAR, EXISTING CONDITION RATIONAL METHOD, DA 1.0, 1.1, 2.0, 2.1       *
 * 10.28.16     KV                                                          *
 **************************************************************************

  FILE NAME: W_25EX.DAT
  TIME/DATE OF STUDY: 11:53 10/28/2016
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                   --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  5
   1)    5.00;  3.384
   2)   10.00;  2.424
   3)   15.00;  1.952
   4)   30.00;  1.536
   5)   60.00;  1.150
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:  CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.  (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     100.00 TO NODE     101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    200.00
  ELEVATION DATA: UPSTREAM(FEET) =    1013.20  DOWNSTREAM(FEET) =    1012.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.506
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.282
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "1 DWELLING/ACRE"          A        0.57      0.98     0.800    32   11.51
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  SUBAREA RUNOFF(CFS) =       0.77
  TOTAL AREA(ACRES) =       0.57   PEAK FLOW RATE(CFS) =       0.77

****************************************************************************
  FLOW PROCESS FROM NODE     101.00 TO NODE     102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    1012.30  DOWNSTREAM(FEET) =    1004.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1131.64   CHANNEL SLOPE =  0.0072
  CHANNEL BASE(FEET) =     0.00   "Z" FACTOR =  99.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.530
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "1 DWELLING/ACRE"          A       13.10      0.98     0.800    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =        5.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.99
  AVERAGE FLOW DEPTH(FEET) =   0.24   TRAVEL TIME(MIN.) =  18.98
  Tc(MIN.) =   30.49
  SUBAREA AREA(ACRES) =    13.10       SUBAREA RUNOFF(CFS) =    8.84
  EFFECTIVE AREA(ACRES) =      13.67     AREA-AVERAGED Fm(INCH/HR) =   0.78
  AREA-AVERAGED Fp(INCH/HR) =   0.97  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =       13.7         PEAK FLOW RATE(CFS) =       9.22

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   1.15
  LONGEST FLOWPATH FROM NODE     100.00 TO NODE     102.00 =    1331.64 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
 ELEVATION DATA: UPSTREAM(FEET) =   1013.40  DOWNSTREAM(FEET) =   1012.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.939
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.732
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL GOOD COVER
 "GRASS"                    A        0.92      0.94     1.000    38   22.94
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.94
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =      0.66
 TOTAL AREA(ACRES) =      0.92   PEAK FLOW RATE(CFS) =      0.66

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1012.50  DOWNSTREAM(FEET) =   1004.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1097.60   CHANNEL SLOPE =  0.0073
 CHANNEL BASE(FEET) =    0.00    "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.358
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL GOOD COVER
 "GRASS"                    A       10.72      0.94     1.000    38
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.94
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.82
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.88
 AVERAGE FLOW DEPTH(FEET) =   0.18   TRAVEL TIME(MIN.) =  20.86
 Tc(MIN.) =   43.80
 SUBAREA AREA(ACRES) =    10.72       SUBAREA RUNOFF(CFS) =    4.08
 EFFECTIVE AREA(ACRES) =     11.64     AREA-AVERAGED Fm(INCH/HR) =   0.94
 AREA-AVERAGED Fp(INCH/HR) =   0.94  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       11.6          PEAK FLOW RATE(CFS) =       4.43

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.22   FLOW VELOCITY(FEET/SEC.) =   0.95
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =   1297.60 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =       11.6  TC(MIN.) =     43.80
```

```
  EFFECTIVE AREA(ACRES) =      11.64  AREA-AVERAGED Fm(INCH/HR)=  0.94
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap = 1.000
  PEAK FLOW RATE(CFS)    =       4.43
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
         (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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           Ver. 18.0  Release Date: 07/01/2011  License ID 1499

                        Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
* WATERMAIN INDUSTRIAL CENTER                                              *
* 100-YEAR, EXISTING CONDITION RATIONAL METHOD, DA 1.0, 1.1, 2.0, 2.1      *
* 10.28.16     KV                                                          *
 **************************************************************************

  FILE NAME: W_100EX.DAT
  TIME/DATE OF STUDY: 11:56 10/28/2016
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                   --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  5
   1)    5.00;  4.668
   2)   10.00;  3.348
   3)   15.00;  2.700
   4)   30.00;  2.120
   5)   60.00;  1.590
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.  (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
  ELEVATION DATA: UPSTREAM(FEET) =   1013.20  DOWNSTREAM(FEET) =   1012.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   11.506
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.153
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  "1 DWELLING/ACRE"          A        0.57      0.74     0.800    52   11.51
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  SUBAREA RUNOFF(CFS) =      1.31
  TOTAL AREA(ACRES) =      0.57   PEAK FLOW RATE(CFS) =      1.31

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1012.30  DOWNSTREAM(FEET) =   1004.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1131.64   CHANNEL SLOPE =  0.0072
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.228
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "1 DWELLING/ACRE"          A       13.10      0.74     0.800    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.800
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.20
  AVERAGE FLOW DEPTH(FEET) =   0.31   TRAVEL TIME(MIN.) =  15.71
  Tc(MIN.) =   27.22
  SUBAREA AREA(ACRES) =    13.10       SUBAREA RUNOFF(CFS) =   19.27
  EFFECTIVE AREA(ACRES) =     13.67     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =      13.7         PEAK FLOW RATE(CFS) =      20.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.38   FLOW VELOCITY(FEET/SEC.) =   1.42
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =   1331.64 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   200.00
 ELEVATION DATA: UPSTREAM(FEET) =   1013.40  DOWNSTREAM(FEET) =   1012.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   22.939
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.393
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL GOOD COVER
 "GRASS"                    A       0.92      0.66     1.000    58   22.94
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =      1.44
 TOTAL AREA(ACRES) =       0.92   PEAK FLOW RATE(CFS) =      1.44

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1012.50  DOWNSTREAM(FEET) =   1004.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1097.60   CHANNEL SLOPE =  0.0073
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   1.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.956
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL GOOD COVER
 "GRASS"                    A      10.72      0.66     1.000    58
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.74
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.12
 AVERAGE FLOW DEPTH(FEET) =   0.26   TRAVEL TIME(MIN.) =  16.32
 Tc(MIN.) =   39.26
 SUBAREA AREA(ACRES) =    10.72       SUBAREA RUNOFF(CFS) =   12.53
 EFFECTIVE AREA(ACRES) =     11.64     AREA-AVERAGED Fm(INCH/HR) =   0.66
 AREA-AVERAGED Fp(INCH/HR) =   0.66  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       11.6         PEAK FLOW RATE(CFS) =      13.60

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =   1.25
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =   1297.60 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =       11.6  TC(MIN.) =     39.26
```

```
 EFFECTIVE AREA(ACRES) =      11.64  AREA-AVERAGED Fm(INCH/HR)=  0.66
 AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap = 1.000
 PEAK FLOW RATE(CFS)    =      13.60
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

APPENDIX E

- Proposed Conditions Hydrology AES Results

Date 12/14/16

Job No. 95956002

Kimley»Horn

Waterman Industrial Center-Proposed Condition

U/S Node	D/S Node	Code	D/S Elev.	U/S Elev.	Length (ft)	Area (acre)	Comments *Soil type A, 90% Imp*
100	101	2	1053.8	1050.1	181.25	2.56	Roof, Tc=5 min
101	102	5	1007.1	1004.6	274.10	3.42	Pkg, B=0, Z=99', D=0.5'
102	102	1	-	-	-	-	1 of 2
300	301	2	1057.8	1057.4	221.28	1.05	Roof, Tc=5 min
301	302	5	1014.4	1010.5	221.00	0.94	Pkg, B=0, Z=99', D=0.5'
302	102	5	1010.5	1004.6	523.94	-	
102	102	1	-	-	-	-	2 of 2
102	103	4	998.4	997.5	20.80	-	Basin 1 - North Entry
				Basin 1 Total		**7.97**	
200	201	2	1056.8	1052.8	291.74	6.08	Roof, Tc=5 min
201	202	5	1009.8	1004	926.31	4.17	Pkg, B=0, Z=99', D=0.5'
202	202	1	-	-	-	-	1 of 2
600	601	2	1057.8	1057.4	342.59	1.7	Roof, Tc=5 min
601	602	5	1014.4	1008.7	222.62	1.01	Pkg, B=0, Z=99', D=0.5'
602	202	5	1008.7	1004	890.60	-	
202	202	1	-	-	-	-	2 of 2
202	203	4	998.43	997.5	21.19	-	Basin 2 - South Entry
				Basin 2 Total		**12.96**	
400	401	2	1014.7	1011.7	100.00	0.08	Pkg
401	402	5	1011.7	1010.8	133.04	0.41	Pkg, B=0, Z=99', D=0.5'
				Basin 4 Total		**0.49**	
500	501	2	1014.8	1013.3	100.00	0.08	Pkg
501	502	5	1013.3	1010	192.21	0.53	Pkg, B=0, Z=99', D=0.5'
				Basin 5 Total		**0.61**	
700	701	2	1053.7	1052.9	269.72	0.84	Roof, Tc=5 min
701	702	5	1009.9	1004.8	118.40	0.72	Pkg, B=0, Z=99', D=0.5'
				Basin 7 Total		**1.56**	
800	801	2	1009.1	1005.2	131.38	0.21	Pkg
				Basin 8 Total		**0.21**	
900	901	2	1052.8	1052.5	69.76	0.41	Roof, Tc=5 min
901	902	5	1009.5	1005.1	129.48	0.35	Pkg, B=0, Z=99', D=0.5'
				Basin 9 Total		**0.76**	
1000	1001	2	1007.4	1005.7	100.00	0.11	Pkg
1001	1002	5	1005.7	1004.9	134.39	0.39	Pkg, B=0, Z=99', D=0.5'
				Basin 10 Total		**0.50**	

```
****************************************************************************
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                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY **************************
 * WATERMAN INDUSTRIAL CENTER                                              *
 * 2-YEAR, PROPOSED CONDITION RATIONAL METHOD, DA 1.0, 1.1, 2.0, 2.1, 3.0,
     3.1, 4.0, 4.1, 5.0, 5.1, 6.0, 6.1, 7.0, 7.1, 8.0, 9.0, 9.1, 10.0, 10.1
*
 * 12.14.2016     KV                                                       *
 **************************************************************************

  FILE NAME: W_2PR.DAT
  TIME/DATE OF STUDY: 13:31 12/16/2016
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  5
   1)    5.00;  1.644
   2)   10.00;  1.182
   3)   15.00;  0.952
   4)   30.00;  0.748
   5)   60.00;  0.561
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.  (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
```

```
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
 FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   181.25
 ELEVATION DATA: UPSTREAM(FEET) =   1053.80  DOWNSTREAM(FEET) =   1050.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.299
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.616
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        2.56      0.74     0.100    52    5.30
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      3.55
 TOTAL AREA(ACRES) =      2.56   PEAK FLOW RATE(CFS) =      3.55

****************************************************************************
 FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1007.10  DOWNSTREAM(FEET) =   1004.60
 CHANNEL LENGTH THRU SUBAREA(FEET) =   274.10   CHANNEL SLOPE =  0.0091
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        3.42      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.58
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.89
 AVERAGE FLOW DEPTH(FEET) =   0.17   TRAVEL TIME(MIN.) =   2.41
 Tc(MIN.) =    7.71
 SUBAREA AREA(ACRES) =     3.42       SUBAREA RUNOFF(CFS) =    4.06
 EFFECTIVE AREA(ACRES) =      5.98    AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        6.0         PEAK FLOW RATE(CFS) =      7.10

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.19   FLOW VELOCITY(FEET/SEC.) =   2.03
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    455.35 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    7.71
 RAINFALL INTENSITY(INCH/HR) =   1.39
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       5.98
 TOTAL STREAM AREA(ACRES) =       5.98
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       7.10

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   221.28
 ELEVATION DATA: UPSTREAM(FEET) =   1057.80  DOWNSTREAM(FEET) =   1057.40

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.320
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.245
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        1.05      0.74     0.100    52    9.32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       1.11
 TOTAL AREA(ACRES) =       1.05   PEAK FLOW RATE(CFS) =       1.11

****************************************************************************
 FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1014.40  DOWNSTREAM(FEET) =   1010.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   221.00   CHANNEL SLOPE =  0.0176
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.117
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.94      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.55
```

```
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    1.75
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   2.10
 Tc(MIN.) =   11.42
 SUBAREA AREA(ACRES) =      0.94       SUBAREA RUNOFF(CFS) =     0.88
 EFFECTIVE AREA(ACRES) =       1.99     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        2.0         PEAK FLOW RATE(CFS) =       1.87

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   1.81
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =     442.28 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    302.00 TO NODE    102.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1010.50  DOWNSTREAM(FEET) =   1004.60
 CHANNEL LENGTH THRU SUBAREA(FEET) =   523.94   CHANNEL SLOPE =  0.0113
 CHANNEL FLOW THRU SUBAREA(CFS) =        1.87
 FLOW VELOCITY(FEET/SEC) =   1.80 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   4.85    Tc(MIN.) =   16.27
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    102.00 =     966.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   16.27
 RAINFALL INTENSITY(INCH/HR) =   0.93
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       1.99
 TOTAL STREAM AREA(ACRES) =       1.99
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.87

 ** CONFLUENCE DATA **
  STREAM       Q       Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1        7.10    7.71    1.393  0.74( 0.07) 0.10       6.0     100.00
     2        1.87   16.27    0.935  0.74( 0.07) 0.10       2.0     300.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q       Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

```
    1        8.46    7.71    1.393  0.74( 0.07) 0.10       6.9     100.00
    2        6.50   16.27    0.935  0.74( 0.07) 0.10       8.0     300.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       8.46    Tc(MIN.) =     7.71
 EFFECTIVE AREA(ACRES) =       6.92   AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.10
 TOTAL AREA(ACRES) =        8.0
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    102.00 =     966.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  41
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   998.40  DOWNSTREAM(FEET) =   997.50
 FLOW LENGTH(FEET) =    20.80   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS   7.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.92
 GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       8.46
 PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    7.75
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    103.00 =     987.02 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.74
 ELEVATION DATA: UPSTREAM(FEET) =   1056.80  DOWNSTREAM(FEET) =   1052.80

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.942
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.465
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A       6.08      0.74     0.100    52    6.94
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       7.61
 TOTAL AREA(ACRES) =      6.08   PEAK FLOW RATE(CFS) =      7.61

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1009.80  DOWNSTREAM(FEET) =   1004.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   926.31   CHANNEL SLOPE =  0.0063
```

```
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  0.947
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        4.17      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.25
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.83
 AVERAGE FLOW DEPTH(FEET) =   0.23   TRAVEL TIME(MIN.) =   8.44
 Tc(MIN.) =   15.38
 SUBAREA AREA(ACRES) =     4.17       SUBAREA RUNOFF(CFS) =    3.27
 EFFECTIVE AREA(ACRES) =     10.25     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =       10.2         PEAK FLOW RATE(CFS) =       8.05

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.22   FLOW VELOCITY(FEET/SEC.) =   1.74
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =   1218.05 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.38
 RAINFALL INTENSITY(INCH/HR) =   0.95
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =      10.25
 TOTAL STREAM AREA(ACRES) =      10.25
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       8.05

****************************************************************************
 FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 ELEVATION DATA: UPSTREAM(FEET) =   1014.70  DOWNSTREAM(FEET) =   1011.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.644
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        0.08      0.74     0.100    52    5.00
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =       0.11
  TOTAL AREA(ACRES) =       0.08   PEAK FLOW RATE(CFS) =      0.11

****************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1011.70  DOWNSTREAM(FEET) =   1010.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =   133.04   CHANNEL SLOPE =  0.0068
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.397
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  A        0.41      0.74     0.100    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.36
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.83
  AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   2.68
  Tc(MIN.) =    7.68
  SUBAREA AREA(ACRES) =     0.41       SUBAREA RUNOFF(CFS) =    0.49
  EFFECTIVE AREA(ACRES) =      0.49     AREA-AVERAGED Fm(INCH/HR) =   0.07
  AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        0.5         PEAK FLOW RATE(CFS) =       0.58

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.08   FLOW VELOCITY(FEET/SEC.) =   0.94
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    402.00 =     233.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  ELEVATION DATA: UPSTREAM(FEET) =   1014.80  DOWNSTREAM(FEET) =   1013.30

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
  *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.644
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                  A        0.08      0.74     0.100    52    5.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      0.11
```

```
 TOTAL AREA(ACRES) =      0.08   PEAK FLOW RATE(CFS) =      0.11

****************************************************************************
 FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1013.30  DOWNSTREAM(FEET) =   1010.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   192.21   CHANNEL SLOPE =  0.0172
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.413
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.53      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =        0.43
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.28
 AVERAGE FLOW DEPTH(FEET) =   0.06   TRAVEL TIME(MIN.) =   2.50
 Tc(MIN.) =    7.50
 SUBAREA AREA(ACRES) =     0.53       SUBAREA RUNOFF(CFS) =    0.64
 EFFECTIVE AREA(ACRES) =      0.61     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        0.6         PEAK FLOW RATE(CFS) =       0.73

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.07   FLOW VELOCITY(FEET/SEC.) =   1.45
 LONGEST FLOWPATH FROM NODE    500.00 TO NODE    502.00 =     292.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   342.59
 ELEVATION DATA: UPSTREAM(FEET) =   1057.80  DOWNSTREAM(FEET) =   1057.40

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.115
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.085
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        1.70      0.74     0.100    52   12.11
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       1.55
 TOTAL AREA(ACRES) =      1.70   PEAK FLOW RATE(CFS) =      1.55

****************************************************************************
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```
 FLOW PROCESS FROM NODE    601.00 TO NODE    602.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1014.40  DOWNSTREAM(FEET) =   1008.70
 CHANNEL LENGTH THRU SUBAREA(FEET) =   222.62   CHANNEL SLOPE =  0.0256
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.005
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        1.01      0.74     0.100     52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.97
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.14
 AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   1.73
 Tc(MIN.) =   13.84
 SUBAREA AREA(ACRES) =     1.01       SUBAREA RUNOFF(CFS) =    0.85
 EFFECTIVE AREA(ACRES) =      2.71     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        2.7         PEAK FLOW RATE(CFS) =       2.27

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   2.20
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    602.00 =     565.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    602.00 TO NODE    202.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1008.70  DOWNSTREAM(FEET) =   1004.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   890.60   CHANNEL SLOPE =  0.0053
 CHANNEL FLOW THRU SUBAREA(CFS) =       2.27
 FLOW VELOCITY(FEET/SEC) =   1.28 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =  11.56   Tc(MIN.) =   25.40
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    202.00 =    1455.81 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   25.40
 RAINFALL INTENSITY(INCH/HR) =   0.81
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
```

```
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       2.71
 TOTAL STREAM AREA(ACRES) =       2.71
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       2.27

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1        8.05   15.38    0.947  0.74( 0.07) 0.10      10.2     200.00
     2        2.27   25.40    0.811  0.74( 0.07) 0.10       2.7     600.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1        9.68   15.38    0.947  0.74( 0.07) 0.10      11.9     200.00
     2        9.06   25.40    0.811  0.74( 0.07) 0.10      13.0     600.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       9.68    Tc(MIN.) =    15.38
 EFFECTIVE AREA(ACRES) =      11.89   AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.10
 TOTAL AREA(ACRES) =       13.0
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    202.00 =    1455.81 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  41
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   998.43  DOWNSTREAM(FEET) =   997.50
 FLOW LENGTH(FEET) =    21.19   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS   7.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  11.41
 GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =        9.68
 PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =   15.41
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    203.00 =    1477.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    700.00 TO NODE    701.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   269.72
 ELEVATION DATA: UPSTREAM(FEET) =   1053.70  DOWNSTREAM(FEET) =   1052.90

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.137
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.262
```

```
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
COMMERCIAL                 A       0.84      0.74     0.100    52    9.14
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
SUBAREA RUNOFF(CFS) =      0.90
TOTAL AREA(ACRES) =      0.84   PEAK FLOW RATE(CFS) =      0.90

****************************************************************************
FLOW PROCESS FROM NODE    701.00 TO NODE    702.00 IS CODE =  51
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1009.90  DOWNSTREAM(FEET) =   1004.80
CHANNEL LENGTH THRU SUBAREA(FEET) =   118.40   CHANNEL SLOPE =  0.0431
CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.184
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 A       0.72      0.74     0.100    52
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.26
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.36
AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   0.84
Tc(MIN.) =    9.97
SUBAREA AREA(ACRES) =     0.72       SUBAREA RUNOFF(CFS) =    0.72
EFFECTIVE AREA(ACRES) =      1.56     AREA-AVERAGED Fm(INCH/HR) =   0.07
AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
TOTAL AREA(ACRES) =        1.6          PEAK FLOW RATE(CFS) =       1.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.08   FLOW VELOCITY(FEET/SEC.) =   2.40
LONGEST FLOWPATH FROM NODE    700.00 TO NODE    702.00 =     388.12 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    800.00 TO NODE    801.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   131.38
ELEVATION DATA: UPSTREAM(FEET) =   1009.10  DOWNSTREAM(FEET) =   1005.20

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
*   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.644
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
 COMMERCIAL                A        0.21      0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.30
 TOTAL AREA(ACRES) =      0.21   PEAK FLOW RATE(CFS) =      0.30

+--------------------------------------------------------------------------+
| SHEET FLOW OFF-SITE                                                      |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE    900.00 TO NODE    901.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    69.76
 ELEVATION DATA: UPSTREAM(FEET) =   1052.80  DOWNSTREAM(FEET) =   1052.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.644
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                A        0.41      0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.58
 TOTAL AREA(ACRES) =      0.41   PEAK FLOW RATE(CFS) =      0.58

****************************************************************************
 FLOW PROCESS FROM NODE    901.00 TO NODE    902.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1009.50  DOWNSTREAM(FEET) =   1005.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =   129.48   CHANNEL SLOPE =  0.0340
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.538
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                A        0.35      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      0.81
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.89
 AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   1.14
 Tc(MIN.) =    6.14
```

```
 SUBAREA AREA(ACRES) =     0.35       SUBAREA RUNOFF(CFS) =    0.46
 EFFECTIVE AREA(ACRES) =       0.76     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =         0.8         PEAK FLOW RATE(CFS) =       1.00

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.07   FLOW VELOCITY(FEET/SEC.) =   1.98
 LONGEST FLOWPATH FROM NODE    900.00 TO NODE    902.00 =     199.24 FEET.

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 ELEVATION DATA: UPSTREAM(FEET) =   1007.40  DOWNSTREAM(FEET) =   1005.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.644
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A         0.11      0.74      0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.16
 TOTAL AREA(ACRES) =      0.11   PEAK FLOW RATE(CFS) =      0.16

****************************************************************************
 FLOW PROCESS FROM NODE   1001.00 TO NODE   1002.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1005.70  DOWNSTREAM(FEET) =   1004.90
 CHANNEL LENGTH THRU SUBAREA(FEET) =   134.39   CHANNEL SLOPE =  0.0060
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *   2 YEAR RAINFALL INTENSITY(INCH/HR) =  1.374
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A         0.39      0.74      0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.39
```

```
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.77
 AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   2.92
 Tc(MIN.) =    7.92
 SUBAREA AREA(ACRES) =      0.39       SUBAREA RUNOFF(CFS) =    0.46
 EFFECTIVE AREA(ACRES) =       0.50     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        0.5         PEAK FLOW RATE(CFS) =       0.58

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.08   FLOW VELOCITY(FEET/SEC.) =   0.90
 LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1002.00 =     234.39 FEET.

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =        0.5  TC(MIN.) =      7.92
 EFFECTIVE AREA(ACRES) =       0.50  AREA-AVERAGED Fm(INCH/HR)=  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap = 0.100
 PEAK FLOW RATE(CFS)    =       0.58
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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            Ver. 18.0  Release Date: 07/01/2011  License ID 1499

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
 * WATERMAN INDUSTRIAL CENTER                                              *
 * 10-YEAR, PROPOSED CONDITION RATIONAL METHOD, DA 1.0, 1.1, 2.0, 2.1, 3.0,
    3.1, 4.0, 4.1, 5.0, 5.1, 6.0, 6.1, 7.0, 7.1, 8.0, 9.0, 9.1, 10.0, 10.1
*
 * 12.14.2016     KV                                                       *
 **************************************************************************

  FILE NAME: W_10PR.DAT
  TIME/DATE OF STUDY: 13:34 12/16/2016
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  5
   1)    5.00;  2.664
   2)   10.00;  1.908
   3)   15.00;  1.540
   4)   30.00;  1.210
   5)   60.00;  0.907
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
```

```
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
 FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   181.25
 ELEVATION DATA: UPSTREAM(FEET) =   1053.80  DOWNSTREAM(FEET) =   1050.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.299
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.619
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        2.56      0.74      0.100    52    5.30
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      5.86
 TOTAL AREA(ACRES) =      2.56   PEAK FLOW RATE(CFS) =      5.86

****************************************************************************
 FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1007.10  DOWNSTREAM(FEET) =   1004.60
 CHANNEL LENGTH THRU SUBAREA(FEET) =   274.10   CHANNEL SLOPE =  0.0091
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    0.50
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.291
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        3.42      0.74      0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.27
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.11
 AVERAGE FLOW DEPTH(FEET) =   0.21   TRAVEL TIME(MIN.) =   2.17
 Tc(MIN.) =    7.47
 SUBAREA AREA(ACRES) =     3.42       SUBAREA RUNOFF(CFS) =    6.82
 EFFECTIVE AREA(ACRES) =      5.98     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        6.0          PEAK FLOW RATE(CFS) =      11.93

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.23   FLOW VELOCITY(FEET/SEC.) =   2.24
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =     455.35 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    7.47
 RAINFALL INTENSITY(INCH/HR) =   2.29
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       5.98
 TOTAL STREAM AREA(ACRES) =       5.98
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      11.93

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   221.28
 ELEVATION DATA: UPSTREAM(FEET) =   1057.80  DOWNSTREAM(FEET) =   1057.40

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.320
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.011
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        1.05      0.74     0.100    52    9.32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       1.83
 TOTAL AREA(ACRES) =       1.05   PEAK FLOW RATE(CFS) =      1.83

****************************************************************************
 FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1014.40  DOWNSTREAM(FEET) =   1010.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   221.00   CHANNEL SLOPE =  0.0176
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.814
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.94      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.57
```

```
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.89
 AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   1.95
 Tc(MIN.) =   11.27
 SUBAREA AREA(ACRES) =     0.94       SUBAREA RUNOFF(CFS) =    1.47
 EFFECTIVE AREA(ACRES) =      1.99     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        2.0          PEAK FLOW RATE(CFS) =       3.12

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   2.02
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =     442.28 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    302.00 TO NODE    102.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1010.50  DOWNSTREAM(FEET) =   1004.60
 CHANNEL LENGTH THRU SUBAREA(FEET) =   523.94   CHANNEL SLOPE =  0.0113
 CHANNEL FLOW THRU SUBAREA(CFS) =       3.12
 FLOW VELOCITY(FEET/SEC) =   2.01 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   4.35   Tc(MIN.) =   15.62
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    102.00 =     966.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.62
 RAINFALL INTENSITY(INCH/HR) =   1.53
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       1.99
 TOTAL STREAM AREA(ACRES) =       1.99
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       3.12

 ** CONFLUENCE DATA **
  STREAM       Q       Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1       11.93     7.47     2.291  0.74( 0.07) 0.10       6.0     100.00
     2        3.12    15.62     1.526  0.74( 0.07) 0.10       2.0     300.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q       Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
```

```
    1       14.21    7.47    2.291  0.74( 0.07) 0.10       6.9     100.00
    2       10.93   15.62    1.526  0.74( 0.07) 0.10       8.0     300.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      14.21    Tc(MIN.) =     7.47
 EFFECTIVE AREA(ACRES) =       6.93   AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.10
 TOTAL AREA(ACRES) =        8.0
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    102.00 =     966.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  41
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   998.40  DOWNSTREAM(FEET) =   997.50
 FLOW LENGTH(FEET) =    20.80   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS   9.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.62
 GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      14.21
 PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =     7.49
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    103.00 =     987.02 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.74
 ELEVATION DATA: UPSTREAM(FEET) =   1056.80  DOWNSTREAM(FEET) =   1052.80

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.942
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.370
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        6.08      0.74     0.100     52    6.94
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =     12.56
 TOTAL AREA(ACRES) =      6.08   PEAK FLOW RATE(CFS) =     12.56

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1009.80  DOWNSTREAM(FEET) =   1004.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    926.31   CHANNEL SLOPE =  0.0063
```

```
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    0.50
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.594
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                  A        4.17      0.74      0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.41
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.11
 AVERAGE FLOW DEPTH(FEET) =   0.27   TRAVEL TIME(MIN.) =   7.33
 Tc(MIN.) =   14.27
 SUBAREA AREA(ACRES) =     4.17       SUBAREA RUNOFF(CFS) =    5.70
 EFFECTIVE AREA(ACRES) =     10.25     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =       10.2          PEAK FLOW RATE(CFS) =      14.02

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.26   FLOW VELOCITY(FEET/SEC.) =   2.03
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1218.05 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   14.27
 RAINFALL INTENSITY(INCH/HR) =   1.59
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =      10.25
 TOTAL STREAM AREA(ACRES) =      10.25
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      14.02

****************************************************************************
 FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 ELEVATION DATA: UPSTREAM(FEET) =   1014.70  DOWNSTREAM(FEET) =   1011.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.664
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  A        0.08      0.74      0.100    52    5.00
```

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.19
 TOTAL AREA(ACRES) =       0.08   PEAK FLOW RATE(CFS) =       0.19

****************************************************************************
 FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1011.70  DOWNSTREAM(FEET) =   1010.80
 CHANNEL LENGTH THRU SUBAREA(FEET) =   133.04   CHANNEL SLOPE =  0.0068
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.320
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.41      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.60
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.97
 AVERAGE FLOW DEPTH(FEET) =   0.08   TRAVEL TIME(MIN.) =   2.28
 Tc(MIN.) =    7.28
 SUBAREA AREA(ACRES) =     0.41      SUBAREA RUNOFF(CFS) =    0.83
 EFFECTIVE AREA(ACRES) =      0.49    AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        0.5         PEAK FLOW RATE(CFS) =       0.99

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   1.08
 LONGEST FLOWPATH FROM NODE    400.00 TO NODE    402.00 =     233.04 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 ELEVATION DATA: UPSTREAM(FEET) =   1014.80  DOWNSTREAM(FEET) =   1013.30

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.664
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        0.08      0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.19
```

```
 TOTAL AREA(ACRES) =      0.08   PEAK FLOW RATE(CFS) =      0.19

****************************************************************************
 FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1013.30  DOWNSTREAM(FEET) =   1010.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   192.21   CHANNEL SLOPE =  0.0172
 CHANNEL BASE(FEET) =    0.00    "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.327
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.53      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.73
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.44
 AVERAGE FLOW DEPTH(FEET) =   0.07   TRAVEL TIME(MIN.) =   2.23
 Tc(MIN.) =    7.23
 SUBAREA AREA(ACRES) =     0.53       SUBAREA RUNOFF(CFS) =    1.07
 EFFECTIVE AREA(ACRES) =       0.61     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        0.6         PEAK FLOW RATE(CFS) =      1.24

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   1.59
 LONGEST FLOWPATH FROM NODE    500.00 TO NODE    502.00 =    292.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   342.59
 ELEVATION DATA: UPSTREAM(FEET) =   1057.80  DOWNSTREAM(FEET) =   1057.40

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.115
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.752
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        1.70      0.74     0.100    52   12.11
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      2.57
 TOTAL AREA(ACRES) =      1.70   PEAK FLOW RATE(CFS) =      2.57

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    601.00 TO NODE    602.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1014.40  DOWNSTREAM(FEET) =   1008.70
 CHANNEL LENGTH THRU SUBAREA(FEET) =   222.62   CHANNEL SLOPE =  0.0256
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.639
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        1.01      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.28
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.41
 AVERAGE FLOW DEPTH(FEET) =   0.12   TRAVEL TIME(MIN.) =   1.54
 Tc(MIN.) =   13.66
 SUBAREA AREA(ACRES) =     1.01       SUBAREA RUNOFF(CFS) =    1.42
 EFFECTIVE AREA(ACRES) =      2.71     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        2.7        PEAK FLOW RATE(CFS) =       3.82

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   2.47
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    602.00 =     565.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    602.00 TO NODE    202.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1008.70  DOWNSTREAM(FEET) =   1004.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   890.60   CHANNEL SLOPE =  0.0053
 CHANNEL FLOW THRU SUBAREA(CFS) =       3.82
 FLOW VELOCITY(FEET/SEC) =   1.44 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =  10.31   Tc(MIN.) =   23.97
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    202.00 =    1455.81 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   23.97
 RAINFALL INTENSITY(INCH/HR) =   1.34
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
```

AREA-AVERAGED Ap = 0.10
EFFECTIVE STREAM AREA(ACRES) = 2.71
TOTAL STREAM AREA(ACRES) = 2.71
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.82

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14.02	14.27	1.594	0.74(0.07)	0.10	10.2	200.00
2	3.82	23.97	1.343	0.74(0.07)	0.10	2.7	600.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16.74	14.27	1.594	0.74(0.07)	0.10	11.9	200.00
2	15.52	23.97	1.343	0.74(0.07)	0.10	13.0	600.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 16.74 Tc(MIN.) = 14.27
EFFECTIVE AREA(ACRES) = 11.86 AREA-AVERAGED Fm(INCH/HR) = 0.07
AREA-AVERAGED Fp(INCH/HR) = 0.74 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 13.0
LONGEST FLOWPATH FROM NODE 600.00 TO NODE 202.00 = 1455.81 FEET.

****
FLOW PROCESS FROM NODE 202.00 TO NODE 203.00 IS CODE = 41

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 998.43 DOWNSTREAM(FEET) = 997.50
FLOW LENGTH(FEET) = 21.19 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 10.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 13.26
GIVEN PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 16.74
PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 14.29
LONGEST FLOWPATH FROM NODE 600.00 TO NODE 203.00 = 1477.00 FEET.

****
FLOW PROCESS FROM NODE 700.00 TO NODE 701.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==
INITIAL SUBAREA FLOW-LENGTH(FEET) = 269.72
ELEVATION DATA: UPSTREAM(FEET) = 1053.70 DOWNSTREAM(FEET) = 1052.90

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 9.137
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.038

```
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        0.84      0.74     0.100    52    9.14
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      1.48
 TOTAL AREA(ACRES) =      0.84   PEAK FLOW RATE(CFS) =      1.48

****************************************************************************
 FLOW PROCESS FROM NODE    701.00 TO NODE    702.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1009.90  DOWNSTREAM(FEET) =   1004.80
 CHANNEL LENGTH THRU SUBAREA(FEET) =   118.40   CHANNEL SLOPE =  0.0431
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.927
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.72      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.09
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.68
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   0.74
 Tc(MIN.) =    9.87
 SUBAREA AREA(ACRES) =      0.72       SUBAREA RUNOFF(CFS) =    1.20
 EFFECTIVE AREA(ACRES) =      1.56     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       2.60

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   2.83
 LONGEST FLOWPATH FROM NODE    700.00 TO NODE    702.00 =     388.12 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    800.00 TO NODE    801.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   131.38
 ELEVATION DATA: UPSTREAM(FEET) =   1009.10  DOWNSTREAM(FEET) =   1005.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.664
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
 COMMERCIAL                    A        0.21      0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.49
 TOTAL AREA(ACRES) =      0.21   PEAK FLOW RATE(CFS) =      0.49

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE    900.00 TO NODE    901.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    69.76
 ELEVATION DATA: UPSTREAM(FEET) =   1052.80  DOWNSTREAM(FEET) =   1052.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.664
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                    A        0.41      0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.96
 TOTAL AREA(ACRES) =      0.41   PEAK FLOW RATE(CFS) =      0.96

****************************************************************************
 FLOW PROCESS FROM NODE    901.00 TO NODE    902.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1009.50  DOWNSTREAM(FEET) =   1005.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =    129.48   CHANNEL SLOPE =  0.0340
 CHANNEL BASE(FEET) =    0.00    "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    0.50
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.513
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                    A        0.35      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.34
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    2.16
 AVERAGE FLOW DEPTH(FEET) =   0.08   TRAVEL TIME(MIN.) =    1.00
 Tc(MIN.) =    6.00
```

```
 SUBAREA AREA(ACRES) =     0.35       SUBAREA RUNOFF(CFS) =    0.77
 EFFECTIVE AREA(ACRES) =      0.76     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        0.8         PEAK FLOW RATE(CFS) =       1.67

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   2.24
 LONGEST FLOWPATH FROM NODE    900.00 TO NODE    902.00 =     199.24 FEET.

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 ELEVATION DATA: UPSTREAM(FEET) =   1007.40  DOWNSTREAM(FEET) =   1005.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.664
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        0.11      0.74     0.100     52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       0.26
 TOTAL AREA(ACRES) =      0.11   PEAK FLOW RATE(CFS) =       0.26

****************************************************************************
 FLOW PROCESS FROM NODE   1001.00 TO NODE   1002.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1005.70  DOWNSTREAM(FEET) =   1004.90
 CHANNEL LENGTH THRU SUBAREA(FEET) =   134.39   CHANNEL SLOPE =  0.0060
 CHANNEL BASE(FEET) =     0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    0.50
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.275
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.39      0.74     0.100     52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.65
```

```
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.87
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   2.58
 Tc(MIN.) =    7.58
 SUBAREA AREA(ACRES) =      0.39        SUBAREA RUNOFF(CFS) =    0.77
 EFFECTIVE AREA(ACRES) =      0.50     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        0.5          PEAK FLOW RATE(CFS) =       0.99

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   1.08
 LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1002.00 =     234.39 FEET.

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =         0.5  TC(MIN.) =      7.58
 EFFECTIVE AREA(ACRES) =       0.50  AREA-AVERAGED Fm(INCH/HR)=  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap = 0.100
 PEAK FLOW RATE(CFS)   =       0.99
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
        (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
          (c) Copyright 1983-2011 Advanced Engineering Software (aes)
             Ver. 18.0  Release Date: 07/01/2011  License ID 1499

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
 * WATERMAN INDUSTRIAL CENTER                                               *
 * 25-YEAR, PROPOSED CONDITION RATIONAL METHOD, DA 1.0, 1.1, 2.0, 2.1, 3.0,
     3.1, 4.0, 4.1, 5.0, 5.1, 6.0, 6.1, 7.0, 7.1, 8.0, 9.0, 9.1, 10.0, 10.1
*
 * 12.14.2016     KV                                                        *
 **************************************************************************

  FILE NAME: W_25PR.DAT
  TIME/DATE OF STUDY: 13:35 12/16/2016
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  5
   1)    5.00;  3.384
   2)   10.00;  2.424
   3)   15.00;  1.952
   4)   30.00;  1.536
   5)   60.00;  1.150
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)    (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
```

```
 *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
 FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   181.25
 ELEVATION DATA: UPSTREAM(FEET) =   1053.80  DOWNSTREAM(FEET) =   1050.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.299
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.327
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        2.56      0.74     0.100    52    5.30
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      7.49
 TOTAL AREA(ACRES) =      2.56   PEAK FLOW RATE(CFS) =      7.49

****************************************************************************
 FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1007.10  DOWNSTREAM(FEET) =   1004.60
 CHANNEL LENGTH THRU SUBAREA(FEET) =   274.10   CHANNEL SLOPE =  0.0091
 CHANNEL BASE(FEET) =    0.00    "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    0.50
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.935
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        3.42      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.92
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.24
 AVERAGE FLOW DEPTH(FEET) =   0.23   TRAVEL TIME(MIN.) =   2.04
 Tc(MIN.) =    7.34
 SUBAREA AREA(ACRES) =      3.42       SUBAREA RUNOFF(CFS) =    8.81
 EFFECTIVE AREA(ACRES) =      5.98     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        6.0         PEAK FLOW RATE(CFS) =      15.40

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.25   FLOW VELOCITY(FEET/SEC.) =   2.40
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =     455.35 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    7.34
 RAINFALL INTENSITY(INCH/HR) =   2.94
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       5.98
 TOTAL STREAM AREA(ACRES) =       5.98
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      15.40

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   221.28
 ELEVATION DATA: UPSTREAM(FEET) =   1057.80  DOWNSTREAM(FEET) =   1057.40

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.320
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.555
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        1.05      0.74     0.100    52    9.32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      2.34
 TOTAL AREA(ACRES) =      1.05   PEAK FLOW RATE(CFS) =      2.34

****************************************************************************
 FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1014.40  DOWNSTREAM(FEET) =   1010.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   221.00   CHANNEL SLOPE =  0.0176
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.320
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.94      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.30
```

```
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.07
 AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   1.78
 Tc(MIN.) =   11.10
 SUBAREA AREA(ACRES) =      0.94       SUBAREA RUNOFF(CFS) =    1.90
 EFFECTIVE AREA(ACRES) =      1.99     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        2.0         PEAK FLOW RATE(CFS) =      4.02

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   2.25
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =     442.28 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    302.00 TO NODE    102.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1010.50  DOWNSTREAM(FEET) =   1004.60
 CHANNEL LENGTH THRU SUBAREA(FEET) =   523.94   CHANNEL SLOPE =  0.0113
 CHANNEL FLOW THRU SUBAREA(CFS) =       4.02
 FLOW VELOCITY(FEET/SEC) =   2.13 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   4.10   Tc(MIN.) =   15.20
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    102.00 =     966.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   15.20
 RAINFALL INTENSITY(INCH/HR) =   1.95
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =      1.99
 TOTAL STREAM AREA(ACRES) =      1.99
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.02

 ** CONFLUENCE DATA **
  STREAM       Q       Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       15.40    7.34    2.935  0.74( 0.07) 0.10       6.0     100.00
     2        4.02   15.20    1.946  0.74( 0.07) 0.10       2.0     300.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q       Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
```

```
    1       18.36    7.34    2.935  0.74( 0.07) 0.10       6.9     100.00
    2       14.10   15.20    1.946  0.74( 0.07) 0.10       8.0     300.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      18.36    Tc(MIN.) =     7.34
 EFFECTIVE AREA(ACRES) =       6.94   AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.10
 TOTAL AREA(ACRES) =        8.0
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    102.00 =     966.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  41
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    998.40  DOWNSTREAM(FEET) =   997.50
 FLOW LENGTH(FEET) =    20.80   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  10.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  13.52
 GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      18.36
 PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    7.36
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    103.00 =     987.02 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.74
 ELEVATION DATA: UPSTREAM(FEET) =   1056.80  DOWNSTREAM(FEET) =   1052.80

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.942
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.011
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A       6.08      0.74     0.100    52    6.94
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =     16.07
 TOTAL AREA(ACRES) =      6.08   PEAK FLOW RATE(CFS) =     16.07

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1009.80  DOWNSTREAM(FEET) =   1004.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   926.31   CHANNEL SLOPE =  0.0063
```

```
CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.056
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 A        4.17      0.74     0.100    52
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.82
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.22
AVERAGE FLOW DEPTH(FEET) =   0.30   TRAVEL TIME(MIN.) =   6.96
Tc(MIN.) =   13.90
SUBAREA AREA(ACRES) =     4.17       SUBAREA RUNOFF(CFS) =    7.44
EFFECTIVE AREA(ACRES) =     10.25     AREA-AVERAGED Fm(INCH/HR) =   0.07
AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
TOTAL AREA(ACRES) =       10.2          PEAK FLOW RATE(CFS) =      18.28

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   2.15
LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1218.05 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   13.90
RAINFALL INTENSITY(INCH/HR) =   2.06
AREA-AVERAGED Fm(INCH/HR) =  0.07
AREA-AVERAGED Fp(INCH/HR) =  0.74
AREA-AVERAGED Ap =  0.10
EFFECTIVE STREAM AREA(ACRES) =      10.25
TOTAL STREAM AREA(ACRES) =      10.25
PEAK FLOW RATE(CFS) AT CONFLUENCE =      18.28

****************************************************************************
FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
ELEVATION DATA: UPSTREAM(FEET) =   1014.70  DOWNSTREAM(FEET) =   1011.70

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.384
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
COMMERCIAL                 A        0.08      0.74     0.100    52    5.00
```

```
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
SUBAREA RUNOFF(CFS) =       0.24
TOTAL AREA(ACRES) =       0.08   PEAK FLOW RATE(CFS) =       0.24

****************************************************************************
FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  51
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1011.70  DOWNSTREAM(FEET) =   1010.80
CHANNEL LENGTH THRU SUBAREA(FEET) =   133.04   CHANNEL SLOPE =  0.0068
CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.957
SUBAREA LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
COMMERCIAL                 A        0.41      0.74     0.100    52
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.78
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.00
AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   2.22
Tc(MIN.) =    7.22
SUBAREA AREA(ACRES) =      0.41       SUBAREA RUNOFF(CFS) =    1.06
EFFECTIVE AREA(ACRES) =      0.49     AREA-AVERAGED Fm(INCH/HR) =   0.07
AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
TOTAL AREA(ACRES) =        0.5         PEAK FLOW RATE(CFS) =       1.27

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   1.19
LONGEST FLOWPATH FROM NODE    400.00 TO NODE    402.00 =     233.04 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
ELEVATION DATA: UPSTREAM(FEET) =   1014.80  DOWNSTREAM(FEET) =   1013.30

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
*  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.384
SUBAREA Tc AND LOSS RATE DATA(AMC III):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
COMMERCIAL                 A        0.08      0.74     0.100    52    5.00
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
SUBAREA RUNOFF(CFS) =      0.24
```

```
 TOTAL AREA(ACRES) =      0.08   PEAK FLOW RATE(CFS) =      0.24

****************************************************************************
 FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1013.30  DOWNSTREAM(FEET) =   1010.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   192.21   CHANNEL SLOPE =  0.0172
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.976
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A       0.53      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       0.93
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.51
 AVERAGE FLOW DEPTH(FEET) =   0.08   TRAVEL TIME(MIN.) =   2.13
 Tc(MIN.) =    7.13
 SUBAREA AREA(ACRES) =     0.53      SUBAREA RUNOFF(CFS) =    1.38
 EFFECTIVE AREA(ACRES) =      0.61     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        0.6         PEAK FLOW RATE(CFS) =      1.59

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.10   FLOW VELOCITY(FEET/SEC.) =   1.73
 LONGEST FLOWPATH FROM NODE    500.00 TO NODE    502.00 =    292.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   342.59
 ELEVATION DATA: UPSTREAM(FEET) =   1057.80  DOWNSTREAM(FEET) =   1057.40

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.115
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.224
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN   (MIN.)
 COMMERCIAL                 A       1.70      0.74     0.100    52   12.11
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      3.29
 TOTAL AREA(ACRES) =      1.70   PEAK FLOW RATE(CFS) =      3.29

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    601.00 TO NODE    602.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1014.40  DOWNSTREAM(FEET) =   1008.70
 CHANNEL LENGTH THRU SUBAREA(FEET) =   222.62   CHANNEL SLOPE =  0.0256
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.092
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        1.01       0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.20
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.64
 AVERAGE FLOW DEPTH(FEET) =   0.13   TRAVEL TIME(MIN.) =   1.41
 Tc(MIN.) =   13.52
 SUBAREA AREA(ACRES) =     1.01       SUBAREA RUNOFF(CFS) =    1.83
 EFFECTIVE AREA(ACRES) =      2.71     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        2.7         PEAK FLOW RATE(CFS) =       4.92

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.13   FLOW VELOCITY(FEET/SEC.) =   2.75
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    602.00 =     565.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    602.00 TO NODE    202.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1008.70  DOWNSTREAM(FEET) =   1004.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   890.60   CHANNEL SLOPE =  0.0053
 CHANNEL FLOW THRU SUBAREA(CFS) =       4.92
 FLOW VELOCITY(FEET/SEC) =   1.53 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   9.72   Tc(MIN.) =   23.24
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    202.00 =    1455.81 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   23.24
 RAINFALL INTENSITY(INCH/HR) =   1.72
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
```

```
AREA-AVERAGED Ap =  0.10
EFFECTIVE STREAM AREA(ACRES) =       2.71
TOTAL STREAM AREA(ACRES) =       2.71
PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.92

** CONFLUENCE DATA **
 STREAM       Q       Tc   Intensity  Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1       18.28   13.90    2.056  0.74( 0.07) 0.10      10.2     200.00
    2        4.92   23.24    1.723  0.74( 0.07) 0.10       2.7     600.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM       Q       Tc   Intensity  Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1       21.82   13.90    2.056  0.74( 0.07) 0.10      11.9     200.00
    2       20.13   23.24    1.723  0.74( 0.07) 0.10      13.0     600.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =       21.82    Tc(MIN.) =    13.90
EFFECTIVE AREA(ACRES) =       11.87   AREA-AVERAGED Fm(INCH/HR) =  0.07
AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.10
TOTAL AREA(ACRES) =       13.0
LONGEST FLOWPATH FROM NODE    600.00 TO NODE    202.00 =    1455.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   998.43  DOWNSTREAM(FEET) =   997.50
  FLOW LENGTH(FEET) =    21.19   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  11.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.20
  GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      21.82
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   13.93
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE    203.00 =    1477.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    700.00 TO NODE    701.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   269.72
  ELEVATION DATA: UPSTREAM(FEET) =   1053.70  DOWNSTREAM(FEET) =   1052.90

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.137
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.590
```

```
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        0.84      0.74     0.100    52    9.14
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      1.90
 TOTAL AREA(ACRES) =      0.84   PEAK FLOW RATE(CFS) =      1.90

****************************************************************************
 FLOW PROCESS FROM NODE    701.00 TO NODE    702.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1009.90  DOWNSTREAM(FEET) =   1004.80
 CHANNEL LENGTH THRU SUBAREA(FEET) =   118.40   CHANNEL SLOPE =  0.0431
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.459
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.72      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       2.67
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.91
 AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   0.68
 Tc(MIN.) =     9.82
 SUBAREA AREA(ACRES) =      0.72       SUBAREA RUNOFF(CFS) =    1.55
 EFFECTIVE AREA(ACRES) =       1.56     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =         1.6         PEAK FLOW RATE(CFS) =       3.35

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.11   FLOW VELOCITY(FEET/SEC.) =   2.81
 LONGEST FLOWPATH FROM NODE    700.00 TO NODE    702.00 =     388.12 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    800.00 TO NODE    801.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   131.38
 ELEVATION DATA: UPSTREAM(FEET) =   1009.10  DOWNSTREAM(FEET) =   1005.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.384
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
 COMMERCIAL                   A        0.21      0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       0.63
 TOTAL AREA(ACRES) =       0.21   PEAK FLOW RATE(CFS) =       0.63

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE    900.00 TO NODE    901.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =     69.76
 ELEVATION DATA: UPSTREAM(FEET) =   1052.80  DOWNSTREAM(FEET) =   1052.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.384
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                   A        0.41      0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       1.22
 TOTAL AREA(ACRES) =       0.41   PEAK FLOW RATE(CFS) =       1.22

****************************************************************************
 FLOW PROCESS FROM NODE    901.00 TO NODE    902.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1009.50  DOWNSTREAM(FEET) =   1005.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =    129.48   CHANNEL SLOPE =  0.0340
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    0.50
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.204
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                   A        0.35      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.71
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.30
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   0.94
 Tc(MIN.) =    5.94
```

```
 SUBAREA AREA(ACRES) =     0.35       SUBAREA RUNOFF(CFS) =    0.99
 EFFECTIVE AREA(ACRES) =      0.76     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =         0.8         PEAK FLOW RATE(CFS) =       2.14

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.09   FLOW VELOCITY(FEET/SEC.) =   2.43
 LONGEST FLOWPATH FROM NODE    900.00 TO NODE    902.00 =     199.24 FEET.

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 ELEVATION DATA: UPSTREAM(FEET) =   1007.40  DOWNSTREAM(FEET) =   1005.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.384
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        0.11      0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.33
 TOTAL AREA(ACRES) =      0.11   PEAK FLOW RATE(CFS) =      0.33

****************************************************************************
 FLOW PROCESS FROM NODE   1001.00 TO NODE   1002.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1005.70  DOWNSTREAM(FEET) =   1004.90
 CHANNEL LENGTH THRU SUBAREA(FEET) =   134.39   CHANNEL SLOPE =  0.0060
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.928
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.39      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      0.83
```

```
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   0.94
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   2.38
 Tc(MIN.) =    7.38
 SUBAREA AREA(ACRES) =     0.39       SUBAREA RUNOFF(CFS) =    1.00
 EFFECTIVE AREA(ACRES) =      0.50     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        0.5          PEAK FLOW RATE(CFS) =       1.28

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.11   FLOW VELOCITY(FEET/SEC.) =   1.08
 LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1002.00 =     234.39 FEET.

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =         0.5  TC(MIN.) =      7.38
 EFFECTIVE AREA(ACRES) =       0.50  AREA-AVERAGED Fm(INCH/HR)=  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap = 0.100
 PEAK FLOW RATE(CFS)    =       1.28
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
        (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 18.0  Release Date: 07/01/2011  License ID 1499

                          Analysis prepared by:




 ************************** DESCRIPTION OF STUDY **************************
 * WATERMAN INDUSTRIAL CENTER                                               *
 * 100-YEAR, PROPOSED CONDITION RATIONAL METHOD, DA 1.0, 1.1, 2.0, 2.1, 3.0,
    3.1, 4.0, 4.1, 5.0, 5.1, 6.0, 6.1, 7.0, 7.1, 8.0, 9.0, 9.1, 10.0, 10.1
*
 * 12.14.2016     KV                                                        *
 **************************************************************************

  FILE NAME: W_100PR.DAT
  TIME/DATE OF STUDY: 13:38 12/16/2016
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS =  5
   1)    5.00;  4.668
   2)   10.00;  3.348
   3)   15.00;  2.700
   4)   30.00;  2.120
   5)   60.00;  1.590
  *ANTECEDENT MOISTURE CONDITION (AMC) III ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
```

```
 *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   181.25
  ELEVATION DATA: UPSTREAM(FEET) =   1053.80  DOWNSTREAM(FEET) =   1050.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.299
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.589
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A        2.56      0.74     0.100    52    5.30
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =     10.40
  TOTAL AREA(ACRES) =      2.56   PEAK FLOW RATE(CFS) =     10.40

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1007.10  DOWNSTREAM(FEET) =   1004.60
  CHANNEL LENGTH THRU SUBAREA(FEET) =   274.10   CHANNEL SLOPE =  0.0091
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.095
  SUBAREA LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 A        3.42      0.74     0.100    52
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.44
  AVERAGE FLOW DEPTH(FEET) =   0.26   TRAVEL TIME(MIN.) =   1.87
  Tc(MIN.) =    7.17
  SUBAREA AREA(ACRES) =     3.42       SUBAREA RUNOFF(CFS) =   12.38
  EFFECTIVE AREA(ACRES) =      5.98     AREA-AVERAGED Fm(INCH/HR) =   0.07
  AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        6.0          PEAK FLOW RATE(CFS) =      21.64

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.29   FLOW VELOCITY(FEET/SEC.) =   2.65
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =     455.35 FEET.

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    7.17
 RAINFALL INTENSITY(INCH/HR) =   4.09
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       5.98
 TOTAL STREAM AREA(ACRES) =       5.98
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      21.64

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   221.28
 ELEVATION DATA: UPSTREAM(FEET) =   1057.80  DOWNSTREAM(FEET) =   1057.40

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.320
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.527
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A         1.05      0.74      0.100    52    9.32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      3.26
 TOTAL AREA(ACRES) =      1.05   PEAK FLOW RATE(CFS) =      3.26

****************************************************************************
 FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1014.40  DOWNSTREAM(FEET) =   1010.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   221.00   CHANNEL SLOPE =  0.0176
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.229
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A         0.94      0.74      0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      4.60
```

```
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.30
 AVERAGE FLOW DEPTH(FEET) =   0.14   TRAVEL TIME(MIN.) =   1.60
 Tc(MIN.) =   10.92
 SUBAREA AREA(ACRES) =     0.94       SUBAREA RUNOFF(CFS) =    2.67
 EFFECTIVE AREA(ACRES) =      1.99     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        2.0         PEAK FLOW RATE(CFS) =       5.65

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   2.36
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =     442.28 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    302.00 TO NODE    102.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1010.50  DOWNSTREAM(FEET) =   1004.60
 CHANNEL LENGTH THRU SUBAREA(FEET) =   523.94   CHANNEL SLOPE =  0.0113
 CHANNEL FLOW THRU SUBAREA(CFS) =       5.65
 FLOW VELOCITY(FEET/SEC) =   2.30 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   3.79   Tc(MIN.) =   14.71
 LONGEST FLOWPATH FROM NODE    300.00 TO NODE    102.00 =     966.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   14.71
 RAINFALL INTENSITY(INCH/HR) =   2.74
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       1.99
 TOTAL STREAM AREA(ACRES) =       1.99
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       5.65

 ** CONFLUENCE DATA **
  STREAM       Q       Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1       21.64     7.17     4.095  0.74( 0.07) 0.10        6.0      100.00
     2        5.65    14.71     2.738  0.74( 0.07) 0.10        2.0      300.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q       Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

```
    1       25.80    7.17    4.095  0.74( 0.07) 0.10       7.0     100.00
    2       19.98   14.71    2.738  0.74( 0.07) 0.10       8.0     300.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      25.80    Tc(MIN.) =     7.17
  EFFECTIVE AREA(ACRES) =       6.95   AREA-AVERAGED Fm(INCH/HR) =  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =        8.0
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    102.00 =     966.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   998.40  DOWNSTREAM(FEET) =   997.50
  FLOW LENGTH(FEET) =    20.80   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  13.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.72
  GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.80
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    7.20
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    103.00 =     987.02 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   291.74
  ELEVATION DATA: UPSTREAM(FEET) =   1056.80  DOWNSTREAM(FEET) =   1052.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.942
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.155
  SUBAREA Tc AND LOSS RATE DATA(AMC III):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                 A       6.08      0.74     0.100     52    6.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =     22.33
  TOTAL AREA(ACRES) =      6.08   PEAK FLOW RATE(CFS) =     22.33

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1009.80  DOWNSTREAM(FEET) =   1004.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.31   CHANNEL SLOPE =  0.0063
```

```
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.915
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        4.17      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.67
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.41
 AVERAGE FLOW DEPTH(FEET) =   0.34   TRAVEL TIME(MIN.) =   6.40
 Tc(MIN.) =   13.34
 SUBAREA AREA(ACRES) =     4.17       SUBAREA RUNOFF(CFS) =   10.66
 EFFECTIVE AREA(ACRES) =     10.25     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =       10.2          PEAK FLOW RATE(CFS) =      26.20

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =   2.39
 LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1218.05 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   13.34
 RAINFALL INTENSITY(INCH/HR) =   2.91
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =      10.25
 TOTAL STREAM AREA(ACRES) =      10.25
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      26.20

****************************************************************************
 FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 ELEVATION DATA: UPSTREAM(FEET) =   1014.70  DOWNSTREAM(FEET) =   1011.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.668
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        0.08      0.74     0.100    52    5.00
```

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       0.33
 TOTAL AREA(ACRES) =       0.08   PEAK FLOW RATE(CFS) =       0.33

****************************************************************************
 FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1011.70  DOWNSTREAM(FEET) =   1010.80
 CHANNEL LENGTH THRU SUBAREA(FEET) =   133.04   CHANNEL SLOPE =  0.0068
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.111
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.41      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.08
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.05
 AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   2.11
 Tc(MIN.) =    7.11
 SUBAREA AREA(ACRES) =      0.41       SUBAREA RUNOFF(CFS) =    1.49
 EFFECTIVE AREA(ACRES) =      0.49     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        0.5        PEAK FLOW RATE(CFS) =       1.78

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   1.27
 LONGEST FLOWPATH FROM NODE    400.00 TO NODE    402.00 =     233.04 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    500.00 TO NODE    501.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 ELEVATION DATA: UPSTREAM(FEET) =   1014.80  DOWNSTREAM(FEET) =   1013.30

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.668
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        0.08      0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.33
```

```
 TOTAL AREA(ACRES) =      0.08   PEAK FLOW RATE(CFS) =      0.33

****************************************************************************
 FLOW PROCESS FROM NODE    501.00 TO NODE    502.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1013.30  DOWNSTREAM(FEET) =   1010.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   192.21   CHANNEL SLOPE =  0.0172
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.162
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.53      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.30
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.67
 AVERAGE FLOW DEPTH(FEET) =   0.09   TRAVEL TIME(MIN.) =   1.92
 Tc(MIN.) =    6.92
 SUBAREA AREA(ACRES) =      0.53       SUBAREA RUNOFF(CFS) =    1.95
 EFFECTIVE AREA(ACRES) =      0.61     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       2.24

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.11   FLOW VELOCITY(FEET/SEC.) =   1.88
 LONGEST FLOWPATH FROM NODE    500.00 TO NODE    502.00 =     292.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    600.00 TO NODE    601.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   342.59
 ELEVATION DATA: UPSTREAM(FEET) =   1057.80  DOWNSTREAM(FEET) =   1057.40

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.115
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.074
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        1.70      0.74     0.100    52   12.11
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      4.59
 TOTAL AREA(ACRES) =      1.70   PEAK FLOW RATE(CFS) =      4.59

****************************************************************************
```

```
 FLOW PROCESS FROM NODE    601.00 TO NODE    602.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1014.40  DOWNSTREAM(FEET) =   1008.70
 CHANNEL LENGTH THRU SUBAREA(FEET) =   222.62   CHANNEL SLOPE =  0.0256
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.897
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        1.01       0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.87
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.72
 AVERAGE FLOW DEPTH(FEET) =   0.15   TRAVEL TIME(MIN.) =   1.37
 Tc(MIN.) =   13.48
 SUBAREA AREA(ACRES) =     1.01       SUBAREA RUNOFF(CFS) =    2.57
 EFFECTIVE AREA(ACRES) =      2.71      AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        2.7         PEAK FLOW RATE(CFS) =       6.88

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.16   FLOW VELOCITY(FEET/SEC.) =   2.88
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    602.00 =     565.21 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    602.00 TO NODE    202.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1008.70  DOWNSTREAM(FEET) =   1004.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   890.60   CHANNEL SLOPE =  0.0053
 CHANNEL FLOW THRU SUBAREA(CFS) =        6.88
 FLOW VELOCITY(FEET/SEC) =   1.65 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   8.97   Tc(MIN.) =   22.45
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    202.00 =    1455.81 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    202.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   22.45
 RAINFALL INTENSITY(INCH/HR) =   2.41
 AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74
```

```
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       2.71
 TOTAL STREAM AREA(ACRES) =       2.71
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       6.88

 ** CONFLUENCE DATA **
  STREAM       Q       Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       26.20   13.34    2.915  0.74( 0.07) 0.10      10.2     200.00
     2        6.88   22.45    2.412  0.74( 0.07) 0.10       2.7     600.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q       Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       31.17   13.34    2.915  0.74( 0.07) 0.10      11.9     200.00
     2       28.45   22.45    2.412  0.74( 0.07) 0.10      13.0     600.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       31.17    Tc(MIN.) =    13.34
 EFFECTIVE AREA(ACRES) =       11.86   AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap =  0.10
 TOTAL AREA(ACRES) =       13.0
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    202.00 =    1455.81 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  41
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   998.43  DOWNSTREAM(FEET) =   997.50
 FLOW LENGTH(FEET) =    21.19   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.45
 GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      31.17
 PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   13.37
 LONGEST FLOWPATH FROM NODE    600.00 TO NODE    203.00 =    1477.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    700.00 TO NODE    701.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   269.72
 ELEVATION DATA: UPSTREAM(FEET) =   1053.70  DOWNSTREAM(FEET) =   1052.90

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    9.137
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.576
```

```
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A       0.84      0.74     0.100    52    9.14
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      2.65
 TOTAL AREA(ACRES) =      0.84   PEAK FLOW RATE(CFS) =      2.65

****************************************************************************
 FLOW PROCESS FROM NODE    701.00 TO NODE    702.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1009.90  DOWNSTREAM(FEET) =   1004.80
 CHANNEL LENGTH THRU SUBAREA(FEET) =   118.40   CHANNEL SLOPE =  0.0431
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.403
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A       0.72      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.73
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.02
 AVERAGE FLOW DEPTH(FEET) =   0.11   TRAVEL TIME(MIN.) =   0.65
 Tc(MIN.) =    9.79
 SUBAREA AREA(ACRES) =     0.72      SUBAREA RUNOFF(CFS) =    2.16
 EFFECTIVE AREA(ACRES) =      1.56     AREA-AVERAGED Fm(INCH/HR) =   0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        1.6        PEAK FLOW RATE(CFS) =       4.67

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   3.32
 LONGEST FLOWPATH FROM NODE    700.00 TO NODE    702.00 =     388.12 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    800.00 TO NODE    801.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   131.38
 ELEVATION DATA: UPSTREAM(FEET) =   1009.10  DOWNSTREAM(FEET) =   1005.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.668
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
 COMMERCIAL                   A        0.21       0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.87
 TOTAL AREA(ACRES) =      0.21   PEAK FLOW RATE(CFS) =      0.87

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE    900.00 TO NODE    901.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =    69.76
 ELEVATION DATA: UPSTREAM(FEET) =   1052.80  DOWNSTREAM(FEET) =   1052.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.668
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                   A        0.41       0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      1.70
 TOTAL AREA(ACRES) =      0.41   PEAK FLOW RATE(CFS) =      1.70

****************************************************************************
 FLOW PROCESS FROM NODE    901.00 TO NODE    902.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1009.50  DOWNSTREAM(FEET) =   1005.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =    129.48   CHANNEL SLOPE =  0.0340
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =    0.50
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.448
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                   A        0.35       0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.38
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.59
 AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   0.83
 Tc(MIN.) =    5.83
```

```
 SUBAREA AREA(ACRES) =      0.35       SUBAREA RUNOFF(CFS) =     1.38
 EFFECTIVE AREA(ACRES) =       0.76     AREA-AVERAGED Fm(INCH/HR) =    0.07
 AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =    0.10
 TOTAL AREA(ACRES) =        0.8          PEAK FLOW RATE(CFS) =        2.99

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.11   FLOW VELOCITY(FEET/SEC.) =   2.51
 LONGEST FLOWPATH FROM NODE    900.00 TO NODE    902.00 =     199.24 FEET.

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+

****************************************************************************
 FLOW PROCESS FROM NODE   1000.00 TO NODE   1001.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
 ELEVATION DATA: UPSTREAM(FEET) =    1007.40  DOWNSTREAM(FEET) =   1005.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.668
 SUBAREA Tc AND LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        0.11      0.74     0.100    52    5.00
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.45
 TOTAL AREA(ACRES) =      0.11   PEAK FLOW RATE(CFS) =      0.45

****************************************************************************
 FLOW PROCESS FROM NODE   1001.00 TO NODE   1002.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    1005.70  DOWNSTREAM(FEET) =   1004.90
 CHANNEL LENGTH THRU SUBAREA(FEET) =   134.39   CHANNEL SLOPE =  0.0060
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  99.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   0.50
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.124
 SUBAREA LOSS RATE DATA(AMC III):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.39      0.74     0.100    52
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.16
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.09
  AVERAGE FLOW DEPTH(FEET) =   0.10   TRAVEL TIME(MIN.) =   2.06
  Tc(MIN.) =    7.06
  SUBAREA AREA(ACRES) =      0.39       SUBAREA RUNOFF(CFS) =    1.42
  EFFECTIVE AREA(ACRES) =      0.50     AREA-AVERAGED Fm(INCH/HR) =   0.07
  AREA-AVERAGED Fp(INCH/HR) =   0.74  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        0.5         PEAK FLOW RATE(CFS) =       1.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.12   FLOW VELOCITY(FEET/SEC.) =   1.18
  LONGEST FLOWPATH FROM NODE   1000.00 TO NODE   1002.00 =    234.39 FEET.

+--------------------------------------------------------------------------+
| SHEET FLOW TO OFF-SITE                                                   |
|                                                                          |
|                                                                          |
+--------------------------------------------------------------------------+
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =        0.5  TC(MIN.) =      7.06
  EFFECTIVE AREA(ACRES) =      0.50  AREA-AVERAGED Fm(INCH/HR)=  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.74  AREA-AVERAGED Ap = 0.100
  PEAK FLOW RATE(CFS)    =       1.82
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

APPENDIX F

- Hydraulic Calculations (WSPGW)

Worksheet for 24" Capacity

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.011	
Channel Slope	0.02000	ft/ft
Normal Depth	2.00	ft
Diameter	2.00	ft
Discharge	37.81	ft^3/s

Results

Discharge	37.81	ft^3/s
Normal Depth	2.00	ft
Flow Area	3.14	ft^2
Wetted Perimeter	6.28	ft
Hydraulic Radius	0.50	ft
Top Width	0.00	ft
Critical Depth	1.94	ft
Percent Full	100.0	%
Critical Slope	0.01761	ft/ft
Velocity	12.03	ft/s
Velocity Head	2.25	ft
Specific Energy	4.25	ft
Froude Number	0.00	
Maximum Discharge	40.67	ft^3/s
Discharge Full	37.81	ft^3/s
Slope Full	0.02000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

Worksheet for 24" Capacity

GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.00	ft
Critical Depth	1.94	ft
Channel Slope	0.02000	ft/ft
Critical Slope	0.01761	ft/ft

Worksheet for Rectangular Emergency Weir 1 - Node 202

Project Description

Solve For	Crest Length

Input Data

Discharge		37.90	ft^3/s
Headwater Elevation		1006.00	ft
Crest Elevation		1005.00	ft
Tailwater Elevation		1005.00	ft
Weir Coefficient		3.33	US
Number Of Contractions	0		

Results

Crest Length	11.38	ft
Headwater Height Above Crest	1.00	ft
Tailwater Height Above Crest	0.00	ft
Flow Area	11.38	ft^2
Velocity	3.33	ft/s
Wetted Perimeter	13.38	ft
Top Width	11.38	ft

Worksheet for Overflow Basin Weir Calc

Project Description

Solve For	Discharge

Input Data

Headwater Elevation	1001.00	ft
Crest Elevation	1000.00	ft
Weir Coefficient	3.33	US
Crest Length	5.00	ft

Results

Discharge	16.65	ft^3/s
Headwater Height Above Crest	1.00	ft
Flow Area	5.00	ft^2
Velocity	3.33	ft/s
Wetted Perimeter	7.00	ft
Top Width	5.00	ft

APPENDIX G

- Inlet Capacity and Spread Calculations (Flowmaster)

Worksheet for North Basin 1 - Node 102

Project Description

Solve For	Spread		

Input Data

Discharge		25.80	ft^3/s
Gutter Width		4.00	ft
Gutter Cross Slope		6.50	%
Road Cross Slope		3.35	%
Grate Width		3.50	ft
Grate Length		3.50	ft
Local Depression		4.00	in
Local Depression Width		2.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%

Results

Spread		32.96	ft
Depth		1.23	ft
Gutter Depression		0.13	ft
Total Depression		0.46	ft
Open Grate Area		5.51	ft^2
Active Grate Weir Length		7.00	ft

Worksheet for South Basin 2 - Node 202

Project Description

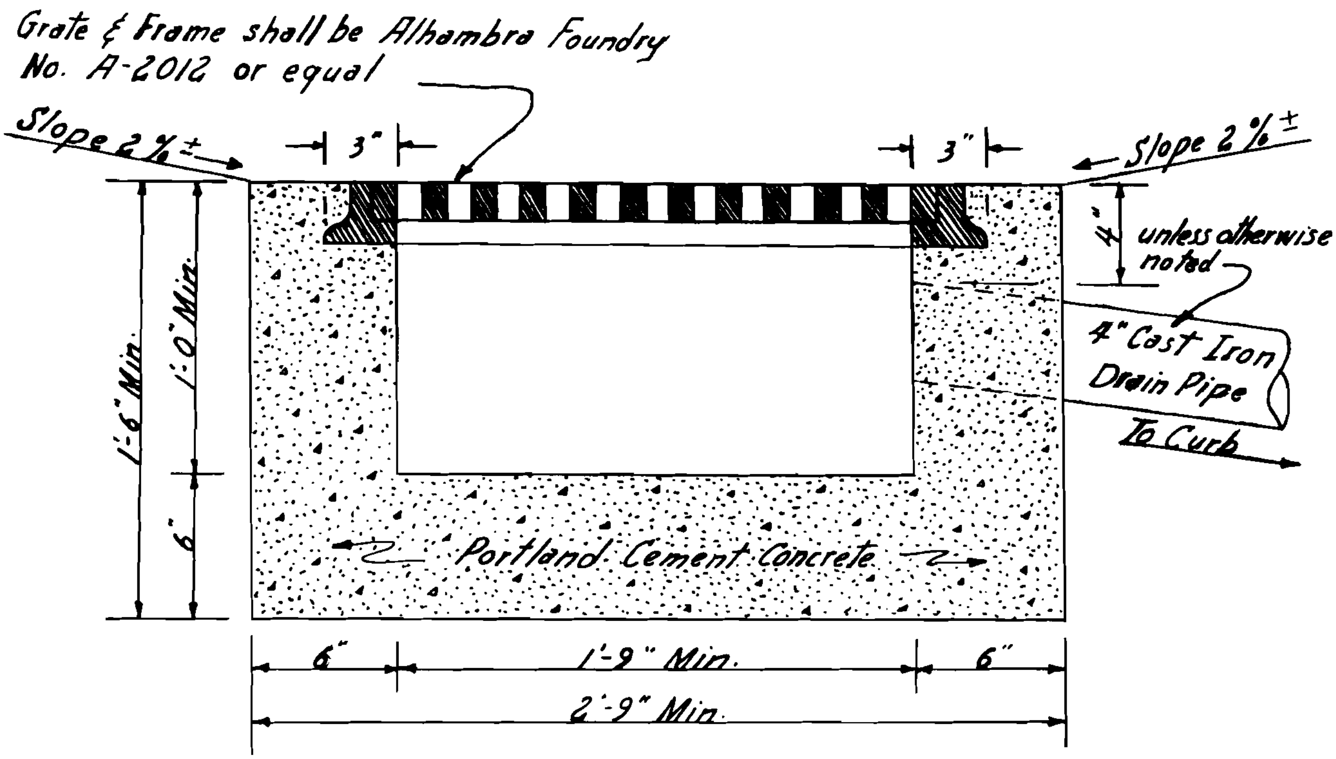
Solve For	Spread

Input Data

Discharge		31.20	ft³/s
Gutter Width		4.00	ft
Gutter Cross Slope		6.50	%
Road Cross Slope		2.00	%
Grate Width		3.50	ft
Grate Length		3.50	ft
Local Depression		4.00	in
Local Depression Width		4.00	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%

Results

Spread	58.74	ft
Depth	1.35	ft
Gutter Depression	0.18	ft
Total Depression	0.51	ft
Open Grate Area	5.51	ft²
Active Grate Weir Length	7.00	ft



Scale 1½" = 1'

Rev. 1	Revised Standard No.	6/22/78

CITY OF SAN BERNARDINO - PUBLIC WORKS DEPT.

TYPICAL PARKING LOT
CATCH BASIN DETAIL

APPROVED
JAN. 10 1967
CITY ENGINEER

STANDARD PLAN
402

APPENDIX H

- Infiltration Analysis Results
  (NorCal Engineering Infiltration Report, Civil D and volume calculations)

Summary

		[illegible]	Storage Volume (cf)	Storage Volume (ac-ft)	Infiltrating Surface Area (sf)	Infiltration Rate (in/hr)	Max Infiltration Outflow (cfs)[2]	Infiltrated Volume (ac-ft)[3]	Drain Time (hrs)
Drainage Area 1 (North)	Basin 1	3.29	97455.80	2.24	35,949	1.14	0.95	1.87	26
	Basin 3	1.02	20522.20	0.47	7,867	1.14	0.21	0.41	27
	Basin 4	0.25	3973.58	0.09	1,648	1.14	0.04	0.08	26
	Basin 7	0.80	10920.07	0.25	4,119	1.14	0.11	0.22	28
	Total	**5.36**		**3.05**				**2.59**	
Drainage Area 2 (South)	Basin 2	5.26	151608.42	3.48	55,846	1.14	1.48	2.93	26
	Basin 5	0.31	9171.07	0.21	3,765	1.14	0.10	0.19	15
	Basin 6	1.39	21418.70	0.49	10,060	1.14	0.27	0.53	22
	Total	**6.97**		**4.18**				**3.65**	

Notes

1: Volume from CivilDesign

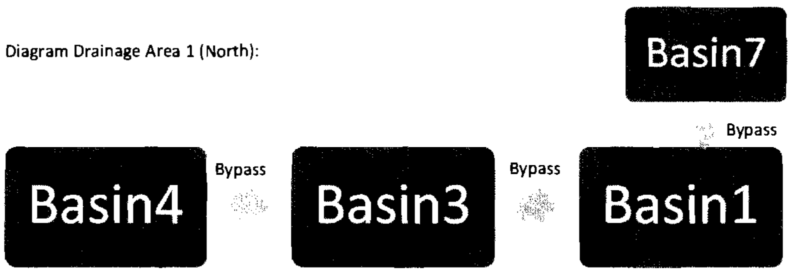
2: Maximum Infiltration Outflow (cfs)= Infiltrating Surface Area (sf) *Infiltration Rate (in/hr) / (12 in/ft) / (60 min/hr) / (60 sec/min)

3: Infiltrated Volume (ac-ft) = Infiltrated Flow (cfs) * Time (min) * (60 sec/min) / (43,560 ac/ft)

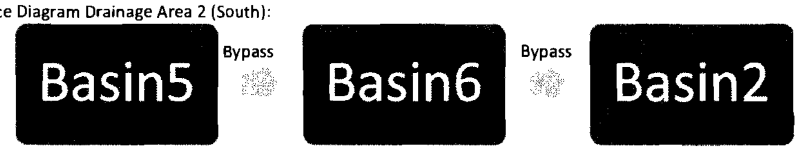
4: Drain Time = [Volume (cf)/Infiltrating Area (sf)]/[Infiltration rate (in/hr)*12in/1ft]

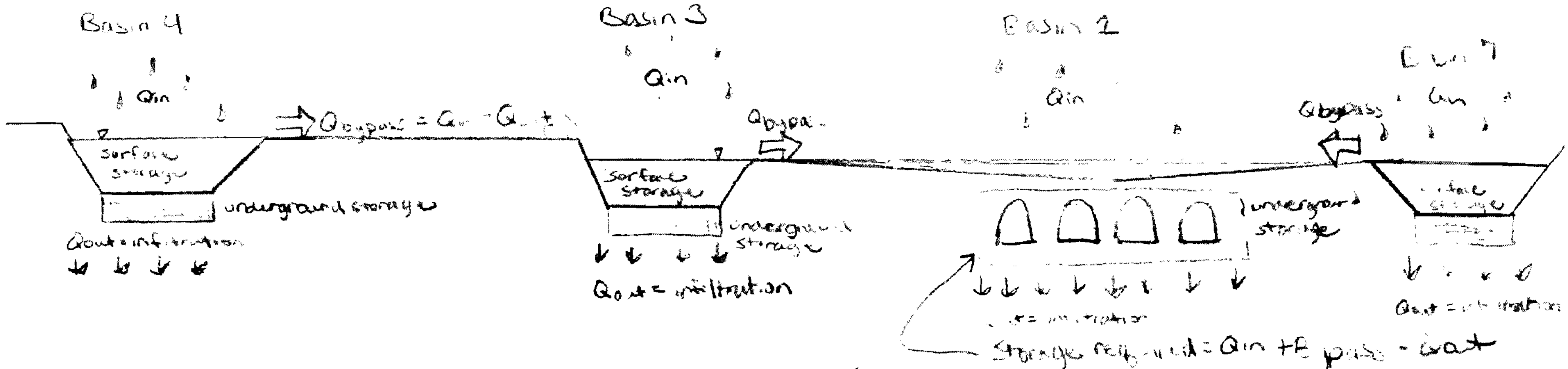
	Volume Pro[illegible]		Storage Volume + Infiltrated Volume	
Drainage Area 1	5.36 ac-ft	<	5.64 ac-ft	✓
Drainage Area 2	6.97 ac-ft	<	7.83 ac-ft	✓

Flow Conveyance Diagram Drainage Area 1 (North):

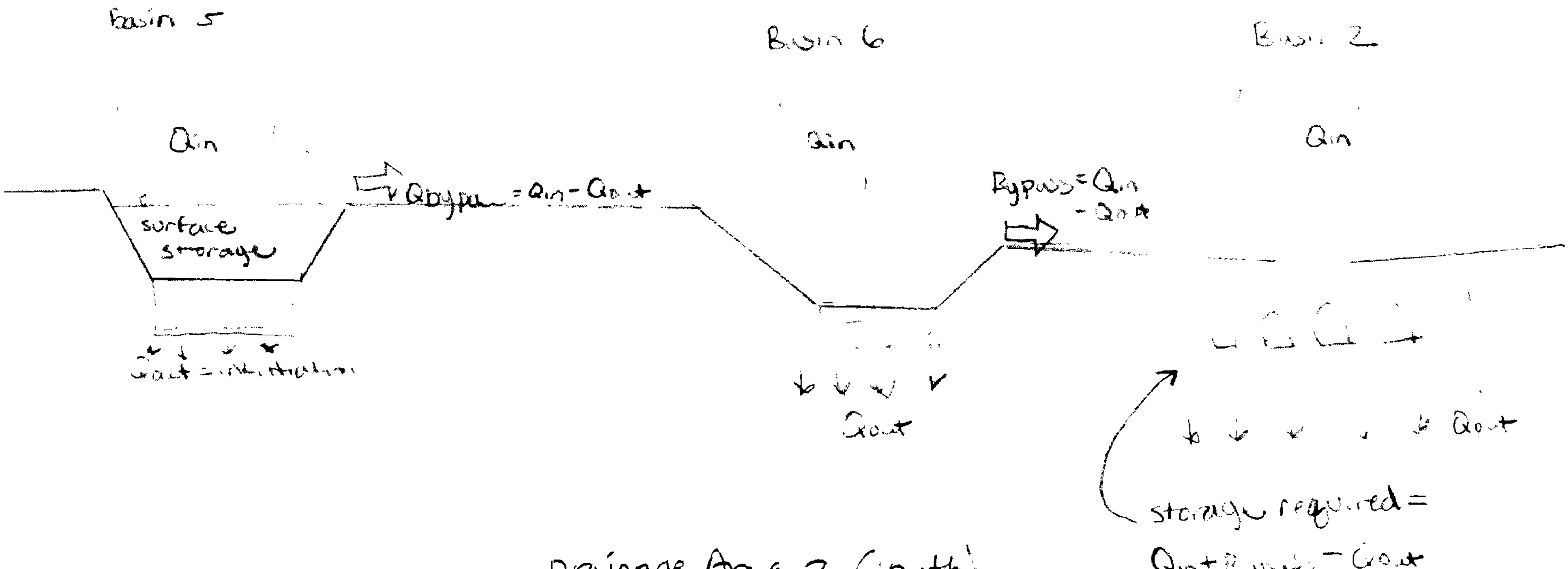


Flow Conveyance Diagram Drainage Area 2 (South):



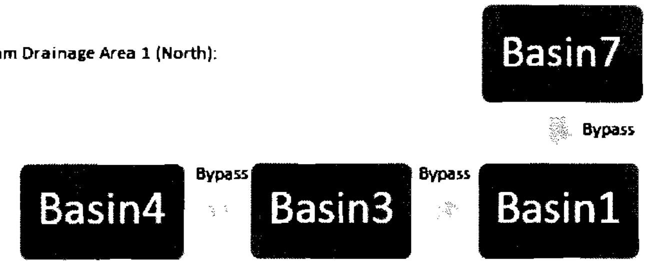


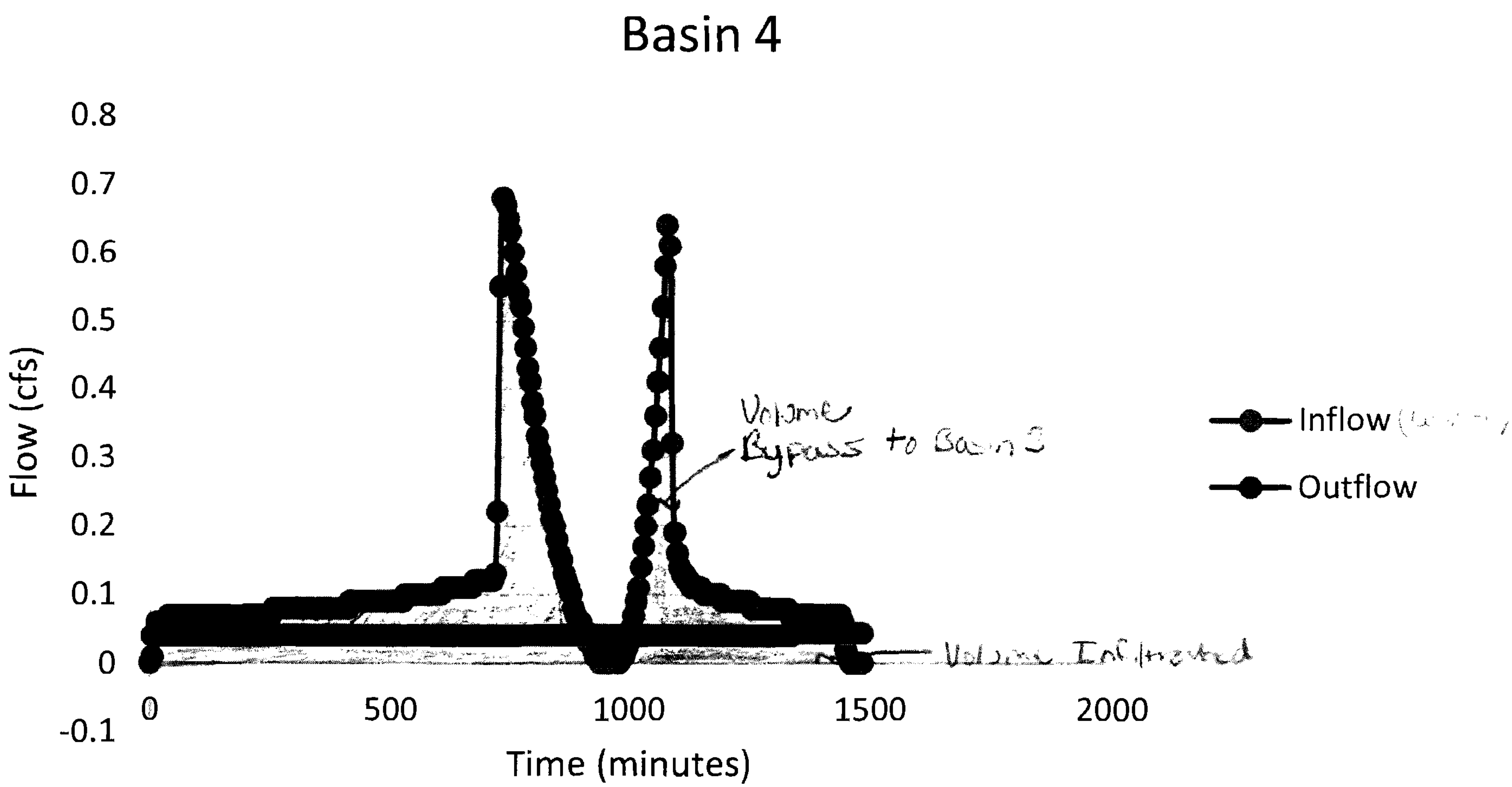
Drainage Area 1 (north) Schematic



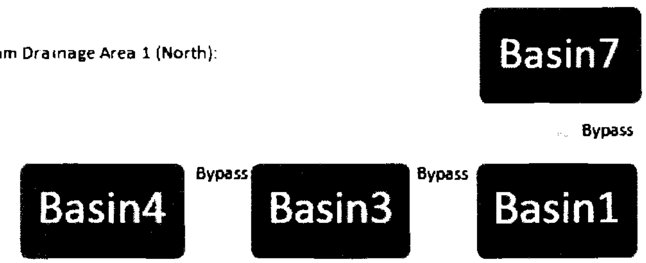
Drainage Area 2 (south) schematic

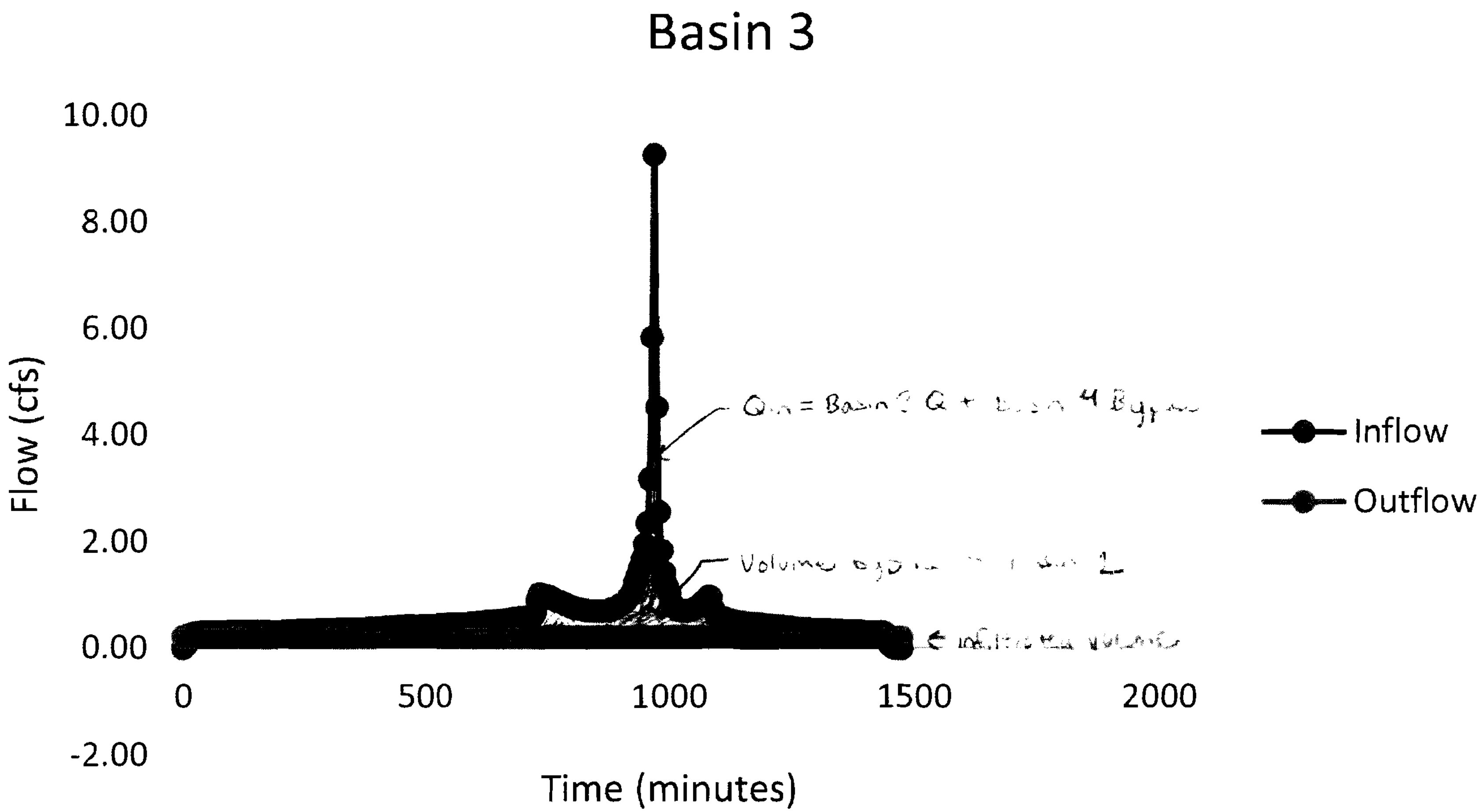
Flow Conveyance Diagram Drainage Area 1 (North):



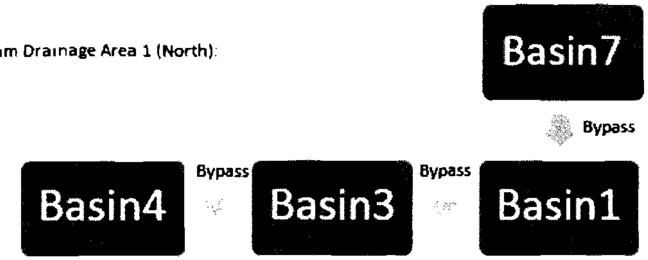


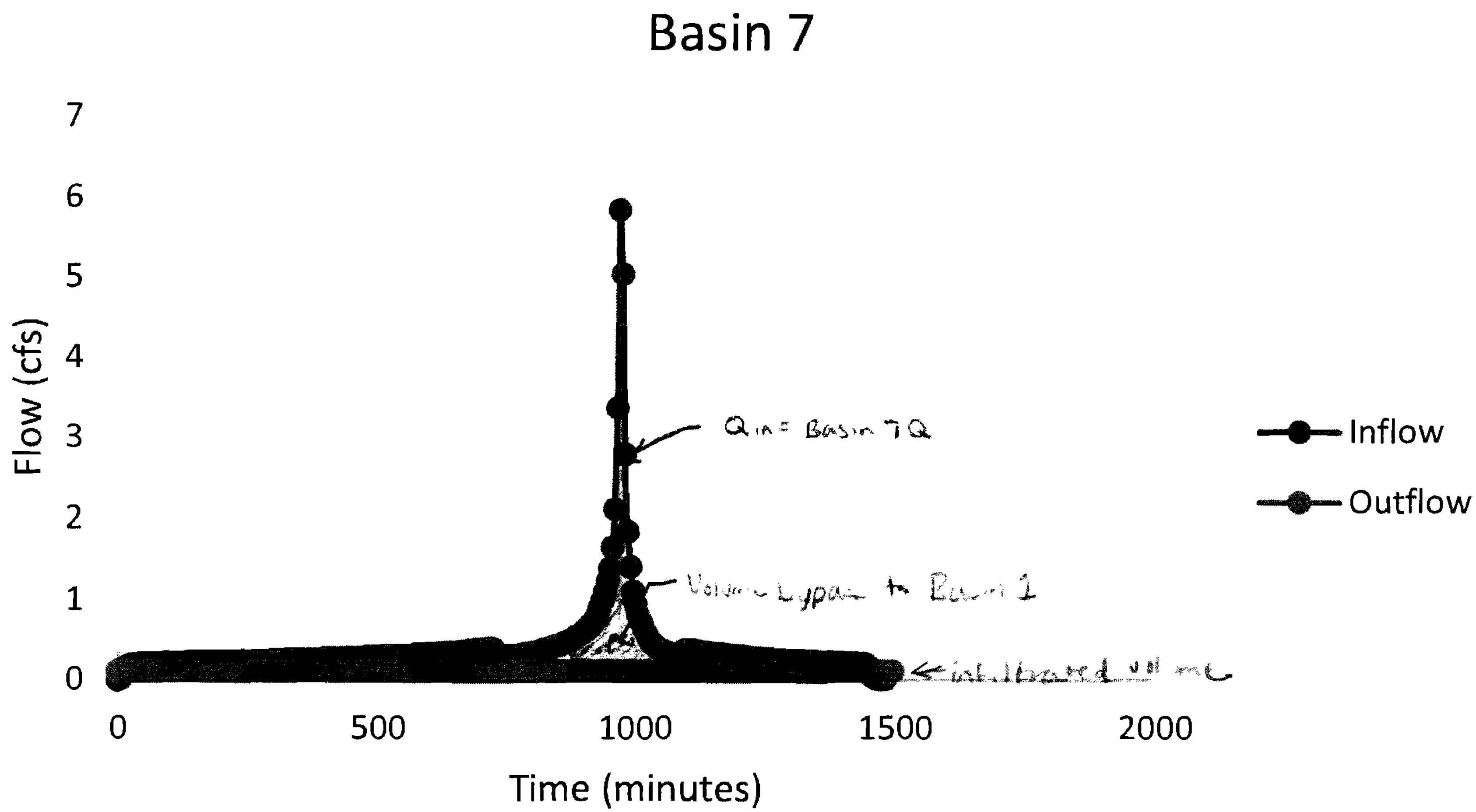
Flow Conveyance Diagram Drainage Area 1 (North):



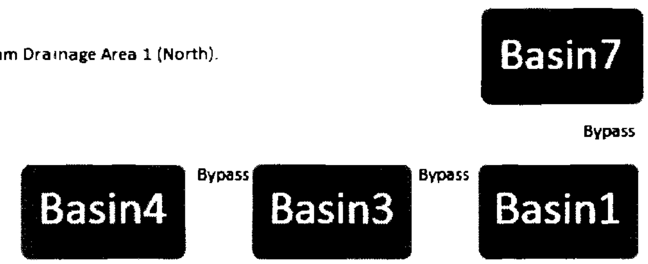


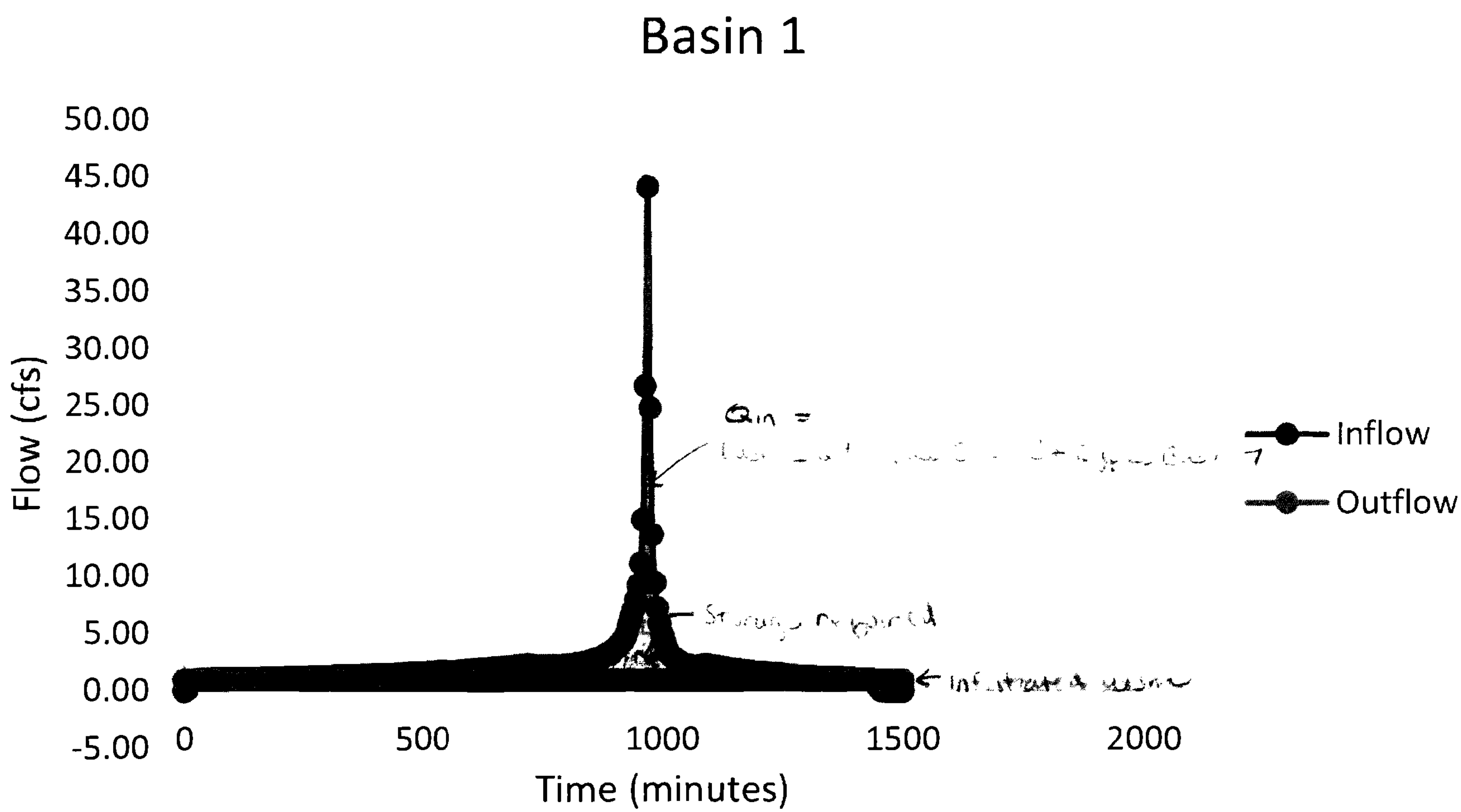
Flow Conveyance Diagram Drainage Area 1 (North):



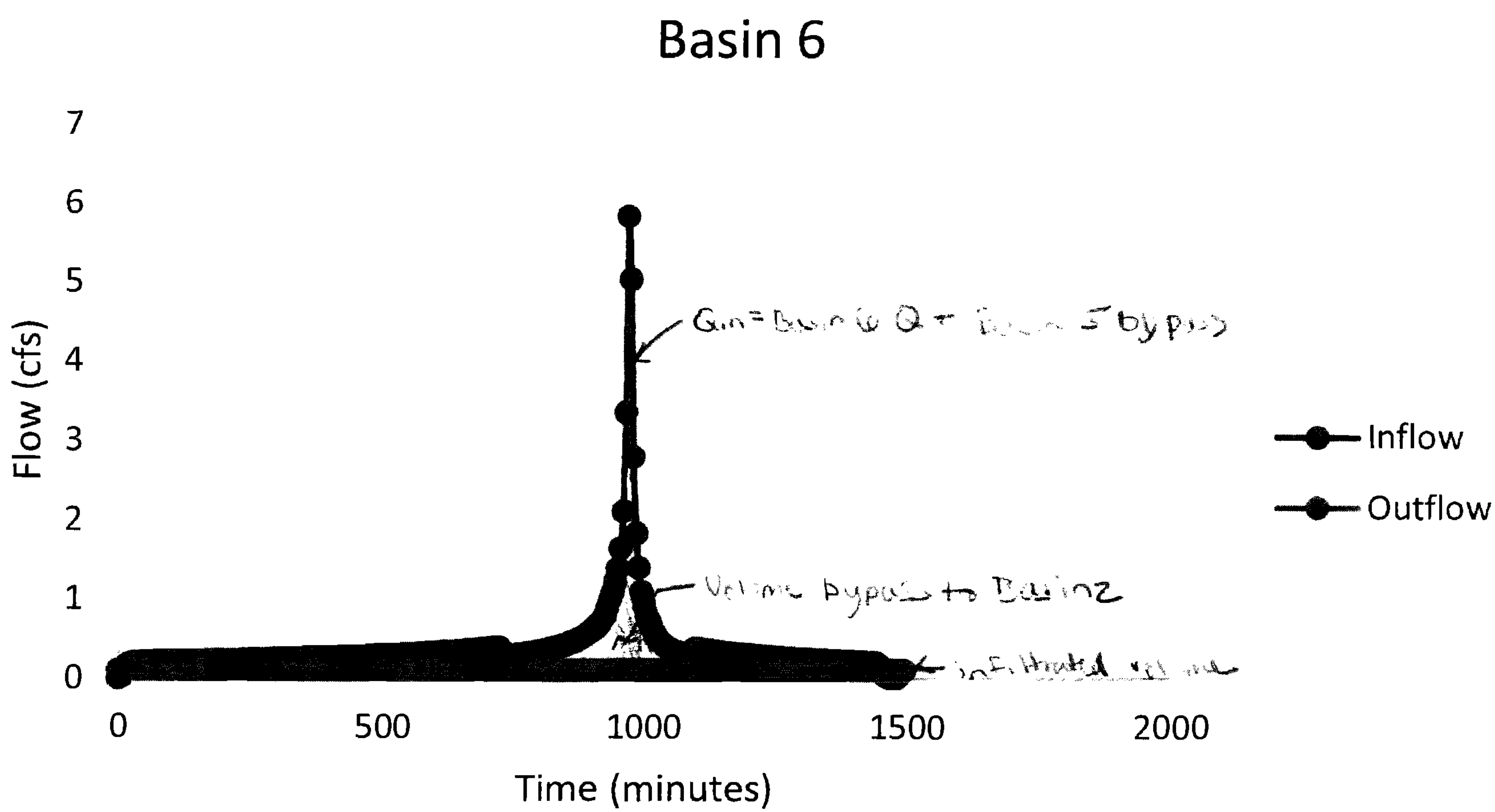


Flow Conveyance Diagram Drainage Area 1 (North).

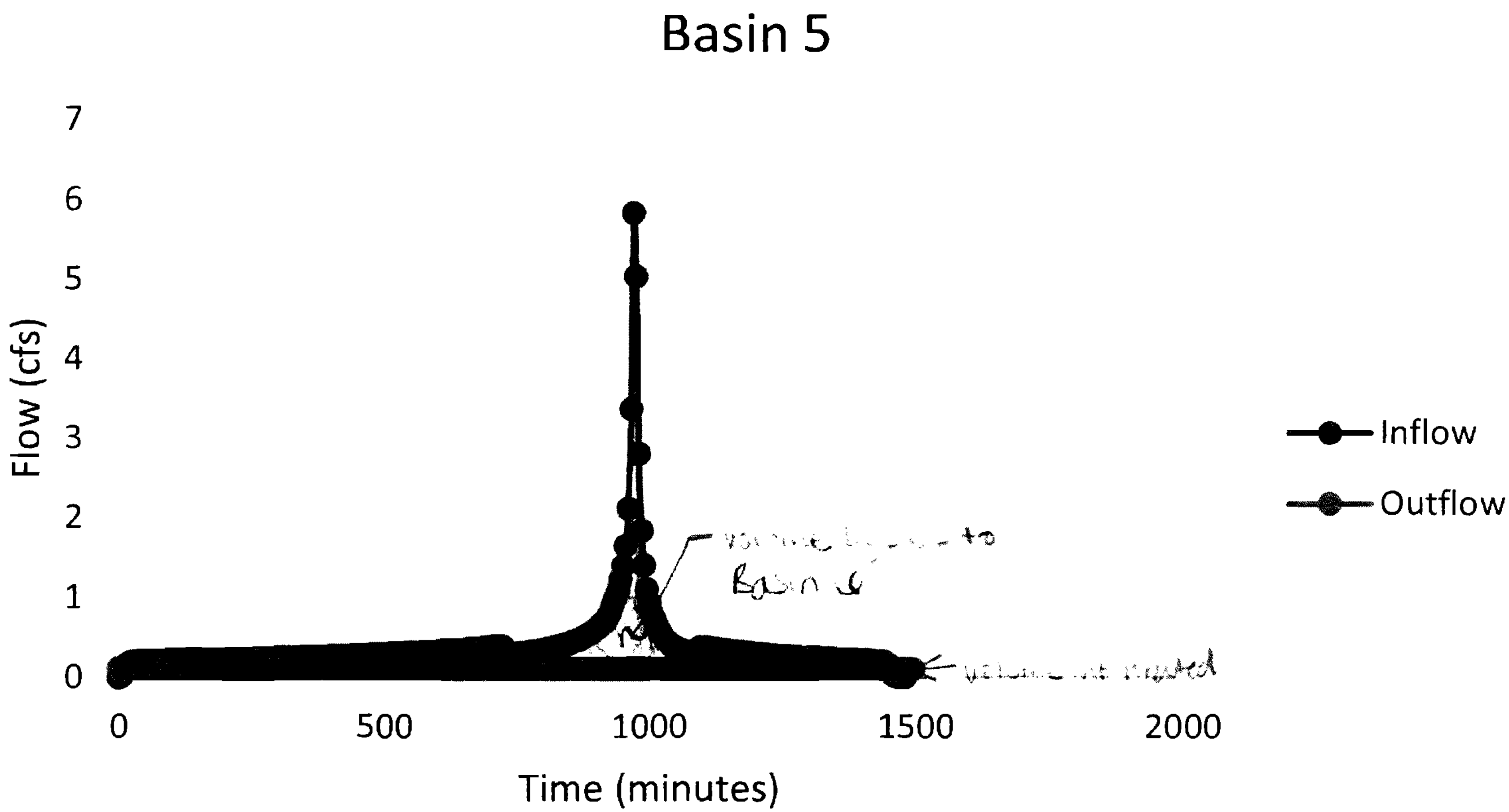




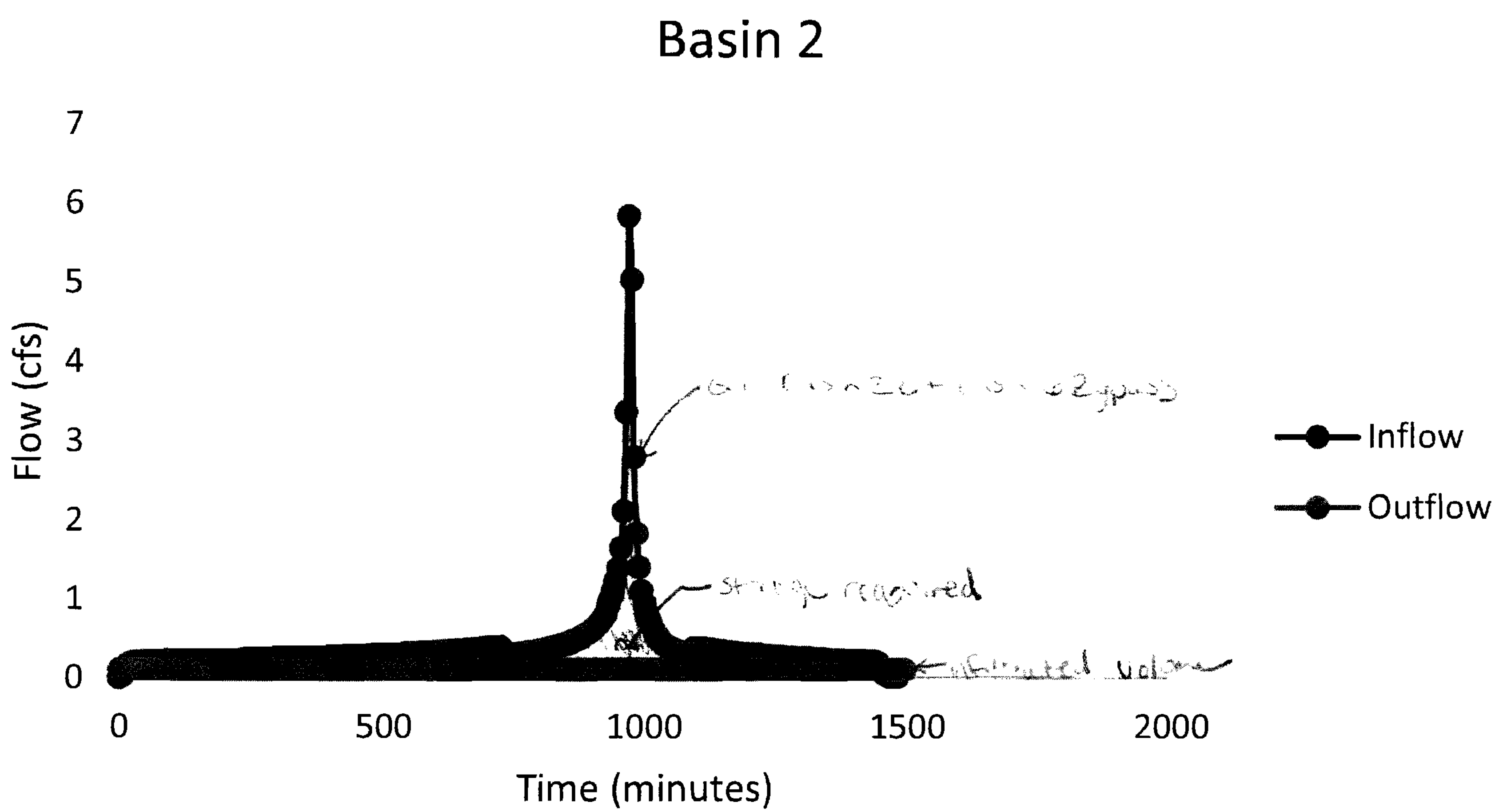
Flow Conveyance Diagram Drainage Area 2 (South):



Flow Conveyance Diagram Drainage Area 2 (South):



Flow Conveyance Diagram Drainage Area 2 (South):



Storage Volume

BASIN 1
Storage Volume

	Contour Elevation	Area (SF)	Delta Z	Average Area	Volume (CF)	Volume (ACFT)
CHAMBER STORAGE	997.5	35949				
	1001	35949	3.5	35,949.00	78285	1.80
SURFACE STORAGE	1004.6					
			0.4	2,047.00	818.80	0.02
	1005	2,047.00				
			1	18,352.00	18,352.00	0.42
	1006	34,657.00				
				Total	97,455.80	**2.24**

BASIN 3
Storage Volume

	Contour Elevation	Area (SF)	Delta Z	Average Area	Volume (CF)	Volume (ACFT)
UNDERGROUND STORAGE	1004.5	7866.78			0	
	1006	7866.78	1.5	7,866.78	11,800.17	0.27
SURFACE STORAGE	1007.5	-				
			0.5	646.17	323.09	0.01
	1008	1,292.35				
			1	2,555.86	2,555.86	0.06
	1009	3,819.38				
			1	5,843.08	5,843.08	0.13
	1010	7,866.78				
				Total	20,522.20	**0.47**

Storage Volume

BASIN 4

Storage Volume

	Contour Elevation	Area (SF)	Delta Z	Average Area	Volume (CF)	Volume (ACFT)
UNDERGROUND STORAGE	1007	1647.97			0	
	1008.5	1647.97	1.5	1,647.97	2,471.96	0.06
SURFACE STORAGE						
	1010	-				
			1	338.82	338.82	0.01
	1011	677.64				
			1	1,162.80	1,162.80	0.03
	1012	1,647.97				
				Total	**3,973.58**	**0.09**

BASIN 7

Storage Volume

	Contour Elevation	Area (SF)	Delta Z	Average Area	Volume (CF)	Volume (ACFT)
UNDERGROUND STORAGE	999	4118.85			0	
	1000.5	4118.85	1.5	4,118.85	6,178.28	0.14
SURFACE STORAGE	1001.5	-				
			0.5	113.73	56.86	0.00
	1002	227.46				
			1	823.13	823.13	0.02
	1003	1,418.80				
			1	2,206.67	2,206.67	0.05
	1004	2,994.55				
			0.5	3,310.27	1,655.14	0.04
	1004.5	3,626.00				
				Total	10,920.07	**0.25**

Storage Volume

BASIN 2

Storage Volume

	Contour Elevation	Area (SF)	Delta Z	Average Area	Volume (CF)	Volume (ACFT)
UNDERGROUND STORAGE	998.5	55846			0	
	1002	55846	3.5	55,846.00	121,139.25	2.78
SURFACE STORAGE	1003.7	-				
			0.3	1,050.90	315.27	0.01
	1004	2,101.80				
			1	14,518.90	14,518.90	0.33
	1005	26,936.00				
			0.5	31,270.00	15,635.00	0.36
	1005.5	35,604.00				
				Total	**151,608.42**	**3.48**

BASIN 5

Storage Volume

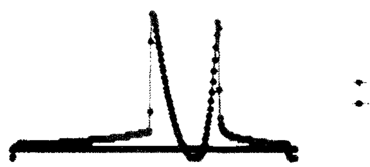
	Contour Elevation	Area (SF)	Delta Z	Average Area	Volume (CF)	Volume (ACFT)
UNDERGROUND STORAGE	1007	3764.5			0	
	1008.5	3764.5	1.5	3,764.50	5,646.75	0.13
SURFACE STORAGE						
	1010	2.05				
			1	821.55	821.55	0.02
	1011	1,641.05				
			1	2,702.77	2,702.77	0.06
	1012	3,764.50				
				Total	**9,171.07**	**0.21**

BASIN 6

Storage Volume

	Contour Elevation	Area (SF)	Delta Z	Average Area	Volume (CF)	Volume (ACFT)
UNDERGROUND STORAGE	1005	10060.2			0	
	1006.5	10060.2	1.5	10,060.20	15,090.30	0.35
SURFACE STORAGE	1006.5	-				
			0.5	239.00	119.50	0.00
	1007	478.00				
			1	1,635.65	1,635.65	0.04
	1008	2,793.29				
			1	4,573.25	4,573.25	0.10
	1009	6,353.21				
				Total	**21,418.70**	**0.49**

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out}- Infiltrated Flow (cfs)	Delta Q =Q_{in} Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
0	0	0	0	0.04	0.00	0.00	0.00		0.00
0+5	5	0.0001	0.01	0.04	0.01	0.00	3.00	0.00	0.00
0+10	10	0.0004	0.04	0.04	0.04	0.00	12.00	0.00	0.00
0+15	15	0.0007	0.06	0.04	0.04	0.02	13.08	4.92	0.00
0+20	20	0.0012	0.06	0.04	0.04	0.02	13.08	9.84	0.00
0+25	25	0.0016	0.06	0.04	0.04	0.02	13.08	14.76	0.00
0+30	30	0.002	0.06	0.04	0.04	0.02	13.08	19.68	0.00
0+35	35	0.0025	0.06	0.04	0.04	0.02	13.08	24.60	0.00
0+40	40	0.0029	0.07	0.04	0.04	0.03	13.08	32.52	0.00
0+45	45	0.0034	0.07	0.04	0.04	0.03	13.08	40.43	0.00
0+50	50	0.0039	0.07	0.04	0.04	0.03	13.08	48.35	0.00
0+55	55	0.0043	0.07	0.04	0.04	0.03	13.08	56.27	0.00
1+0	60	0.0048	0.07	0.04	0.04	0.03	13.08	64.19	0.00
1+5	65	0.0052	0.07	0.04	0.04	0.03	13.08	72.11	0.00
1+10	70	0.0057	0.07	0.04	0.04	0.03	13.08	80.03	0.00
1+15	75	0.0062	0.07	0.04	0.04	0.03	13.08	87.95	0.00
1+20	80	0.0066	0.07	0.04	0.04	0.03	13.08	95.87	0.00
1+25	85	0.0071	0.07	0.04	0.04	0.03	13.08	103.79	0.00
1+30	90	0.0076	0.07	0.04	0.04	0.03	13.08	111.71	0.00
1+35	95	0.008	0.07	0.04	0.04	0.03	13.08	119.63	0.00
1+40	100	0.0085	0.07	0.04	0.04	0.03	13.08	127.55	0.00
1+45	105	0.009	0.07	0.04	0.04	0.03	13.08	135.47	0.00
1+50	110	0.0094	0.07	0.04	0.04	0.03	13.08	143.38	0.00
1+55	115	0.0099	0.07	0.04	0.04	0.03	13.08	151.30	0.00
2+0	120	0.0104	0.07	0.04	0.04	0.03	13.08	159.22	0.00
2+5	125	0.0109	0.07	0.04	0.04	0.03	13.08	167.14	0.00
2+10	130	0.0114	0.07	0.04	0.04	0.03	13.08	175.06	0.00
2+15	135	0.0118	0.07	0.04	0.04	0.03	13.08	182.98	0.00
2+20	140	0.0123	0.07	0.04	0.04	0.03	13.08	190.90	0.00
2+25	145	0.0128	0.07	0.04	0.04	0.03	13.08	198.82	0.00
2+30	150	0.0133	0.07	0.04	0.04	0.03	13.08	206.74	0.00
2+35	155	0.0138	0.07	0.04	0.04	0.03	13.08	214.66	0.00
2+40	160	0.0143	0.07	0.04	0.04	0.03	13.08	222.58	0.00
2+45	165	0.0147	0.07	0.04	0.04	0.03	13.08	230.50	0.00
2+50	170	0.0152	0.07	0.04	0.04	0.03	13.08	238.42	0.00
2+55	175	0.0157	0.07	0.04	0.04	0.03	13.08	246.33	0.00
3+0	180	0.0162	0.07	0.04	0.04	0.03	13.08	254.25	0.00
3+5	185	0.0167	0.07	0.04	0.04	0.03	13.08	262.17	0.00
3+10	190	0.0172	0.07	0.04	0.04	0.03	13.08	270.09	0.00
3+15	195	0.0177	0.07	0.04	0.04	0.03	13.08	278.01	0.00
3+20	200	0.0182	0.07	0.04	0.04	0.03	13.08	285.93	0.00
3+25	205	0.0187	0.07	0.04	0.04	0.03	13.08	293.85	0.00
3+30	210	0.0192	0.07	0.04	0.04	0.03	13.08	301.77	0.00
3+35	215	0.0197	0.07	0.04	0.04	0.03	13.08	309.69	0.00
3+40	220	0.0202	0.07	0.04	0.04	0.03	13.08	317.61	0.00
3+45	225	0.0207	0.07	0.04	0.04	0.03	13.08	325.53	0.00
3+50	230	0.0212	0.07	0.04	0.04	0.03	13.08	333.45	0.00
3+55	235	0.0218	0.07	0.04	0.04	0.03	13.08	341.37	0.00
4+0	240	0.0223	0.07	0.04	0.04	0.03	13.08	349.28	0.00
4+5	245	0.0228	0.07	0.04	0.04	0.03	13.08	357.20	0.00
4+10	250	0.0233	0.07	0.04	0.04	0.03	13.08	365.12	0.00
4+15	255	0.0238	0.08	0.04	0.04	0.04	13.08	376.04	0.00
4+20	260	0.0243	0.08	0.04	0.04	0.04	13.08	386.96	0.00
4+25	265	0.0249	0.08	0.04	0.04	0.04	13.08	397.88	0.00
4+30	270	0.0254	0.08	0.04	0.04	0.04	13.08	408.80	0.00
4+35	275	0.0259	0.08	0.04	0.04	0.04	13.08	419.72	0.00
4+40	280	0.0264	0.08	0.04	0.04	0.04	13.08	430.64	0.00
4+45	285	0.027	0.08	0.04	0.04	0.04	13.08	441.56	0.00
4+50	290	0.0275	0.08	0.04	0.04	0.04	13.08	452.48	0.00
4+55	295	0.028	0.08	0.04	0.04	0.04	13.08	463.40	0.00
5+0	300	0.0286	0.08	0.04	0.04	0.04	13.08	474.32	0.00
5+5	305	0.0291	0.08	0.04	0.04	0.04	13.08	485.24	0.00
5+10	310	0.0296	0.08	0.04	0.04	0.04	13.08	496.15	0.00
5+15	315	0.0302	0.08	0.04	0.04	0.04	13.08	507.07	0.00
5+20	320	0.0307	0.08	0.04	0.04	0.04	13.08	517.99	0.00
5+25	325	0.0313	0.08	0.04	0.04	0.04	13.08	528.91	0.00
5+30	330	0.0318	0.08	0.04	0.04	0.04	13.08	539.83	0.00
5+35	335	0.0324	0.08	0.04	0.04	0.04	13.08	550.75	0.00
5+40	340	0.0329	0.08	0.04	0.04	0.04	13.08	561.67	0.00
5+45	345	0.0335	0.08	0.04	0.04	0.04	13.08	572.59	0.00
5+50	350	0.034	0.08	0.04	0.04	0.04	13.08	583.51	0.00
5+55	355	0.0346	0.08	0.04	0.04	0.04	13.08	594.43	0.00
6+0	360	0.0351	0.08	0.04	0.04	0.04	13.08	605.35	0.00
6+5	365	0.0357	0.08	0.04	0.04	0.04	13.08	616.27	0.00
6+10	370	0.0363	0.08	0.04	0.04	0.04	13.08	627.19	0.00
6+15	375	0.0368	0.08	0.04	0.04	0.04	13.08	638.10	0.00
6+20	380	0.0374	0.08	0.04	0.04	0.04	13.08	649.02	0.00
6+25	385	0.038	0.08	0.04	0.04	0.04	13.08	659.94	0.00
6+30	390	0.0386	0.08	0.04	0.04	0.04	13.08	670.86	0.00
6+35	395	0.0391	0.08	0.04	0.04	0.04	13.08	681.78	0.00
6+40	400	0.0397	0.08	0.04	0.04	0.04	13.08	692.70	0.00
6+45	405	0.0403	0.08	0.04	0.04	0.04	13.08	703.62	0.00
6+50	410	0.0409	0.08	0.04	0.04	0.04	13.08	714.54	0.00
6+55	415	0.0415	0.09	0.04	0.04	0.05	13.08	728.46	0.00
7+0	420	0.042	0.09	0.04	0.04	0.05	13.08	742.38	0.00
7+5	425	0.0426	0.09	0.04	0.04	0.05	13.08	756.30	0.00
7+10	430	0.0432	0.09	0.04	0.04	0.05	13.08	770.22	0.00
7+15	435	0.0438	0.09	0.04	0.04	0.05	13.08	784.14	0.00
7+20	440	0.0444	0.09	0.04	0.04	0.05	13.08	798.05	0.00
7+25	445	0.045	0.09	0.04	0.04	0.05	13.08	811.97	0.00
7+30	450	0.0456	0.09	0.04	0.04	0.05	13.08	825.89	0.00
7+35	455	0.0462	0.09	0.04	0.04	0.05	13.08	839.81	0.00
7+40	460	0.0469	0.09	0.04	0.04	0.05	13.08	853.73	0.00
7+45	465	0.0475	0.09	0.04	0.04	0.05	13.08	867.65	0.00
7+50	470	0.0481	0.09	0.04	0.04	0.05	13.08	881.57	0.00



Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q = Q_{in} - Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)	
7+55	475	0.0487	0.09	0.04	0.04	0.05	13.08	895.49	0.00	
8+ 0	480	0.0493	0.09	0.04	0.04	0.05	13.08	909.41	0.00	
8+ 5	485	0.05	0.09	0.04	0.04	0.05	13.08	923.33	0.00	
8+10	490	0.0506	0.09	0.04	0.04	0.05	13.08	937.25	0.00	
8+15	495	0.0512	0.09	0.04	0.04	0.05	13.08	951.17	0.00	
8+20	500	0.0519	0.09	0.04	0.04	0.05	13.08	965.09	0.00	
8+25	505	0.0525	0.09	0.04	0.04	0.05	13.08	979.00	0.00	
8+30	510	0.0531	0.09	0.04	0.04	0.05	13.08	992.92	0.00	
8+35	515	0.0538	0.09	0.04	0.04	0.05	13.08	1006.84	0.00	
8+40	520	0.0544	0.09	0.04	0.04	0.05	13.08	1020.76	0.00	
8+45	525	0.0551	0.09	0.04	0.04	0.05	13.08	1034.68	0.00	
8+50	530	0.0558	0.1	0.04	0.04	0.06	13.08	1051.60	0.00	
8+55	535	0.0564	0.1	0.04	0.04	0.06	13.08	1068.52	0.00	
9+ 0	540	0.0571	0.1	0.04	0.04	0.06	13.08	1085.44	0.00	
9+ 5	545	0.0577	0.1	0.04	0.04	0.06	13.08	1102.36	0.00	
9+10	550	0.0584	0.1	0.04	0.04	0.06	13.08	1119.28	0.00	
9+15	555	0.0591	0.1	0.04	0.04	0.06	13.08	1136.20	0.00	
9+20	560	0.0598	0.1	0.04	0.04	0.06	13.08	1153.12	0.00	
9+25	565	0.0605	0.1	0.04	0.04	0.06	13.08	1170.04	0.00	
9+30	570	0.0611	0.1	0.04	0.04	0.06	13.08	1186.95	0.00	
9+35	575	0.0618	0.1	0.04	0.04	0.06	13.08	1203.87	0.00	
9+40	580	0.0625	0.1	0.04	0.04	0.06	13.08	1220.79	0.00	
9+45	585	0.0632	0.1	0.04	0.04	0.06	13.08	1237.71	0.00	
9+50	590	0.0639	0.1	0.04	0.04	0.06	13.08	1254.63	0.00	
9+55	595	0.0646	0.1	0.04	0.04	0.06	13.08	1271.55	0.00	
10+ 0	600	0.0654	0.1	0.04	0.04	0.06	13.08	1288.47	0.00	
10+ 5	605	0.0661	0.1	0.04	0.04	0.06	13.08	1305.39	0.00	
10+10	610	0.0668	0.11	0.04	0.04	0.07	13.08	1325.31	0.00	
10+15	615	0.0675	0.11	0.04	0.04	0.07	13.08	1345.23	0.00	
10+20	620	0.0683	0.11	0.04	0.04	0.07	13.08	1365.15	0.00	
10+25	625	0.069	0.11	0.04	0.04	0.07	13.08	1385.07	0.00	
10+30	630	0.0698	0.11	0.04	0.04	0.07	13.08	1404.99	0.00	
10+35	635	0.0705	0.11	0.04	0.04	0.07	13.08	1424.90	0.00	
10+40	640	0.0713	0.11	0.04	0.04	0.07	13.08	1444.82	0.00	
10+45	645	0.072	0.11	0.04	0.04	0.07	13.08	1464.74	0.00	
10+50	650	0.0728	0.11	0.04	0.04	0.07	13.08	1484.66	0.00	
10+55	655	0.0736	0.11	0.04	0.04	0.07	13.08	1504.58	0.00	
11+ 0	660	0.0743	0.11	0.04	0.04	0.07	13.08	1524.50	0.00	
11+ 5	665	0.0751	0.11	0.04	0.04	0.07	13.08	1544.42	0.00	
11+10	670	0.0759	0.11	0.04	0.04	0.07	13.08	1564.34	0.00	
11+15	675	0.0767	0.12	0.04	0.04	0.08	13.08	1587.26	0.00	
11+20	680	0.0775	0.12	0.04	0.04	0.08	13.08	1610.18	0.00	
11+25	685	0.0783	0.12	0.04	0.04	0.08	13.08	1633.10	0.00	
11+30	690	0.0792	0.12	0.04	0.04	0.08	13.08	1656.02	0.00	
11+35	695	0.08	0.12	0.04	0.04	0.08	13.08	1678.94	0.00	
11+40	700	0.0808	0.12	0.04	0.04	0.08	13.08	1701.85	0.00	
11+45	705	0.0816	0.12	0.04	0.04	0.08	13.08	1724.77	0.00	
11+50	710	0.0825	0.12	0.04	0.04	0.08	13.08	1747.69	0.00	
11+55	715	0.0834	0.12	0.04	0.04	0.08	13.08	1770.61	0.00	
12+ 0	720	0.0842	0.13	0.04	0.04	0.09	13.08	1796.53	0.00	
12+ 5	725	0.0857	0.22	0.04	0.04	0.18	13.08	1849.45	0.00	
12+10	730	0.0895	0.55	0.04	0.04	0.51	13.08	2001.37	0.00	
12+15	735	0.0942	0.68	0.04	0.04	0.64	13.08	2192.29	0.00	
12+20	740	0.0989	0.68	0.04	0.04	0.64	13.08	2383.21	0.00	
12+25	745	0.1035	0.67	0.04	0.04	0.63	13.08	2571.13	0.00	
12+30	750	0.108	0.65	0.04	0.04	0.61	13.08	2753.05	0.00	
12+35	755	0.1123	0.63	0.04	0.04	0.59	13.08	2928.97	0.00	
12+40	760	0.1164	0.6	0.04	0.04	0.56	13.08	3095.89	0.00	
12+45	765	0.1204	0.57	0.04	0.04	0.53	13.08	3253.80	0.00	
12+50	770	0.1241	0.54	0.04	0.04	0.50	13.08	3402.72	0.00	
12+55	775	0.1277	0.52	0.04	0.04	0.48	13.08	3545.64	0.00	
13+ 0	780	0.131	0.49	0.04	0.04	0.45	13.08	3679.56	0.00	
13+ 5	785	0.1342	0.46	0.04	0.04	0.42	13.08	3804.48	0.00	
13+10	790	0.1372	0.43	0.04	0.04	0.39	13.08	3920.40	0.00	
13+15	795	0.14	0.41	0.04	0.04	0.37	13.08	3973.58	0.37	Exceeds storage volume, flow now bypasses to Basin 3
13+20	800	0.1426	0.38	0.04	0.04	0.34	13.08	3973.58	0.34	
13+25	805	0.1451	0.36	0.04	0.04	0.32	13.08	3973.58	0.32	
13+30	810	0.1474	0.33	0.04	0.04	0.29	13.08	3973.58	0.29	
13+35	815	0.1495	0.31	0.04	0.04	0.27	13.08	3973.58	0.27	
13+40	820	0.1515	0.29	0.04	0.04	0.25	13.08	3973.58	0.25	
13+45	825	0.1534	0.27	0.04	0.04	0.23	13.08	3973.58	0.23	
13+50	830	0.1551	0.25	0.04	0.04	0.21	13.08	3973.58	0.21	
13+55	835	0.1567	0.23	0.04	0.04	0.19	13.08	3973.58	0.19	
14+ 0	840	0.1582	0.21	0.04	0.04	0.17	13.08	3973.58	0.17	
14+ 5	845	0.1595	0.2	0.04	0.04	0.16	13.08	3973.58	0.16	
14+10	850	0.1608	0.18	0.04	0.04	0.14	13.08	3973.58	0.14	
14+15	855	0.1619	0.16	0.04	0.04	0.12	13.08	3973.58	0.12	
14+20	860	0.1629	0.15	0.04	0.04	0.11	13.08	3973.58	0.11	
14+25	865	0.1638	0.13	0.04	0.04	0.09	13.08	3973.58	0.09	
14+30	870	0.1647	0.12	0.04	0.04	0.08	13.08	3973.58	0.08	
14+35	875	0.1654	0.11	0.04	0.04	0.07	13.08	3973.58	0.07	
14+40	880	0.1661	0.1	0.04	0.04	0.06	13.08	3973.58	0.06	
14+45	885	0.1666	0.08	0.04	0.04	0.04	13.08	3973.58	0.04	
14+50	890	0.1671	0.07	0.04	0.04	0.03	13.08	3973.58	0.03	
14+55	895	0.1676	0.06	0.04	0.04	0.02	13.08	3973.58	0.02	
15+ 0	900	0.168	0.06	0.04	0.04	0.02	13.08	3973.58	0.02	
15+ 5	905	0.1683	0.05	0.04	0.04	0.01	13.08	3973.58	0.01	
15+10	910	0.1686	0.04	0.04	0.04	0.00	12.00	3973.58	0.00	
15+15	915	0.1688	0.03	0.04	0.03	0.00	9.00	3973.58	0.00	
15+20	920	0.169	0.03	0.04	0.03	0.00	9.00	3973.58	0.00	
15+25	925	0.1691	0.02	0.04	0.02	0.00	6.00	3973.58	0.00	
15+30	930	0.1692	0.01	0.04	0.01	0.00	3.00	3973.58	0.00	
15+35	935	0.1692	0.01	0.04	0.01	0.00	3.00	3973.58	0.00	
15+40	940	0.1693	0	0.04	0.00	0.00	0.00	3973.58	0.00	
15+45	945	0.1693	0	0.04	0.00	0.00	0.00	3973.58	0.00	

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q = Q_{in} - Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
15+50	950	0.1693	0	0.04	0.00	0.00	0.00	3973.58	0.00
15+55	955	0.1693	0	0.04	0.00	0.00	0.00	3973.58	0.00
16+ 0	960	0.1694	0	0.04	0.00	0.00	0.00	3973.58	0.00
16+ 5	965	0.1694	0.01	0.04	0.01	0.00	3.00	3973.58	0.00
16+10	970	0.1695	0.01	0.04	0.01	0.00	3.00	3973.58	0.00
16+15	975	0.1696	0.01	0.04	0.01	0.00	3.00	3973.58	0.00
16+20	980	0.1696	0	0.04	0.00	0.00	0.00	3973.58	0.00
16+25	985	0.1696	0.01	0.04	0.01	0.00	3.00	3973.58	0.00
16+30	990	0.1697	0.01	0.04	0.01	0.00	3.00	3973.58	0.00
16+35	995	0.1699	0.02	0.04	0.02	0.00	6.00	3973.58	0.00
16+40	1000	0.1701	0.03	0.04	0.03	0.00	9.00	3973.58	0.00
16+45	1005	0.1705	0.05	0.04	0.04	0.01	13.08	3973.58	0.01
16+50	1010	0.1709	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
16+55	1015	0.1715	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
17+ 0	1020	0.1723	0.11	0.04	0.04	0.07	13.08	3973.58	0.07
17+ 5	1025	0.1732	0.14	0.04	0.04	0.10	13.08	3973.58	0.10
17+10	1030	0.1743	0.17	0.04	0.04	0.13	13.08	3973.58	0.13
17+15	1035	0.1757	0.2	0.04	0.04	0.16	13.08	3973.58	0.16
17+20	1040	0.1773	0.23	0.04	0.04	0.19	13.08	3973.58	0.19
17+25	1045	0.1792	0.27	0.04	0.04	0.23	13.08	3973.58	0.23
17+30	1050	0.1814	0.31	0.04	0.04	0.27	13.08	3973.58	0.27
17+35	1055	0.1838	0.36	0.04	0.04	0.32	13.08	3973.58	0.32
17+40	1060	0.1867	0.41	0.04	0.04	0.37	13.08	3973.58	0.37
17+45	1065	0.1898	0.46	0.04	0.04	0.42	13.08	3973.58	0.42
17+50	1070	0.1934	0.52	0.04	0.04	0.48	13.08	3973.58	0.48
17+55	1075	0.1974	0.58	0.04	0.04	0.54	13.08	3973.58	0.54
18+ 0	1080	0.2018	0.64	0.04	0.04	0.60	13.08	3973.58	0.60
18+ 5	1085	0.206	0.61	0.04	0.04	0.57	13.08	3973.58	0.57
18+10	1090	0.2082	0.32	0.04	0.04	0.28	13.08	3973.58	0.28
18+15	1095	0.2095	0.19	0.04	0.04	0.15	13.08	3973.58	0.15
18+20	1100	0.2106	0.16	0.04	0.04	0.12	13.08	3973.58	0.12
18+25	1105	0.2116	0.14	0.04	0.04	0.10	13.08	3973.58	0.10
18+30	1110	0.2125	0.13	0.04	0.04	0.09	13.08	3973.58	0.09
18+35	1115	0.2134	0.13	0.04	0.04	0.09	13.08	3973.58	0.09
18+40	1120	0.2142	0.12	0.04	0.04	0.08	13.08	3973.58	0.08
18+45	1125	0.215	0.12	0.04	0.04	0.08	13.08	3973.58	0.08
18+50	1130	0.2158	0.11	0.04	0.04	0.07	13.08	3973.58	0.07
18+55	1135	0.2166	0.11	0.04	0.04	0.07	13.08	3973.58	0.07
19+ 0	1140	0.2173	0.11	0.04	0.04	0.07	13.08	3973.58	0.07
19+ 5	1145	0.2181	0.11	0.04	0.04	0.07	13.08	3973.58	0.07
19+10	1150	0.2188	0.11	0.04	0.04	0.07	13.08	3973.58	0.07
19+15	1155	0.2195	0.1	0.04	0.04	0.06	13.08	3973.58	0.06
19+20	1160	0.2202	0.1	0.04	0.04	0.06	13.08	3973.58	0.06
19+25	1165	0.2209	0.1	0.04	0.04	0.06	13.08	3973.58	0.06
19+30	1170	0.2216	0.1	0.04	0.04	0.06	13.08	3973.58	0.06
19+35	1175	0.2223	0.1	0.04	0.04	0.06	13.08	3973.58	0.06
19+40	1180	0.223	0.1	0.04	0.04	0.06	13.08	3973.58	0.06
19+45	1185	0.2236	0.1	0.04	0.04	0.06	13.08	3973.58	0.06
19+50	1190	0.2243	0.1	0.04	0.04	0.06	13.08	3973.58	0.06
19+55	1195	0.225	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+ 0	1200	0.2256	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+ 5	1205	0.2262	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+10	1210	0.2269	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+15	1215	0.2275	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+20	1220	0.2281	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+25	1225	0.2287	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+30	1230	0.2293	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+35	1235	0.2299	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+40	1240	0.2305	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+45	1245	0.2311	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+50	1250	0.2317	0.09	0.04	0.04	0.05	13.08	3973.58	0.05
20+55	1255	0.2323	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+ 0	1260	0.2329	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+ 5	1265	0.2334	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+10	1270	0.234	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+15	1275	0.2346	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+20	1280	0.2351	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+25	1285	0.2357	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+30	1290	0.2362	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+35	1295	0.2368	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+40	1300	0.2373	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+45	1305	0.2379	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+50	1310	0.2384	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
21+55	1315	0.2389	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
22+ 0	1320	0.2394	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
22+ 5	1325	0.24	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
22+10	1330	0.2405	0.08	0.04	0.04	0.04	13.08	3973.58	0.04
22+15	1335	0.241	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
22+20	1340	0.2415	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
22+25	1345	0.242	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
22+30	1350	0.2425	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
22+35	1355	0.243	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
22+40	1360	0.2435	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
22+45	1365	0.244	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
22+50	1370	0.2445	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
22+55	1375	0.245	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+ 0	1380	0.2455	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+ 5	1385	0.246	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+10	1390	0.2465	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+15	1395	0.2469	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+20	1400	0.2474	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+25	1405	0.2479	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+30	1410	0.2483	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+35	1415	0.2488	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+40	1420	0.2493	0.07	0.04	0.04	0.03	13.08	3973.58	0.03

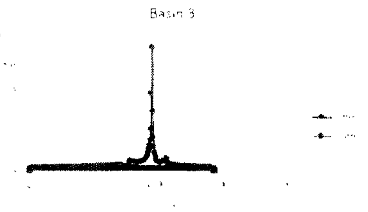
Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q = Q_{in} Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
23+45	1425	0.2497	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+50	1430	0.2502	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
23+55	1435	0.2507	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
24+ 0	1440	0.2511	0.07	0.04	0.04	0.03	13.08	3973.58	0.03
24+ 5	1445	0.2515	0.06	0.04	0.04	0.02	13.08	3973.58	0.02
24+10	1450	0.2517	0.02	0.04	0.02	0.00	6.00	3973.58	0.00
24+15	1455	0.2517	0.01	0.04	0.01	0.00	3.00	3973.58	0.00
24+20	1460	0.2517	0	0.04	0.00	0.00	0.00	3973.58	0.00
24+25	1465	0.2518	0	0.04	0.00	0.00	0.00	3973.58	0.00
24+30	1470	0.2518	0	0.04	0.00	0.00	0.00	3973.58	0.00
24+35	1475	0.2518	0	0.04	0.00	0.00	0.00	3973.58	0.00
24+40	1480	0.2518	0	0.04	0.00	0.00	0.00	3973.58	0.00
24+45	1485	0.2518	0	0.04	0.00	0.00	0.00	3973.58	0.00

0.083

ac-ft (total volume Infiltrated)

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q = Q_{in} - Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
25+00	1500	0	0	0.04	0.04	-0.04	39.24	3934.336	0
26+00	1560	0	0	0.04	0 04	-0 04	156.97	3816.609	0
27+00	1620	0	0	0.04	0 04	-0 04	156.97	3659.64	0
28+00	1680	0	0	0.04	0.04	0 04	156.97	3502.67	0
29+00	1740	0	0	0.04	0.04	0 04	156.97	3345 701	0
30+00	1800	0	0	0.04	0.04	-0.04	156.97	3188.732	0
31+00	1860	0	0	0 04	0 04	-0.04	156.97	3031.763	0
32+00	1920	0	0	0 04	0 04	-0.04	156.97	2874.794	0
33+00	1980	0	0	0.04	0 04	-0.04	156.97	2717.825	0
34+00	2040	0	0	0.04	0.04	-0 04	156.97	2560 856	0
35+00	2100	0	0	0.04	0.04	-0 04	156 97	2403 886	0
36+00	2160	0	0	0 04	0.04	-0.04	156 97	2246.917	0
37+00	2220	0	0	0 04	0.04	-0.04	156.97	2089.948	0
38+00	2280	0	0	0 04	0 04	-0.04	156.97	1932 979	0
39+00	2340	0	0	0 04	0 04	0.04	156 97	1776.01	0
40+00	2400	0	0	0.04	0.04	-0 04	156 97	1619 041	0
41+00	2460	0	0	0 04	0.04	-0 04	156 97	1462 072	0
42+00	2520	0	0	0 04	0.04	-0.04	156 97	1305.102	0
43+00	2580	0	0	0 04	0.04	-0.04	156.97	1148.133	0
44+00	2640	0	0	0 04	0 04	0.04	156.97	991 1641	0
45+00	2700	0	0	0 04	0 04	-0.04	156 97	834.1949	0
46+00	2760	0	0	0.04	0 04	-0.04	156.97	677.2258	0
47+00	2820	0	0	0 04	0 04	-0 04	156 97	520 2567	0
48+00	2880	0	0	0 04	0.04	-0 04	156 97	363.2875	0
49+00	2940	0	0	0 04	0.04	-0.04	156 97	206.3184	0
50+00	3000	0	0	0 04	0.04	-0.04	156.97	49 34924	0
51+00	3060	0	0	0 04	0 04	-0.04	156.97	0	0

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 3 Q (cfs)	Q_{in}=Basin3 Q+Bypass Basin4 (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
0	0	0	0	0.00	0.21	0.00	0.00	0.00	0	0.00
0+5	5	0.0003	0.05	0.05	0.21	0.05	0.00	15.00	0.00	0.00
0+10	10	0.0017	0.19	0.19	0.21	0.19	0.00	57.00	0.00	0.00
0+15	15	0.0033	0.24	0.24	0.21	0.21	0.03	62.44	9.56	0.00
0+20	20	0.0051	0.25	0.25	0.21	0.21	0.04	62.44	22.11	0.00
0+25	25	0.0068	0.26	0.26	0.21	0.21	0.05	62.44	37.67	0.00
0+30	30	0.0087	0.26	0.26	0.21	0.21	0.05	62.44	53.23	0.00
0+35	35	0.0105	0.27	0.27	0.21	0.21	0.06	62.44	71.79	0.00
0+40	40	0.0123	0.27	0.27	0.21	0.21	0.06	62.44	90.34	0.00
0+45	45	0.0142	0.27	0.27	0.21	0.21	0.06	62.44	108.90	0.00
0+50	50	0.016	0.27	0.27	0.21	0.21	0.06	62.44	127.46	0.00
0+55	55	0.0179	0.27	0.27	0.21	0.21	0.06	62.44	146.02	0.00
1+0	60	0.0198	0.27	0.27	0.21	0.21	0.06	62.44	164.57	0.00
1+5	65	0.0217	0.27	0.27	0.21	0.21	0.06	62.44	183.13	0.00
1+10	70	0.0235	0.27	0.27	0.21	0.21	0.06	62.44	201.69	0.00
1+15	75	0.0254	0.27	0.27	0.21	0.21	0.06	62.44	220.25	0.00
1+20	80	0.0273	0.27	0.27	0.21	0.21	0.06	62.44	238.80	0.00
1+25	85	0.0292	0.28	0.28	0.21	0.21	0.07	62.44	260.36	0.00
1+30	90	0.0311	0.28	0.28	0.21	0.21	0.07	62.44	281.92	0.00
1+35	95	0.033	0.28	0.28	0.21	0.21	0.07	62.44	303.48	0.00
1+40	100	0.0349	0.28	0.28	0.21	0.21	0.07	62.44	325.03	0.00
1+45	105	0.0369	0.28	0.28	0.21	0.21	0.07	62.44	346.59	0.00
1+50	110	0.0388	0.28	0.28	0.21	0.21	0.07	62.44	368.15	0.00
1+55	115	0.0407	0.28	0.28	0.21	0.21	0.07	62.44	389.71	0.00
2+0	120	0.0426	0.28	0.28	0.21	0.21	0.07	62.44	411.26	0.00
2+5	125	0.0446	0.28	0.28	0.21	0.21	0.07	62.44	432.82	0.00
2+10	130	0.0465	0.28	0.28	0.21	0.21	0.07	62.44	454.38	0.00
2+15	135	0.0485	0.28	0.28	0.21	0.21	0.07	62.44	475.94	0.00
2+20	140	0.0504	0.28	0.28	0.21	0.21	0.07	62.44	497.49	0.00
2+25	145	0.0524	0.28	0.28	0.21	0.21	0.07	62.44	519.05	0.00
2+30	150	0.0544	0.29	0.29	0.21	0.21	0.08	62.44	543.61	0.00
2+35	155	0.0563	0.29	0.29	0.21	0.21	0.08	62.44	568.17	0.00
2+40	160	0.0583	0.29	0.29	0.21	0.21	0.08	62.44	592.72	0.00
2+45	165	0.0603	0.29	0.29	0.21	0.21	0.08	62.44	617.28	0.00
2+50	170	0.0623	0.29	0.29	0.21	0.21	0.08	62.44	641.84	0.00
2+55	175	0.0643	0.29	0.29	0.21	0.21	0.08	62.44	666.40	0.00
3+0	180	0.0663	0.29	0.29	0.21	0.21	0.08	62.44	690.95	0.00
3+5	185	0.0683	0.29	0.29	0.21	0.21	0.08	62.44	715.51	0.00
3+10	190	0.0703	0.29	0.29	0.21	0.21	0.08	62.44	740.07	0.00
3+15	195	0.0724	0.29	0.29	0.21	0.21	0.08	62.44	764.63	0.00
3+20	200	0.0744	0.29	0.29	0.21	0.21	0.08	62.44	789.18	0.00
3+25	205	0.0764	0.3	0.30	0.21	0.21	0.09	62.44	816.74	0.00
3+30	210	0.0785	0.3	0.30	0.21	0.21	0.09	62.44	844.30	0.00
3+35	215	0.0805	0.3	0.30	0.21	0.21	0.09	62.44	871.85	0.00
3+40	220	0.0826	0.3	0.30	0.21	0.21	0.09	62.44	899.41	0.00
3+45	225	0.0846	0.3	0.30	0.21	0.21	0.09	62.44	926.97	0.00
3+50	230	0.0867	0.3	0.30	0.21	0.21	0.09	62.44	954.53	0.00
3+55	235	0.0888	0.3	0.30	0.21	0.21	0.09	62.44	982.08	0.00
4+0	240	0.0909	0.3	0.30	0.21	0.21	0.09	62.44	1009.64	0.00
4+5	245	0.093	0.3	0.30	0.21	0.21	0.09	62.44	1037.20	0.00
4+10	250	0.0951	0.3	0.30	0.21	0.21	0.09	62.44	1064.76	0.00
4+15	255	0.0972	0.31	0.31	0.21	0.21	0.10	62.44	1095.31	0.00
4+20	260	0.0993	0.31	0.31	0.21	0.21	0.10	62.44	1125.87	0.00
4+25	265	0.1014	0.31	0.31	0.21	0.21	0.10	62.44	1156.43	0.00
4+30	270	0.1035	0.31	0.31	0.21	0.21	0.10	62.44	1186.99	0.00
4+35	275	0.1057	0.31	0.31	0.21	0.21	0.10	62.44	1217.54	0.00
4+40	280	0.1078	0.31	0.31	0.21	0.21	0.10	62.44	1248.10	0.00
4+45	285	0.11	0.31	0.31	0.21	0.21	0.10	62.44	1278.66	0.00
4+50	290	0.1121	0.31	0.31	0.21	0.21	0.10	62.44	1309.22	0.00
4+55	295	0.1143	0.31	0.31	0.21	0.21	0.10	62.44	1339.77	0.00
5+0	300	0.1165	0.32	0.32	0.21	0.21	0.11	62.44	1373.33	0.00
5+5	305	0.1186	0.32	0.32	0.21	0.21	0.11	62.44	1406.89	0.00
5+10	310	0.1208	0.32	0.32	0.21	0.21	0.11	62.44	1440.45	0.00
5+15	315	0.123	0.32	0.32	0.21	0.21	0.11	62.44	1474.00	0.00
5+20	320	0.1252	0.32	0.32	0.21	0.21	0.11	62.44	1507.56	0.00
5+25	325	0.1275	0.32	0.32	0.21	0.21	0.11	62.44	1541.12	0.00
5+30	330	0.1297	0.32	0.32	0.21	0.21	0.11	62.44	1574.68	0.00
5+35	335	0.1319	0.32	0.32	0.21	0.21	0.11	62.44	1608.23	0.00
5+40	340	0.1342	0.33	0.33	0.21	0.21	0.12	62.44	1644.79	0.00
5+45	345	0.1364	0.33	0.33	0.21	0.21	0.12	62.44	1681.35	0.00
5+50	350	0.1387	0.33	0.33	0.21	0.21	0.12	62.44	1717.91	0.00
5+55	355	0.1409	0.33	0.33	0.21	0.21	0.12	62.44	1754.46	0.00
6+0	360	0.1432	0.33	0.33	0.21	0.21	0.12	62.44	1791.02	0.00
6+5	365	0.1455	0.33	0.33	0.21	0.21	0.12	62.44	1827.58	0.00
6+10	370	0.1478	0.33	0.33	0.21	0.21	0.12	62.44	1864.14	0.00
6+15	375	0.1501	0.33	0.33	0.21	0.21	0.12	62.44	1900.69	0.00
6+20	380	0.1524	0.34	0.34	0.21	0.21	0.13	62.44	1940.25	0.00
6+25	385	0.1547	0.34	0.34	0.21	0.21	0.13	62.44	1979.81	0.00
6+30	390	0.1571	0.34	0.34	0.21	0.21	0.13	62.44	2019.36	0.00
6+35	395	0.1594	0.34	0.34	0.21	0.21	0.13	62.44	2058.92	0.00
6+40	400	0.1618	0.34	0.34	0.21	0.21	0.13	62.44	2098.48	0.00
6+45	405	0.1641	0.34	0.34	0.21	0.21	0.13	62.44	2138.04	0.00
6+50	410	0.1665	0.34	0.34	0.21	0.21	0.13	62.44	2177.59	0.00
6+55	415	0.1689	0.35	0.35	0.21	0.21	0.14	62.44	2220.15	0.00
7+0	420	0.1713	0.35	0.35	0.21	0.21	0.14	62.44	2262.71	0.00
7+5	425	0.1737	0.35	0.35	0.21	0.21	0.14	62.44	2305.27	0.00
7+10	430	0.1761	0.35	0.35	0.21	0.21	0.14	62.44	2347.82	0.00
7+15	435	0.1785	0.35	0.35	0.21	0.21	0.14	62.44	2390.38	0.00
7+20	440	0.181	0.35	0.35	0.21	0.21	0.14	62.44	2432.94	0.00
7+25	445	0.1834	0.36	0.36	0.21	0.21	0.15	62.44	2478.50	0.00
7+30	450	0.1859	0.36	0.36	0.21	0.21	0.15	62.44	2524.05	0.00
7+35	455	0.1884	0.36	0.36	0.21	0.21	0.15	62.44	2569.61	0.00
7+40	460	0.1908	0.36	0.36	0.21	0.21	0.15	62.44	2615.17	0.00
7+45	465	0.1933	0.36	0.36	0.21	0.21	0.15	62.44	2660.73	0.00
7+50	470	0.1958	0.36	0.36	0.21	0.21	0.15	62.44	2706.28	0.00
7+55	475	0.1984	0.37	0.37	0.21	0.21	0.16	62.44	2754.84	0.00
8+0	480	0.2009	0.37	0.37	0.21	0.21	0.16	62.44	2803.40	0.00
8+5	485	0.2035	0.37	0.37	0.21	0.21	0.16	62.44	2851.96	0.00
8+10	490	0.206	0.37	0.37	0.21	0.21	0.16	62.44	2900.51	0.00
8+15	495	0.2086	0.37	0.37	0.21	0.21	0.16	62.44	2949.07	0.00
8+20	500	0.2112	0.38	0.38	0.21	0.21	0.17	62.44	3000.63	0.00
8+25	505	0.2138	0.38	0.38	0.21	0.21	0.17	62.44	3052.19	0.00
8+30	510	0.2164	0.38	0.38	0.21	0.21	0.17	62.44	3103.74	0.00
8+35	515	0.219	0.38	0.38	0.21	0.21	0.17	62.44	3155.30	0.00
8+40	520	0.2217	0.38	0.38	0.21	0.21	0.17	62.44	3206.86	0.00
8+45	525	0.2243	0.39	0.39	0.21	0.21	0.18	62.44	3261.42	0.00
8+50	530	0.227	0.39	0.39	0.21	0.21	0.18	62.44	3315.97	0.00
8+55	535	0.2297	0.39	0.39	0.21	0.21	0.18	62.44	3370.53	0.00
9+0	540	0.2324	0.39	0.39	0.21	0.21	0.18	62.44	3425.09	0.00
9+5	545	0.2351	0.39	0.39	0.21	0.21	0.18	62.44	3479.65	0.00

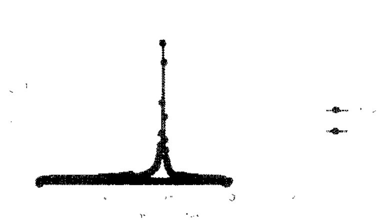


Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 3 Q (cfs)	Q_{in}=Basin3 Q+Bypass Basin4 (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q =Q_{in}-Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)	
9+10	550	0.2378	0.4	0.40	0.21	0.21	0.19	62.44	3537.20	0.00	
9+15	555	0.2406	0.4	0.40	0.21	0.21	0.19	62.44	3594.76	0.00	
9+20	560	0.2433	0.4	0.40	0.21	0.21	0.19	62.44	3652.32	0.00	
9+25	565	0.2461	0.4	0.40	0.21	0.21	0.19	62.44	3709.88	0.00	
9+30	570	0.2489	0.41	0.41	0.21	0.21	0.20	62.44	3770.43	0.00	
9+35	575	0.2517	0.41	0.41	0.21	0.21	0.20	62.44	3830.99	0.00	
9+40	580	0.2546	0.41	0.41	0.21	0.21	0.20	62.44	3891.55	0.00	
9+45	585	0.2574	0.41	0.41	0.21	0.21	0.20	62.44	3952.10	0.00	
9+50	590	0.2603	0.42	0.42	0.21	0.21	0.21	62.44	4015.66	0.00	
9+55	595	0.2632	0.42	0.42	0.21	0.21	0.21	62.44	4079.22	0.00	
10+ 0	600	0.2661	0.42	0.42	0.21	0.21	0.21	62.44	4142.78	0.00	
10+ 5	605	0.269	0.42	0.42	0.21	0.21	0.21	62.44	4206.33	0.00	
10+10	610	0.2719	0.43	0.43	0.21	0.21	0.22	62.44	4272.89	0.00	
10+15	615	0.2749	0.43	0.43	0.21	0.21	0.22	62.44	4339.45	0.00	
10+20	620	0.2779	0.43	0.43	0.21	0.21	0.22	62.44	4406.01	0.00	
10+25	625	0.2809	0.44	0.44	0.21	0.21	0.23	62.44	4475.56	0.00	
10+30	630	0.2839	0.44	0.44	0.21	0.21	0.23	62.44	4545.12	0.00	
10+35	635	0.287	0.44	0.44	0.21	0.21	0.23	62.44	4614.68	0.00	
10+40	640	0.2901	0.45	0.45	0.21	0.21	0.24	62.44	4687.24	0.00	
10+45	645	0.2932	0.45	0.45	0.21	0.21	0.24	62.44	4759.79	0.00	
10+50	650	0.2963	0.45	0.45	0.21	0.21	0.24	62.44	4832.35	0.00	
10+55	655	0.2994	0.46	0.46	0.21	0.21	0.25	62.44	4907.91	0.00	
11+ 0	660	0.3026	0.46	0.46	0.21	0.21	0.25	62.44	4983.47	0.00	
11+ 5	665	0.3058	0.46	0.46	0.21	0.21	0.25	62.44	5059.02	0.00	
11+10	670	0.309	0.47	0.47	0.21	0.21	0.26	62.44	5137.58	0.00	
11+15	675	0.3122	0.47	0.47	0.21	0.21	0.26	62.44	5216.14	0.00	
11+20	680	0.3155	0.48	0.48	0.21	0.21	0.27	62.44	5297.70	0.00	
11+25	685	0.3188	0.48	0.48	0.21	0.21	0.27	62.44	5379.25	0.00	
11+30	690	0.3222	0.48	0.48	0.21	0.21	0.27	62.44	5460.81	0.00	
11+35	695	0.3255	0.49	0.49	0.21	0.21	0.28	62.44	5545.37	0.00	
11+40	700	0.3289	0.49	0.49	0.21	0.21	0.28	62.44	5629.93	0.00	
11+45	705	0.3323	0.5	0.50	0.21	0.21	0.29	62.44	5717.48	0.00	
11+50	710	0.3358	0.5	0.50	0.21	0.21	0.29	62.44	5805.04	0.00	
11+55	715	0.3393	0.51	0.51	0.21	0.21	0.30	62.44	5895.60	0.00	
12+ 0	720	0.3428	0.51	0.51	0.21	0.21	0.30	62.44	5986.16	0.00	
12+ 5	725	0.3461	0.49	0.49	0.21	0.21	0.28	62.44	6070.71	0.00	
12+10	730	0.3489	0.4	0.40	0.21	0.21	0.19	62.44	6128.27	0.00	
12+15	735	0.3515	0.38	0.38	0.21	0.21	0.17	62.44	6179.83	0.00	
12+20	740	0.3541	0.38	0.38	0.21	0.21	0.17	62.44	6231.39	0.00	
12+25	745	0.3567	0.38	0.38	0.21	0.21	0.17	62.44	6282.94	0.00	
12+30	750	0.3594	0.38	0.38	0.21	0.21	0.17	62.44	6334.50	0.00	
12+35	755	0.362	0.39	0.39	0.21	0.21	0.18	62.44	6389.06	0.00	
12+40	760	0.3647	0.39	0.39	0.21	0.21	0.18	62.44	6443.62	0.00	
12+45	765	0.3675	0.4	0.40	0.21	0.21	0.19	62.44	6501.17	0.00	
12+50	770	0.3702	0.4	0.40	0.21	0.21	0.19	62.44	6558.73	0.00	
12+55	775	0.3731	0.41	0.41	0.21	0.21	0.20	62.44	6619.29	0.00	
13+ 0	780	0.376	0.42	0.42	0.21	0.21	0.21	62.44	6682.84	0.00	
13+ 5	785	0.3789	0.43	0.43	0.21	0.21	0.22	62.44	6749.40	0.00	
13+10	790	0.3819	0.43	0.43	0.21	0.21	0.22	62.44	6815.96	0.00	
13+15	795	0.3849	0.44	0.81	0.21	0.21	0.60	62.44	6995.44	0.00	
13+20	800	0.388	0.45	0.79	0.21	0.21	0.58	62.44	7168.91	0.00	
13+25	805	0.3911	0.46	0.78	0.21	0.21	0.57	62.44	7339.39	0.00	
13+30	810	0.3944	0.47	0.76	0.21	0.21	0.55	62.44	7503.87	0.00	
13+35	815	0.3977	0.48	0.75	0.21	0.21	0.54	62.44	7665.34	0.00	
13+40	820	0.401	0.49	0.74	0.21	0.21	0.53	62.44	7823.82	0.00	
13+45	825	0.4044	0.5	0.73	0.21	0.21	0.52	62.44	7979.30	0.00	
13+50	830	0.408	0.51	0.72	0.21	0.21	0.51	62.44	8131.77	0.00	
13+55	835	0.4115	0.52	0.71	0.21	0.21	0.50	62.44	8281.25	0.00	
14+ 0	840	0.4152	0.54	0.71	0.21	0.21	0.50	62.44	8430.73	0.00	
14+ 5	845	0.419	0.55	0.71	0.21	0.21	0.50	62.44	8580.20	0.00	
14+10	850	0.4229	0.56	0.70	0.21	0.21	0.49	62.44	8726.68	0.00	
14+15	855	0.4269	0.58	0.70	0.21	0.21	0.49	62.44	8873.16	0.00	
14+20	860	0.431	0.6	0.71	0.21	0.21	0.50	62.44	9022.63	0.00	
14+25	865	0.4352	0.61	0.70	0.21	0.21	0.49	62.44	9169.11	0.00	
14+30	870	0.4396	0.63	0.71	0.21	0.21	0.50	62.44	9318.59	0.00	
14+35	875	0.4441	0.65	0.72	0.21	0.21	0.51	62.44	9471.06	0.00	
14+40	880	0.4487	0.68	0.74	0.21	0.21	0.53	62.44	9629.54	0.00	
14+45	885	0.4536	0.7	0.74	0.21	0.21	0.53	62.44	9788.02	0.00	
14+50	890	0.4586	0.73	0.76	0.21	0.21	0.55	62.44	9952.49	0.00	
14+55	895	0.4639	0.76	0.78	0.21	0.21	0.57	62.44	10122.97	0.00	
15+ 0	900	0.4694	0.8	0.82	0.21	0.21	0.61	62.44	10305.45	0.00	
15+ 5	905	0.4751	0.83	0.84	0.21	0.21	0.63	62.44	10493.92	0.00	
15+10	910	0.4812	0.88	0.88	0.21	0.21	0.67	62.44	10695.48	0.00	
15+15	915	0.4876	0.93	0.93	0.21	0.21	0.72	62.44	10912.04	0.00	
15+20	920	0.4944	0.99	0.99	0.21	0.21	0.78	62.44	11146.60	0.00	
15+25	925	0.5019	1.08	1.08	0.21	0.21	0.87	62.44	11408.15	0.00	
15+30	930	0.5104	1.24	1.24	0.21	0.21	1.03	62.44	11717.71	0.00	
15+35	935	0.5198	1.36	1.36	0.21	0.21	1.15	62.44	12063.27	0.00	
15+40	940	0.5302	1.51	1.51	0.21	0.21	1.30	62.44	12453.83	0.00	
15+45	945	0.5418	1.68	1.68	0.21	0.21	1.47	62.44	12895.38	0.00	
15+50	950	0.5553	1.96	1.96	0.21	0.21	1.75	62.44	13420.94	0.00	
15+55	955	0.5715	2.36	2.36	0.21	0.21	2.15	62.44	14066.50	0.00	
16+ 0	960	0.5935	3.19	3.19	0.21	0.21	2.98	62.44	14961.05	0.00	
16+ 5	965	0.6337	5.84	5.84	0.21	0.21	5.63	62.44	20522.20	5.63	Exceeds storage volume, flow now bypasses to Basin 1
16+10	970	0.6977	9.28	9.28	0.21	0.21	9.07	62.44	20522.20	9.07	
16+15	975	0.7289	4.53	4.53	0.21	0.21	4.32	62.44	20522.20	4.32	
16+20	980	0.7466	2.57	2.57	0.21	0.21	2.36	62.44	20522.20	2.36	
16+25	985	0.7593	1.85	1.85	0.21	0.21	1.64	62.44	20522.20	1.64	
16+30	990	0.7692	1.44	1.44	0.21	0.21	1.23	62.44	20522.20	1.23	
16+35	995	0.7774	1.18	1.18	0.21	0.21	0.97	62.44	20522.20	0.97	
16+40	1000	0.7844	1.03	1.03	0.21	0.21	0.82	62.44	20522.20	0.82	
16+45	1005	0.7902	0.84	0.85	0.21	0.21	0.64	62.44	20522.20	0.64	
16+50	1010	0.7954	0.76	0.79	0.21	0.21	0.58	62.44	20522.20	0.58	
16+55	1015	0.8002	0.7	0.75	0.21	0.21	0.54	62.44	20522.20	0.54	
17+ 0	1020	0.8047	0.65	0.72	0.21	0.21	0.51	62.44	20522.20	0.51	
17+ 5	1025	0.8089	0.61	0.71	0.21	0.21	0.50	62.44	20522.20	0.50	
17+10	1030	0.8128	0.57	0.70	0.21	0.21	0.49	62.44	20522.20	0.49	
17+15	1035	0.8165	0.54	0.70	0.21	0.21	0.49	62.44	20522.20	0.49	
17+20	1040	0.8201	0.52	0.71	0.21	0.21	0.50	62.44	20522.20	0.50	
17+25	1045	0.8235	0.49	0.72	0.21	0.21	0.51	62.44	20522.20	0.51	
17+30	1050	0.8267	0.47	0.74	0.21	0.21	0.53	62.44	20522.20	0.53	
17+35	1055	0.8298	0.45	0.77	0.21	0.21	0.56	62.44	20522.20	0.56	
17+40	1060	0.8329	0.44	0.81	0.21	0.21	0.60	62.44	20522.20	0.60	
17+45	1065	0.8358	0.42	0.84	0.21	0.21	0.63	62.44	20522.20	0.63	
17+50	1070	0.8386	0.41	0.89	0.21	0.21	0.68	62.44	20522.20	0.68	
17+55	1075	0.8413	0.39	0.93	0.21	0.21	0.72	62.44	20522.20	0.72	
18+ 0	1080	0.8439	0.38	0.98	0.21	0.21	0.77	62.44	20522.20	0.77	
18+ 5	1085	0.8467	0.4	0.97	0.21	0.21	0.76	62.44	20522.20	0.76	
18+10	1090	0.85	0.48	0.76	0.21	0.21	0.55	62.44	20522.20	0.55	
18+15	1095	0.8534	0.5	0.65	0.21	0.21	0.44	62.44	20522.20	0.44	

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 3 Q (cfs)	Q_{in}=Basin3 Q+Bypass Basin4 (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q =Q_{in}-Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
18+20	1100	0.8568	0.49	0.61	0.21	0.21	0.40	62.44	20522.20	0.40
18+25	1105	0.8602	0.49	0.59	0.21	0.21	0.38	62.44	20522.20	0.38
18+30	1110	0.8635	0.48	0.57	0.21	0.21	0.36	62.44	20522.20	0.36
18+35	1115	0.8668	0.48	0.57	0.21	0.21	0.36	62.44	20522.20	0.36
18+40	1120	0.87	0.47	0.55	0.21	0.21	0.34	62.44	20522.20	0.34
18+45	1125	0.8732	0.46	0.54	0.21	0.21	0.33	62.44	20522.20	0.33
18+50	1130	0.8763	0.45	0.52	0.21	0.21	0.31	62.44	20522.20	0.31
18+55	1135	0.8794	0.45	0.52	0.21	0.21	0.31	62.44	20522 20	0.31
19+ 0	1140	0.8824	0.44	0.51	0.21	0.21	0.30	62.44	20522.20	0.30
19+ 5	1145	0.8854	0.43	0.50	0.21	0.21	0.29	62.44	20522.20	0.29
19+10	1150	0.8884	0.43	0.50	0.21	0.21	0.29	62.44	20522.20	0.29
19+15	1155	0.8913	0.42	0.48	0.21	0.21	0.27	62.44	20522.20	0.27
19+20	1160	0.8942	0.42	0.48	0.21	0.21	0.27	62.44	20522.20	0.27
19+25	1165	0.897	0.41	0.47	0.21	0.21	0.26	62.44	20522.20	0.26
19+30	1170	0.8998	0.41	0.47	0.21	0.21	0.26	62.44	20522.20	0.26
19+35	1175	0.9026	0.4	0.46	0.21	0.21	0.25	62.44	20522.20	0.25
19+40	1180	0.9053	0.4	0.46	0.21	0.21	0.25	62.44	20522.20	0.25
19+45	1185	0.908	0.39	0.45	0.21	0.21	0.24	62.44	20522.20	0.24
19+50	1190	0.9107	0.39	0.45	0.21	0.21	0.24	62.44	20522.20	0.24
19+55	1195	0.9134	0.38	0.43	0.21	0.21	0.22	62.44	20522.20	0.22
20+ 0	1200	0.916	0.38	0.43	0.21	0.21	0.22	62.44	20522.20	0.22
20+ 5	1205	0.9186	0.38	0.43	0.21	0.21	0.22	62.44	20522.20	0.22
20+10	1210	0.9211	0.37	0.42	0.21	0.21	0.21	62.44	20522.20	0.21
20+15	1215	0.9237	0.37	0.42	0.21	0.21	0.21	62.44	20522.20	0.21
20+20	1220	0.9262	0.37	0.42	0.21	0.21	0.21	62.44	20522.20	0.21
20+25	1225	0.9287	0.36	0.41	0.21	0.21	0.20	62.44	20522.20	0.20
20+30	1230	0.9311	0.36	0.41	0.21	0.21	0.20	62.44	20522.20	0.20
20+35	1235	0.9336	0.35	0.40	0.21	0.21	0.19	62.44	20522.20	0.19
20+40	1240	0.936	0.35	0.40	0.21	0.21	0.19	62.44	20522.20	0.19
20+45	1245	0.9384	0.35	0.40	0.21	0.21	0.19	62.44	20522.20	0.19
20+50	1250	0.9408	0.35	0.40	0.21	0.21	0.19	62.44	20522.20	0.19
20+55	1255	0.9431	0.34	0.38	0.21	0.21	0.17	62.44	20522.20	0.17
21+ 0	1260	0.9455	0.34	0.38	0.21	0.21	0.17	62.44	20522.20	0.17
21+ 5	1265	0.9478	0.34	0.38	0.21	0.21	0.17	62.44	20522.20	0.17
21+10	1270	0.9501	0.33	0.37	0.21	0.21	0.16	62.44	20522.20	0.16
21+15	1275	0.9524	0.33	0.37	0.21	0.21	0.16	62.44	20522.20	0.16
21+20	1280	0.9546	0.33	0.37	0.21	0.21	0.16	62.44	20522.20	0 16
21+25	1285	0.9569	0.33	0.37	0.21	0.21	0.16	62.44	20522.20	0.16
21+30	1290	0.9591	0.32	0.36	0.21	0.21	0.15	62.44	20522.20	0.15
21+35	1295	0.9613	0.32	0.36	0.21	0.21	0.15	62.44	20522.20	0.15
21+40	1300	0.9635	0.32	0.36	0.21	0.21	0.15	62.44	20522.20	0.15
21+45	1305	0.9657	0.32	0.36	0.21	0.21	0.15	62.44	20522.20	0.15
21+50	1310	0.9679	0.31	0.35	0.21	0.21	0.14	62.44	20522.20	0.14
21+55	1315	0.97	0.31	0.35	0.21	0.21	0.14	62.44	20522.20	0.14
22+ 0	1320	0.9721	0.31	0.35	0.21	0.21	0.14	62.44	20522.20	0.14
22+ 5	1325	0.9743	0.31	0.35	0.21	0.21	0.14	62.44	20522.20	0.14
22+10	1330	0.9764	0.31	0.35	0.21	0.21	0.14	62.44	20522.20	0.14
22+15	1335	0.9784	0.3	0.33	0.21	0.21	0.12	62.44	20522.20	0.12
22+20	1340	0.9805	0.3	0.33	0.21	0.21	0.12	62.44	20522.20	0.12
22+25	1345	0 9826	0.3	0.33	0.21	0.21	0.12	62.44	20522.20	0.12
22+30	1350	0.9846	0.3	0.33	0.21	0.21	0.12	62.44	20522.20	0.12
22+35	1355	0.9867	0.3	0.33	0.21	0.21	0.12	62.44	20522.20	0.12
22+40	1360	0.9887	0.29	0.32	0.21	0.21	0.11	62.44	20522.20	0.11
22+45	1365	0.9907	0.29	0.32	0.21	0.21	0.11	62.44	20522.20	0.11
22+50	1370	0.9927	0.29	0.32	0.21	0.21	0.11	62.44	20522.20	0.11
22+55	1375	0.9947	0.29	0.32	0.21	0.21	0.11	62.44	20522.20	0.11
23+ 0	1380	0.9966	0.29	0.32	0.21	0.21	0.11	62 44	20522.20	0.11
23+ 5	1385	0.9986	0.28	0.31	0.21	0.21	0.10	62.44	20522.20	0.10
23+10	1390	1.0005	0.28	0.31	0.21	0 21	0.10	62.44	20522.20	0.10
23+15	1395	1.0025	0.28	0.31	0.21	0.21	0.10	62.44	20522.20	0.10
23+20	1400	1.0044	0.28	0.31	0.21	0.21	0.10	62.44	20522.20	0.10
23+25	1405	1.0063	0.28	0.31	0.21	0.21	0.10	62.44	20522.20	0.10
23+30	1410	1.0082	0.28	0.31	0.21	0.21	0.10	62.44	20522.20	0.10
23+35	1415	1.0101	0.27	0.30	0.21	0.21	0.09	62.44	20522.20	0.09
23+40	1420	1.012	0.27	0.30	0.21	0.21	0.09	62.44	20522.20	0.09
23+45	1425	1.0139	0.27	0.30	0.21	0.21	0.09	62.44	20522.20	0.09
23+50	1430	1.0157	0.27	0.30	0.21	0.21	0.09	62.44	20522.20	0.09
23+55	1435	1.0176	0.27	0.30	0.21	0.21	0.09	62.44	20522.20	0.09
24+ 0	1440	1.0194	0.27	0.30	0.21	0 21	0.09	62.44	20522 20	0.09
24+ 5	1445	1.0209	0.22	0.24	0.21	0.21	0.03	62.44	20522.20	0.03
24+10	1450	1.0214	0.07	0.07	0.21	0.07	0.00	21.00	20522.20	0.00
24+15	1455	1.0216	0.03	0.03	0.21	0 03	0.00	9.00	20522.20	0.00
24+20	1460	1.0217	0.01	0.01	0.21	0.01	0.00	3.00	20522.20	0.00
24+25	1465	1.0217	0.01	0.01	0.21	0.01	0.00	3.00	20522.20	0.00
24+30	1470	1.0218	0	0.00	0.21	0.00	0.00	0.00	20522.20	0.00
24+35	1475	1.0218	0	0.00	0.21	0.00	0.00	0.00	20522.20	0.00

0.41 ac-ft (volume infiltrated)

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 3 Q (cfs)	Q_{in}=Basin3 Q+Bypass Basin4 (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q =Q_{in}-Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
25+00	1500	0	0	0.00	0.21	0.21	-0.21	312.21	20209.99	0
26+00	1560	0	0	0.00	0.21	0.21	-0.21	749.31	19460.68	0
27+00	1620	0	0	0.00	0.21	0.21	-0.21	749.31	18711.37	0
28+00	1680	0	0	0.00	0.21	0.21	-0.21	749.31	17962.06	0
29+00	1740	0	0	0.00	0.21	0.21	-0.21	749.31	17212.75	0
30+00	1800	0	0	0.00	0.21	0.21	-0.21	749.31	16463.44	0
31+00	1860	0	0	0.00	0.21	0.21	-0.21	749.31	15714.13	0
32+00	1920	0	0	0.00	0.21	0.21	-0.21	749.31	14964.81	0
33+00	1980	0	0	0.00	0.21	0.21	-0.21	749.31	14215.50	0
34+00	2040	0	0	0.00	0.21	0.21	-0.21	749.31	13466.19	0
35+00	2100	0	0	0.00	0.21	0.21	-0.21	749.31	12716.88	0
36+00	2160	0	0	0.00	0.21	0.21	-0.21	749.31	11967.57	0
37+00	2220	0	0	0.00	0.21	0.21	-0.21	749.31	11218.26	0
38+00	2280	0	0	0.00	0.21	0.21	-0.21	749.31	10468.95	0
39+00	2340	0	0	0.00	0.21	0.21	-0.21	749.31	9719.64	0
40+00	2400	0	0	0.00	0.21	0.21	-0.21	749.31	8970.33	0
41+00	2460	0	0	0.00	0.21	0.21	-0.21	749.31	8221.02	0
42+00	2520	0	0	0.00	0.21	0.21	-0.21	749.31	7471.71	0
43+00	2580	0	0	0.00	0.21	0.21	-0.21	749.31	6722.40	0
44+00	2640	0	0	0.00	0.21	0.21	-0.21	749.31	5973.08	0
45+00	2700	0	0	0.00	0.21	0.21	-0.21	749.31	5223.77	0
46+00	2760	0	0	0.00	0.21	0.21	-0.21	749.31	4474.46	0
47+00	2820	0	0	0.00	0.21	0.21	-0.21	749.31	3725.15	0
48+00	2880	0	0	0.00	0.21	0.21	-0.21	749.31	2975.84	0
49+00	2940	0	0	0.00	0.21	0.21	-0.21	749.31	2226.53	0
50+00	3000	0	0	0.00	0.21	0.21	-0.21	749.31	1477.22	0
51+00	3060	0	0	0.00	0.21	0.21	-0.21	749.31	727.91	0
52+00	3120	0	0	0.00	0.21	0.21	-0.21	749.31	0.00	0



Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
0	0	0	0	0.11	0.00	0.00	0.00		0.00
0+5	5	0.00	0.02	0.11	0.02	0.00	6.00	0.00	0.00
0+10	10	0.00	0.09	0.11	0.09	0.00	27.00	0.00	0.00
0+15	15	0.00	0.16	0.11	0.11	0.05	32.69	15.31	0.00
0+20	20	0.00	0.18	0.11	0.11	0.07	32.69	36.61	0.00
0+25	25	0.00	0.19	0.11	0.11	0.08	32.69	60.92	0.00
0+30	30	0.01	0.20	0.11	0.11	0.09	32.69	88.23	0.00
0+35	35	0.01	0.20	0.11	0.11	0.09	32.69	115.53	0.00
0+40	40	0.01	0.20	0.11	0.11	0.09	32.69	142.84	0.00
0+45	45	0.01	0.21	0.11	0.11	0.10	32.69	173.15	0.00
0+50	50	0.01	0.21	0.11	0.11	0.10	32.69	203.45	0.00
0+55	55	0.01	0.21	0.11	0.11	0.10	32.69	233.76	0.00
1+0	60	0.01	0.21	0.11	0.11	0.10	32.69	264.07	0.00
1+5	65	0.02	0.21	0.11	0.11	0.10	32.69	294.37	0.00
1+10	70	0.02	0.21	0.11	0.11	0.10	32.69	324.68	0.00
1+15	75	0.02	0.21	0.11	0.11	0.10	32.69	354.99	0.00
1+20	80	0.02	0.21	0.11	0.11	0.10	32.69	385.29	0.00
1+25	85	0.02	0.21	0.11	0.11	0.10	32.69	415.60	0.00
1+30	90	0.02	0.22	0.11	0.11	0.11	32.69	448.91	0.00
1+35	95	0.02	0.22	0.11	0.11	0.11	32.69	482.21	0.00
1+40	100	0.03	0.22	0.11	0.11	0.11	32.69	515.52	0.00
1+45	105	0.03	0.22	0.11	0.11	0.11	32.69	548.83	0.00
1+50	110	0.03	0.22	0.11	0.11	0.11	32.69	582.13	0.00
1+55	115	0.03	0.22	0.11	0.11	0.11	32.69	615.44	0.00
2+0	120	0.03	0.22	0.11	0.11	0.11	32.69	648.75	0.00
2+5	125	0.03	0.22	0.11	0.11	0.11	32.69	682.05	0.00
2+10	130	0.04	0.22	0.11	0.11	0.11	32.69	715.36	0.00
2+15	135	0.04	0.22	0.11	0.11	0.11	32.69	748.67	0.00
2+20	140	0.04	0.22	0.11	0.11	0.11	32.69	781.97	0.00
2+25	145	0.04	0.22	0.11	0.11	0.11	32.69	815.28	0.00
2+30	150	0.04	0.22	0.11	0.11	0.11	32.69	848.59	0.00
2+35	155	0.04	0.22	0.11	0.11	0.11	32.69	881.89	0.00
2+40	160	0.04	0.22	0.11	0.11	0.11	32.69	915.20	0.00
2+45	165	0.05	0.23	0.11	0.11	0.12	32.69	951.51	0.00
2+50	170	0.05	0.23	0.11	0.11	0.12	32.69	987.81	0.00
2+55	175	0.05	0.23	0.11	0.11	0.12	32.69	1024.12	0.00
3+0	180	0.05	0.23	0.11	0.11	0.12	32.69	1060.43	0.00
3+5	185	0.05	0.23	0.11	0.11	0.12	32.69	1096.73	0.00
3+10	190	0.05	0.23	0.11	0.11	0.12	32.69	1133.04	0.00
3+15	195	0.06	0.23	0.11	0.11	0.12	32.69	1169.35	0.00
3+20	200	0.06	0.23	0.11	0.11	0.12	32.69	1205.65	0.00
3+25	205	0.06	0.23	0.11	0.11	0.12	32.69	1241.96	0.00
3+30	210	0.06	0.23	0.11	0.11	0.12	32.69	1278.27	0.00
3+35	215	0.06	0.23	0.11	0.11	0.12	32.69	1314.57	0.00
3+40	220	0.06	0.23	0.11	0.11	0.12	32.69	1350.88	0.00
3+45	225	0.07	0.23	0.11	0.11	0.12	32.69	1387.19	0.00
3+50	230	0.07	0.23	0.11	0.11	0.12	32.69	1423.49	0.00
3+55	235	0.07	0.24	0.11	0.11	0.13	32.69	1462.80	0.00
4+0	240	0.07	0.24	0.11	0.11	0.13	32.69	1502.10	0.00
4+5	245	0.07	0.24	0.11	0.11	0.13	32.69	1541.41	0.00
4+10	250	0.07	0.24	0.11	0.11	0.13	32.69	1580.72	0.00
4+15	255	0.07	0.24	0.11	0.11	0.13	32.69	1620.02	0.00
4+20	260	0.08	0.24	0.11	0.11	0.13	32.69	1659.33	0.00
4+25	265	0.08	0.24	0.11	0.11	0.13	32.69	1698.64	0.00
4+30	270	0.08	0.24	0.11	0.11	0.13	32.69	1737.94	0.00
4+35	275	0.08	0.24	0.11	0.11	0.13	32.69	1777.25	0.00
4+40	280	0.08	0.24	0.11	0.11	0.13	32.69	1816.56	0.00
4+45	285	0.08	0.24	0.11	0.11	0.13	32.69	1855.86	0.00
4+50	290	0.09	0.24	0.11	0.11	0.13	32.69	1895.17	0.00
4+55	295	0.09	0.25	0.11	0.11	0.14	32.69	1937.48	0.00
5+0	300	0.09	0.25	0.11	0.11	0.14	32.69	1979.78	0.00
5+5	305	0.09	0.25	0.11	0.11	0.14	32.69	2022.09	0.00
5+10	310	0.09	0.25	0.11	0.11	0.14	32.69	2064.40	0.00
5+15	315	0.09	0.25	0.11	0.11	0.14	32.69	2106.70	0.00
5+20	320	0.10	0.25	0.11	0.11	0.14	32.69	2149.01	0.00
5+25	325	0.10	0.25	0.11	0.11	0.14	32.69	2191.32	0.00
5+30	330	0.10	0.25	0.11	0.11	0.14	32.69	2233.62	0.00
5+35	335	0.10	0.25	0.11	0.11	0.14	32.69	2275.93	0.00
5+40	340	0.10	0.25	0.11	0.11	0.14	32.69	2318.24	0.00
5+45	345	0.11	0.25	0.11	0.11	0.14	32.69	2360.54	0.00
5+50	350	0.11	0.26	0.11	0.11	0.15	32.69	2405.85	0.00
5+55	355	0.11	0.26	0.11	0.11	0.15	32.69	2451.16	0.00
6+0	360	0.11	0.26	0.11	0.11	0.15	32.69	2496.46	0.00
6+5	365	0.11	0.26	0.11	0.11	0.15	32.69	2541.77	0.00
6+10	370	0.11	0.26	0.11	0.11	0.15	32.69	2587.08	0.00
6+15	375	0.12	0.26	0.11	0.11	0.15	32.69	2632.38	0.00
6+20	380	0.12	0.26	0.11	0.11	0.15	32.69	2677.69	0.00
6+25	385	0.12	0.26	0.11	0.11	0.15	32.69	2723.00	0.00
6+30	390	0.12	0.26	0.11	0.11	0.15	32.69	2768.30	0.00
6+35	395	0.12	0.27	0.11	0.11	0.16	32.69	2816.61	0.00
6+40	400	0.13	0.27	0.11	0.11	0.16	32.69	2864.92	0.00
6+45	405	0.13	0.27	0.11	0.11	0.16	32.69	2913.22	0.00
6+50	410	0.13	0.27	0.11	0.11	0.16	32.69	2961.53	0.00
6+55	415	0.13	0.27	0.11	0.11	0.16	32.69	3009.84	0.00
7+0	420	0.13	0.27	0.11	0.11	0.16	32.69	3058.14	0.00
7+5	425	0.13	0.27	0.11	0.11	0.16	32.69	3106.45	0.00
7+10	430	0.14	0.27	0.11	0.11	0.16	32.69	3154.76	0.00
7+15	435	0.14	0.27	0.11	0.11	0.16	32.69	3203.06	0.00
7+20	440	0.14	0.28	0.11	0.11	0.17	32.69	3254.37	0.00
7+25	445	0.14	0.28	0.11	0.11	0.17	32.69	3305.68	0.00
7+30	450	0.14	0.28	0.11	0.11	0.17	32.69	3356.98	0.00
7+35	455	0.15	0.28	0.11	0.11	0.17	32.69	3408.29	0.00
7+40	460	0.15	0.28	0.11	0.11	0.17	32.69	3459.60	0.00
7+45	465	0.15	0.28	0.11	0.11	0.17	32.69	3510.90	0.00
7+50	470	0.15	0.28	0.11	0.11	0.17	32.69	3562.21	0.00

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)	
7+55	475	0.15	0.29	0.11	0.11	0.18	32.69	3616.52	0.00	
8+ 0	480	0.16	0.29	0.11	0.11	0.18	32.69	3670.82	0.00	
8+ 5	485	0.16	0.29	0.11	0.11	0.18	32.69	3725.13	0.00	
8+10	490	0.16	0.29	0.11	0.11	0.18	32.69	3779.44	0.00	
8+15	495	0.16	0.29	0.11	0.11	0.18	32.69	3833.74	0.00	
8+20	500	0.16	0.29	0.11	0.11	0.18	32.69	3888.05	0.00	
8+25	505	0.17	0.29	0.11	0.11	0.18	32.69	3942.36	0.00	
8+30	510	0.17	0.30	0.11	0.11	0.19	32.69	3999.66	0.00	
8+35	515	0.17	0.30	0.11	0.11	0.19	32.69	4056.97	0.00	
8+40	520	0.17	0.30	0.11	0.11	0.19	32.69	4114.28	0.00	
8+45	525	0.17	0.30	0.11	0.11	0.19	32.69	4171.58	0.00	
8+50	530	0.18	0.30	0.11	0.11	0.19	32.69	4228.89	0.00	
8+55	535	0.18	0.30	0.11	0.11	0.19	32.69	4286.20	0.00	
9+ 0	540	0.18	0.31	0.11	0.11	0.20	32.69	4346.50	0.00	
9+ 5	545	0.18	0.31	0.11	0.11	0.20	32.69	4406.81	0.00	
9+10	550	0.18	0.31	0.11	0.11	0.20	32.69	4467.12	0.00	
9+15	555	0.19	0.31	0.11	0.11	0.20	32.69	4527.42	0.00	
9+20	560	0.19	0.31	0.11	0.11	0.20	32.69	4587.73	0.00	
9+25	565	0.19	0.31	0.11	0.11	0.20	32.69	4648.04	0.00	
9+30	570	0.19	0.32	0.11	0.11	0.21	32.69	4711.34	0.00	
9+35	575	0.20	0.32	0.11	0.11	0.21	32.69	4774.65	0.00	
9+40	580	0.20	0.32	0.11	0.11	0.21	32.69	4837.96	0.00	
9+45	585	0.20	0.32	0.11	0.11	0.21	32.69	4901.26	0.00	
9+50	590	0.20	0.32	0.11	0.11	0.21	32.69	4964.57	0.00	
9+55	595	0.20	0.33	0.11	0.11	0.22	32.69	5030.88	0.00	
10+ 0	600	0.21	0.33	0.11	0.11	0.22	32.69	5097.18	0.00	
10+ 5	605	0.21	0.33	0.11	0.11	0.22	32.69	5163.49	0.00	
10+10	610	0.21	0.33	0.11	0.11	0.22	32.69	5229.80	0.00	
10+15	615	0.21	0.34	0.11	0.11	0.23	32.69	5299.10	0.00	
10+20	620	0.22	0.34	0.11	0.11	0.23	32.69	5368.41	0.00	
10+25	625	0.22	0.34	0.11	0.11	0.23	32.69	5437.72	0.00	
10+30	630	0.22	0.34	0.11	0.11	0.23	32.69	5507.02	0.00	
10+35	635	0.22	0.34	0.11	0.11	0.23	32.69	5576.33	0.00	
10+40	640	0.23	0.35	0.11	0.11	0.24	32.69	5648.64	0.00	
10+45	645	0.23	0.35	0.11	0.11	0.24	32.69	5720.94	0.00	
10+50	650	0.23	0.35	0.11	0.11	0.24	32.69	5793.25	0.00	
10+55	655	0.23	0.35	0.11	0.11	0.24	32.69	5865.56	0.00	
11+ 0	660	0.23	0.36	0.11	0.11	0.25	32.69	5940.86	0.00	
11+ 5	665	0.24	0.36	0.11	0.11	0.25	32.69	6016.17	0.00	
11+10	670	0.24	0.36	0.11	0.11	0.25	32.69	6091.47	0.00	
11+15	675	0.24	0.37	0.11	0.11	0.26	32.69	6169.78	0.00	
11+20	680	0.24	0.37	0.11	0.11	0.26	32.69	6248.09	0.00	
11+25	685	0.25	0.37	0.11	0.11	0.26	32.69	6326.39	0.00	
11+30	690	0.25	0.38	0.11	0.11	0.27	32.69	6407.70	0.00	
11+35	695	0.25	0.38	0.11	0.11	0.27	32.69	6489.01	0.00	
11+40	700	0.26	0.38	0.11	0.11	0.27	32.69	6570.31	0.00	
11+45	705	0.26	0.39	0.11	0.11	0.28	32.69	6654.62	0.00	
11+50	710	0.26	0.39	0.11	0.11	0.28	32.69	6738.93	0.00	
11+55	715	0.26	0.39	0.11	0.11	0.28	32.69	6823.23	0.00	
12+ 0	720	0.27	0.40	0.11	0.11	0.29	32.69	6910.54	0.00	
12+ 5	725	0.27	0.39	0.11	0.11	0.28	32.69	6994.85	0.00	
12+10	730	0.27	0.35	0.11	0.11	0.24	32.69	7067.15	0.00	
12+15	735	0.27	0.31	0.11	0.11	0.20	32.69	7127.46	0.00	
12+20	740	0.28	0.30	0.11	0.11	0.19	32.69	7184.77	0.00	
12+25	745	0.28	0.30	0.11	0.11	0.19	32.69	7242.07	0.00	
12+30	750	0.28	0.30	0.11	0.11	0.19	32.69	7299.38	0.00	
12+35	755	0.28	0.30	0.11	0.11	0.19	32.69	7356.69	0.00	
12+40	760	0.28	0.31	0.11	0.11	0.20	32.69	7416.99	0.00	
12+45	765	0.29	0.31	0.11	0.11	0.20	32.69	7477.30	0.00	
12+50	770	0.29	0.31	0.11	0.11	0.20	32.69	7537.61	0.00	
12+55	775	0.29	0.32	0.11	0.11	0.21	32.69	7600.91	0.00	
13+ 0	780	0.29	0.32	0.11	0.11	0.21	32.69	7664.22	0.00	
13+ 5	785	0.29	0.33	0.11	0.11	0.22	32.69	7730.53	0.00	
13+10	790	0.30	0.33	0.11	0.11	0.22	32.69	7796.83	0.00	
13+15	795	0.30	0.34	0.11	0.11	0.23	32.69	7866.14	0.00	
13+20	800	0.30	0.35	0.11	0.11	0.24	32.69	7938.45	0.00	
13+25	805	0.30	0.35	0.11	0.11	0.24	32.69	8010.75	0.00	
13+30	810	0.31	0.36	0.11	0.11	0.25	32.69	8086.06	0.00	
13+35	815	0.31	0.37	0.11	0.11	0.26	32.69	8164.37	0.00	
13+40	820	0.31	0.38	0.11	0.11	0.27	32.69	8245.67	0.00	
13+45	825	0.31	0.38	0.11	0.11	0.27	32.69	8326.98	0.00	
13+50	830	0.32	0.39	0.11	0.11	0.28	32.69	8411.29	0.00	
13+55	835	0.32	0.40	0.11	0.11	0.29	32.69	8498.59	0.00	
14+ 0	840	0.32	0.41	0.11	0.11	0.30	32.69	8588.90	0.00	
14+ 5	845	0.33	0.42	0.11	0.11	0.31	32.69	8682.21	0.00	
14+10	850	0.33	0.43	0.11	0.11	0.32	32.69	8778.51	0.00	
14+15	855	0.33	0.44	0.11	0.11	0.33	32.69	8877.82	0.00	
14+20	860	0.33	0.46	0.11	0.11	0.35	32.69	8983.13	0.00	
14+25	865	0.34	0.47	0.11	0.11	0.36	32.69	9091.43	0.00	
14+30	870	0.34	0.48	0.11	0.11	0.37	32.69	9202.74	0.00	
14+35	875	0.34	0.50	0.11	0.11	0.39	32.69	9320.05	0.00	
14+40	880	0.35	0.52	0.11	0.11	0.41	32.69	9443.35	0.00	
14+45	885	0.35	0.54	0.11	0.11	0.43	32.69	9572.66	0.00	
14+50	890	0.36	0.56	0.11	0.11	0.45	32.69	9707.97	0.00	
14+55	895	0.36	0.58	0.11	0.11	0.47	32.69	9849.27	0.00	
15+ 0	900	0.36	0.61	0.11	0.11	0.50	32.69	9999.58	0.00	
15+ 5	905	0.37	0.63	0.11	0.11	0.52	32.69	10155.89	0.00	
15+10	910	0.37	0.67	0.11	0.11	0.56	32.69	10324.19	0.00	
15+15	915	0.38	0.70	0.11	0.11	0.59	32.69	10501.50	0.00	
15+20	920	0.38	0.74	0.11	0.11	0.63	32.69	10690.81	0.00	
15+25	925	0.39	0.80	0.11	0.11	0.69	32.69	10898.11	0.00	
15+30	930	0.39	0.90	0.11	0.11	0.79	32.69	10920.07	0.79	Exceeds storage volume, flow now bypasses to Basin 1
15+35	935	0.40	1.00	0.11	0.11	0.89	32.69	10920.07	0.89	
15+40	940	0.41	1.10	0.11	0.11	0.99	32.69	10920.07	0.99	
15+45	945	0.42	1.23	0.11	0.11	1.12	32.69	10920.07	1.12	

Basin 7

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
15+50	950	0.43	1.40	0.11	0.11	1.29	32.69	10920.07	1.29
15+55	955	0.44	1.65	0.11	0.11	1.54	32.69	10920.07	1.54
16+ 0	960	0.45	2.12	0.11	0.11	2.01	32.69	10920.07	2.01
16+ 5	965	0.48	3.37	0.11	0.11	3.26	32.69	10920.07	3.26
16+10	970	0.52	5.84	0.11	0.11	5.73	32.69	10920.07	5.73
16+15	975	0.55	5.04	0.11	0.11	4.93	32.69	10920.07	4.93
16+20	980	0.57	2.80	0.11	0.11	2.69	32.69	10920.07	2.69
16+25	985	0.58	1.84	0.11	0.11	1.73	32.69	10920.07	1.73
16+30	990	0.59	1.41	0.11	0.11	1.30	32.69	10920.07	1.30
16+35	995	0.60	1.11	0.11	0.11	1.00	32.69	10920.07	1.00
16+40	1000	0.61	0.94	0.11	0.11	0.83	32.69	10920.07	0.83
16+45	1005	0.61	0.82	0.11	0.11	0.71	32.69	10920.07	0.71
16+50	1010	0.62	0.73	0.11	0.11	0.62	32.69	10920.07	0.62
16+55	1015	0.62	0.65	0.11	0.11	0.54	32.69	10920.07	0.54
17+ 0	1020	0.63	0.59	0.11	0.11	0.48	32.69	10920.07	0.48
17+ 5	1025	0.63	0.53	0.11	0.11	0.42	32.69	10920.07	0.42
17+10	1030	0.63	0.48	0.11	0.11	0.37	32.69	10920.07	0.37
17+15	1035	0.64	0.45	0.11	0.11	0.34	32.69	10920.07	0.34
17+20	1040	0.64	0.42	0.11	0.11	0.31	32.69	10920.07	0.31
17+25	1045	0.64	0.40	0.11	0.11	0.29	32.69	10920.07	0.29
17+30	1050	0.64	0.38	0.11	0.11	0.27	32.69	10920.07	0.27
17+35	1055	0.65	0.37	0.11	0.11	0.26	32.69	10920.07	0.26
17+40	1060	0.65	0.35	0.11	0.11	0.24	32.69	10920.07	0.24
17+45	1065	0.65	0.34	0.11	0.11	0.23	32.69	10920.07	0.23
17+50	1070	0.65	0.33	0.11	0.11	0.22	32.69	10920.07	0.22
17+55	1075	0.66	0.32	0.11	0.11	0.21	32.69	10920.07	0.21
18+ 0	1080	0.66	0.31	0.11	0.11	0.20	32.69	10920.07	0.20
18+ 5	1085	0.66	0.31	0.11	0.11	0.20	32.69	10920.07	0.20
18+10	1090	0.66	0.35	0.11	0.11	0.24	32.69	10920.07	0.24
18+15	1095	0.67	0.38	0.11	0.11	0.27	32.69	10920.07	0.27
18+20	1100	0.67	0.38	0.11	0.11	0.27	32.69	10920.07	0.27
18+25	1105	0.67	0.38	0.11	0.11	0.27	32.69	10920.07	0.27
18+30	1110	0.67	0.38	0.11	0.11	0.27	32.69	10920.07	0.27
18+35	1115	0.68	0.37	0.11	0.11	0.26	32.69	10920.07	0.26
18+40	1120	0.68	0.37	0.11	0.11	0.26	32.69	10920.07	0.26
18+45	1125	0.68	0.36	0.11	0.11	0.25	32.69	10920.07	0.25
18+50	1130	0.68	0.36	0.11	0.11	0.25	32.69	10920.07	0.25
18+55	1135	0.69	0.35	0.11	0.11	0.24	32.69	10920.07	0.24
19+ 0	1140	0.69	0.35	0.11	0.11	0.24	32.69	10920.07	0.24
19+ 5	1145	0.69	0.34	0.11	0.11	0.23	32.69	10920.07	0.23
19+10	1150	0.69	0.34	0.11	0.11	0.23	32.69	10920.07	0.23
19+15	1155	0.70	0.33	0.11	0.11	0.22	32.69	10920.07	0.22
19+20	1160	0.70	0.33	0.11	0.11	0.22	32.69	10920.07	0.22
19+25	1165	0.70	0.33	0.11	0.11	0.22	32.69	10920.07	0.22
19+30	1170	0.70	0.32	0.11	0.11	0.21	32.69	10920.07	0.21
19+35	1175	0.70	0.32	0.11	0.11	0.21	32.69	10920.07	0.21
19+40	1180	0.71	0.31	0.11	0.11	0.20	32.69	10920.07	0.20
19+45	1185	0.71	0.31	0.11	0.11	0.20	32.69	10920.07	0.20
19+50	1190	0.71	0.31	0.11	0.11	0.20	32.69	10920.07	0.20
19+55	1195	0.71	0.30	0.11	0.11	0.19	32.69	10920.07	0.19
20+ 0	1200	0.71	0.30	0.11	0.11	0.19	32.69	10920.07	0.19
20+ 5	1205	0.72	0.30	0.11	0.11	0.19	32.69	10920.07	0.19
20+10	1210	0.72	0.29	0.11	0.11	0.18	32.69	10920.07	0.18
20+15	1215	0.72	0.29	0.11	0.11	0.18	32.69	10920.07	0.18
20+20	1220	0.72	0.29	0.11	0.11	0.18	32.69	10920.07	0.18
20+25	1225	0.72	0.28	0.11	0.11	0.17	32.69	10920.07	0.17
20+30	1230	0.73	0.28	0.11	0.11	0.17	32.69	10920.07	0.17
20+35	1235	0.73	0.28	0.11	0.11	0.17	32.69	10920.07	0.17
20+40	1240	0.73	0.28	0.11	0.11	0.17	32.69	10920.07	0.17
20+45	1245	0.73	0.27	0.11	0.11	0.16	32.69	10920.07	0.16
20+50	1250	0.73	0.27	0.11	0.11	0.16	32.69	10920.07	0.16
20+55	1255	0.74	0.27	0.11	0.11	0.16	32.69	10920.07	0.16
21+ 0	1260	0.74	0.27	0.11	0.11	0.16	32.69	10920.07	0.16
21+ 5	1265	0.74	0.26	0.11	0.11	0.15	32.69	10920.07	0.15
21+10	1270	0.74	0.26	0.11	0.11	0.15	32.69	10920.07	0.15
21+15	1275	0.74	0.26	0.11	0.11	0.15	32.69	10920.07	0.15
21+20	1280	0.75	0.26	0.11	0.11	0.15	32.69	10920.07	0.15
21+25	1285	0.75	0.26	0.11	0.11	0.15	32.69	10920.07	0.15
21+30	1290	0.75	0.25	0.11	0.11	0.14	32.69	10920.07	0.14
21+35	1295	0.75	0.25	0.11	0.11	0.14	32.69	10920.07	0.14
21+40	1300	0.75	0.25	0.11	0.11	0.14	32.69	10920.07	0.14
21+45	1305	0.75	0.25	0.11	0.11	0.14	32.69	10920.07	0.14
21+50	1310	0.76	0.25	0.11	0.11	0.14	32.69	10920.07	0.14
21+55	1315	0.76	0.25	0.11	0.11	0.14	32.69	10920.07	0.14
22+ 0	1320	0.76	0.24	0.11	0.11	0.13	32.69	10920.07	0.13
22+ 5	1325	0.76	0.24	0.11	0.11	0.13	32.69	10920.07	0.13
22+10	1330	0.76	0.24	0.11	0.11	0.13	32.69	10920.07	0.13
22+15	1335	0.76	0.24	0.11	0.11	0.13	32.69	10920.07	0.13
22+20	1340	0.77	0.24	0.11	0.11	0.13	32.69	10920.07	0.13
22+25	1345	0.77	0.24	0.11	0.11	0.13	32.69	10920.07	0.13
22+30	1350	0.77	0.23	0.11	0.11	0.12	32.69	10920.07	0.12
22+35	1355	0.77	0.23	0.11	0.11	0.12	32.69	10920.07	0.12
22+40	1360	0.77	0.23	0.11	0.11	0.12	32.69	10920.07	0.12
22+45	1365	0.77	0.23	0.11	0.11	0.12	32.69	10920.07	0.12
22+50	1370	0.78	0.23	0.11	0.11	0.12	32.69	10920.07	0.12
22+55	1375	0.78	0.23	0.11	0.11	0.12	32.69	10920.07	0.12
23+ 0	1380	0.78	0.22	0.11	0.11	0.11	32.69	10920.07	0.11
23+ 5	1385	0.78	0.22	0.11	0.11	0.11	32.69	10920.07	0.11
23+10	1390	0.78	0.22	0.11	0.11	0.11	32.69	10920.07	0.11
23+15	1395	0.78	0.22	0.11	0.11	0.11	32.69	10920.07	0.11
23+20	1400	0.78	0.22	0.11	0.11	0.11	32.69	10920.07	0.11
23+25	1405	0.79	0.22	0.11	0.11	0.11	32.69	10920.07	0.11
23+30	1410	0.79	0.22	0.11	0.11	0.11	32.69	10920.07	0.11
23+35	1415	0.79	0.22	0.11	0.11	0.11	32.69	10920.07	0.11
23+40	1420	0.79	0.21	0.11	0.11	0.10	32.69	10920.07	0.10

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
23+45	1425	0.79	0 21	0 11	0.11	0.10	32.69	10920.07	0.10
23+50	1430	0.79	0.21	0.11	0 11	0 10	32.69	10920.07	0 10
23+55	1435	0.79	0.21	0 11	0.11	0 10	32.69	10920 07	0.10
24+ 0	1440	0 80	0.21	0.11	0 11	0 10	32.69	10920 07	0.10
24+ 5	1445	0.80	0.19	0.11	0 11	0.08	32 69	10920.07	0 08
24+10	1450	0.80	0.12	0 11	0 11	0.01	32 69	10920 07	0.01
24+15	1455	0.80	0 05	0 11	0 05	0.00	15.00	10920.07	0.00
24+20	1460	0.80	0 03	0.11	0.03	0 00	9 00	10920 07	0.00
24+25	1465	0 80	0.02	0.11	0.02	0.00	6 00	10920.07	0.00
24+30	1470	0 80	0.01	0 11	0.01	0 00	3 00	10920 07	0.00
24+35	1475	0 80	0.01	0 11	0.01	0 00	3.00	10920 07	0 00
24+40	1480	0.80	0.01	0 11	0 01	0.00	3.00	10920.07	0.00
24+45	1485	0.80	0 00	0 11	0 00	0 00	0.00	10920.07	0.00
24+50	1490	0.80	0 00	0 11	0.00	0 00	0.00	10920.07	0.00
24+55	1495	0.80	0.00	0 11	0.00	0 00	0 00	10920.07	0.00
24+60	1500	0 80	0.00	0.11	0.00	0 00	0.00	10920 07	0.00

0.22 ac-ft (volume Infiltrated)

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
25+00	1500	0	0	0.11	0 11	-0.11	0.00	10920.0744	0
26+00	1560	0	0	0.11	0.11	-0 11	392.32	10527.7539	0
27+00	1620	0	0	0.11	0.11	-0.11	392.32	10135.4334	0
28+00	1680	0	0	0.11	0.11	-0.11	392.32	9743.11296	0
29+00	1740	0	0	0.11	0.11	-0.11	392.32	9350.7925	0
30+00	1800	0	0	0.11	0.11	-0.11	392.32	8958.47204	0
31+00	1860	0	0	0.11	0.11	-0.11	392.32	8566.15158	0
32+00	1920	0	0	0.11	0.11	-0.11	392.32	8173.83111	0
33+00	1980	0	0	0.11	0.11	-0.11	392.32	7781.51065	0
34+00	2040	0	0	0.11	0.11	-0.11	392.32	7389.19019	0
35+00	2100	0	0	0.11	0.11	-0.11	392.32	6996.86973	0
36+00	2160	0	0	0.11	0.11	-0.11	392.32	6604.54926	0
37+00	2220	0	0	0.11	0.11	-0.11	392.32	6212.2288	0
38+00	2280	0	0	0.11	0.11	-0.11	392.32	5819.90834	0
39+00	2340	0	0	0.11	0.11	-0.11	392.32	5427.58788	0
40+00	2400	0	0	0.11	0.11	-0.11	392 32	5035.26741	0
41+00	2460	0	0	0.11	0.11	-0.11	392.32	4642.94695	0
42+00	2520	0	0	0.11	0.11	-0.11	392.32	4250.62649	0
43+00	2580	0	0	0.11	0.11	-0.11	392.32	3858.30603	0
44+00	2640	0	0	0.11	0.11	-0.11	392.32	3465.98556	0
45+00	2700	0	0	0.11	0.11	-0.11	392.32	3073.6651	0
46+00	2760	0	0	0 11	0.11	-0.11	392.32	2681 34464	0
47+00	2820	0	0	0.11	0.11	-0.11	392.32	2289.02418	0
48+00	2880	0	0	0.11	0.11	-0.11	392.32	1896.70371	0
49+00	2940	0	0	0.11	0.11	-0.11	392.32	1504.38325	0
50+00	3000	0	0	0.11	0.11	-0.11	392.32	1112.06279	0
51+00	3060	0	0	0.11	0.11	-0.11	392.32	719.742325	0
52+00	3120	0	0	0.11	0.11	-0.11	392.32	327.421863	0
53+00	3180	0	0	0.11	0.11	-0 11	392.32	0	0

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 1 Q (cfs)	Bypass from Basin 3 (cfs)	Bypass from Basin 7 (cfs)	Q_{in} = Basin 1 Q+BypassBasin7+BypassBasin3	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Storage Volume Required (cf)
0	0	0	0	0.00	0.00	0.00	0.95	0.00	0.00	0.00	0
0+5	5	0.0009	0.14	0.00	0.00	0.14	0.95	0.14	0.00	42.00	0.00
0+10	10	0.005	0.59	0.00	0.00	0.59	0.95	0.59	0.00	177.00	0.00
0+15	15	0.0102	0.76	0.00	0.00	0.76	0.95	0.76	0.00	228.00	0.00
0+20	20	0.0158	0.81	0.00	0.00	0.81	0.95	0.81	0.00	243.00	0.00
0+25	25	0.0215	0.83	0.00	0.00	0.83	0.95	0.83	0.00	249.00	0.00
0+30	30	0.0273	0.84	0.00	0.00	0.84	0.95	0.84	0.00	252.00	0.00
0+35	35	0.0332	0.85	0.00	0.00	0.85	0.95	0.85	0.00	255.00	0.00
0+40	40	0.0391	0.86	0.00	0.00	0.86	0.95	0.86	0.00	258.00	0.00
0+45	45	0.045	0.87	0.00	0.00	0.87	0.95	0.87	0.00	261.00	0.00
0+50	50	0.051	0.87	0.00	0.00	0.87	0.95	0.87	0.00	261.00	0.00
0+55	55	0.057	0.87	0.00	0.00	0.87	0.95	0.87	0.00	261.00	0.00
1+0	60	0.063	0.87	0.00	0.00	0.87	0.95	0.87	0.00	261.00	0.00
1+5	65	0.0691	0.88	0.00	0.00	0.88	0.95	0.88	0.00	264.00	0.00
1+10	70	0.0751	0.88	0.00	0.00	0.88	0.95	0.88	0.00	264.00	0.00
1+15	75	0.0812	0.88	0.00	0.00	0.88	0.95	0.88	0.00	264.00	0.00
1+20	80	0.0873	0.88	0.00	0.00	0.88	0.95	0.88	0.00	264.00	0.00
1+25	85	0.0933	0.89	0.00	0.00	0.89	0.95	0.89	0.00	267.00	0.00
1+30	90	0.0995	0.89	0.00	0.00	0.89	0.95	0.89	0.00	267.00	0.00
1+35	95	0.1056	0.89	0.00	0.00	0.89	0.95	0.89	0.00	267.00	0.00
1+40	100	0.1117	0.89	0.00	0.00	0.89	0.95	0.89	0.00	267.00	0.00
1+45	105	0.1179	0.9	0.00	0.00	0.90	0.95	0.90	0.00	270.00	0.00
1+50	110	0.1241	0.9	0.00	0.00	0.90	0.95	0.90	0.00	270.00	0.00
1+55	115	0.1303	0.9	0.00	0.00	0.90	0.95	0.90	0.00	270.00	0.00
2+0	120	0.1365	0.9	0.00	0.00	0.90	0.95	0.90	0.00	270.00	0.00
2+5	125	0.1428	0.91	0.00	0.00	0.91	0.95	0.91	0.00	273.00	0.00
2+10	130	0.149	0.91	0.00	0.00	0.91	0.95	0.91	0.00	273.00	0.00
2+15	135	0.1553	0.91	0.00	0.00	0.91	0.95	0.91	0.00	273.00	0.00
2+20	140	0.1616	0.91	0.00	0.00	0.91	0.95	0.91	0.00	273.00	0.00
2+25	145	0.1679	0.92	0.00	0.00	0.92	0.95	0.92	0.00	276.00	0.00
2+30	150	0.1742	0.92	0.00	0.00	0.92	0.95	0.92	0.00	276.00	0.00
2+35	155	0.1806	0.92	0.00	0.00	0.92	0.95	0.92	0.00	276.00	0.00
2+40	160	0.1869	0.92	0.00	0.00	0.92	0.95	0.92	0.00	276.00	0.00
2+45	165	0.1933	0.93	0.00	0.00	0.93	0.95	0.93	0.00	279.00	0.00
2+50	170	0.1997	0.93	0.00	0.00	0.93	0.95	0.93	0.00	279.00	0.00
2+55	175	0.2062	0.93	0.00	0.00	0.93	0.95	0.93	0.00	279.00	0.00
3+0	180	0.2126	0.94	0.00	0.00	0.94	0.95	0.94	0.00	282.00	0.00
3+5	185	0.2191	0.94	0.00	0.00	0.94	0.95	0.94	0.00	282.00	0.00
3+10	190	0.2256	0.94	0.00	0.00	0.94	0.95	0.94	0.00	282.00	0.00
3+15	195	0.2321	0.94	0.00	0.00	0.94	0.95	0.94	0.00	282.00	0.00
3+20	200	0.2386	0.95	0.00	0.00	0.95	0.95	0.95	0.00	285.00	0.00
3+25	205	0.2451	0.95	0.00	0.00	0.95	0.95	0.95	0.00	285.00	0.00
3+30	210	0.2517	0.95	0.00	0.00	0.95	0.95	0.95	0.00	285.00	0.00
3+35	215	0.2583	0.96	0.00	0.00	0.96	0.95	0.95	0.01	285.35	2.65
3+40	220	0.2649	0.96	0.00	0.00	0.96	0.95	0.95	0.01	285.35	5.31
3+45	225	0.2716	0.96	0.00	0.00	0.96	0.95	0.95	0.01	285.35	7.96
3+50	230	0.2782	0.97	0.00	0.00	0.97	0.95	0.95	0.02	285.35	13.62
3+55	235	0.2849	0.97	0.00	0.00	0.97	0.95	0.95	0.02	285.35	19.27
4+0	240	0.2916	0.97	0.00	0.00	0.97	0.95	0.95	0.02	285.35	24.93
4+5	245	0.2983	0.98	0.00	0.00	0.98	0.95	0.95	0.03	285.35	33.58
4+10	250	0.3051	0.98	0.00	0.00	0.98	0.95	0.95	0.03	285.35	42.24
4+15	255	0.3118	0.98	0.00	0.00	0.98	0.95	0.95	0.03	285.35	50.89
4+20	260	0.3186	0.99	0.00	0.00	0.99	0.95	0.95	0.04	285.35	62.55
4+25	265	0.3255	0.99	0.00	0.00	0.99	0.95	0.95	0.04	285.35	74.20
4+30	270	0.3323	0.99	0.00	0.00	0.99	0.95	0.95	0.04	285.35	85.86
4+35	275	0.3392	1	0.00	0.00	1.00	0.95	0.95	0.05	285.35	100.51
4+40	280	0.3461	1	0.00	0.00	1.00	0.95	0.95	0.05	285.35	115.17
4+45	285	0.353	1	0.00	0.00	1.00	0.95	0.95	0.05	285.35	129.82
4+50	290	0.3599	1.01	0.00	0.00	1.01	0.95	0.95	0.06	285.35	147.48
4+55	295	0.3669	1.01	0.00	0.00	1.01	0.95	0.95	0.06	285.35	165.13
5+0	300	0.3739	1.02	0.00	0.00	1.02	0.95	0.95	0.07	285.35	185.79
5+5	305	0.3809	1.02	0.00	0.00	1.02	0.95	0.95	0.07	285.35	206.44
5+10	310	0.3879	1.02	0.00	0.00	1.02	0.95	0.95	0.07	285.35	227.10
5+15	315	0.395	1.03	0.00	0.00	1.03	0.95	0.95	0.08	285.35	250.75
5+20	320	0.4021	1.03	0.00	0.00	1.03	0.95	0.95	0.08	285.35	274.41
5+25	325	0.4092	1.03	0.00	0.00	1.03	0.95	0.95	0.08	285.35	298.06
5+30	330	0.4164	1.04	0.00	0.00	1.04	0.95	0.95	0.09	285.35	324.72
5+35	335	0.4235	1.04	0.00	0.00	1.04	0.95	0.95	0.09	285.35	351.37
5+40	340	0.4307	1.05	0.00	0.00	1.05	0.95	0.95	0.10	285.35	381.03
5+45	345	0.438	1.05	0.00	0.00	1.05	0.95	0.95	0.10	285.35	410.68
5+50	350	0.4452	1.05	0.00	0.00	1.05	0.95	0.95	0.10	285.35	440.33
5+55	355	0.4525	1.06	0.00	0.00	1.06	0.95	0.95	0.11	285.35	472.99
6+0	360	0.4598	1.06	0.00	0.00	1.06	0.95	0.95	0.11	285.35	505.64
6+5	365	0.4672	1.07	0.00	0.00	1.07	0.95	0.95	0.12	285.35	541.30
6+10	370	0.4746	1.07	0.00	0.00	1.07	0.95	0.95	0.12	285.35	576.95
6+15	375	0.482	1.08	0.00	0.00	1.08	0.95	0.95	0.13	285.35	615.61
6+20	380	0.4894	1.08	0.00	0.00	1.08	0.95	0.95	0.13	285.35	654.26
6+25	385	0.4969	1.08	0.00	0.00	1.08	0.95	0.95	0.13	285.35	692.92
6+30	390	0.5044	1.09	0.00	0.00	1.09	0.95	0.95	0.14	285.35	734.57
6+35	395	0.5119	1.09	0.00	0.00	1.09	0.95	0.95	0.14	285.35	776.23
6+40	400	0.5195	1.1	0.00	0.00	1.10	0.95	0.95	0.15	285.35	820.88
6+45	405	0.5271	1.1	0.00	0.00	1.10	0.95	0.95	0.15	285.35	865.54
6+50	410	0.5347	1.11	0.00	0.00	1.11	0.95	0.95	0.16	285.35	913.19
6+55	415	0.5424	1.11	0.00	0.00	1.11	0.95	0.95	0.16	285.35	960.85
7+0	420	0.5501	1.12	0.00	0.00	1.12	0.95	0.95	0.17	285.35	1011.50
7+5	425	0.5578	1.12	0.00	0.00	1.12	0.95	0.95	0.17	285.35	1062.16
7+10	430	0.5656	1.13	0.00	0.00	1.13	0.95	0.95	0.18	285.35	1115.81
7+15	435	0.5734	1.13	0.00	0.00	1.13	0.95	0.95	0.18	285.35	1169.47
7+20	440	0.5812	1.14	0.00	0.00	1.14	0.95	0.95	0.19	285.35	1226.12
7+25	445	0.5891	1.14	0.00	0.00	1.14	0.95	0.95	0.19	285.35	1282.78
7+30	450	0.597	1.15	0.00	0.00	1.15	0.95	0.95	0.20	285.35	1342.43
7+35	455	0.605	1.15	0.00	0.00	1.15	0.95	0.95	0.20	285.35	1402.09
7+40	460	0.613	1.16	0.00	0.00	1.16	0.95	0.95	0.21	285.35	1464.74
7+45	465	0.621	1.17	0.00	0.00	1.17	0.95	0.95	0.22	285.35	1530.40
7+50	470	0.6291	1.17	0.00	0.00	1.17	0.95	0.95	0.22	285.35	1596.05
7+55	475	0.6372	1.18	0.00	0.00	1.18	0.95	0.95	0.23	285.35	1664.71
8+0	480	0.6453	1.18	0.00	0.00	1.18	0.95	0.95	0.23	285.35	1733.36
8+5	485	0.6535	1.19	0.00	0.00	1.19	0.95	0.95	0.24	285.35	1805.01
8+10	490	0.6617	1.2	0.00	0.00	1.20	0.95	0.95	0.25	285.35	1879.67
8+15	495	0.67	1.2	0.00	0.00	1.20	0.95	0.95	0.25	285.35	1954.32
8+20	500	0.6783	1.21	0.00	0.00	1.21	0.95	0.95	0.26	285.35	2031.98
8+25	505	0.6867	1.21	0.00	0.00	1.21	0.95	0.95	0.26	285.35	2109.63
8+30	510	0.6951	1.22	0.00	0.00	1.22	0.95	0.95	0.27	285.35	2190.29
8+35	515	0.7035	1.23	0.00	0.00	1.23	0.95	0.95	0.28	285.35	2273.94
8+40	520	0.712	1.23	0.00	0.00	1.23	0.95	0.95	0.28	285.35	2357.60
8+45	525	0.7206	1.24	0.00	0.00	1.24	0.95	0.95	0.29	285.35	2444.25
8+50	530	0.7291	1.25	0.00	0.00	1.25	0.95	0.95	0.30	285.35	2533.91
8+55	535	0.7378	1.25	0.00	0.00	1.25	0.95	0.95	0.30	285.35	2623.56
9+0	540	0.7465	1.26	0.00	0.00	1.26	0.95	0.95	0.31	285.35	2716.22

Basin 1

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 1 Q (cfs)	Bypass from Basin 3 (cfs)	Bypass from Basin 7 (cfs)	Q_{in}= Basin 1 Q+BypassBasin7+BypassBasin3	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Storage Volume Required (cf)
9+ 5	545	0.7552	1.27	0.00	0.00	1.27	0.95	0.95	0.32	285.35	2811.87
9+10	550	0.764	1.28	0.00	0.00	1.28	0.95	0.95	0.33	285.35	2910.53
9+15	555	0.7728	1.28	0.00	0.00	1.28	0.95	0.95	0.33	285.35	3009.18
9+20	560	0.7817	1.29	0.00	0.00	1.29	0.95	0.95	0.34	285.35	3110.84
9+25	565	0.7906	1.3	0.00	0.00	1.30	0.95	0.95	0.35	285.35	3215.49
9+30	570	0.7996	1.31	0.00	0.00	1.31	0.95	0.95	0.36	285.35	3323.15
9+35	575	0.8087	1.31	0.00	0.00	1.31	0.95	0.95	0.36	285.35	3430.80
9+40	580	0.8178	1.32	0.00	0.00	1.32	0.95	0.95	0.37	285.35	3541.46
9+45	585	0.8269	1.33	0.00	0.00	1.33	0.95	0.95	0.38	285.35	3655.11
9+50	590	0.8362	1.34	0.00	0.00	1.34	0.95	0.95	0.39	285.35	3771.77
9+55	595	0.8454	1.35	0.00	0.00	1.35	0.95	0.95	0.40	285.35	3891.42
10+ 0	600	0.8548	1.36	0.00	0.00	1.36	0.95	0.95	0.41	285.35	4014.08
10+ 5	605	0.8642	1.37	0.00	0.00	1.37	0.95	0.95	0.42	285.35	4139.73
10+10	610	0.8737	1.38	0.00	0.00	1.38	0.95	0.95	0.43	285.35	4268.39
10+15	615	0.8832	1.38	0.00	0.00	1.38	0.95	0.95	0.43	285.35	4397.04
10+20	620	0.8928	1.39	0.00	0.00	1.39	0.95	0.95	0.44	285.35	4528.69
10+25	625	0.9025	1.4	0.00	0.00	1.40	0.95	0.95	0.45	285.35	4663.35
10+30	630	0.9122	1.41	0.00	0.00	1.41	0.95	0.95	0.46	285.35	4801.00
10+35	635	0.922	1.42	0.00	0.00	1.42	0.95	0.95	0.47	285.35	4941.66
10+40	640	0.9319	1.43	0.00	0.00	1.43	0.95	0.95	0.48	285.35	5085.31
10+45	645	0.9418	1.44	0.00	0.00	1.44	0.95	0.95	0.49	285.35	5231.97
10+50	650	0.9519	1.46	0.00	0.00	1.46	0.95	0.95	0.51	285.35	5384.62
10+55	655	0.962	1.47	0.00	0.00	1.47	0.95	0.95	0.52	285.35	5540.28
11+ 0	660	0.9721	1.48	0.00	0.00	1.48	0.95	0.95	0.53	285.35	5698.93
11+ 5	665	0.9824	1.49	0.00	0.00	1.49	0.95	0.95	0.54	285.35	5860.59
11+10	670	0.9927	1.5	0.00	0.00	1.50	0.95	0.95	0.55	285.35	6025.24
11+15	675	1.0032	1.51	0.00	0.00	1.51	0.95	0.95	0.56	285.35	6192.90
11+20	680	1.0137	1.53	0.00	0.00	1.53	0.95	0.95	0.58	285.35	6366.55
11+25	685	1.0243	1.54	0.00	0.00	1.54	0.95	0.95	0.59	285.35	6543.21
11+30	690	1.035	1.55	0.00	0.00	1.55	0.95	0.95	0.60	285.35	6722.86
11+35	695	1.0458	1.57	0.00	0.00	1.57	0.95	0.95	0.62	285.35	6908.52
11+40	700	1.0567	1.58	0.00	0.00	1.58	0.95	0.95	0.63	285.35	7097.17
11+45	705	1.0677	1.59	0.00	0.00	1.59	0.95	0.95	0.64	285.35	7288.83
11+50	710	1.0788	1.61	0.00	0.00	1.61	0.95	0.95	0.66	285.35	7486.48
11+55	715	1.0899	1.62	0.00	0.00	1.62	0.95	0.95	0.67	285.35	7687.14
12+ 0	720	1.1013	1.64	0.00	0.00	1.64	0.95	0.95	0.69	285.35	7893.79
12+ 5	725	1.1121	1.57	0.00	0.00	1.57	0.95	0.95	0.62	285.35	8079.45
12+10	730	1.1211	1.31	0.00	0.00	1.31	0.95	0.95	0.36	285.35	8187.10
12+15	735	1.1296	1.23	0.00	0.00	1.23	0.95	0.95	0.28	285.35	8270.76
12+20	740	1.1379	1.22	0.00	0.00	1.22	0.95	0.95	0.27	285.35	8351.41
12+25	745	1.1464	1.22	0.00	0.00	1.22	0.95	0.95	0.27	285.35	8432.06
12+30	750	1.1548	1.23	0.00	0.00	1.23	0.95	0.95	0.28	285.35	8515.72
12+35	755	1.1634	1.24	0.00	0.00	1.24	0.95	0.95	0.29	285.35	8602.37
12+40	760	1.1721	1.26	0.00	0.00	1.26	0.95	0.95	0.31	285.35	8695.03
12+45	765	1.1809	1.28	0.00	0.00	1.28	0.95	0.95	0.33	285.35	8793.68
12+50	770	1.1898	1.3	0.00	0.00	1.30	0.95	0.95	0.35	285.35	8898.34
12+55	775	1.1989	1.32	0.00	0.00	1.32	0.95	0.95	0.37	285.35	9008.99
13+ 0	780	1.2082	1.34	0.00	0.00	1.34	0.95	0.95	0.39	285.35	9125.65
13+ 5	785	1.2176	1.36	0.00	0.00	1.36	0.95	0.95	0.41	285.35	9248.30
13+10	790	1.2272	1.39	0.00	0.00	1.39	0.95	0.95	0.44	285.35	9379.96
13+15	795	1.2369	1.41	0.00	0.00	1.41	0.95	0.95	0.46	285.35	9517.61
13+20	800	1.2468	1.44	0.00	0.00	1.44	0.95	0.95	0.49	285.35	9664.27
13+25	805	1.257	1.47	0.00	0.00	1.47	0.95	0.95	0.52	285.35	9819.92
13+30	810	1.2673	1.5	0.00	0.00	1.50	0.95	0.95	0.55	285.35	9984.58
13+35	815	1.2778	1.53	0.00	0.00	1.53	0.95	0.95	0.58	285.35	10158.23
13+40	820	1.2886	1.57	0.00	0.00	1.57	0.95	0.95	0.62	285.35	10343.89
13+45	825	1.2996	1.6	0.00	0.00	1.60	0.95	0.95	0.65	285.35	10538.54
13+50	830	1.3109	1.64	0.00	0.00	1.64	0.95	0.95	0.69	285.35	10745.20
13+55	835	1.3224	1.67	0.00	0.00	1.67	0.95	0.95	0.72	285.35	10960.85
14+ 0	840	1.3342	1.72	0.00	0.00	1.72	0.95	0.95	0.77	285.35	11191.51
14+ 5	845	1.3463	1.76	0.00	0.00	1.76	0.95	0.95	0.81	285.35	11434.16
14+10	850	1.3588	1.81	0.00	0.00	1.81	0.95	0.95	0.86	285.35	11691.82
14+15	855	1.3716	1.86	0.00	0.00	1.86	0.95	0.95	0.91	285.35	11964.47
14+20	860	1.3848	1.91	0.00	0.00	1.91	0.95	0.95	0.96	285.35	12252.13
14+25	865	1.3983	1.97	0.00	0.00	1.97	0.95	0.95	1.02	285.35	12557.78
14+30	870	1.4123	2.03	0.00	0.00	2.03	0.95	0.95	1.08	285.35	12881.44
14+35	875	1.4268	2.1	0.00	0.00	2.10	0.95	0.95	1.15	285.35	13226.09
14+40	880	1.4418	2.18	0.00	0.00	2.18	0.95	0.95	1.23	285.35	13594.74
14+45	885	1.4573	2.25	0.00	0.00	2.25	0.95	0.95	1.30	285.35	13984.40
14+50	890	1.4734	2.35	0.00	0.00	2.35	0.95	0.95	1.40	285.35	14404.05
14+55	895	1.4903	2.44	0.00	0.00	2.44	0.95	0.95	1.49	285.35	14850.71
15+ 0	900	1.5079	2.56	0.00	0.00	2.56	0.95	0.95	1.61	285.35	15333.36
15+ 5	905	1.5263	2.67	0.00	0.00	2.67	0.95	0.95	1.72	285.35	15849.02
15+10	910	1.5458	2.83	0.00	0.00	2.83	0.95	0.95	1.88	285.35	16412.67
15+15	915	1.5663	2.98	0.00	0.00	2.98	0.95	0.95	2.03	285.35	17021.33
15+20	920	1.5881	3.18	0.00	0.00	3.18	0.95	0.95	2.23	285.35	17689.98
15+25	925	1.6119	3.45	0.00	0.00	3.45	0.95	0.95	2.50	285.35	18439.64
15+30	930	1.6391	3.95	0.00	0.79	4.74	0.95	0.95	3.79	285.35	19576.60
15+35	935	1.6689	4.34	0.00	0.89	5.23	0.95	0.95	4.28	285.35	20860.56
15+40	940	1.7021	4.82	0.00	0.99	5.81	0.95	0.95	4.86	285.35	22318.52
15+45	945	1.739	5.36	0.00	1.12	6.48	0.95	0.95	5.53	285.35	23977.48
15+50	950	1.7819	6.22	0.00	1.29	7.51	0.95	0.95	6.56	285.35	25945.45
15+55	955	1.8332	7.45	0.00	1.54	8.99	0.95	0.95	8.04	285.35	28357.41
16+ 0	960	1.9023	10.03	0.00	2.01	12.04	0.95	0.95	11.09	285.35	31684.37
16+ 5	965	2.0253	17.87	5.63	3.26	26.76	0.95	0.95	25.81	285.35	39427.89
16+10	970	2.2278	29.4	9.07	5.73	44.20	0.95	0.95	43.25	285.35	52403.41
16+15	975	2.3349	15.55	4.32	4.93	24.80	0.95	0.95	23.85	285.35	59558.92
16+20	980	2.3943	8.62	2.36	2.69	13.67	0.95	0.95	12.72	285.35	63375.44
16+25	985	2.4364	6.11	1.64	1.73	9.48	0.95	0.95	8.53	285.35	65934.96
16+30	990	2.4691	4.75	1.23	1.30	7.28	0.95	0.95	6.33	285.35	67834.48
16+35	995	2.4961	3.91	0.97	1.00	5.88	0.95	0.95	4.93	285.35	69314.00
16+40	1000	2.5189	3.32	0.82	0.83	4.97	0.95	0.95	4.02	285.35	70520.52
16+45	1005	2.5392	2.94	0.64	0.71	4.29	0.95	0.95	3.34	285.35	71521.96
16+50	1010	2.5562	2.48	0.58	0.62	3.68	0.95	0.95	2.73	285.35	72340.40
16+55	1015	2.5719	2.27	0.54	0.54	3.35	0.95	0.95	2.40	285.35	73059.83
17+ 0	1020	2.5863	2.1	0.51	0.48	3.09	0.95	0.95	2.14	285.35	73701.27
17+ 5	1025	2.5999	1.97	0.50	0.42	2.89	0.95	0.95	1.94	285.35	74282.71
17+10	1030	2.6126	1.85	0.49	0.37	2.71	0.95	0.95	1.76	285.35	74810.15
17+15	1035	2.6247	1.75	0.49	0.34	2.58	0.95	0.95	1.63	285.35	75298.59
17+20	1040	2.6362	1.67	0.50	0.31	2.48	0.95	0.95	1.53	285.35	75757.02
17+25	1045	2.6472	1.59	0.51	0.29	2.39	0.95	0.95	1.44	285.35	76188.46
17+30	1050	2.6577	1.53	0.53	0.27	2.33	0.95	0.95	1.38	285.35	76601.90
17+35	1055	2.6678	1.47	0.56	0.26	2.29	0.95	0.95	1.34	285.35	77003.34
17+40	1060	2.6775	1.41	0.60	0.24	2.25	0.95	0.95	1.30	285.35	77392.78
17+45	1065	2.6869	1.36	0.63	0.23	2.22	0.95	0.95	1.27	285.35	77773.21
17+50	1070	2.6959	1.32	0.68	0.22	2.22	0.95	0.95	1.27	285.35	78153.65
17+55	1075	2.7047	1.27	0.72	0.21	2.20	0.95	0.95	1.25	285.35	78528.09
18+ 0	1080	2.7132	1.23	0.77	0.20	2.20	0.95	0.95	1.25	285.35	78902.53
18+ 5	1085	2.722	1.28	0.76	0.20	2.24	0.95	0.95	1.29	285.35	79288.97

Basin 1

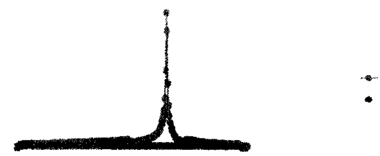
Time (n+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 1 Q (cfs)	Bypass from Basin 3 (cfs)	Bypass from Basin 7 (cfs)	Q_{in} = Basin 1 Q+BypassBasin7+BypassBasin3	Max Infiltration (cfs)	Q_{out} infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Storage Volume Required (cf)
18+10	1090	2.7326	1.53	0.55	0.24	2.32	0.95	0 95	1.37	285.35	79699 41
18+15	1095	2 7435	1.59	0.44	0.27	2.30	0.95	0.95	1.35	285 35	80103.84
18+20	1100	2 7545	1.59	0.40	0.27	2 26	0.95	0 95	1 31	285.35	80496 28
18+25	1105	2 7653	1.57	0.38	0.27	2.22	0.95	0 95	1.27	285.35	80876.72
18+30	1110	2 776	1.55	0.36	0 27	2 18	0 95	0.95	1.23	285.35	81245.16
18+35	1115	2 7865	1.53	0.36	0.26	2 15	0.95	0.95	1.20	285.35	81604 60
18+40	1120	2 7969	1.51	0.34	0.26	2.11	0.95	0.95	1.16	285.35	81952 03
18+45	1125	2.8072	1.49	0.33	0.25	2 07	0 95	0.95	1 12	285.35	82287.47
18+50	1130	2.8173	1.46	0.31	0.25	2.02	0.95	0.95	1.07	285.35	82607.91
18+55	1135	2.8272	1.44	0.31	0 24	1 99	0.95	0 95	1 04	285.35	82919.35
19+ 0	1140	2.837	1 42	0.30	0 24	1.96	0 95	0.95	1.01	285.35	83221.79
19+ 5	1145	2.8466	1.4	0.29	0.23	1.92	0.95	0.95	0.97	285.35	83512 22
19+10	1150	2 8561	1.38	0 29	0.23	1 90	0.95	0.95	0.95	285.35	83796.66
19+15	1155	2.8655	1.36	0.27	0.22	1.85	0.95	0.95	0 90	285 35	84066 10
19+20	1160	2.8748	1.35	0.27	0.22	1.84	0.95	0.95	0.89	285.35	84332.54
19+25	1165	2.8839	1 33	0.26	0 22	1 81	0.95	0 95	0 86	285.35	84589 98
19+30	1170	2.893	1 31	0.26	0.21	1.78	0 95	0.95	0.83	285.35	84838 42
19+35	1175	2 9019	1 3	0.25	0.21	1.76	0.95	0 95	0.81	285.35	85080.85
19+40	1180	2.9107	1 28	0.25	0.20	1.73	0 95	0.95	0.78	285.35	85314.29
19+45	1185	2.9194	1.27	0.24	0.20	1.71	0.95	0 95	0.76	285.35	85541 73
19+50	1190	2.928	1.25	0 24	0 20	1 69	0 95	0.95	0.74	285.35	85763.17
19+55	1195	2.9366	1 24	0.22	0 19	1 65	0 95	0 95	0 70	285.35	85972 61
20+ 0	1200	2.945	1.22	0.22	0 19	1.63	0 95	0 95	0.68	285.35	86176.04
20+ 5	1205	2.9534	1.21	0.22	0 19	1 62	0.95	0.95	0.67	285.35	86376.48
20+10	1210	2 9616	1.2	0 21	0.18	1 59	0 95	0.95	0 64	285.35	86567 92
20+15	1215	2 9698	1.19	0.21	0.18	1.58	0.95	0 95	0.63	285.35	86756.36
20+20	1220	2.9779	1 18	0.21	0 18	1.57	0.95	0 95	0 62	285.35	86941.80
20+25	1225	2 9859	1.16	0.20	0.17	1 53	0 95	0 95	0.58	285.35	87115 23
20+30	1230	2.9938	1.15	0 20	0.17	1.52	0.95	0.95	0.57	285.35	87285.67
20+35	1235	3.0017	1 14	0.19	0.17	1 50	0.95	0 95	0.55	285.35	87450.11
20+40	1240	3.0095	1.13	0 19	0.17	1 49	0.95	0.95	0.54	285 35	87611 55
20+45	1245	3.0172	1.12	0 19	0.16	1 47	0.95	0.95	0.52	285.35	87766 99
20+50	1250	3.0249	1.11	0.19	0.16	1 46	0 95	0 95	0 51	285.35	87919.42
20+55	1255	3.0325	1 1	0.17	0 16	1 43	0 95	0.95	0.48	285.35	88062.86
21+ 0	1260	3 04	1 09	0 17	0 16	1 42	0.95	0 95	0.47	285 35	88203.30
21+ 5	1265	3.0474	1.08	0 17	0.15	1 40	0 95	0.95	0.45	285.35	88337 74
21+10	1270	3.0548	1.07	0 16	0.15	1 38	0.95	0.95	0 43	285.35	88466 18
21+15	1275	3.0622	1.07	0 16	0.15	1 38	0.95	0.95	0 43	285.35	88594 62
21+20	1280	3.0695	1.06	0.16	0 15	1.37	0 95	0 95	0 42	285 35	88720.05
21+25	1285	3.0767	1.05	0.16	0.15	1.36	0 95	0.95	0.41	285.35	88842.49
21+30	1290	3.0839	1.04	0.15	0 14	1 33	0.95	0.95	0.38	285.35	88955.93
21+35	1295	3.091	1 03	0 15	0.14	1 32	0.95	0 95	0.37	285 35	89066 37
21+40	1300	3.098	1.03	0.15	0 14	1 32	0.95	0 95	0.37	285.35	89176 81
21+45	1305	3.105	1 02	0.15	0 14	1.31	0.95	0.95	0.36	285.35	89284.24
21+50	1310	3 112	1 01	0 14	0.14	1.29	0.95	0.95	0.34	285 35	89385 68
21+55	1315	3.1189	1	0 14	0 14	1 28	0.95	0.95	0.33	285.35	89484 12
22+ 0	1320	3 1258	1	0.14	0 13	1 27	0.95	0 95	0.32	285.35	89579 56
22+ 5	1325	3 1326	0 99	0.14	0.13	1 26	0.95	0.95	0 31	285.35	89672.00
22+10	1330	3.1393	0.98	0.14	0.13	1.25	0.95	0 95	0.30	285 35	89761.43
22+15	1335	3 1461	0.98	0.12	0.13	1.23	0 95	0.95	0.28	285.35	89844.87
22+20	1340	3 1527	0.97	0.12	0.13	1 22	0.95	0 95	0 27	285.35	89925.31
22+25	1345	3 1594	0 96	0 12	0.13	1.21	0.95	0.95	0.26	285.35	90002.75
22+30	1350	3 1659	0.96	0.12	0 12	1.20	0 95	0 95	0 25	285 35	90077 19
22+35	1355	3.1725	0.95	0.12	0 12	1 19	0 95	0.95	0.24	285 35	90148 63
22+40	1360	3 179	0.94	0 11	0.12	1 17	0 95	0.95	0 22	285.35	90214.06
22+45	1365	3 1854	0 94	0.11	0 12	1.17	0.95	0 95	0.22	285.35	90279.50
22+50	1370	3 1919	0 93	0 11	0 12	1 16	0.95	0.95	0.21	285.35	90341.94
22+55	1375	3.1983	0 93	0.11	0 12	1 16	0 95	0.95	0.21	285.35	90404.38
23+ 0	1380	3 2046	0.92	0.11	0 11	1.14	0.95	0 95	0 19	285.35	90460.82
23+ 5	1385	3.2109	0 92	0.10	0 11	1.13	0 95	0.95	0.18	285.35	90514.25
23+10	1390	3 2172	0.91	0.10	0 11	1.12	0 95	0.95	0.17	285 35	90564.69
23+15	1395	3.2234	0 9	0.10	0.11	1 11	0 95	0.95	0 16	285.35	90612 13
23+20	1400	3.2296	0.9	0 10	0 11	1 11	0.95	0 95	0.16	285.35	90659 57
23+25	1405	3.2358	0 89	0 10	0 11	1.10	0.95	0.95	0.15	285.35	90704.01
23+30	1410	3.2419	0.89	0.10	0 11	1.10	0 95	0 95	0 15	285.35	90748 44
23+35	1415	3.248	0 88	0 09	0 11	1.08	0.95	0.95	0 13	285.35	90786.88
23+40	1420	3.254	0 88	0 09	0 10	1.07	0.95	0.95	0 12	285.35	90822.32
23+45	1425	3.2601	0.87	0.09	0 10	1 06	0.95	0.95	0.11	285 35	90854 76
23+50	1430	3.2661	0.87	0 09	0.10	1 06	0.95	0.95	0.11	285.35	90887.20
23+55	1435	3 272	0.87	0.09	0 10	1.06	0.95	0 95	0 11	285 35	90919.64
24+ 0	1440	3.2779	0.86	0.09	0 10	1.05	0 95	0 95	0 10	285.35	90949.07
24+ 5	1445	3.2829	0.72	0 03	0.08	0 83	0 95	0.83	0.00	248.78	90949 07
24+10	1450	3.2847	0 26	0.00	0 01	0.27	0.95	0.27	0 00	81.31	90949 07
24+15	1455	3 2854	0.1	0.00	0 00	0 10	0.95	0 10	0.00	30 00	90949 07
24+20	1460	3.2857	0 05	0.00	0 00	0 05	0 95	0.05	0.00	15 00	90949.07
24+25	1465	3.2859	0.03	0.00	0 00	0.03	0.95	0.03	0 00	9.00	90949.07
24+30	1470	3.286	0 02	0.00	0.00	0.02	0.95	0.02	0 00	6.00	90949 07
24+35	1475	3 2861	0.01	0 00	0.00	0.01	0.95	0.01	0.00	3.00	90949.07
24+40	1480	3 2861	0	0 00	0 00	0.00	0 95	0 00	0.00	0 00	90949 07
24+45	1485	0	0	0.00	0.00	0.00	0 95	0 00	0 00	0 00	90949.07
24+50	1490	0	0	0 00	0.00	0 00	0 95	0 00	0 00	0 00	90949.07
24+55	1495	0	0	0 00	0.00	0.00	0 95	0.00	0 00	0.00	90949.07
24+60	1500	0	0	0.00	0.00	0.00	0.95	0.00	0.00	0.00	90949.07

Storage Volume Required is less than storage volume provided

1.87 ac-ft (Volume Infiltrated)	**2.09** ac-ft (Volume Stored)

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 1 Q (cfs)	Bypass from Basin 3 (cfs)	Bypass from Basin 7 (cfs)	Q_{in}= Basin 1 Q+BypassBasin7+BypassBasin3	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Storage Volume Required (cf)
26+00	1560	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	87529.07
27+00	1620	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	84109.07
28+00	1680	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	80689.07
29+00	1740	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	77269.07
30+00	1800	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	73849.07
31+00	1860	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	70429.07
32+00	1920	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	67009.07
33+00	1980	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	63589.07
34+00	2040	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	60169.07
35+00	2100	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	56749.07
36+00	2160	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	53329.07
37+00	2220	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	49909.07
38+00	2280	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	46489.07
39+00	2340	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	43069.07
40+00	2400	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	39649.07
41+00	2460	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	36229.07
42+00	2520	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	32809.07
43+00	2580	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	29389.07
44+00	2640	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	25969.07
45+00	2700	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	22549.07
46+00	2760	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	19129.07
47+00	2820	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	15709.07
48+00	2880	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	12289.07
49+00	2940	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	8869.07
50+00	3000	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	5449.07
51+00	3060	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	2029.07
52+00	3120	0	0	0.00	0.00	0.00	0.95	0.95	-0.95	3420.00	0.00

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
0	0	0	0	0	0	0.00	0	0	0.00
0+5	5	0.0001	0.01	0.1	0.01	0.00	3	0.00	0.00
0+10	10	0.0005	0.06	0.1	0.06	0.00	18	0.00	0.00
0+15	15	0.001	0.07	0.1	0.07	0.00	21	0.00	0.00
0+20	20	0.0015	0.08	0.1	0.08	0.00	24	0.00	0.00
0+25	25	0.002	0.08	0.1	0.08	0.00	24	0.00	0.00
0+30	30	0.0026	0.08	0.1	0.08	0.00	24	0.00	0.00
0+35	35	0.0031	0.08	0.1	0.08	0.00	24	0.00	0.00
0+40	40	0.0037	0.08	0.1	0.08	0.00	24	0.00	0.00
0+45	45	0.0043	0.08	0.1	0.08	0.00	24	0.00	0.00
0+50	50	0.0048	0.08	0.1	0.08	0.00	24	0.00	0.00
0+55	55	0.0054	0.08	0.1	0.08	0.00	24	0.00	0.00
1+0	60	0.006	0.08	0.1	0.08	0.00	24	0.00	0.00
1+5	65	0.0065	0.08	0.1	0.08	0.00	24	0.00	0.00
1+10	70	0.0071	0.08	0.1	0.08	0.00	24	0.00	0.00
1+15	75	0.0077	0.08	0.1	0.08	0.00	24	0.00	0.00
1+20	80	0.0083	0.08	0.1	0.08	0.00	24	0.00	0.00
1+25	85	0.0089	0.08	0.1	0.08	0.00	24	0.00	0.00
1+30	90	0.0094	0.08	0.1	0.08	0.00	24	0.00	0.00
1+35	95	0.01	0.08	0.1	0.08	0.00	24	0.00	0.00
1+40	100	0.0106	0.08	0.1	0.08	0.00	24	0.00	0.00
1+45	105	0.0112	0.09	0.1	0.09	0.00	27	0.00	0.00
1+50	110	0.0118	0.09	0.1	0.09	0.00	27	0.00	0.00
1+55	115	0.0124	0.09	0.1	0.09	0.00	27	0.00	0.00
2+0	120	0.013	0.09	0.1	0.09	0.00	27	0.00	0.00
2+5	125	0.0135	0.09	0.1	0.09	0.00	27	0.00	0.00
2+10	130	0.0141	0.09	0.1	0.09	0.00	27	0.00	0.00
2+15	135	0.0147	0.09	0.1	0.09	0.00	27	0.00	0.00
2+20	140	0.0153	0.09	0.1	0.09	0.00	27	0.00	0.00
2+25	145	0.0159	0.09	0.1	0.09	0.00	27	0.00	0.00
2+30	150	0.0165	0.09	0.1	0.09	0.00	27	0.00	0.00
2+35	155	0.0171	0.09	0.1	0.09	0.00	27	0.00	0.00
2+40	160	0.0177	0.09	0.1	0.09	0.00	27	0.00	0.00
2+45	165	0.0184	0.09	0.1	0.09	0.00	27	0.00	0.00
2+50	170	0.019	0.09	0.1	0.09	0.00	27	0.00	0.00
2+55	175	0.0196	0.09	0.1	0.09	0.00	27	0.00	0.00
3+0	180	0.0202	0.09	0.1	0.09	0.00	27	0.00	0.00
3+5	185	0.0208	0.09	0.1	0.09	0.00	27	0.00	0.00
3+10	190	0.0214	0.09	0.1	0.09	0.00	27	0.00	0.00
3+15	195	0.022	0.09	0.1	0.09	0.00	27	0.00	0.00
3+20	200	0.0227	0.09	0.1	0.09	0.00	27	0.00	0.00
3+25	205	0.0233	0.09	0.1	0.09	0.00	27	0.00	0.00
3+30	210	0.0239	0.09	0.1	0.09	0.00	27	0.00	0.00
3+35	215	0.0245	0.09	0.1	0.09	0.00	27	0.00	0.00
3+40	220	0.0252	0.09	0.1	0.09	0.00	27	0.00	0.00
3+45	225	0.0258	0.09	0.1	0.09	0.00	27	0.00	0.00
3+50	230	0.0264	0.09	0.1	0.09	0.00	27	0.00	0.00
3+55	235	0.0271	0.09	0.1	0.09	0.00	27	0.00	0.00
4+0	240	0.0277	0.09	0.1	0.09	0.00	27	0.00	0.00
4+5	245	0.0283	0.09	0.1	0.09	0.00	27	0.00	0.00
4+10	250	0.029	0.09	0.1	0.09	0.00	27	0.00	0.00
4+15	255	0.0296	0.09	0.1	0.09	0.00	27	0.00	0.00
4+20	260	0.0303	0.09	0.1	0.09	0.00	27	0.00	0.00
4+25	265	0.0309	0.09	0.1	0.09	0.00	27	0.00	0.00
4+30	270	0.0316	0.09	0.1	0.09	0.00	27	0.00	0.00
4+35	275	0.0322	0.09	0.1	0.09	0.00	27	0.00	0.00
4+40	280	0.0329	0.1	0.1	0.1	0.00	30	0.00	0.00
4+45	285	0.0335	0.1	0.1	0.1	0.00	30	0.00	0.00
4+50	290	0.0342	0.1	0.1	0.1	0.00	30	0.00	0.00
4+55	295	0.0348	0.1	0.1	0.1	0.00	30	0.00	0.00
5+0	300	0.0355	0.1	0.1	0.1	0.00	30	0.00	0.00
5+5	305	0.0362	0.1	0.1	0.1	0.00	30	0.00	0.00
5+10	310	0.0368	0.1	0.1	0.1	0.00	30	0.00	0.00
5+15	315	0.0375	0.1	0.1	0.1	0.00	30	0.00	0.00
5+20	320	0.0382	0.1	0.1	0.1	0.00	30	0.00	0.00
5+25	325	0.0389	0.1	0.1	0.1	0.00	30	0.00	0.00
5+30	330	0.0395	0.1	0.1	0.1	0.00	30	0.00	0.00
5+35	335	0.0402	0.1	0.1	0.1	0.00	30	0.00	0.00
5+40	340	0.0409	0.1	0.1	0.1	0.00	30	0.00	0.00
5+45	345	0.0416	0.1	0.1	0.1	0.00	30	0.00	0.00
5+50	350	0.0423	0.1	0.1	0.1	0.00	30	0.00	0.00
5+55	355	0.043	0.1	0.1	0.1	0.00	30	0.00	0.00
6+0	360	0.0437	0.1	0.1	0.1	0.00	30	0.00	0.00
6+5	365	0.0444	0.1	0.1	0.1	0.00	30	0.00	0.00
6+10	370	0.0451	0.1	0.1	0.1	0.00	30	0.00	0.00
6+15	375	0.0458	0.1	0.1	0.1	0.00	30	0.00	0.00
6+20	380	0.0465	0.1	0.1	0.1	0.00	30	0.00	0.00
6+25	385	0.0472	0.1	0.1	0.1	0.00	30	0.00	0.00
6+30	390	0.0479	0.1	0.1	0.1	0.00	30	0.00	0.00
6+35	395	0.0486	0.1	0.1	0.1	0.00	30	0.00	0.00
6+40	400	0.0493	0.1	0.1	0.1	0.00	30	0.00	0.00
6+45	405	0.0501	0.1	0.1	0.1	0.00	30	0.00	0.00
6+50	410	0.0508	0.11	0.1	0.1	0.01	30	3.00	0.00
6+55	415	0.0515	0.11	0.1	0.1	0.01	30	6.00	0.00
7+0	420	0.0522	0.11	0.1	0.1	0.01	30	9.00	0.00
7+5	425	0.053	0.11	0.1	0.1	0.01	30	12.00	0.00
7+10	430	0.0537	0.11	0.1	0.1	0.01	30	15.00	0.00
7+15	435	0.0545	0.11	0.1	0.1	0.01	30	18.00	0.00
7+20	440	0.0552	0.11	0.1	0.1	0.01	30	21.00	0.00
7+25	445	0.0559	0.11	0.1	0.1	0.01	30	24.00	0.00
7+30	450	0.0567	0.11	0.1	0.1	0.01	30	27.00	0.00
7+35	455	0.0575	0.11	0.1	0.1	0.01	30	30.00	0.00
7+40	460	0.0582	0.11	0.1	0.1	0.01	30	33.00	0.00
7+45	465	0.059	0.11	0.1	0.1	0.01	30	36.00	0.00
7+50	470	0.0597	0.11	0.1	0.1	0.01	30	39.00	0.00



Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
7+55	475	0.0605	0.11	0.1	0.1	0.01	30	42.00	0.00
8+ 0	480	0.0613	0.11	0.1	0.1	0.01	30	45.00	0.00
8+ 5	485	0.0621	0.11	0.1	0.1	0.01	30	48.00	0.00
8+10	490	0.0628	0.11	0.1	0.1	0.01	30	51.00	0.00
8+15	495	0.0636	0.11	0.1	0.1	0.01	30	54.00	0.00
8+20	500	0.0644	0.11	0.1	0.1	0.01	30	57.00	0.00
8+25	505	0.0652	0.12	0.1	0.1	0.02	30	63.00	0.00
8+30	510	0.066	0.12	0.1	0.1	0.02	30	69.00	0.00
8+35	515	0.0668	0.12	0.1	0.1	0.02	30	75.00	0.00
8+40	520	0.0676	0.12	0.1	0.1	0.02	30	81.00	0.00
8+45	525	0.0684	0.12	0.1	0.1	0.02	30	87.00	0.00
8+50	530	0.0692	0.12	0.1	0.1	0.02	30	93.00	0.00
8+55	535	0.0701	0.12	0.1	0.1	0.02	30	99.00	0.00
9+ 0	540	0.0709	0.12	0.1	0.1	0.02	30	105.00	0.00
9+ 5	545	0.0717	0.12	0.1	0.1	0.02	30	111.00	0.00
9+10	550	0.0726	0.12	0.1	0.1	0.02	30	117.00	0.00
9+15	555	0.0734	0.12	0.1	0.1	0.02	30	123.00	0.00
9+20	560	0.0742	0.12	0.1	0.1	0.02	30	129.00	0.00
9+25	565	0.0751	0.12	0.1	0.1	0.02	30	135.00	0.00
9+30	570	0.0759	0.12	0.1	0.1	0.02	30	141.00	0.00
9+35	575	0.0768	0.12	0.1	0.1	0.02	30	147.00	0.00
9+40	580	0.0777	0.13	0.1	0.1	0.03	30	156.00	0.00
9+45	585	0.0785	0.13	0.1	0.1	0.03	30	165.00	0.00
9+50	590	0.0794	0.13	0.1	0.1	0.03	30	174.00	0.00
9+55	595	0.0803	0.13	0.1	0.1	0.03	30	183.00	0.00
10+ 0	600	0.0812	0.13	0.1	0.1	0.03	30	192.00	0.00
10+ 5	605	0.0821	0.13	0.1	0.1	0.03	30	201.00	0.00
10+10	610	0.083	0.13	0.1	0.1	0.03	30	210.00	0.00
10+15	615	0.0839	0.13	0.1	0.1	0.03	30	219.00	0.00
10+20	620	0.0848	0.13	0.1	0.1	0.03	30	228.00	0.00
10+25	625	0.0857	0.13	0.1	0.1	0.03	30	237.00	0.00
10+30	630	0.0866	0.13	0.1	0.1	0.03	30	246.00	0.00
10+35	635	0.0876	0.14	0.1	0.1	0.04	30	258.00	0.00
10+40	640	0.0885	0.14	0.1	0.1	0.04	30	270.00	0.00
10+45	645	0.0894	0.14	0.1	0.1	0.04	30	282.00	0.00
10+50	650	0.0904	0.14	0.1	0.1	0.04	30	294.00	0.00
10+55	655	0.0914	0.14	0.1	0.1	0.04	30	306.00	0.00
11+ 0	660	0.0923	0.14	0.1	0.1	0.04	30	318.00	0.00
11+ 5	665	0.0933	0.14	0.1	0.1	0.04	30	330.00	0.00
11+10	670	0.0943	0.14	0.1	0.1	0.04	30	342.00	0.00
11+15	675	0.0953	0.14	0.1	0.1	0.04	30	354.00	0.00
11+20	680	0.0963	0.15	0.1	0.1	0.05	30	369.00	0.00
11+25	685	0.0973	0.15	0.1	0.1	0.05	30	384.00	0.00
11+30	690	0.0983	0.15	0.1	0.1	0.05	30	399.00	0.00
11+35	695	0.0993	0.15	0.1	0.1	0.05	30	414.00	0.00
11+40	700	0.1004	0.15	0.1	0.1	0.05	30	429.00	0.00
11+45	705	0.1014	0.15	0.1	0.1	0.05	30	444.00	0.00
11+50	710	0.1025	0.15	0.1	0.1	0.05	30	459.00	0.00
11+55	715	0.1035	0.15	0.1	0.1	0.05	30	474.00	0.00
12+ 0	720	0.1046	0.16	0.1	0.1	0.06	30	492.00	0.00
12+ 5	725	0.1056	0.15	0.1	0.1	0.05	30	507.00	0.00
12+10	730	0.1065	0.13	0.1	0.1	0.03	30	516.00	0.00
12+15	735	0.1073	0.12	0.1	0.1	0.02	30	522.00	0.00
12+20	740	0.1081	0.12	0.1	0.1	0.02	30	528.00	0.00
12+25	745	0.1089	0.12	0.1	0.1	0.02	30	534.00	0.00
12+30	750	0.1097	0.12	0.1	0.1	0.02	30	540.00	0.00
12+35	755	0.1105	0.12	0.1	0.1	0.02	30	546.00	0.00
12+40	760	0.1113	0.12	0.1	0.1	0.02	30	552.00	0.00
12+45	765	0.1122	0.12	0.1	0.1	0.02	30	558.00	0.00
12+50	770	0.113	0.12	0.1	0.1	0.02	30	564.00	0.00
12+55	775	0.1139	0.13	0.1	0.1	0.03	30	573.00	0.00
13+ 0	780	0.1148	0.13	0.1	0.1	0.03	30	582.00	0.00
13+ 5	785	0.1156	0.13	0.1	0.1	0.03	30	591.00	0.00
13+10	790	0.1166	0.13	0.1	0.1	0.03	30	600.00	0.00
13+15	795	0.1175	0.13	0.1	0.1	0.03	30	609.00	0.00
13+20	800	0.1184	0.14	0.1	0.1	0.04	30	621.00	0.00
13+25	805	0.1194	0.14	0.1	0.1	0.04	30	633.00	0.00
13+30	810	0.1204	0.14	0.1	0.1	0.04	30	645.00	0.00
13+35	815	0.1214	0.15	0.1	0.1	0.05	30	660.00	0.00
13+40	820	0.1224	0.15	0.1	0.1	0.05	30	675.00	0.00
13+45	825	0.1234	0.15	0.1	0.1	0.05	30	690.00	0.00
13+50	830	0.1245	0.16	0.1	0.1	0.06	30	708.00	0.00
13+55	835	0.1256	0.16	0.1	0.1	0.06	30	726.00	0.00
14+ 0	840	0.1267	0.16	0.1	0.1	0.06	30	744.00	0.00
14+ 5	845	0.1279	0.17	0.1	0.1	0.07	30	765.00	0.00
14+10	850	0.1291	0.17	0.1	0.1	0.07	30	786.00	0.00
14+15	855	0.1303	0.18	0.1	0.1	0.08	30	810.00	0.00
14+20	860	0.1315	0.18	0.1	0.1	0.08	30	834.00	0.00
14+25	865	0.1328	0.19	0.1	0.1	0.09	30	861.00	0.00
14+30	870	0.1341	0.19	0.1	0.1	0.09	30	888.00	0.00
14+35	875	0.1355	0.2	0.1	0.1	0.10	30	918.00	0.00
14+40	880	0.1369	0.21	0.1	0.1	0.11	30	951.00	0.00
14+45	885	0.1384	0.21	0.1	0.1	0.11	30	984.00	0.00
14+50	890	0.1399	0.22	0.1	0.1	0.12	30	1020.00	0.00
14+55	895	0.1415	0.23	0.1	0.1	0.13	30	1059.00	0.00
15+ 0	900	0.1432	0.24	0.1	0.1	0.14	30	1101.00	0.00
15+ 5	905	0.1449	0.25	0.1	0.1	0.15	30	1146.00	0.00
15+10	910	0.1468	0.27	0.1	0.1	0.17	30	1197.00	0.00
15+15	915	0.1487	0.28	0.1	0.1	0.18	30	1251.00	0.00
15+20	920	0.1508	0.3	0.1	0.1	0.20	30	1311.00	0.00
15+25	925	0.1531	0.33	0.1	0.1	0.23	30	1380.00	0.00
15+30	930	0.1556	0.37	0.1	0.1	0.27	30	1461.00	0.00
15+35	935	0.1585	0.41	0.1	0.1	0.31	30	1554.00	0.00
15+40	940	0.1616	0.46	0.1	0.1	0.36	30	1662.00	0.00
15+45	945	0.1651	0.51	0.1	0.1	0.41	30	1785.00	0.00

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
15+50	950	0.1692	0.59	0.1	0.1	0.49	30	1932.00	0.00
15+55	955	0.174	0.7	0.1	0.1	0.60	30	2112.00	0.00
16+ 0	960	0.1805	0.95	0.1	0.1	0.85	30	2367.00	0.00
16+ 5	965	0.192	1.67	0.1	0.1	1.57	30	2838.00	0.00
16+10	970	0.2111	2.78	0.1	0.1	2.68	30	3642.00	0.00
16+15	975	0.2216	1.52	0.1	0.1	1.42	30	4068.00	0.00
16+20	980	0.2274	0.84	0.1	0.1	0.74	30	4290.00	0.00
16+25	985	0.2314	0.59	0.1	0.1	0.49	30	4437.00	0.00
16+30	990	0.2346	0.46	0.1	0.1	0.36	30	4545.00	0.00
16+35	995	0.2371	0.37	0.1	0.1	0.27	30	4626.00	0.00
16+40	1000	0.2393	0.32	0.1	0.1	0.22	30	4692.00	0.00
16+45	1005	0.2412	0.27	0.1	0.1	0.17	30	4743.00	0.00
16+50	1010	0.2428	0.24	0.1	0.1	0.14	30	4785.00	0.00
16+55	1015	0.2443	0.22	0.1	0.1	0.12	30	4821.00	0.00
17+ 0	1020	0.2457	0.2	0.1	0.1	0.10	30	4851.00	0.00
17+ 5	1025	0.247	0.19	0.1	0.1	0.09	30	4878.00	0.00
17+10	1030	0.2482	0.18	0.1	0.1	0.08	30	4902.00	0.00
17+15	1035	0.2493	0.17	0.1	0.1	0.07	30	4923.00	0.00
17+20	1040	0.2504	0.16	0.1	0.1	0.06	30	4941.00	0.00
17+25	1045	0.2515	0.15	0.1	0.1	0.05	30	4956.00	0.00
17+30	1050	0.2525	0.15	0.1	0.1	0.05	30	4971.00	0.00
17+35	1055	0.2534	0.14	0.1	0.1	0.04	30	4983.00	0.00
17+40	1060	0.2543	0.13	0.1	0.1	0.03	30	4992.00	0.00
17+45	1065	0.2552	0.13	0.1	0.1	0.03	30	5001.00	0.00
17+50	1070	0.2561	0.13	0.1	0.1	0.03	30	5010.00	0.00
17+55	1075	0.2569	0.12	0.1	0.1	0.02	30	5016.00	0.00
18+ 0	1080	0.2577	0.12	0.1	0.1	0.02	30	5022.00	0.00
18+ 5	1085	0.2586	0.12	0.1	0.1	0.02	30	5028.00	0.00
18+10	1090	0.2596	0.14	0.1	0.1	0.04	30	5040.00	0.00
18+15	1095	0.2606	0.15	0.1	0.1	0.05	30	5055.00	0.00
18+20	1100	0.2616	0.15	0.1	0.1	0.05	30	5070.00	0.00
18+25	1105	0.2627	0.15	0.1	0.1	0.05	30	5085.00	0.00
18+30	1110	0.2637	0.15	0.1	0.1	0.05	30	5100.00	0.00
18+35	1115	0.2647	0.15	0.1	0.1	0.05	30	5115.00	0.00
18+40	1120	0.2657	0.14	0.1	0.1	0.04	30	5127.00	0.00
18+45	1125	0.2667	0.14	0.1	0.1	0.04	30	5139.00	0.00
18+50	1130	0.2676	0.14	0.1	0.1	0.04	30	5151.00	0.00
18+55	1135	0.2686	0.14	0.1	0.1	0.04	30	5163.00	0.00
19+ 0	1140	0.2695	0.14	0.1	0.1	0.04	30	5175.00	0.00
19+ 5	1145	0.2704	0.13	0.1	0.1	0.03	30	5184.00	0.00
19+10	1150	0.2713	0.13	0.1	0.1	0.03	30	5193.00	0.00
19+15	1155	0.2722	0.13	0.1	0.1	0.03	30	5202.00	0.00
19+20	1160	0.2731	0.13	0.1	0.1	0.03	30	5211.00	0.00
19+25	1165	0.2739	0.13	0.1	0.1	0.03	30	5220.00	0.00
19+30	1170	0.2748	0.12	0.1	0.1	0.02	30	5226.00	0.00
19+35	1175	0.2757	0.12	0.1	0.1	0.02	30	5232.00	0.00
19+40	1180	0.2765	0.12	0.1	0.1	0.02	30	5238.00	0.00
19+45	1185	0.2773	0.12	0.1	0.1	0.02	30	5244.00	0.00
19+50	1190	0.2781	0.12	0.1	0.1	0.02	30	5250.00	0.00
19+55	1195	0.279	0.12	0.1	0.1	0.02	30	5256.00	0.00
20+ 0	1200	0.2798	0.12	0.1	0.1	0.02	30	5262.00	0.00
20+ 5	1205	0.2805	0.12	0.1	0.1	0.02	30	5268.00	0.00
20+10	1210	0.2813	0.11	0.1	0.1	0.01	30	5271.00	0.00
20+15	1215	0.2821	0.11	0.1	0.1	0.01	30	5274.00	0.00
20+20	1220	0.2829	0.11	0.1	0.1	0.01	30	5277.00	0.00
20+25	1225	0.2836	0.11	0.1	0.1	0.01	30	5280.00	0.00
20+30	1230	0.2844	0.11	0.1	0.1	0.01	30	5283.00	0.00
20+35	1235	0.2851	0.11	0.1	0.1	0.01	30	5286.00	0.00
20+40	1240	0.2859	0.11	0.1	0.1	0.01	30	5289.00	0.00
20+45	1245	0.2866	0.11	0.1	0.1	0.01	30	5292.00	0.00
20+50	1250	0.2873	0.11	0.1	0.1	0.01	30	5295.00	0.00
20+55	1255	0.2881	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+ 0	1260	0.2888	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+ 5	1265	0.2895	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+10	1270	0.2902	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+15	1275	0.2909	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+20	1280	0.2916	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+25	1285	0.2923	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+30	1290	0.2929	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+35	1295	0.2936	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+40	1300	0.2943	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+45	1305	0.295	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+50	1310	0.2956	0.1	0.1	0.1	0.00	30	5295.00	0.00
21+55	1315	0.2963	0.1	0.1	0.1	0.00	30	5295.00	0.00
22+ 0	1320	0.2969	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+ 5	1325	0.2976	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+10	1330	0.2982	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+15	1335	0.2989	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+20	1340	0.2995	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+25	1345	0.3001	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+30	1350	0.3007	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+35	1355	0.3014	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+40	1360	0.302	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+45	1365	0.3026	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+50	1370	0.3032	0.09	0.1	0.09	0.00	27	5295.00	0.00
22+55	1375	0.3038	0.09	0.1	0.09	0.00	27	5295.00	0.00
23+ 0	1380	0.3044	0.09	0.1	0.09	0.00	27	5295.00	0.00
23+ 5	1385	0.305	0.09	0.1	0.09	0.00	27	5295.00	0.00
23+10	1390	0.3056	0.09	0.1	0.09	0.00	27	5295.00	0.00
23+15	1395	0.3062	0.09	0.1	0.09	0.00	27	5295.00	0.00
23+20	1400	0.3068	0.09	0.1	0.09	0.00	27	5295.00	0.00
23+25	1405	0.3074	0.08	0.1	0.08	0.00	24	5295.00	0.00
23+30	1410	0.308	0.08	0.1	0.08	0.00	24	5295.00	0.00
23+35	1415	0.3085	0.08	0.1	0.08	0.00	24	5295.00	0.00
23+40	1420	0.3091	0.08	0.1	0.08	0.00	24	5295.00	0.00

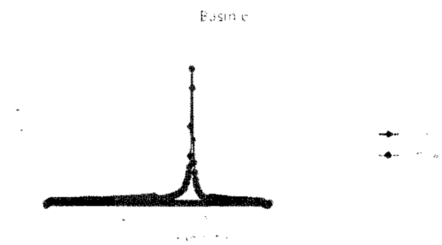
Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
23+45	1425	0.3097	0.08	0.1	0.08	0.00	24	5295.00	0.00
23+50	1430	0.3103	0.08	0.1	0.08	0.00	24	5295.00	0.00
23+55	1435	0.3108	0.08	0.1	0.08	0.00	24	5295.00	0.00
24+0	1440	0.3114	0.08	0.1	0.08	0.00	24	5295.00	0.00
24+5	1445	0.3119	0 07	0.1	0.07	0.00	21	5295.00	0.00
24+10	1450	0.312	0.03	0.1	0.03	0.00	9	5295.00	0.00
24+15	1455	0.3121	0.01	0 1	0.01	0.00	3	5295.00	0.00
24+20	1460	0.3121	0	0.1	0	0.00	0	5295.00	0.00
24+25	1465	0.3122	0	0.1	0	0.00	0	5295 00	0.00
24+30	1470	0.3122	0	0.1	0	0.00	0	5295 00	0.00
24+35	1475	0.3122	0	0.1	0	0.00	0	5295.00	0.00
24+40	1480	0.3122	0	0.1	0	0.00	0	5295.00	0.00

0.19
ac-ft (Volume
Infiltrated)

Basin 5

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Q_{in} (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
25+00	1500	0	0	0.10	0.10	-0.10	120.00	5175	0
26+00	1560	0	0	0.10	0.10	-0.10	360.00	4815	0
27+00	1620	0	0	0.10	0.10	-0.10	360.00	4455	0
28+00	1680	0	0	0.10	0.10	-0.10	360.00	4095	0
29+00	1740	0	0	0.10	0.10	-0.10	360.00	3735	0
30+00	1800	0	0	0.10	0.10	-0.10	360.00	3375	0
31+00	1860	0	0	0.10	0.10	-0.10	360.00	3015	0
32+00	1920	0	0	0.10	0.10	-0.10	360.00	2655	0
33+00	1980	0	0	0.10	0.10	-0.10	360.00	2295	0
34+00	2040	0	0	0.10	0.10	-0.10	360.00	1935	0
35+00	2100	0	0	0.10	0.10	-0.10	360.00	1575	0
36+00	2160	0	0	0.10	0.10	-0.10	360.00	1215	0
37+00	2220	0	0	0.10	0.10	-0.10	360.00	855	0
38+00	2280	0	0	0.10	0.10	-0.10	360.00	495	0
39+00	2340	0	0	0.10	0.10	-0.10	360.00	135	0
40+00	2400	0	0	0.10	0.10	-0.10	360.00	0	0

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 6 Q (cfs)	Bypass from Basin 5 (cfs)	Q_{in}= Basin 6 Q+Basin5 Bypass (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q =Q_{in}-Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
	0	0	0	0.00	0.00	0	0	0.00	0	0	0.00
0+5	5	0.0005	0.07	0.00	0.07	0.27	0.07	0.00	21.00	0.00	0.00
0+10	10	0.0023	0.27	0.00	0.27	0.27	0.27	0.00	79.85	1.15	0.00
0+15	15	0.0046	0.33	0.00	0.33	0.27	0.27	0.06	79.85	20.29	0.00
0+20	20	0.007	0.34	0.00	0.34	0.27	0.27	0.07	79.85	42.44	0.00
0+25	25	0.0094	0.35	0.00	0.35	0.27	0.27	0.08	79.85	67.59	0.00
0+30	30	0.0119	0.36	0.00	0.36	0.27	0.27	0.09	79.85	95.74	0.00
0+35	35	0.0144	0.36	0.00	0.36	0.27	0.27	0.09	79.85	123.88	0.00
0+40	40	0.0169	0.37	0.00	0.37	0.27	0.27	0.10	79.85	155.03	0.00
0+45	45	0.0194	0.37	0.00	0.37	0.27	0.27	0.10	79.85	186.18	0.00
0+50	50	0.0219	0.37	0.00	0.37	0.27	0.27	0.10	79.85	217.32	0.00
0+55	55	0.0245	0.37	0.00	0.37	0.27	0.27	0.10	79.85	248.47	0.00
1+0	60	0.027	0.37	0.00	0.37	0.27	0.27	0.10	79.85	279.62	0.00
1+5	65	0.0296	0.37	0.00	0.37	0.27	0.27	0.10	79.85	310.77	0.00
1+10	70	0.0321	0.37	0.00	0.37	0.27	0.27	0.10	79.85	341.91	0.00
1+15	75	0.0347	0.37	0.00	0.37	0.27	0.27	0.10	79.85	373.06	0.00
1+20	80	0.0373	0.37	0.00	0.37	0.27	0.27	0.10	79.85	404.21	0.00
1+25	85	0.0399	0.37	0.00	0.37	0.27	0.27	0.10	79.85	435.35	0.00
1+30	90	0.0425	0.38	0.00	0.38	0.27	0.27	0.11	79.85	469.50	0.00
1+35	95	0.0451	0.38	0.00	0.38	0.27	0.27	0.11	79.85	503.65	0.00
1+40	100	0.0477	0.38	0.00	0.38	0.27	0.27	0.11	79.85	537.80	0.00
1+45	105	0.0503	0.38	0.00	0.38	0.27	0.27	0.11	79.85	571.94	0.00
1+50	110	0.0529	0.38	0.00	0.38	0.27	0.27	0.11	79.85	606.09	0.00
1+55	115	0.0555	0.38	0.00	0.38	0.27	0.27	0.11	79.85	640.24	0.00
2+0	120	0.0582	0.38	0.00	0.38	0.27	0.27	0.11	79.85	674.38	0.00
2+5	125	0.0608	0.38	0.00	0.38	0.27	0.27	0.11	79.85	708.53	0.00
2+10	130	0.0634	0.38	0.00	0.38	0.27	0.27	0.11	79.85	742.68	0.00
2+15	135	0.0661	0.39	0.00	0.39	0.27	0.27	0.12	79.85	779.83	0.00
2+20	140	0.0688	0.39	0.00	0.39	0.27	0.27	0.12	79.85	816.97	0.00
2+25	145	0.0714	0.39	0.00	0.39	0.27	0.27	0.12	79.85	854.12	0.00
2+30	150	0.0741	0.39	0.00	0.39	0.27	0.27	0.12	79.85	891.27	0.00
2+35	155	0.0768	0.39	0.00	0.39	0.27	0.27	0.12	79.85	928.41	0.00
2+40	160	0.0795	0.39	0.00	0.39	0.27	0.27	0.12	79.85	965.56	0.00
2+45	165	0.0822	0.39	0.00	0.39	0.27	0.27	0.12	79.85	1002.71	0.00
2+50	170	0.0849	0.39	0.00	0.39	0.27	0.27	0.12	79.85	1039.86	0.00
2+55	175	0.0877	0.4	0.00	0.40	0.27	0.27	0.13	79.85	1080.00	0.00
3+0	180	0.0904	0.4	0.00	0.40	0.27	0.27	0.13	79.85	1120.15	0.00
3+5	185	0.0931	0.4	0.00	0.40	0.27	0.27	0.13	79.85	1160.30	0.00
3+10	190	0.0959	0.4	0.00	0.40	0.27	0.27	0.13	79.85	1200.45	0.00
3+15	195	0.0986	0.4	0.00	0.40	0.27	0.27	0.13	79.85	1240.59	0.00
3+20	200	0.1014	0.4	0.00	0.40	0.27	0.27	0.13	79.85	1280.74	0.00
3+25	205	0.1042	0.4	0.00	0.40	0.27	0.27	0.13	79.85	1320.89	0.00
3+30	210	0.107	0.4	0.00	0.40	0.27	0.27	0.13	79.85	1361.03	0.00
3+35	215	0.1097	0.41	0.00	0.41	0.27	0.27	0.14	79.85	1404.18	0.00
3+40	220	0.1125	0.41	0.00	0.41	0.27	0.27	0.14	79.85	1447.33	0.00
3+45	225	0.1154	0.41	0.00	0.41	0.27	0.27	0.14	79.85	1490.48	0.00
3+50	230	0.1182	0.41	0.00	0.41	0.27	0.27	0.14	79.85	1533.62	0.00
3+55	235	0.121	0.41	0.00	0.41	0.27	0.27	0.14	79.85	1576.77	0.00
4+0	240	0.1238	0.41	0.00	0.41	0.27	0.27	0.14	79.85	1619.92	0.00
4+5	245	0.1267	0.41	0.00	0.41	0.27	0.27	0.14	79.85	1663.06	0.00
4+10	250	0.1296	0.42	0.00	0.42	0.27	0.27	0.15	79.85	1709.21	0.00
4+15	255	0.1324	0.42	0.00	0.42	0.27	0.27	0.15	79.85	1755.36	0.00
4+20	260	0.1353	0.42	0.00	0.42	0.27	0.27	0.15	79.85	1801.51	0.00
4+25	265	0.1382	0.42	0.00	0.42	0.27	0.27	0.15	79.85	1847.65	0.00
4+30	270	0.1411	0.42	0.00	0.42	0.27	0.27	0.15	79.85	1893.80	0.00
4+35	275	0.144	0.42	0.00	0.42	0.27	0.27	0.15	79.85	1939.95	0.00
4+40	280	0.1469	0.42	0.00	0.42	0.27	0.27	0.15	79.85	1986.09	0.00
4+45	285	0.1498	0.43	0.00	0.43	0.27	0.27	0.16	79.85	2035.24	0.00
4+50	290	0.1528	0.43	0.00	0.43	0.27	0.27	0.16	79.85	2084.39	0.00
4+55	295	0.1557	0.43	0.00	0.43	0.27	0.27	0.16	79.85	2133.54	0.00
5+0	300	0.1587	0.43	0.00	0.43	0.27	0.27	0.16	79.85	2182.68	0.00
5+5	305	0.1617	0.43	0.00	0.43	0.27	0.27	0.16	79.85	2231.83	0.00
5+10	310	0.1647	0.43	0.00	0.43	0.27	0.27	0.16	79.85	2280.98	0.00
5+15	315	0.1676	0.43	0.00	0.43	0.27	0.27	0.16	79.85	2330.12	0.00
5+20	320	0.1707	0.44	0.00	0.44	0.27	0.27	0.17	79.85	2382.27	0.00
5+25	325	0.1737	0.44	0.00	0.44	0.27	0.27	0.17	79.85	2434.42	0.00
5+30	330	0.1767	0.44	0.00	0.44	0.27	0.27	0.17	79.85	2486.57	0.00
5+35	335	0.1797	0.44	0.00	0.44	0.27	0.27	0.17	79.85	2538.71	0.00
5+40	340	0.1828	0.44	0.00	0.44	0.27	0.27	0.17	79.85	2590.86	0.00
5+45	345	0.1859	0.44	0.00	0.44	0.27	0.27	0.17	79.85	2643.01	0.00
5+50	350	0.1889	0.45	0.00	0.45	0.27	0.27	0.18	79.85	2698.15	0.00
5+55	355	0.192	0.45	0.00	0.45	0.27	0.27	0.18	79.85	2753.30	0.00
6+0	360	0.1951	0.45	0.00	0.45	0.27	0.27	0.18	79.85	2808.45	0.00
6+5	365	0.1982	0.45	0.00	0.45	0.27	0.27	0.18	79.85	2863.60	0.00
6+10	370	0.2014	0.45	0.00	0.45	0.27	0.27	0.18	79.85	2918.74	0.00
6+15	375	0.2045	0.46	0.00	0.46	0.27	0.27	0.19	79.85	2976.89	0.00
6+20	380	0.2077	0.46	0.00	0.46	0.27	0.27	0.19	79.85	3035.04	0.00
6+25	385	0.2108	0.46	0.00	0.46	0.27	0.27	0.19	79.85	3093.18	0.00
6+30	390	0.214	0.46	0.00	0.46	0.27	0.27	0.19	79.85	3151.33	0.00
6+35	395	0.2172	0.46	0.00	0.46	0.27	0.27	0.19	79.85	3209.48	0.00
6+40	400	0.2204	0.47	0.00	0.47	0.27	0.27	0.20	79.85	3270.63	0.00
6+45	405	0.2236	0.47	0.00	0.47	0.27	0.27	0.20	79.85	3331.77	0.00
6+50	410	0.2268	0.47	0.00	0.47	0.27	0.27	0.20	79.85	3392.92	0.00
6+55	415	0.2301	0.47	0.00	0.47	0.27	0.27	0.20	79.85	3454.07	0.00
7+0	420	0.2334	0.47	0.00	0.47	0.27	0.27	0.20	79.85	3515.21	0.00
7+5	425	0.2366	0.48	0.00	0.48	0.27	0.27	0.21	79.85	3579.36	0.00
7+10	430	0.2399	0.48	0.00	0.48	0.27	0.27	0.21	79.85	3643.51	0.00
7+15	435	0.2432	0.48	0.00	0.48	0.27	0.27	0.21	79.85	3707.66	0.00
7+20	440	0.2466	0.48	0.00	0.48	0.27	0.27	0.21	79.85	3771.80	0.00
7+25	445	0.2499	0.48	0.00	0.48	0.27	0.27	0.21	79.85	3835.95	0.00
7+30	450	0.2532	0.49	0.00	0.49	0.27	0.27	0.22	79.85	3903.10	0.00
7+35	455	0.2566	0.49	0.00	0.49	0.27	0.27	0.22	79.85	3970.24	0.00
7+40	460	0.26	0.49	0.00	0.49	0.27	0.27	0.22	79.85	4037.39	0.00
7+45	465	0.2634	0.49	0.00	0.49	0.27	0.27	0.22	79.85	4104.54	0.00



Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 6 Q (cfs)	Bypass from Basin 5 (cfs)	Q_{in}= Basin 6 Q+Basin5 Bypass (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q =Q_{in}-Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
7+50	470	0.2668	0.5	0.00	0.50	0.27	0.27	0.23	79.85	4174.69	0.00
7+55	475	0.2703	0.5	0.00	0.50	0.27	0.27	0.23	79.85	4244.83	0.00
8+ 0	480	0.2737	0.5	0.00	0.50	0.27	0.27	0.23	79.85	4314.98	0.00
8+ 5	485	0.2772	0.5	0.00	0.50	0.27	0.27	0.23	79.85	4385.13	0.00
8+10	490	0.2807	0.51	0.00	0.51	0.27	0.27	0.24	79.85	4458.27	0.00
8+15	495	0.2842	0.51	0.00	0.51	0.27	0.27	0.24	79.85	4531.42	0.00
8+20	500	0.2877	0.51	0.00	0.51	0.27	0.27	0.24	79.85	4604.57	0.00
8+25	505	0.2912	0.51	0.00	0.51	0.27	0.27	0.24	79.85	4677.72	0.00
8+30	510	0.2948	0.52	0.00	0.52	0.27	0.27	0.25	79.85	4753.86	0.00
8+35	515	0.2984	0.52	0.00	0.52	0.27	0.27	0.25	79.85	4830.01	0.00
8+40	520	0.302	0.52	0.00	0.52	0.27	0.27	0.25	79.85	4906.16	0.00
8+45	525	0.3056	0.53	0.00	0.53	0.27	0.27	0.26	79.85	4985.30	0.00
8+50	530	0.3092	0.53	0.00	0.53	0.27	0.27	0.26	79.85	5064.45	0.00
8+55	535	0.3129	0.53	0.00	0.53	0.27	0.27	0.26	79.85	5143.60	0.00
9+ 0	540	0.3166	0.53	0.00	0.53	0.27	0.27	0.26	79.85	5222.75	0.00
9+ 5	545	0.3203	0.54	0.00	0.54	0.27	0.27	0.27	79.85	5304.89	0.00
9+10	550	0.324	0.54	0.00	0.54	0.27	0.27	0.27	79.85	5387.04	0.00
9+15	555	0.3277	0.54	0.00	0.54	0.27	0.27	0.27	79.85	5469.19	0.00
9+20	560	0.3315	0.55	0.00	0.55	0.27	0.27	0.28	79.85	5554.34	0.00
9+25	565	0.3353	0.55	0.00	0.55	0.27	0.27	0.28	79.85	5639.48	0.00
9+30	570	0.3391	0.55	0.00	0.55	0.27	0.27	0.28	79.85	5724.63	0.00
9+35	575	0.3429	0.56	0.00	0.56	0.27	0.27	0.29	79.85	5812.78	0.00
9+40	580	0.3468	0.56	0.00	0.56	0.27	0.27	0.29	79.85	5900.92	0.00
9+45	585	0.3507	0.56	0.00	0.56	0.27	0.27	0.29	79.85	5989.07	0.00
9+50	590	0.3546	0.57	0.00	0.57	0.27	0.27	0.30	79.85	6080.22	0.00
9+55	595	0.3585	0.57	0.00	0.57	0.27	0.27	0.30	79.85	6171.37	0.00
10+ 0	600	0.3625	0.58	0.00	0.58	0.27	0.27	0.31	79.85	6265.51	0.00
10+ 5	605	0.3665	0.58	0.00	0.58	0.27	0.27	0.31	79.85	6359.66	0.00
10+10	610	0.3705	0.58	0.00	0.58	0.27	0.27	0.31	79.85	6453.81	0.00
10+15	615	0.3745	0.59	0.00	0.59	0.27	0.27	0.32	79.85	6550.95	0.00
10+20	620	0.3786	0.59	0.00	0.59	0.27	0.27	0.32	79.85	6648.10	0.00
10+25	625	0.3827	0.59	0.00	0.59	0.27	0.27	0.32	79.85	6745.25	0.00
10+30	630	0.3868	0.6	0.00	0.60	0.27	0.27	0.33	79.85	6845.40	0.00
10+35	635	0.391	0.6	0.00	0.60	0.27	0.27	0.33	79.85	6945.54	0.00
10+40	640	0.3951	0.61	0.00	0.61	0.27	0.27	0.34	79.85	7048.69	0.00
10+45	645	0.3994	0.61	0.00	0.61	0.27	0.27	0.34	79.85	7151.84	0.00
10+50	650	0.4036	0.62	0.00	0.62	0.27	0.27	0.35	79.85	7257.98	0.00
10+55	655	0.4079	0.62	0.00	0.62	0.27	0.27	0.35	79.85	7364.13	0.00
11+ 0	660	0.4122	0.63	0.00	0.63	0.27	0.27	0.36	79.85	7473.28	0.00
11+ 5	665	0.4166	0.63	0.00	0.63	0.27	0.27	0.36	79.85	7582.43	0.00
11+10	670	0.4209	0.64	0.00	0.64	0.27	0.27	0.37	79.85	7694.57	0.00
11+15	675	0.4254	0.64	0.00	0.64	0.27	0.27	0.37	79.85	7806.72	0.00
11+20	680	0.4298	0.65	0.00	0.65	0.27	0.27	0.38	79.85	7921.87	0.00
11+25	685	0.4343	0.65	0.00	0.65	0.27	0.27	0.38	79.85	8037.01	0.00
11+30	690	0.4389	0.66	0.00	0.66	0.27	0.27	0.39	79.85	8155.16	0.00
11+35	695	0.4434	0.66	0.00	0.66	0.27	0.27	0.39	79.85	8273.31	0.00
11+40	700	0.448	0.67	0.00	0.67	0.27	0.27	0.40	79.85	8394.46	0.00
11+45	705	0.4527	0.68	0.00	0.68	0.27	0.27	0.41	79.85	8518.60	0.00
11+50	710	0.4574	0.68	0.00	0.68	0.27	0.27	0.41	79.85	8642.75	0.00
11+55	715	0.4621	0.69	0.00	0.69	0.27	0.27	0.42	79.85	8769.90	0.00
12+ 0	720	0.4669	0.7	0.00	0.70	0.27	0.27	0.43	79.85	8900.04	0.00
12+ 5	725	0.4715	0.66	0.00	0.66	0.27	0.27	0.39	79.85	9018.19	0.00
12+10	730	0.4752	0.55	0.00	0.55	0.27	0.27	0.28	79.85	9103.34	0.00
12+15	735	0.4788	0.52	0.00	0.52	0.27	0.27	0.25	79.85	9179.49	0.00
12+20	740	0.4823	0.51	0.00	0.51	0.27	0.27	0.24	79.85	9252.63	0.00
12+25	745	0.4859	0.52	0.00	0.52	0.27	0.27	0.25	79.85	9328.78	0.00
12+30	750	0.4895	0.52	0.00	0.52	0.27	0.27	0.25	79.85	9404.93	0.00
12+35	755	0.4931	0.53	0.00	0.53	0.27	0.27	0.26	79.85	9484.07	0.00
12+40	760	0.4968	0.53	0.00	0.53	0.27	0.27	0.26	79.85	9563.22	0.00
12+45	765	0.5005	0.54	0.00	0.54	0.27	0.27	0.27	79.85	9645.37	0.00
12+50	770	0.5043	0.55	0.00	0.55	0.27	0.27	0.28	79.85	9730.52	0.00
12+55	775	0.5082	0.56	0.00	0.56	0.27	0.27	0.29	79.85	9818.66	0.00
13+ 0	780	0.5121	0.57	0.00	0.57	0.27	0.27	0.30	79.85	9909.81	0.00
13+ 5	785	0.5161	0.58	0.00	0.58	0.27	0.27	0.31	79.85	10003.96	0.00
13+10	790	0.5202	0.59	0.00	0.59	0.27	0.27	0.32	79.85	10101.10	0.00
13+15	795	0.5243	0.6	0.00	0.60	0.27	0.27	0.33	79.85	10201.25	0.00
13+20	800	0.5285	0.61	0.00	0.61	0.27	0.27	0.34	79.85	10304.40	0.00
13+25	805	0.5328	0.62	0.00	0.62	0.27	0.27	0.35	79.85	10410.55	0.00
13+30	810	0.5372	0.64	0.00	0.64	0.27	0.27	0.37	79.85	10522.69	0.00
13+35	815	0.5417	0.65	0.00	0.65	0.27	0.27	0.38	79.85	10637.84	0.00
13+40	820	0.5462	0.66	0.00	0.66	0.27	0.27	0.39	79.85	10755.99	0.00
13+45	825	0.5509	0.68	0.00	0.68	0.27	0.27	0.41	79.85	10880.13	0.00
13+50	830	0.5557	0.7	0.00	0.70	0.27	0.27	0.43	79.85	11010.28	0.00
13+55	835	0.5606	0.71	0.00	0.71	0.27	0.27	0.44	79.85	11143.43	0.00
14+ 0	840	0.5656	0.73	0.00	0.73	0.27	0.27	0.46	79.85	11282.58	0.00
14+ 5	845	0.5708	0.75	0.00	0.75	0.27	0.27	0.48	79.85	11427.72	0.00
14+10	850	0.5761	0.77	0.00	0.77	0.27	0.27	0.50	79.85	11578.87	0.00
14+15	855	0.5815	0.79	0.00	0.79	0.27	0.27	0.52	79.85	11736.02	0.00
14+20	860	0.5871	0.81	0.00	0.81	0.27	0.27	0.54	79.85	11899.16	0.00
14+25	865	0.5928	0.84	0.00	0.84	0.27	0.27	0.57	79.85	12071.31	0.00
14+30	870	0.5988	0.86	0.00	0.86	0.27	0.27	0.59	79.85	12249.46	0.00
14+35	875	0.6049	0.89	0.00	0.89	0.27	0.27	0.62	79.85	12436.61	0.00
14+40	880	0.6113	0.93	0.00	0.93	0.27	0.27	0.66	79.85	12635.75	0.00
14+45	885	0.6179	0.96	0.00	0.96	0.27	0.27	0.69	79.85	12843.90	0.00
14+50	890	0.6248	1	0.00	1.00	0.27	0.27	0.73	79.85	13064.05	0.00
14+55	895	0.6319	1.04	0.00	1.04	0.27	0.27	0.77	79.85	13296.19	0.00
15+ 0	900	0.6394	1.09	0.00	1.09	0.27	0.27	0.82	79.85	13543.34	0.00
15+ 5	905	0.6473	1.14	0.00	1.14	0.27	0.27	0.87	79.85	13805.49	0.00
15+10	910	0.6556	1.2	0.00	1.20	0.27	0.27	0.93	79.85	14085.64	0.00
15+15	915	0.6643	1.27	0.00	1.27	0.27	0.27	1.00	79.85	14386.78	0.00
15+20	920	0.6736	1.36	0.00	1.36	0.27	0.27	1.09	79.85	14714.93	0.00
15+25	925	0.6838	1.48	0.00	1.48	0.27	0.27	1.21	79.85	15079.08	0.00
15+30	930	0.6955	1.69	0.00	1.69	0.27	0.27	1.42	79.85	15506.23	0.00
15+35	935	0.7083	1.86	0.00	1.86	0.27	0.27	1.59	79.85	15984.37	0.00

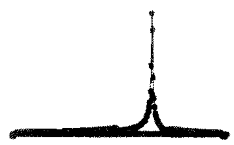
Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 6 Q (cfs)	Bypass from Basin 5 (cfs)	Q_{in}= Basin 6 Q+Basin5 Bypass (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q =Q_{in}-Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)	
15+40	940	0.7225	2.06	0.00	2.06	0.27	0.27	1.79	79.85	16522.52	0.00	
15+45	945	0.7383	2.3	0.00	2.30	0.27	0.27	2.03	79.85	17132.67	0.00	
15+50	950	0.7568	2.68	0.00	2.68	0.27	0.27	2.41	79.85	17856.81	0.00	
15+55	955	0.779	3.23	0.00	3.23	0.27	0.27	2.96	79.85	18745.96	0.00	
16+ 0	960	0.8092	4.39	0.00	4.39	0.27	0.27	4.12	79.85	19983.11	0.00	
16+ 5	965	0.8649	8.09	0.00	8.09	0.27	0.27	7.82	79.85	21418.70	0.27	Exceeds storage volume, flow now bypasses to Basin 2
16+10	970	0.9523	12.68	0.00	12.68	0.27	0.27	12.41	79.85	21418.70	0.27	
16+15	975	0.9938	6.03	0.00	6.03	0.27	0.27	5.76	79.85	21418.70	0.27	
16+20	980	1.0176	3.45	0.00	3.45	0.27	0.27	3.18	79.85	21418.70	0.27	
16+25	985	1.0348	2.49	0.00	2.49	0.27	0.27	2.22	79.85	21418.70	0.27	
16+30	990	1.0481	1.94	0.00	1.94	0.27	0.27	1.67	79.85	21418.70	0.27	
16+35	995	1.0591	1.59	0.00	1.59	0.27	0.27	1.32	79.85	21418.70	0.27	
16+40	1000	1.0686	1.38	0.00	1.38	0.27	0.27	1.11	79.85	21418.70	0.27	
16+45	1005	1.0764	1.14	0.00	1.14	0.27	0.27	0.87	79.85	21418.70	0.27	
16+50	1010	1.0835	1.03	0.00	1.03	0.27	0.27	0.76	79.85	21418.70	0.27	
16+55	1015	1.09	0.95	0.00	0.95	0.27	0.27	0.68	79.85	21418.70	0.27	
17+ 0	1020	1.096	0.88	0.00	0.88	0.27	0.27	0.61	79.85	21418.70	0.27	
17+ 5	1025	1.1017	0.82	0.00	0.82	0.27	0.27	0.55	79.85	21418.70	0.27	
17+10	1030	1.107	0.78	0.00	0.78	0.27	0.27	0.51	79.85	21418.70	0.27	
17+15	1035	1.1121	0.74	0.00	0.74	0.27	0.27	0.47	79.85	21418.70	0.27	
17+20	1040	1.1169	0.7	0.00	0.70	0.27	0.27	0.43	79.85	21418.70	0.27	
17+25	1045	1.1216	0.67	0.00	0.67	0.27	0.27	0.40	79.85	21418.70	0.27	
17+30	1050	1.126	0.64	0.00	0.64	0.27	0.27	0.37	79.85	21418.70	0.27	
17+35	1055	1.1302	0.62	0.00	0.62	0.27	0.27	0.35	79.85	21418.70	0.27	
17+40	1060	1.1343	0.59	0.00	0.59	0.27	0.27	0.32	79.85	21418.70	0.27	
17+45	1065	1.1383	0.57	0.00	0.57	0.27	0.27	0.30	79.85	21418.70	0.27	
17+50	1070	1.1421	0.55	0.00	0.55	0.27	0.27	0.28	79.85	21418.70	0.27	
17+55	1075	1.1458	0.54	0.00	0.54	0.27	0.27	0.27	79.85	21418.70	0.27	
18+ 0	1080	1.1494	0.52	0.00	0.52	0.27	0.27	0.25	79.85	21418.70	0.27	
18+ 5	1085	1.1531	0.55	0.00	0.55	0.27	0.27	0.28	79.85	21418.70	0.27	
18+10	1090	1.1577	0.66	0.00	0.66	0.27	0.27	0.39	79.85	21418.70	0.27	
18+15	1095	1.1623	0.68	0.00	0.68	0.27	0.27	0.41	79.85	21418.70	0.27	
18+20	1100	1.167	0.67	0.00	0.67	0.27	0.27	0.40	79.85	21418.70	0.27	
18+25	1105	1.1715	0.67	0.00	0.67	0.27	0.27	0.40	79.85	21418.70	0.27	
18+30	1110	1.1761	0.66	0.00	0.66	0.27	0.27	0.39	79.85	21418.70	0.27	
18+35	1115	1.1805	0.65	0.00	0.65	0.27	0.27	0.38	79.85	21418.70	0.27	
18+40	1120	1.1849	0.64	0.00	0.64	0.27	0.27	0.37	79.85	21418.70	0.27	
18+45	1125	1.1892	0.63	0.00	0.63	0.27	0.27	0.36	79.85	21418.70	0.27	
18+50	1130	1.1935	0.62	0.00	0.62	0.27	0.27	0.35	79.85	21418.70	0.27	
18+55	1135	1.1977	0.61	0.00	0.61	0.27	0.27	0.34	79.85	21418.70	0.27	
19+ 0	1140	1.2018	0.6	0.00	0.60	0.27	0.27	0.33	79.85	21418.70	0.27	
19+ 5	1145	1.2059	0.59	0.00	0.59	0.27	0.27	0.32	79.85	21418.70	0.27	
19+10	1150	1.2099	0.58	0.00	0.58	0.27	0.27	0.31	79.85	21418.70	0.27	
19+15	1155	1.2139	0.58	0.00	0.58	0.27	0.27	0.31	79.85	21418.70	0.27	
19+20	1160	1.2178	0.57	0.00	0.57	0.27	0.27	0.30	79.85	21418.70	0.27	
19+25	1165	1.2217	0.56	0.00	0.56	0.27	0.27	0.29	79.85	21418.70	0.27	
19+30	1170	1.2255	0.55	0.00	0.55	0.27	0.27	0.28	79.85	21418.70	0.27	
19+35	1175	1.2293	0.55	0.00	0.55	0.27	0.27	0.28	79.85	21418.70	0.27	
19+40	1180	1.233	0.54	0.00	0.54	0.27	0.27	0.27	79.85	21418.70	0.27	
19+45	1185	1.2367	0.54	0.00	0.54	0.27	0.27	0.27	79.85	21418.70	0.27	
19+50	1190	1.2403	0.53	0.00	0.53	0.27	0.27	0.26	79.85	21418.70	0.27	
19+55	1195	1.2439	0.52	0.00	0.52	0.27	0.27	0.25	79.85	21418.70	0.27	
20+ 0	1200	1.2475	0.52	0.00	0.52	0.27	0.27	0.25	79.85	21418.70	0.27	
20+ 5	1205	1.251	0.51	0.00	0.51	0.27	0.27	0.24	79.85	21418.70	0.27	
20+10	1210	1.2545	0.51	0.00	0.51	0.27	0.27	0.24	79.85	21418.70	0.27	
20+15	1215	1.258	0.5	0.00	0.50	0.27	0.27	0.23	79.85	21418.70	0.27	
20+20	1220	1.2614	0.5	0.00	0.50	0.27	0.27	0.23	79.85	21418.70	0.27	
20+25	1225	1.2648	0.49	0.00	0.49	0.27	0.27	0.22	79.85	21418.70	0.27	
20+30	1230	1.2682	0.49	0.00	0.49	0.27	0.27	0.22	79.85	21418.70	0.27	
20+35	1235	1.2715	0.48	0.00	0.48	0.27	0.27	0.21	79.85	21418.70	0.27	
20+40	1240	1.2748	0.48	0.00	0.48	0.27	0.27	0.21	79.85	21418.70	0.27	
20+45	1245	1.278	0.47	0.00	0.47	0.27	0.27	0.20	79.85	21418.70	0.27	
20+50	1250	1.2813	0.47	0.00	0.47	0.27	0.27	0.20	79.85	21418.70	0.27	
20+55	1255	1.2845	0.47	0.00	0.47	0.27	0.27	0.20	79.85	21418.70	0.27	
21+ 0	1260	1.2877	0.46	0.00	0.46	0.27	0.27	0.19	79.85	21418.70	0.27	
21+ 5	1265	1.2908	0.46	0.00	0.46	0.27	0.27	0.19	79.85	21418.70	0.27	
21+10	1270	1.294	0.45	0.00	0.45	0.27	0.27	0.18	79.85	21418.70	0.27	
21+15	1275	1.2971	0.45	0.00	0.45	0.27	0.27	0.18	79.85	21418.70	0.27	
21+20	1280	1.3001	0.45	0.00	0.45	0.27	0.27	0.18	79.85	21418.70	0.27	
21+25	1285	1.3032	0.44	0.00	0.44	0.27	0.27	0.17	79.85	21418.70	0.27	
21+30	1290	1.3062	0.44	0.00	0.44	0.27	0.27	0.17	79.85	21418.70	0.27	
21+35	1295	1.3092	0.44	0.00	0.44	0.27	0.27	0.17	79.85	21418.70	0.27	
21+40	1300	1.3122	0.43	0.00	0.43	0.27	0.27	0.16	79.85	21418.70	0.27	
21+45	1305	1.3152	0.43	0.00	0.43	0.27	0.27	0.16	79.85	21418.70	0.27	
21+50	1310	1.3181	0.43	0.00	0.43	0.27	0.27	0.16	79.85	21418.70	0.27	
21+55	1315	1.3211	0.42	0.00	0.42	0.27	0.27	0.15	79.85	21418.70	0.27	
22+ 0	1320	1.324	0.42	0.00	0.42	0.27	0.27	0.15	79.85	21418.70	0.27	
22+ 5	1325	1.3268	0.42	0.00	0.42	0.27	0.27	0.15	79.85	21418.70	0.27	
22+10	1330	1.3297	0.42	0.00	0.42	0.27	0.27	0.15	79.85	21418.70	0.27	
22+15	1335	1.3325	0.41	0.00	0.41	0.27	0.27	0.14	79.85	21418.70	0.27	
22+20	1340	1.3354	0.41	0.00	0.41	0.27	0.27	0.14	79.85	21418.70	0.27	
22+25	1345	1.3382	0.41	0.00	0.41	0.27	0.27	0.14	79.85	21418.70	0.27	
22+30	1350	1.341	0.4	0.00	0.40	0.27	0.27	0.13	79.85	21418.70	0.27	
22+35	1355	1.3437	0.4	0.00	0.40	0.27	0.27	0.13	79.85	21418.70	0.27	
22+40	1360	1.3465	0.4	0.00	0.40	0.27	0.27	0.13	79.85	21418.70	0.27	
22+45	1365	1.3492	0.4	0.00	0.40	0.27	0.27	0.13	79.85	21418.70	0.27	
22+50	1370	1.3519	0.39	0.00	0.39	0.27	0.27	0.12	79.85	21418.70	0.27	
22+55	1375	1.3546	0.39	0.00	0.39	0.27	0.27	0.12	79.85	21418.70	0.27	
23+ 0	1380	1.3573	0.39	0.00	0.39	0.27	0.27	0.12	79.85	21418.70	0.27	
23+ 5	1385	1.36	0.39	0.00	0.39	0.27	0.27	0.12	79.85	21418.70	0.27	
23+10	1390	1.3626	0.39	0.00	0.39	0.27	0.27	0.12	79.85	21418.70	0.27	
23+15	1395	1.3653	0.38	0.00	0.38	0.27	0.27	0.11	79.85	21418.70	0.27	
23+20	1400	1.3679	0.38	0.00	0.38	0.27	0.27	0.11	79.85	21418.70	0.27	
23+25	1405	1.3705	0.38	0.00	0.38	0.27	0.27	0.11	79.85	21418.70	0.27	

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 6 Q (cfs)	Bypass from Basin 5 (cfs)	Q_{in}= Basin 6 Q+Basin5 Bypass (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q =Q_{in}-Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
23+30	1410	1.3731	0.38	0.00	0.38	0.27	0.27	0.11	79.85	21418.70	0.27
23+35	1415	1.3757	0.37	0.00	0.37	0.27	0.27	0.10	79.85	21418.70	0.27
23+40	1420	1.3782	0.37	0.00	0.37	0.27	0.27	0.10	79.85	21418.70	0.27
23+45	1425	1.3808	0.37	0.00	0.37	0.27	0.27	0.10	79.85	21418.70	0.27
23+50	1430	1.3833	0.37	0.00	0.37	0.27	0.27	0.10	79.85	21418.70	0.27
23+55	1435	1.3858	0.37	0.00	0.37	0.27	0.27	0.10	79.85	21418.70	0.27
24+ 0	1440	1.3883	0.36	0.00	0.36	0.27	0.27	0.09	79.85	21418.70	0.27
24+ 5	1445	1.3904	0.29	0.00	0.29	0.27	0.27	0.02	79.85	21418.70	0.27
24+10	1450	1.391	0.09	0.00	0.09	0.27	0.09	0.00	27.00	21418.70	0.27
24+15	1455	1.3912	0.03	0.00	0.03	0.27	0.03	0.00	9.00	21418.70	0.27
24+20	1460	1.3914	0.02	0.00	0.02	0.27	0.02	0.00	6.00	21418.70	0.27
24+25	1465	1.3914	0.01	0.00	0.01	0.27	0.01	0.00	3.00	21418.70	0.27
24+30	1470	1.3915	0.01	0.00	0.01	0.27	0.01	0.00	3.00	21418.70	0.27
24+35	1475	1.3915	0	0.00	0.00	0.27	0.00	0.00	0.00	21418.70	0.27

0.53 ac-ft (volume infiltrated)

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 6 Q (cfs)	Bypass from Basin 5 (cfs)	Q_{in}= Basin 6 Q+Basin5 Bypass (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q =Q_{in}-Q_{out} (cfs)	Infiltrated Volume (cf)	Volume Stored (cf)	Q_{bypass} (cfs)
25+00	1500	0	0	0	0	0.27	0.27	-0.27	479.12	21019.43	0
26+00	1560	0	0	0	0	0.27	0.27	-0.27	958.23	20061.20	0
27+00	1620	0	0	0	0	0.27	0.27	-0.27	958.23	19102.97	0
28+00	1680	0	0	0	0	0.27	0.27	-0.27	958.23	18144.73	0
29+00	1740	0	0	0	0	0.27	0.27	-0.27	958.23	17186.50	0
30+00	1800	0	0	0	0	0.27	0.27	-0.27	958.23	16228.26	0
31+00	1860	0	0	0	0	0.27	0.27	-0.27	958.23	15270.03	0
32+00	1920	0	0	0	0	0.27	0.27	-0.27	958.23	14311.80	0
33+00	1980	0	0	0	0	0.27	0.27	-0.27	958.23	13353.56	0
34+00	2040	0	0	0	0	0.27	0.27	-0.27	958.23	12395.33	0
35+00	2100	0	0	0	0	0.27	0.27	-0.27	958.23	11437.09	0
36+00	2160	0	0	0	0	0.27	0.27	-0.27	958.23	10478.86	0
37+00	2220	0	0	0	0	0.27	0.27	-0.27	958.23	9520.63	0
38+00	2280	0	0	0	0	0.27	0.27	-0.27	958.23	8562.39	0
39+00	2340	0	0	0	0	0.27	0.27	-0.27	958.23	7604.16	0
40+00	2400	0	0	0	0	0.27	0.27	-0.27	958.23	6645.92	0
41+00	2460	0	0	0	0	0.27	0.27	-0.27	958.23	5687.69	0
42+00	2520	0	0	0	0	0.27	0.27	-0.27	958.23	4729.46	0
43+00	2580	0	0	0	0	0.27	0.27	-0.27	958.23	3771.22	0
44+00	2640	0	0	0	0	0.27	0.27	-0.27	958.23	2812.99	0
45+00	2700	0	0	0	0	0.27	0.27	-0.27	958.23	1854.75	0
46+00	2760	0	0	0	0	0.27	0.27	-0.27	958.23	896.52	0
47+00	2820	0	0	0	0	0.27	0.27	-0.27	958.23	0.00	0

Time (n+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 2 Q (cfs)	Bypass from Basin 6 (cfs)	Q_{in}=Basin2 Q+ Basin 6 Bypass (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q =Q_{in}-Q_{out} (cfs)	Infiltrated Volume (cf)	Storage Volume Required (cf)
0	0	0	0	0.00	0.00	1.48	0.00	0.00	0	0
0+5	5	0.0006	0.09	0.00	0.09	1.48	0.09	0.00	27.00	0.00
0+10	10	0.0041	0.51	0.00	0.51	1.48	0.51	0.00	154.15	0.00
0+15	15	0.0108	0.97	0.00	1.03	1.48	1.03	0.00	310.15	0.00
0+20	20	0.0188	1.16	0.00	1.23	1.48	1.23	0.00	370.15	0.00
0+25	25	0.0274	1.24	0.00	1.32	1.48	1.32	0.00	397.15	0.00
0+30	30	0.0362	1.28	0.00	1.37	1.48	1.37	0.00	412.15	0.00
0+35	35	0.0453	1.31	0.00	1.40	1.48	1.40	0.00	421.15	0.00
0+40	40	0.0544	1.33	0.00	1.43	1.48	1.43	0.00	430.15	0.00
0+45	45	0.0637	1.35	0.00	1.45	1.48	1.45	0.00	436.15	0.00
0+50	50	0.0731	1.36	0.00	1.46	1.48	1.46	0.00	439.15	0.00
0+55	55	0.0826	1.37	0.00	1.47	1.48	1.47	0.00	442.15	0.00
1+0	60	0.0921	1.38	0.00	1.48	1.48	1.48	0.01	443.28	1.87
1+5	65	0.1017	1.39	0.00	1.49	1.48	1.48	0.02	443.28	6.74
1+10	70	0.1113	1.4	0.00	1.50	1.48	1.48	0.03	443.28	14.61
1+15	75	0.121	1.41	0.00	1.51	1.48	1.48	0.04	443.28	25.48
1+20	80	0.1307	1.41	0.00	1.51	1.48	1.48	0.04	443.28	36.35
1+25	85	0.1404	1.41	0.00	1.51	1.48	1.48	0.04	443.28	47.22
1+30	90	0.1502	1.42	0.00	1.53	1.48	1.48	0.06	443.28	64.09
1+35	95	0.16	1.42	0.00	1.53	1.48	1.48	0.06	443.28	80.96
1+40	100	0.1698	1.43	0.00	1.54	1.48	1.48	0.07	443.28	100.83
1+45	105	0.1797	1.43	0.00	1.54	1.48	1.48	0.07	443.28	120.70
1+50	110	0.1896	1.43	0.00	1.54	1.48	1.48	0.07	443.28	140.56
1+55	115	0.1995	1.44	0.00	1.55	1.48	1.48	0.08	443.28	163.43
2+0	120	0.2094	1.44	0.00	1.55	1.48	1.48	0.08	443.28	186.30
2+5	125	0.2194	1.45	0.00	1.56	1.48	1.48	0.09	443.28	212.17
2+10	130	0.2293	1.45	0.00	1.56	1.48	1.48	0.09	443.28	238.04
2+15	135	0.2394	1.46	0.00	1.58	1.48	1.48	0.11	443.28	269.91
2+20	140	0.2494	1.46	0.00	1.58	1.48	1.48	0.11	443.28	301.78
2+25	145	0.2595	1.46	0.00	1.58	1.48	1.48	0.11	443.28	333.65
2+30	150	0.2696	1.47	0.00	1.59	1.48	1.48	0.12	443.28	368.52
2+35	155	0.2798	1.47	0.00	1.59	1.48	1.48	0.12	443.28	403.39
2+40	160	0.2899	1.48	0.00	1.60	1.48	1.48	0.13	443.28	441.26
2+45	165	0.3001	1.48	0.00	1.60	1.48	1.48	0.13	443.28	479.13
2+50	170	0.3104	1.49	0.00	1.61	1.48	1.48	0.14	443.28	520.00
2+55	175	0.3206	1.49	0.00	1.62	1.48	1.48	0.15	443.28	563.87
3+0	180	0.3309	1.5	0.00	1.63	1.48	1.48	0.16	443.28	610.74
3+5	185	0.3412	1.5	0.00	1.63	1.48	1.48	0.16	443.28	657.61
3+10	190	0.3526	1.5	0.00	1.63	1.48	1.48	0.16	443.28	704.48
3+15	195	0.362	1.51	0.00	1.64	1.48	1.48	0.17	443.28	754.35
3+20	200	0.3724	1.51	0.00	1.64	1.48	1.48	0.17	443.28	804.22
3+25	205	0.3829	1.52	0.00	1.65	1.48	1.48	0.18	443.28	857.09
3+30	210	0.3934	1.52	0.00	1.65	1.48	1.48	0.18	443.28	909.96
3+35	215	0.4039	1.53	0.00	1.67	1.48	1.48	0.20	443.28	968.83
3+40	220	0.4145	1.53	0.00	1.67	1.48	1.48	0.20	443.28	1027.69
3+45	225	0.4251	1.54	0.00	1.68	1.48	1.48	0.21	443.28	1089.56
3+50	230	0.4357	1.54	0.00	1.68	1.48	1.48	0.21	443.28	1151.43
3+55	235	0.4464	1.55	0.00	1.69	1.48	1.48	0.22	443.28	1216.30
4+0	240	0.4571	1.55	0.00	1.69	1.48	1.48	0.22	443.28	1281.17
4+5	245	0.4678	1.56	0.00	1.70	1.48	1.48	0.23	443.28	1349.04
4+10	250	0.4786	1.56	0.00	1.71	1.48	1.48	0.24	443.28	1419.91
4+15	255	0.4894	1.57	0.00	1.72	1.48	1.48	0.25	443.28	1493.78
4+20	260	0.5002	1.58	0.00	1.73	1.48	1.48	0.26	443.28	1570.65
4+25	265	0.5111	1.58	0.00	1.73	1.48	1.48	0.26	443.28	1647.52
4+30	270	0.522	1.59	0.00	1.74	1.48	1.48	0.27	443.28	1727.39
4+35	275	0.533	1.59	0.00	1.74	1.48	1.48	0.27	443.28	1807.26
4+40	280	0.544	1.6	0.00	1.75	1.48	1.48	0.28	443.28	1890.13
4+45	285	0.555	1.6	0.00	1.76	1.48	1.48	0.29	443.28	1976.00
4+50	290	0.5661	1.61	0.00	1.77	1.48	1.48	0.30	443.28	2064.87
4+55	295	0.5772	1.61	0.00	1.77	1.48	1.48	0.30	443.28	2153.74
5+0	300	0.5884	1.62	0.00	1.78	1.48	1.48	0.31	443.28	2245.61
5+5	305	0.5996	1.63	0.00	1.79	1.48	1.48	0.32	443.28	2340.48
5+10	310	0.6108	1.63	0.00	1.79	1.48	1.48	0.32	443.28	2435.35
5+15	315	0.6221	1.64	0.00	1.80	1.48	1.48	0.33	443.28	2533.22
5+20	320	0.6334	1.64	0.00	1.81	1.48	1.48	0.34	443.28	2634.09
5+25	325	0.6448	1.65	0.00	1.87	1.48	1.48	0.35	443.28	2737.96
5+30	330	0.6562	1.66	0.00	1.83	1.48	1.48	0.36	443.28	2844.82
5+35	335	0.6677	1.66	0.00	1.83	1.48	1.48	0.36	443.28	2951.69
5+40	340	0.6792	1.67	0.00	1.84	1.48	1.48	0.37	443.28	3061.56
5+45	345	0.6907	1.68	0.00	1.85	1.48	1.48	0.38	443.28	3174.43
5+50	350	0.7023	1.68	0.00	1.86	1.48	1.48	0.39	443.28	3290.30
5+55	355	0.7139	1.69	0.00	1.87	1.48	1.48	0.40	443.28	3409.17
6+0	360	0.7256	1.7	0.00	1.88	1.48	1.48	0.41	443.28	3531.04
6+5	365	0.7373	1.7	0.00	1.88	1.48	1.48	0.41	443.28	3652.91
6+10	370	0.7491	1.71	0.00	1.89	1.48	1.48	0.42	443.28	3777.78
6+15	375	0.7609	1.72	0.00	1.91	1.48	1.48	0.44	443.28	3908.65
6+20	380	0.7728	1.72	0.00	1.91	1.48	1.48	0.44	443.28	4039.52
6+25	385	0.7847	1.73	0.00	1.92	1.48	1.48	0.45	443.28	4173.39
6+30	390	0.7967	1.74	0.00	1.93	1.48	1.48	0.46	443.28	4310.26
6+35	395	0.8087	1.75	0.00	1.94	1.48	1.48	0.47	443.28	4450.13
6+40	400	0.8208	1.75	0.00	1.95	1.48	1.48	0.48	443.28	4593.00
6+45	405	0.8329	1.76	0.00	1.96	1.48	1.48	0.49	443.28	4738.87
6+50	410	0.8451	1.77	0.00	1.97	1.48	1.48	0.50	443.28	4887.74
6+55	415	0.8573	1.78	0.00	1.98	1.48	1.48	0.51	443.28	5039.61
7+0	420	0.8696	1.78	0.00	1.98	1.48	1.48	0.51	443.28	5191.48
7+5	425	0.8819	1.79	0.00	2.00	1.48	1.48	0.53	443.28	5349.35
7+10	430	0.8943	1.8	0.00	2.01	1.48	1.48	0.54	443.28	5510.22
7+15	435	0.9068	1.81	0.00	2.02	1.48	1.48	0.55	443.28	5674.08
7+20	440	0.9193	1.82	0.00	2.03	1.48	1.48	0.56	443.28	5840.95
7+25	445	0.9318	1.82	0.00	2.03	1.48	1.48	0.56	443.28	6007.82
7+30	450	0.9444	1.83	0.00	2.05	1.48	1.48	0.58	443.28	6180.69
7+35	455	0.9571	1.84	0.00	2.06	1.48	1.48	0.59	443.28	6356.56
7+40	460	0.9699	1.85	0.00	2.07	1.48	1.48	0.60	443.28	6535.43
7+45	465	0.9827	1.86	0.00	2.08	1.48	1.48	0.61	443.28	6717.30
7+50	470	0.9955	1.87	0.00	2.10	1.48	1.48	0.63	443.28	6905.17
7+55	475	1.0084	1.88	0.00	2.11	1.48	1.48	0.64	443.28	7096.04
8+0	480	1.0214	1.89	0.00	2.12	1.48	1.48	0.65	443.28	7289.91
8+5	485	1.0345	1.9	0.00	2.13	1.48	1.48	0.66	443.28	7486.78
8+10	490	1.0476	1.9	0.00	2.14	1.48	1.48	0.67	443.28	7686.65
8+15	495	1.0608	1.91	0.00	2.15	1.48	1.48	0.68	443.28	7889.52
8+20	500	1.074	1.92	0.00	2.16	1.48	1.48	0.69	443.28	8095.39
8+25	505	1.0874	1.93	0.00	2.17	1.48	1.48	0.70	443.28	8304.26
8+30	510	1.1008	1.94	0.00	2.19	1.48	1.48	0.72	443.28	8519.13



Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 2 Q (cfs)	Bypass from Basin 6 (cfs)	Q_{in}=Basin2 Q+ Basin 6 Bypass (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q =Q_{in}-Q_{out} (cfs)	Infiltrated Volume (cf)	Storage Volume Required (cf)
8+35	515	1.1142	1.95	0.00	2.20	1.48	1.48	0.73	443.28	8737.00
8+40	520	1.1278	1.97	0.00	2.22	1.48	1.48	0.75	443.28	8960.87
8+45	525	1.1414	1.98	0.00	2.24	1.48	1.48	0.77	443.28	9190.74
8+50	530	1.155	1.99	0.00	2.25	1.48	1.48	0.78	443.28	9423.61
8+55	535	1.1688	2	0.00	2.26	1.48	1.48	0.79	443.28	9659.48
9+ 0	540	1.1826	2.01	0.00	2.27	1.48	1.48	0.80	443.28	9898.35
9+ 5	545	1.1965	2.02	0.00	2.29	1.48	1.48	0.82	443.28	10143.21
9+10	550	1.2105	2.03	0.00	2.30	1.48	1.48	0.83	443.28	10391.08
9+15	555	1.2246	2.04	0.00	2.31	1.48	1.48	0.84	443.28	10641.95
9+20	560	1.2388	2.06	0.00	2.34	1.48	1.48	0.87	443.28	10901.82
9+25	565	1.253	2.07	0.00	2.35	1.48	1.48	0.88	443.28	11164.69
9+30	570	1.2673	2.08	0.00	2.36	1.48	1.48	0.89	443.28	11430.56
9+35	575	1.2818	2.09	0.00	2.38	1.48	1.48	0.91	443.28	11702.43
9+40	580	1.2963	2.11	0.00	2.40	1.48	1.48	0.93	443.28	11980.30
9+45	585	1.3108	2.12	0.00	2.41	1.48	1.48	0.94	443.28	12261.17
9+50	590	1.3255	2.13	0.00	2.43	1.48	1.48	0.96	443.28	12548.04
9+55	595	1.3403	2.15	0.00	2.45	1.48	1.48	0.98	443.28	12840.91
10+ 0	600	1.3552	2.16	0.00	2.47	1.48	1.48	1.00	443.28	13139.78
10+ 5	605	1.3702	2.17	0.00	2.48	1.48	1.48	1.01	443.28	13441.65
10+10	610	1.3852	2.19	0.00	2.50	1.48	1.48	1.03	443.28	13749.52
10+15	615	1.4004	2.2	0.00	2.52	1.48	1.48	1.05	443.28	14063.39
10+20	620	1.4157	2.22	0.00	2.54	1.48	1.48	1.07	443.28	14383.26
10+25	625	1.4311	2.23	0.00	2.55	1.48	1.48	1.08	443.28	14706.13
10+30	630	1.4465	2.25	0.00	2.58	1.48	1.48	1.11	443.28	15038.00
10+35	635	1.4621	2.27	0.00	2.60	1.48	1.48	1.13	443.28	15375.87
10+40	640	1.4779	2.28	0.00	2.62	1.48	1.48	1.15	443.28	15719.74
10+45	645	1.4937	2.3	0.00	2.64	1.48	1.48	1.17	443.28	16069.61
10+50	650	1.5096	2.32	0.00	2.67	1.48	1.48	1.20	443.28	16428.47
10+55	655	1.5257	2.33	0.00	2.68	1.48	1.48	1.21	443.28	16790.34
11+ 0	660	1.5419	2.35	0.00	2.71	1.48	1.48	1.24	443.28	17161.21
11+ 5	665	1.5582	2.37	0.00	2.73	1.48	1.48	1.26	443.28	17538.08
11+10	670	1.5747	2.39	0.00	2.76	1.48	1.48	1.29	443.28	17923.95
11+15	675	1.5913	2.41	0.00	2.78	1.48	1.48	1.31	443.28	18315.82
11+20	680	1.608	2.43	0.00	2.81	1.48	1.48	1.34	443.28	18716.69
11+25	685	1.6248	2.45	0.00	2.83	1.48	1.48	1.36	443.28	19123.56
11+30	690	1.6418	2.47	0.00	2.86	1.48	1.48	1.39	443.28	19539.43
11+35	695	1.659	2.49	0.00	2.88	1.48	1.48	1.41	443.28	19961.30
11+40	700	1.6763	2.51	0.00	2.91	1.48	1.48	1.44	443.28	20392.17
11+45	705	1.6937	2.53	0.00	2.94	1.48	1.48	1.47	443.28	20832.04
11+50	710	1.7113	2.56	0.00	2.97	1.48	1.48	1.50	443.28	21280.91
11+55	715	1.7291	2.58	0.00	3.00	1.48	1.48	1.53	443.28	21738.78
12+ 0	720	1.7471	2.61	0.00	3.04	1.48	1.48	1.57	443.28	22208.65
12+ 5	725	1.7648	2.58	0.00	2.97	1.48	1.48	1.50	443.28	22657.52
12+10	730	1.7809	2.34	0.00	2.62	1.48	1.48	1.15	443.28	23001.39
12+15	735	1.7953	2.09	0.00	2.34	1.48	1.48	0.87	443.28	23261.26
12+20	740	1.8091	2	0.00	2.24	1.48	1.48	0.77	443.28	23491.13
12+25	745	1.8228	1.98	0.00	2.23	1.48	1.48	0.76	443.28	23718.00
12+30	750	1.8364	1.99	0.00	2.24	1.48	1.48	0.77	443.28	23947.87
12+35	755	1.8502	2	0.00	2.26	1.48	1.48	0.79	443.28	24183.74
12+40	760	1.8641	2.02	0.00	2.28	1.48	1.48	0.81	443.28	24425.60
12+45	765	1.8781	2.04	0.00	2.31	1.48	1.48	0.84	443.28	24676.47
12+50	770	1.8924	2.07	0.00	2.35	1.48	1.48	0.88	443.28	24939.34
12+55	775	1.9068	2.09	0.00	2.38	1.48	1.48	0.91	443.28	25211.21
13+ 0	780	1.9214	2.13	0.00	2.43	1.48	1.48	0.96	443.28	25498.08
13+ 5	785	1.9363	2.16	0.00	2.47	1.48	1.48	1.00	443.28	25796.95
13+10	790	1.9514	2.19	0.00	2.51	1.48	1.48	1.04	443.28	26107.82
13+15	795	1.9668	2.23	0.00	2.56	1.48	1.48	1.09	443.28	26433.69
13+20	800	1.9824	2.27	0.00	2.61	1.48	1.48	1.14	443.28	26774.56
13+25	805	1.9984	2.32	0.00	2.67	1.48	1.48	1.20	443.28	27133.43
13+30	810	2.0146	2.36	0.00	2.73	1.48	1.48	1.26	443.28	27510.30
13+35	815	2.0312	2.41	0.00	2.79	1.48	1.48	1.32	443.28	27905.17
13+40	820	2.0482	2.46	0.00	2.85	1.48	1.48	1.38	443.28	28318.04
13+45	825	2.0655	2.51	0.00	2.92	1.48	1.48	1.45	443.28	28751.91
13+50	830	2.0831	2.57	0.00	3.00	1.48	1.48	1.53	443.28	29209.78
13+55	835	2.1012	2.63	0.00	3.07	1.48	1.48	1.60	443.28	29688.65
14+ 0	840	2.1198	2.69	0.00	3.15	1.48	1.48	1.68	443.28	30191.52
14+ 5	845	2.1387	2.76	0.00	3.24	1.48	1.48	1.77	443.28	30721.39
14+10	850	2.1582	2.83	0.00	3.33	1.48	1.48	1.86	443.28	31278.26
14+15	855	2.1782	2.91	0.00	3.43	1.48	1.48	1.96	443.28	31865.13
14+20	860	2.1988	2.99	0.00	3.53	1.48	1.48	2.06	443.28	32482.00
14+25	865	2.22	3.07	0.00	3.64	1.48	1.48	2.17	443.28	33131.87
14+30	870	2.2418	3.17	0.00	3.76	1.48	1.48	2.29	443.28	33817.73
14+35	875	2.2643	3.27	0.00	3.89	1.48	1.48	2.42	443.28	34542.60
14+40	880	2.2876	3.38	0.00	4.04	1.48	1.48	2.57	443.28	35312.47
14+45	885	2.3118	3.5	0.00	4.19	1.48	1.48	2.72	443.28	36127.34
14+50	890	2.3368	3.64	0.00	4.37	1.48	1.48	2.90	443.28	36996.21
14+55	895	2.3629	3.78	0.00	4.55	1.48	1.48	3.08	443.28	37919.08
15+ 0	900	2.39	3.95	0.00	4.77	1.48	1.48	3.30	443.28	38907.95
15+ 5	905	2.4185	4.13	0.00	5.00	1.48	1.48	3.53	443.28	39965.82
15+10	910	2.4483	4.33	0.00	5.26	1.48	1.48	3.79	443.28	41101.69
15+15	915	2.4797	4.56	0.00	5.56	1.48	1.48	4.09	443.28	42327.56
15+20	920	2.513	4.84	0.00	5.93	1.48	1.48	4.46	443.28	43664.43
15+25	925	2.5488	5.19	0.00	6.40	1.48	1.48	4.93	443.28	45142.30
15+30	930	2.5885	5.76	0.00	7.18	1.48	1.48	5.71	443.28	46854.17
15+35	935	2.6327	6.43	0.00	8.02	1.48	1.48	6.55	443.28	48818.04
15+40	940	2.6816	7.1	0.00	8.89	1.48	1.48	7.42	443.28	51042.91
15+45	945	2.7359	7.88	0.00	9.91	1.48	1.48	8.44	443.28	53573.78
15+50	950	2.7975	8.94	0.00	11.35	1.48	1.48	9.88	443.28	56536.65
15+55	955	2.8697	10.48	0.00	13.44	1.48	1.48	11.97	443.28	60126.52
16+ 0	960	2.9611	13.27	0.00	17.39	1.48	1.48	15.92	443.28	64901.39
16+ 5	965	3.1027	20.55	0.27	28.37	1.48	1.48	26.90	443.28	72970.26
16+10	970	3.3439	35.04	0.27	47.45	1.48	1.48	45.98	443.28	86763.13
16+15	975	3.5815	34.49	0.27	40.25	1.48	1.48	38.78	443.28	98395.99
16+20	980	3.7217	20.36	0.27	23.54	1.48	1.48	22.07	443.28	105015.86
16+25	985	3.8127	13.21	0.27	15.43	1.48	1.48	13.96	443.28	109202.73
16+30	990	3.8798	9.75	0.27	11.42	1.48	1.48	9.95	443.28	112186.60
16+35	995	3.934	7.86	0.27	9.18	1.48	1.48	7.71	443.28	114498.47
16+40	1000	3.9786	6.48	0.27	7.59	1.48	1.48	6.12	443.28	116333.34
16+45	1005	4.0176	5.66	0.27	6.53	1.48	1.48	5.06	443.28	117850.21
16+50	1010	4.0523	5.04	0.27	5.80	1.48	1.48	4.33	443.28	119148.08
16+55	1015	4.0834	4.52	0.27	5.20	1.48	1.48	3.73	443.28	120265.95
17+ 0	1020	4.1116	4.09	0.27	4.70	1.48	1.48	3.23	443.28	121233.82
17+ 5	1025	4.1373	3.74	0.27	4.29	1.48	1.48	2.82	443.28	122078.69

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 2 Q (cfs)	Bypass from Basin 6 (cfs)	Q_{in}=Basin2 Q+ Basin 6 Bypass (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Storage Volume Required (cf)
17+10	1030	4.1612	3.46	0.27	3.97	1.48	1.48	2.50	443.28	122827.56
17+15	1035	4.1832	3.2	0.27	3.67	1.48	1.48	2.20	443.28	123486.43
17+20	1040	4.203	2.87	0.27	3.30	1.48	1.48	1.83	443.28	124034.30
17+25	1045	4.2217	2.71	0.27	3.11	1.48	1.48	1.64	443.28	124525.17
17+30	1050	4.2394	2.58	0.27	2.95	1.48	1.48	1.48	443.28	124968.04
17+35	1055	4.2564	2.46	0.27	2.81	1.48	1.48	1.34	443.28	125368.91
17+40	1060	4.2727	2.36	0.27	2.68	1.48	1.48	1.21	443.28	125730.78
17+45	1065	4.2883	2.27	0.27	2.57	1.48	1.48	1.10	443.28	126059.65
17+50	1070	4.3033	2.19	0.27	2.47	1.48	1.48	1.00	443.28	126358.52
17+55	1075	4.3179	2.11	0.27	2.38	1.48	1.48	0.91	443.28	126630.39
18+0	1080	4.332	2.04	0.27	2.29	1.48	1.48	0.82	443.28	126875.26
18+5	1085	4.346	2.04	0.27	2.32	1.48	1.48	0.85	443.28	127129.12
18+10	1090	4.3614	2.24	0.27	2.63	1.48	1.48	1.16	443.28	127475.99
18+15	1095	4.3784	2.46	0.27	2.87	1.48	1.48	1.40	443.28	127894.86
18+20	1100	4.3957	2.52	0.27	2.92	1.48	1.48	1.45	443.28	128328.73
18+25	1105	4.4131	2.52	0.27	2.92	1.48	1.48	1.45	443.28	128762.60
18+30	1110	4.4302	2.49	0.27	2.88	1.48	1.48	1.41	443.28	129184.47
18+35	1115	4.4472	2.46	0.27	2.84	1.48	1.48	1.37	443.28	129594.34
18+40	1120	4.4639	2.43	0.27	2.80	1.48	1.48	1.33	443.28	129992.21
18+45	1125	4.4805	2.4	0.27	2.76	1.48	1.48	1.29	443.28	130378.08
18+50	1130	4.4968	2.37	0.27	2.72	1.48	1.48	1.25	443.28	130751.95
18+55	1135	4.5128	2.33	0.27	2.67	1.48	1.48	1.20	443.28	131110.82
19+0	1140	4.5287	2.3	0.27	2.63	1.48	1.48	1.16	443.28	131457.69
19+5	1145	4.5443	2.27	0.27	2.59	1.48	1.48	1.12	443.28	131792.56
19+10	1150	4.5598	2.24	0.27	2.55	1.48	1.48	1.08	443.28	132115.43
19+15	1155	4.575	2.21	0.27	2.52	1.48	1.48	1.05	443.28	132429.30
19+20	1160	4.59	2.18	0.27	2.48	1.48	1.48	1.01	443.28	132731.17
19+25	1165	4.6049	2.15	0.27	2.44	1.48	1.48	0.97	443.28	133021.04
19+30	1170	4.6195	2.13	0.27	2.41	1.48	1.48	0.94	443.28	133301.91
19+35	1175	4.634	2.1	0.27	2.38	1.48	1.48	0.91	443.28	133573.78
19+40	1180	4.6483	2.08	0.27	2.35	1.48	1.48	0.88	443.28	133836.65
19+45	1185	4.6624	2.05	0.27	2.32	1.48	1.48	0.85	443.28	134090.52
19+50	1190	4.6763	2.03	0.27	2.29	1.48	1.48	0.82	443.28	134335.39
19+55	1195	4.6901	2	0.27	2.25	1.48	1.48	0.78	443.28	134568.25
20+0	1200	4.7038	1.98	0.27	2.23	1.48	1.48	0.76	443.28	134795.12
20+5	1205	4.7173	1.96	0.27	2.20	1.48	1.48	0.73	443.28	135012.99
20+10	1210	4.7307	1.94	0.27	2.18	1.48	1.48	0.71	443.28	135224.86
20+15	1215	4.7439	1.92	0.27	2.15	1.48	1.48	0.68	443.28	135427.73
20+20	1220	4.757	1.9	0.27	2.13	1.48	1.48	0.66	443.28	135624.60
20+25	1225	4.7699	1.88	0.27	2.10	1.48	1.48	0.63	443.28	135812.47
20+30	1230	4.7828	1.86	0.27	2.08	1.48	1.48	0.61	443.28	135994.34
20+35	1235	4.7955	1.85	0.27	2.06	1.48	1.48	0.59	443.28	136170.21
20+40	1240	4.8081	1.83	0.27	2.04	1.48	1.48	0.57	443.28	136340.08
20+45	1245	4.8206	1.81	0.27	2.01	1.48	1.48	0.54	443.28	136500.95
20+50	1250	4.8329	1.8	0.27	2.00	1.48	1.48	0.53	443.28	136658.82
20+55	1255	4.8452	1.78	0.27	1.98	1.48	1.48	0.51	443.28	136810.69
21+0	1260	4.8573	1.76	0.27	1.95	1.48	1.48	0.48	443.28	136953.56
21+5	1265	4.8694	1.75	0.27	1.94	1.48	1.48	0.47	443.28	137093.43
21+10	1270	4.8813	1.73	0.27	1.91	1.48	1.48	0.44	443.28	137224.30
21+15	1275	4.8932	1.72	0.27	1.90	1.48	1.48	0.43	443.28	137352.17
21+20	1280	4.9049	1.71	0.27	1.89	1.48	1.48	0.42	443.28	137477.04
21+25	1285	4.9166	1.69	0.27	1.86	1.48	1.48	0.39	443.28	137592.91
21+30	1290	4.9282	1.68	0.27	1.85	1.48	1.48	0.38	443.28	137705.78
21+35	1295	4.9396	1.67	0.27	1.84	1.48	1.48	0.37	443.28	137815.65
21+40	1300	4.951	1.65	0.27	1.81	1.48	1.48	0.34	443.28	137916.51
21+45	1305	4.9623	1.64	0.27	1.80	1.48	1.48	0.33	443.28	138014.38
21+50	1310	4.9735	1.63	0.27	1.79	1.48	1.48	0.32	443.28	138109.25
21+55	1315	4.9847	1.62	0.27	1.77	1.48	1.48	0.30	443.28	138198.12
22+0	1320	4.9957	1.61	0.27	1.76	1.48	1.48	0.29	443.28	138283.99
22+5	1325	5.0067	1.59	0.27	1.74	1.48	1.48	0.27	443.28	138363.86
22+10	1330	5.0176	1.58	0.27	1.73	1.48	1.48	0.26	443.28	138440.73
22+15	1335	5.0285	1.57	0.27	1.71	1.48	1.48	0.24	443.28	138511.60
22+20	1340	5.0392	1.56	0.27	1.70	1.48	1.48	0.23	443.28	138579.47
22+25	1345	5.0499	1.55	0.27	1.69	1.48	1.48	0.22	443.28	138644.34
22+30	1350	5.0605	1.54	0.27	1.67	1.48	1.48	0.20	443.28	138703.21
22+35	1355	5.0711	1.53	0.27	1.66	1.48	1.48	0.19	443.28	138759.08
22+40	1360	5.0815	1.52	0.27	1.65	1.48	1.48	0.18	443.28	138811.95
22+45	1365	5.0919	1.51	0.27	1.64	1.48	1.48	0.17	443.28	138861.82
22+50	1370	5.1023	1.5	0.27	1.62	1.48	1.48	0.15	443.28	138905.69
22+55	1375	5.1126	1.49	0.27	1.61	1.48	1.48	0.14	443.28	138946.56
23+0	1380	5.1228	1.48	0.27	1.60	1.48	1.48	0.13	443.28	138984.43
23+5	1385	5.1329	1.47	0.27	1.59	1.48	1.48	0.12	443.28	139019.30
23+10	1390	5.143	1.47	0.27	1.59	1.48	1.48	0.12	443.28	139054.17
23+15	1395	5.1531	1.46	0.27	1.57	1.48	1.48	0.10	443.28	139083.04
23+20	1400	5.1631	1.45	0.27	1.56	1.48	1.48	0.09	443.28	139108.91
23+25	1405	5.173	1.44	0.27	1.55	1.48	1.48	0.08	443.28	139131.78
23+30	1410	5.1828	1.43	0.27	1.54	1.48	1.48	0.07	443.28	139151.64
23+35	1415	5.1926	1.42	0.27	1.52	1.48	1.48	0.05	443.28	139165.51
23+40	1420	5.2024	1.42	0.27	1.52	1.48	1.48	0.05	443.28	139179.38
23+45	1425	5.2121	1.41	0.27	1.51	1.48	1.48	0.04	443.28	139190.25
23+50	1430	5.2217	1.4	0.27	1.50	1.48	1.48	0.03	443.28	139198.12
23+55	1435	5.2313	1.39	0.27	1.49	1.48	1.48	0.02	443.28	139202.99
24+0	1440	5.2409	1.39	0.27	1.48	1.48	1.48	0.01	443.28	139204.86
24+5	1445	5.2498	1.29	0.27	1.31	1.48	1.31	0.00	394.15	139204.86
24+10	1450	5.2557	0.86	0.27	0.86	1.48	0.86	0.00	258.00	139204.86
24+15	1455	5.2584	0.4	0.27	0.40	1.48	0.40	0.00	120.00	139204.86
24+20	1460	5.2599	0.21	0.27	0.21	1.48	0.21	0.00	63.00	139204.86
24+25	1465	5.2608	0.13	0.27	0.13	1.48	0.13	0.00	39.00	139204.86
24+30	1470	5.2614	0.09	0.27	0.09	1.48	0.09	0.00	27.00	139204.86
24+35	1475	5.2619	0.07	0.27	0.07	1.48	0.07	0.00	21.00	139204.86
24+40	1480	5.2622	0.05	0.00	0.05	1.48	0.05	0.00	15.00	139204.86
24+45	1485	5.2625	0.04	0.00	0.04	1.48	0.04	0.00	12.00	139204.86
24+50	1490	5.2627	0.03	0.00	0.03	1.48	0.03	0.00	9.00	139204.86
24+55	1495	5.2628	0.02	0.00	0.00	1.48	0.00	0.00	0.00	139204.86
25+0	1500	5.2629	0.01	0.00	0.00	1.48	0.00	0.00	0.00	139204.86
25+5	1505	5.2629	0.01	0.00	0.00	1.48	0.00	0.00	0.00	139204.86
25+10	1510	5.2629	0	0.00	0.00	1.48	0.00	0.00	0.00	139204.86

Storage Volume Required is less than storage volume provided

2.93 ac-ft (volume infiltrated)	**3.20** ac-ft (volume stored)

Basin2

Time (h+m)	Time (minutes)	Hydrograph Volume (ac-ft)	Basin 2 Q (cfs)	Bypass from Basin 6 (cfs)	Q_{in}=Basin2 Q+ Basin 6 Bypass (cfs)	Max Infiltration (cfs)	Q_{out} Infiltrated Flow (cfs)	Delta Q $=Q_{in}-Q_{out}$ (cfs)	Infiltrated Volume (cf)	Storage Volume Required (cf)
26+00	1560	0	0	0	0	1.48	1.48	-1.48	4432.78	134772.09
27+00	1620	0	0	0	0	1.48	1.48	-1.48	5319.33	129452.75
28+00	1680	0	0	0	0	1.48	1.48	-1.48	5319.33	124133.42
29+00	1740	0	0	0	0	1.48	1.48	-1.48	5319.33	118814.09
30+00	1800	0	0	0	0	1.48	1.48	-1.48	5319.33	113494.76
31+00	1860	0	0	0	0	1.48	1.48	-1.48	5319.33	108175.43
32+00	1920	0	0	0	0	1.48	1.48	-1.48	5319.33	102856.10
33+00	1980	0	0	0	0	1.48	1.48	-1.48	5319.33	97536.77
34+00	2040	0	0	0	0	1.48	1.48	-1.48	5319.33	92217.43
35+00	2100	0	0	0	0	1.48	1.48	-1.48	5319.33	86898.10
36+00	2160	0	0	0	0	1.48	1.48	-1.48	5319.33	81578.77
37+00	2220	0	0	0	0	1.48	1.48	-1.48	5319.33	76259.44
38+00	2280	0	0	0	0	1.48	1.48	-1.48	5319.33	70940.11
39+00	2340	0	0	0	0	1.48	1.48	-1.48	5319.33	65620.78
40+00	2400	0	0	0	0	1.48	1.48	-1.48	5319.33	60301.44
41+00	2460	0	0	0	0	1.48	1.48	-1.48	5319.33	54982.11
42+00	2520	0	0	0	0	1.48	1.48	-1.48	5319.33	49662.78
43+00	2580	0	0	0	0	1.48	1.48	-1.48	5319.33	44343.45
44+00	2640	0	0	0	0	1.48	1.48	-1.48	5319.33	39024.12
45+00	2700	0	0	0	0	1.48	1.48	-1.48	5319.33	33704.79
46+00	2760	0	0	0	0	1.48	1.48	-1.48	5319.33	28385.46
47+00	2820	0	0	0	0	1.48	1.48	-1.48	5319.33	23066.12
48+00	2880	0	0	0	0	1.48	1.48	-1.48	5319.33	17746.79
49+00	2940	0	0	0	0	1.48	1.48	-1.48	5319.33	12427.46
50+00	3000	0	0	0	0	1.48	1.48	-1.48	5319.33	7108.13
51+00	3060	0	0	0	0	1.48	1.48	-1.48	5319.33	1788.80
52+00	3120	0	0	0	0	1.48	1.48	-1.48	5319.33	0.00

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

Study date 07/27/16

++

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

Program License Serial Number 6083

WATERMAN INDUSTRIAL CENTER
PROPOSED CONDITION BASIN 1
SAN BERNARDINO, CA
07.27.2016 KV

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	6.40	1	1.59
Rainfall data for year 100	6.40	6	3.04
Rainfall data for year 100	6.40	24	6.26

++

******** 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)
90.0	98.0	6.40	1.000	0.040	0.100	0.004

Area-averaged adjusted loss rate Fm (In/Hr) = 0.004

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

Area Area SCS CN SCS CN S Pervious

```
 (Ac.)       Fract          (AMC2)    (AMC3)              Yield Fr
     0.64    0.100          90.0      98.0         0.20      0.962
     5.76    0.900          98.0      98.0         0.20      0.962

Area-averaged catchment yield fraction, Y =  0.962
Area-averaged low loss fraction, Yb =  0.038
User entry of time of concentration  =   0.112 (hours)
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =        6.40(Ac.)
Catchment Lag time =   0.089 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 93.2808
Hydrograph baseflow =      0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.004(In/Hr)
Average low loss rate fraction (Yb) = 0.038 (decimal)
VALLEY DEVELOPED S-Graph proportion =  0.467
VALLEY UNDEVELOPED S-Graph proportion =  0.533
FOOTHILL S-Graph proportion =  0.000
MOUNTAIN S-Graph proportion =  0.000
DESERT S-Graph proportion = -0.000

Computed peak 5-minute rainfall =  0.588(In)
Computed peak 30-minute rainfall =  1.205(In)
Specified peak 1-hour rainfall =  1.590(In)
Computed peak 3-hour rainfall =  2.366(In)
Specified peak 6-hour rainfall =  3.040(In)
Specified peak 24-hour rainfall =  6.260(In)


Rainfall depth area reduction factors:
Using a total area of       6.40(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.588(In)
30-minute factor = 1.000    Adjusted rainfall =  1.205(In)
1-hour factor = 1.000       Adjusted rainfall =  1.590(In)
3-hour factor = 1.000       Adjusted rainfall =  2.366(In)
6-hour factor = 1.000       Adjusted rainfall =  3.040(In)
24-hour factor = 1.000      Adjusted rainfall =  6.260(In)
---------------------------------------------------------------------

                        U n i t   H y d r o g r a p h
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval           'S' Graph          Unit Hydrograph
Number             Mean values             ((CFS))
---------------------------------------------------------------------
                (K =         77.40 (CFS))

  1                16.185                 12.527
  2                69.533                 41.291
  3                88.797                 14.911
  4                94.146                  4.140
  5                96.420                  1.760
  6                97.887                  1.136
  7                98.856                  0.750
  8                99.465                  0.471
  9               100.000                  0.414
---------------------------------------------------------------------
Peak Unit    Adjusted mass rainfall  Unit rainfall
Number              (In)                 (In)
  1               0.5883               0.5883
  2               0.7763               0.1880
  3               0.9129               0.1367
  4               1.0243               0.1113
```

5	1.1199	0.0956
6	1.2046	0.0847
7	1.2812	0.0766
8	1.3515	0.0703
9	1.4167	0.0652
10	1.4777	0.0610
11	1.5352	0.0574
12	1.5895	0.0544
13	1.6362	0.0467
14	1.6807	0.0445
15	1.7232	0.0425
16	1.7640	0.0407
17	1.8031	0.0391
18	1.8408	0.0377
19	1.8772	0.0364
20	1.9124	0.0352
21	1.9464	0.0341
22	1.9795	0.0331
23	2.0116	0.0321
24	2.0428	0.0312
25	2.0732	0.0304
26	2.1029	0.0296
27	2.1318	0.0289
28	2.1600	0.0282
29	2.1876	0.0276
30	2.2147	0.0270
31	2.2411	0.0264
32	2.2670	0.0259
33	2.2924	0.0254
34	2.3173	0.0249
35	2.3417	0.0244
36	2.3657	0.0240
37	2.3893	0.0236
38	2.4125	0.0232
39	2.4352	0.0228
40	2.4576	0.0224
41	2.4797	0.0221
42	2.5014	0.0217
43	2.5228	0.0214
44	2.5439	0.0211
45	2.5646	0.0208
46	2.5851	0.0205
47	2.6053	0.0202
48	2.6252	0.0199
49	2.6449	0.0197
50	2.6643	0.0194
51	2.6834	0.0192
52	2.7023	0.0189
53	2.7210	0.0187
54	2.7395	0.0185
55	2.7577	0.0182
56	2.7758	0.0180
57	2.7936	0.0178
58	2.8112	0.0176
59	2.8287	0.0174
60	2.8459	0.0173
61	2.8630	0.0171
62	2.8799	0.0169
63	2.8966	0.0167
64	2.9131	0.0165
65	2.9295	0.0164
66	2.9457	0.0162
67	2.9618	0.0161

68	2.9777	0.0159
69	2.9935	0.0158
70	3.0091	0.0156
71	3.0246	0.0155
72	3.0399	0.0153
73	3.0619	0.0219
74	3.0836	0.0218
75	3.1053	0.0216
76	3.1268	0.0215
77	3.1482	0.0214
78	3.1694	0.0212
79	3.1905	0.0211
80	3.2115	0.0210
81	3.2323	0.0209
82	3.2531	0.0207
83	3.2737	0.0206
84	3.2942	0.0205
85	3.3146	0.0204
86	3.3348	0.0203
87	3.3550	0.0201
88	3.3750	0.0200
89	3.3949	0.0199
90	3.4148	0.0198
91	3.4345	0.0197
92	3.4541	0.0196
93	3.4736	0.0195
94	3.4930	0.0194
95	3.5123	0.0193
96	3.5315	0.0192
97	3.5507	0.0191
98	3.5697	0.0190
99	3.5886	0.0189
100	3.6075	0.0188
101	3.6262	0.0188
102	3.6449	0.0187
103	3.6635	0.0186
104	3.6819	0.0185
105	3.7004	0.0184
106	3.7187	0.0183
107	3.7369	0.0182
108	3.7551	0.0182
109	3.7731	0.0181
110	3.7911	0.0180
111	3.8091	0.0179
112	3.8269	0.0178
113	3.8447	0.0178
114	3.8624	0.0177
115	3.8800	0.0176
116	3.8975	0.0175
117	3.9150	0.0175
118	3.9324	0.0174
119	3.9497	0.0173
120	3.9670	0.0173
121	3.9842	0.0172
122	4.0013	0.0171
123	4.0184	0.0171
124	4.0353	0.0170
125	4.0523	0.0169
126	4.0691	0.0169
127	4.0859	0.0168
128	4.1027	0.0167
129	4.1193	0.0167
130	4.1359	0.0166

131	4.1525	0.0165
132	4.1690	0.0165
133	4.1854	0.0164
134	4.2018	0.0164
135	4.2181	0.0163
136	4.2343	0.0163
137	4.2505	0.0162
138	4.2667	0.0161
139	4.2827	0.0161
140	4.2988	0.0160
141	4.3147	0.0160
142	4.3306	0.0159
143	4.3465	0.0159
144	4.3623	0.0158
145	4.3781	0.0158
146	4.3938	0.0157
147	4.4094	0.0157
148	4.4250	0.0156
149	4.4406	0.0156
150	4.4561	0.0155
151	4.4716	0.0155
152	4.4870	0.0154
153	4.5023	0.0154
154	4.5176	0.0153
155	4.5329	0.0153
156	4.5481	0.0152
157	4.5633	0.0152
158	4.5784	0.0151
159	4.5935	0.0151
160	4.6085	0.0150
161	4.6235	0.0150
162	4.6384	0.0149
163	4.6533	0.0149
164	4.6682	0.0149
165	4.6830	0.0148
166	4.6978	0.0148
167	4.7125	0.0147
168	4.7272	0.0147
169	4.7418	0.0146
170	4.7564	0.0146
171	4.7710	0.0146
172	4.7855	0.0145
173	4.8000	0.0145
174	4.8144	0.0144
175	4.8288	0.0144
176	4.8431	0.0144
177	4.8575	0.0143
178	4.8717	0.0143
179	4.8860	0.0142
180	4.9002	0.0142
181	4.9144	0.0142
182	4.9285	0.0141
183	4.9426	0.0141
184	4.9566	0.0141
185	4.9707	0.0140
186	4.9846	0.0140
187	4.9986	0.0139
188	5.0125	0.0139
189	5.0264	0.0139
190	5.0402	0.0138
191	5.0540	0.0138
192	5.0678	0.0138
193	5.0815	0.0137

194	5.0952	0.0137
195	5.1089	0.0137
196	5.1225	0.0136
197	5.1361	0.0136
198	5.1497	0.0136
199	5.1632	0.0135
200	5.1767	0.0135
201	5.1902	0.0135
202	5.2036	0.0134
203	5.2170	0.0134
204	5.2304	0.0134
205	5.2438	0.0133
206	5.2571	0.0133
207	5.2704	0.0133
208	5.2836	0.0133
209	5.2968	0.0132
210	5.3100	0.0132
211	5.3232	0.0132
212	5.3363	0.0131
213	5.3494	0.0131
214	5.3625	0.0131
215	5.3755	0.0130
216	5.3885	0.0130
217	5.4015	0.0130
218	5.4145	0.0130
219	5.4274	0.0129
220	5.4403	0.0129
221	5.4532	0.0129
222	5.4660	0.0128
223	5.4788	0.0128
224	5.4916	0.0128
225	5.5044	0.0128
226	5.5171	0.0127
227	5.5298	0.0127
228	5.5425	0.0127
229	5.5552	0.0127
230	5.5678	0.0126
231	5.5804	0.0126
232	5.5930	0.0126
233	5.6055	0.0125
234	5.6180	0.0125
235	5.6305	0.0125
236	5.6430	0.0125
237	5.6554	0.0124
238	5.6679	0.0124
239	5.6803	0.0124
240	5.6926	0.0124
241	5.7050	0.0123
242	5.7173	0.0123
243	5.7296	0.0123
244	5.7419	0.0123
245	5.7541	0.0122
246	5.7663	0.0122
247	5.7785	0.0122
248	5.7907	0.0122
249	5.8029	0.0122
250	5.8150	0.0121
251	5.8271	0.0121
252	5.8392	0.0121
253	5.8513	0.0121
254	5.8633	0.0120
255	5.8753	0.0120
256	5.8873	0.0120

257	5.8993	0.0120
258	5.9112	0.0119
259	5.9232	0.0119
260	5.9351	0.0119
261	5.9470	0.0119
262	5.9588	0.0119
263	5.9707	0.0118
264	5.9825	0.0118
265	5.9943	0.0118
266	6.0060	0.0118
267	6.0178	0.0118
268	6.0295	0.0117
269	6.0412	0.0117
270	6.0529	0.0117
271	6.0646	0.0117
272	6.0763	0.0117
273	6.0879	0.0116
274	6.0995	0.0116
275	6.1111	0.0116
276	6.1227	0.0116
277	6.1342	0.0115
278	6.1457	0.0115
279	6.1572	0.0115
280	6.1687	0.0115
281	6.1802	0.0115
282	6.1917	0.0115
283	6.2031	0.0114
284	6.2145	0.0114
285	6.2259	0.0114
286	6.2373	0.0114
287	6.2486	0.0114
288	6.2599	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0003	0.0110
2	0.0114	0.0003	0.0110
3	0.0114	0.0003	0.0111
4	0.0114	0.0003	0.0111
5	0.0115	0.0003	0.0111
6	0.0115	0.0003	0.0111
7	0.0115	0.0003	0.0112
8	0.0115	0.0003	0.0112
9	0.0116	0.0003	0.0112
10	0.0116	0.0003	0.0113
11	0.0116	0.0003	0.0113
12	0.0117	0.0003	0.0113
13	0.0117	0.0003	0.0114
14	0.0117	0.0003	0.0114
15	0.0118	0.0003	0.0114
16	0.0118	0.0003	0.0114
17	0.0118	0.0003	0.0115
18	0.0118	0.0003	0.0115
19	0.0119	0.0003	0.0116
20	0.0119	0.0003	0.0116
21	0.0119	0.0003	0.0116
22	0.0120	0.0003	0.0116
23	0.0120	0.0003	0.0117
24	0.0120	0.0003	0.0117
25	0.0121	0.0003	0.0118
26	0.0121	0.0003	0.0118

27	0.0122	0.0003	0.0118
28	0.0122	0.0003	0.0118
29	0.0122	0.0003	0.0119
30	0.0122	0.0003	0.0119
31	0.0123	0.0003	0.0120
32	0.0123	0.0003	0.0120
33	0.0124	0.0003	0.0120
34	0.0124	0.0003	0.0121
35	0.0124	0.0003	0.0121
36	0.0125	0.0003	0.0121
37	0.0125	0.0003	0.0122
38	0.0125	0.0003	0.0122
39	0.0126	0.0003	0.0123
40	0.0126	0.0003	0.0123
41	0.0127	0.0003	0.0123
42	0.0127	0.0003	0.0124
43	0.0128	0.0003	0.0124
44	0.0128	0.0003	0.0125
45	0.0128	0.0003	0.0125
46	0.0129	0.0003	0.0125
47	0.0129	0.0003	0.0126
48	0.0130	0.0003	0.0126
49	0.0130	0.0003	0.0127
50	0.0130	0.0003	0.0127
51	0.0131	0.0003	0.0128
52	0.0131	0.0003	0.0128
53	0.0132	0.0003	0.0129
54	0.0132	0.0003	0.0129
55	0.0133	0.0003	0.0130
56	0.0133	0.0003	0.0130
57	0.0134	0.0003	0.0130
58	0.0134	0.0003	0.0131
59	0.0135	0.0003	0.0131
60	0.0135	0.0003	0.0132
61	0.0136	0.0003	0.0132
62	0.0136	0.0003	0.0133
63	0.0137	0.0003	0.0133
64	0.0137	0.0003	0.0134
65	0.0138	0.0003	0.0134
66	0.0138	0.0003	0.0135
67	0.0139	0.0003	0.0135
68	0.0139	0.0003	0.0136
69	0.0140	0.0003	0.0137
70	0.0140	0.0003	0.0137
71	0.0141	0.0003	0.0138
72	0.0141	0.0003	0.0138
73	0.0142	0.0003	0.0139
74	0.0142	0.0003	0.0139
75	0.0143	0.0003	0.0140
76	0.0144	0.0003	0.0140
77	0.0144	0.0003	0.0141
78	0.0145	0.0003	0.0141
79	0.0146	0.0003	0.0142
80	0.0146	0.0003	0.0143
81	0.0147	0.0003	0.0144
82	0.0147	0.0003	0.0144
83	0.0148	0.0003	0.0145
84	0.0149	0.0003	0.0145
85	0.0149	0.0003	0.0146
86	0.0150	0.0003	0.0147
87	0.0151	0.0003	0.0147
88	0.0151	0.0003	0.0148
89	0.0152	0.0003	0.0149

90	0.0153	0.0003	0.0149
91	0.0154	0.0003	0.0150
92	0.0154	0.0003	0.0151
93	0.0155	0.0003	0.0152
94	0.0156	0.0003	0.0152
95	0.0157	0.0003	0.0153
96	0.0157	0.0003	0.0154
97	0.0158	0.0003	0.0155
98	0.0159	0.0003	0.0155
99	0.0160	0.0003	0.0156
100	0.0160	0.0003	0.0157
101	0.0161	0.0003	0.0158
102	0.0162	0.0003	0.0159
103	0.0163	0.0003	0.0160
104	0.0164	0.0003	0.0160
105	0.0165	0.0003	0.0162
106	0.0165	0.0003	0.0162
107	0.0167	0.0003	0.0163
108	0.0167	0.0003	0.0164
109	0.0169	0.0003	0.0165
110	0.0169	0.0003	0.0166
111	0.0171	0.0003	0.0167
112	0.0171	0.0003	0.0168
113	0.0173	0.0003	0.0169
114	0.0173	0.0003	0.0170
115	0.0175	0.0003	0.0171
116	0.0175	0.0003	0.0172
117	0.0177	0.0003	0.0174
118	0.0178	0.0003	0.0174
119	0.0179	0.0003	0.0176
120	0.0180	0.0003	0.0177
121	0.0182	0.0003	0.0178
122	0.0182	0.0003	0.0179
123	0.0184	0.0003	0.0181
124	0.0185	0.0003	0.0182
125	0.0187	0.0003	0.0183
126	0.0188	0.0003	0.0184
127	0.0189	0.0003	0.0186
128	0.0190	0.0003	0.0187
129	0.0192	0.0003	0.0189
130	0.0193	0.0003	0.0190
131	0.0195	0.0003	0.0192
132	0.0196	0.0003	0.0193
133	0.0198	0.0003	0.0195
134	0.0199	0.0003	0.0196
135	0.0201	0.0003	0.0198
136	0.0203	0.0003	0.0199
137	0.0205	0.0003	0.0202
138	0.0206	0.0003	0.0203
139	0.0209	0.0003	0.0205
140	0.0210	0.0003	0.0206
141	0.0212	0.0003	0.0209
142	0.0214	0.0003	0.0210
143	0.0216	0.0003	0.0213
144	0.0218	0.0003	0.0215
145	0.0153	0.0003	0.0150
146	0.0155	0.0003	0.0151
147	0.0158	0.0003	0.0154
148	0.0159	0.0003	0.0156
149	0.0162	0.0003	0.0159
150	0.0164	0.0003	0.0161
151	0.0167	0.0003	0.0164
152	0.0169	0.0003	0.0166

153	0.0173	0.0003	0.0169
154	0.0174	0.0003	0.0171
155	0.0178	0.0003	0.0175
156	0.0180	0.0003	0.0177
157	0.0185	0.0003	0.0181
158	0.0187	0.0003	0.0184
159	0.0192	0.0003	0.0188
160	0.0194	0.0003	0.0191
161	0.0199	0.0003	0.0196
162	0.0202	0.0003	0.0199
163	0.0208	0.0003	0.0204
164	0.0211	0.0003	0.0207
165	0.0217	0.0003	0.0214
166	0.0221	0.0003	0.0217
167	0.0228	0.0003	0.0224
168	0.0232	0.0003	0.0228
169	0.0240	0.0003	0.0237
170	0.0244	0.0003	0.0241
171	0.0254	0.0003	0.0251
172	0.0259	0.0003	0.0256
173	0.0270	0.0003	0.0267
174	0.0276	0.0003	0.0273
175	0.0289	0.0003	0.0286
176	0.0296	0.0003	0.0293
177	0.0312	0.0003	0.0309
178	0.0321	0.0003	0.0318
179	0.0341	0.0003	0.0337
180	0.0352	0.0003	0.0348
181	0.0377	0.0003	0.0374
182	0.0391	0.0003	0.0388
183	0.0425	0.0003	0.0422
184	0.0445	0.0003	0.0442
185	0.0544	0.0003	0.0540
186	0.0574	0.0003	0.0571
187	0.0652	0.0003	0.0649
188	0.0703	0.0003	0.0700
189	0.0847	0.0003	0.0844
190	0.0956	0.0003	0.0953
191	0.1367	0.0003	0.1364
192	0.1880	0.0003	0.1876
193	0.5883	0.0003	0.5880
194	0.1113	0.0003	0.1110
195	0.0766	0.0003	0.0763
196	0.0610	0.0003	0.0607
197	0.0467	0.0003	0.0464
198	0.0407	0.0003	0.0404
199	0.0364	0.0003	0.0360
200	0.0331	0.0003	0.0327
201	0.0304	0.0003	0.0301
202	0.0282	0.0003	0.0279
203	0.0264	0.0003	0.0261
204	0.0249	0.0003	0.0246
205	0.0236	0.0003	0.0232
206	0.0224	0.0003	0.0221
207	0.0214	0.0003	0.0211
208	0.0205	0.0003	0.0201
209	0.0197	0.0003	0.0193
210	0.0189	0.0003	0.0186
211	0.0182	0.0003	0.0179
212	0.0176	0.0003	0.0173
213	0.0171	0.0003	0.0167
214	0.0165	0.0003	0.0162
215	0.0161	0.0003	0.0157

216	0.0156	0.0003	0.0153
217	0.0219	0.0003	0.0216
218	0.0215	0.0003	0.0212
219	0.0211	0.0003	0.0208
220	0.0207	0.0003	0.0204
221	0.0204	0.0003	0.0200
222	0.0200	0.0003	0.0197
223	0.0197	0.0003	0.0194
224	0.0194	0.0003	0.0191
225	0.0191	0.0003	0.0188
226	0.0188	0.0003	0.0185
227	0.0186	0.0003	0.0182
228	0.0183	0.0003	0.0180
229	0.0181	0.0003	0.0177
230	0.0178	0.0003	0.0175
231	0.0176	0.0003	0.0173
232	0.0174	0.0003	0.0171
233	0.0172	0.0003	0.0169
234	0.0170	0.0003	0.0167
235	0.0168	0.0003	0.0165
236	0.0166	0.0003	0.0163
237	0.0164	0.0003	0.0161
238	0.0163	0.0003	0.0159
239	0.0161	0.0003	0.0158
240	0.0159	0.0003	0.0156
241	0.0158	0.0003	0.0154
242	0.0156	0.0003	0.0153
243	0.0155	0.0003	0.0151
244	0.0153	0.0003	0.0150
245	0.0152	0.0003	0.0148
246	0.0150	0.0003	0.0147
247	0.0149	0.0003	0.0146
248	0.0148	0.0003	0.0144
249	0.0146	0.0003	0.0143
250	0.0145	0.0003	0.0142
251	0.0144	0.0003	0.0141
252	0.0143	0.0003	0.0139
253	0.0142	0.0003	0.0138
254	0.0141	0.0003	0.0137
255	0.0139	0.0003	0.0136
256	0.0138	0.0003	0.0135
257	0.0137	0.0003	0.0134
258	0.0136	0.0003	0.0133
259	0.0135	0.0003	0.0132
260	0.0134	0.0003	0.0131
261	0.0133	0.0003	0.0130
262	0.0133	0.0003	0.0129
263	0.0132	0.0003	0.0128
264	0.0131	0.0003	0.0127
265	0.0130	0.0003	0.0127
266	0.0129	0.0003	0.0126
267	0.0128	0.0003	0.0125
268	0.0127	0.0003	0.0124
269	0.0127	0.0003	0.0123
270	0.0126	0.0003	0.0122
271	0.0125	0.0003	0.0122
272	0.0124	0.0003	0.0121
273	0.0123	0.0003	0.0120
274	0.0123	0.0003	0.0119
275	0.0122	0.0003	0.0119
276	0.0121	0.0003	0.0118
277	0.0121	0.0003	0.0117
278	0.0120	0.0003	0.0117

279	0.0119	0.0003	0.0116
280	0.0119	0.0003	0.0115
281	0.0118	0.0003	0.0115
282	0.0117	0.0003	0.0114
283	0.0117	0.0003	0.0113
284	0.0116	0.0003	0.0113
285	0.0115	0.0003	0.0112
286	0.0115	0.0003	0.0112
287	0.0114	0.0003	0.0111
288	0.0114	0.0003	0.0110

```
-----------------------------------------------------------------------
-----------------------------------------------------------------------
Total soil rain loss =      0.10(In)
Total effective rainfall =      6.16(In)
Peak flow rate in flood hydrograph =     29.40(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      0.0009      0.14   Q          |          |          |          |
  0+10      0.0050      0.59   Q          |          |          |          |
  0+15      0.0102      0.76   VQ         |          |          |          |
  0+20      0.0158      0.81   VQ         |          |          |          |
  0+25      0.0215      0.83   VQ         |          |          |          |
  0+30      0.0273      0.84   VQ         |          |          |          |
  0+35      0.0332      0.85   VQ         |          |          |          |
  0+40      0.0391      0.86   VQ         |          |          |          |
  0+45      0.0450      0.87   VQ         |          |          |          |
  0+50      0.0510      0.87   VQ         |          |          |          |
  0+55      0.0570      0.87   VQ         |          |          |          |
  1+ 0      0.0630      0.87   VQ         |          |          |          |
  1+ 5      0.0691      0.88   VQ         |          |          |          |
  1+10      0.0751      0.88   VQ         |          |          |          |
  1+15      0.0812      0.88   VQ         |          |          |          |
  1+20      0.0873      0.88   |Q         |          |          |          |
  1+25      0.0933      0.89   |Q         |          |          |          |
  1+30      0.0995      0.89   |Q         |          |          |          |
  1+35      0.1056      0.89   |Q         |          |          |          |
  1+40      0.1117      0.89   |Q         |          |          |          |
  1+45      0.1179      0.90   |Q         |          |          |          |
  1+50      0.1241      0.90   |Q         |          |          |          |
  1+55      0.1303      0.90   |Q         |          |          |          |
  2+ 0      0.1365      0.90   |Q         |          |          |          |
  2+ 5      0.1428      0.91   |Q         |          |          |          |
  2+10      0.1490      0.91   |Q         |          |          |          |
  2+15      0.1553      0.91   |Q         |          |          |          |
  2+20      0.1616      0.91   |Q         |          |          |          |
  2+25      0.1679      0.92   |QV        |          |          |          |
  2+30      0.1742      0.92   |QV        |          |          |          |
  2+35      0.1806      0.92   |QV        |          |          |          |
  2+40      0.1869      0.92   |QV        |          |          |          |
  2+45      0.1933      0.93   |QV        |          |          |          |
  2+50      0.1997      0.93   |QV        |          |          |          |
  2+55      0.2062      0.93   |QV        |          |          |          |
  3+ 0      0.2126      0.94   |QV        |          |          |          |
  3+ 5      0.2191      0.94   |QV        |          |          |          |
  3+10      0.2256      0.94   |QV        |          |          |          |
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 3+15          0.2321        0.94  |QV        |         |         |         |
 3+20          0.2386        0.95  |QV        |         |         |         |
 3+25          0.2451        0.95  |QV        |         |         |         |
 3+30          0.2517        0.95  |Q V       |         |         |         |
 3+35          0.2583        0.96  |Q V       |         |         |         |
 3+40          0.2649        0.96  |Q V       |         |         |         |
 3+45          0.2716        0.96  |Q V       |         |         |         |
 3+50          0.2782        0.97  |Q V       |         |         |         |
 3+55          0.2849        0.97  |Q V       |         |         |         |
 4+ 0          0.2916        0.97  |Q V       |         |         |         |
 4+ 5          0.2983        0.98  |Q V       |         |         |         |
 4+10          0.3051        0.98  |Q V       |         |         |         |
 4+15          0.3118        0.98  |Q V       |         |         |         |
 4+20          0.3186        0.99  |Q V       |         |         |         |
 4+25          0.3255        0.99  |Q V       |         |         |         |
 4+30          0.3323        0.99  |Q  V      |         |         |         |
 4+35          0.3392        1.00  |Q  V      |         |         |         |
 4+40          0.3461        1.00  |Q  V      |         |         |         |
 4+45          0.3530        1.00  |Q  V      |         |         |         |
 4+50          0.3599        1.01  |Q  V      |         |         |         |
 4+55          0.3669        1.01  |Q  V      |         |         |         |
 5+ 0          0.3739        1.02  |Q  V      |         |         |         |
 5+ 5          0.3809        1.02  |Q  V      |         |         |         |
 5+10          0.3879        1.02  |Q  V      |         |         |         |
 5+15          0.3950        1.03  |Q  V      |         |         |         |
 5+20          0.4021        1.03  |Q  V      |         |         |         |
 5+25          0.4092        1.03  |Q  V      |         |         |         |
 5+30          0.4164        1.04  |Q   V     |         |         |         |
 5+35          0.4235        1.04  |Q   V     |         |         |         |
 5+40          0.4307        1.05  |Q   V     |         |         |         |
 5+45          0.4380        1.05  |Q   V     |         |         |         |
 5+50          0.4452        1.05  |Q   V     |         |         |         |
 5+55          0.4525        1.06  |Q   V     |         |         |         |
 6+ 0          0.4598        1.06  |Q   V     |         |         |         |
 6+ 5          0.4672        1.07  |Q   V     |         |         |         |
 6+10          0.4746        1.07  |Q   V     |         |         |         |
 6+15          0.4820        1.08  |Q   V     |         |         |         |
 6+20          0.4894        1.08  |Q   V     |         |         |         |
 6+25          0.4969        1.08  |Q    V    |         |         |         |
 6+30          0.5044        1.09  |Q    V    |         |         |         |
 6+35          0.5119        1.09  |Q    V    |         |         |         |
 6+40          0.5195        1.10  |Q    V    |         |         |         |
 6+45          0.5271        1.10  |Q    V    |         |         |         |
 6+50          0.5347        1.11  |Q    V    |         |         |         |
 6+55          0.5424        1.11  |Q    V    |         |         |         |
 7+ 0          0.5501        1.12  |Q    V    |         |         |         |
 7+ 5          0.5578        1.12  |Q    V    |         |         |         |
 7+10          0.5656        1.13  |Q    V    |         |         |         |
 7+15          0.5734        1.13  |Q    V    |         |         |         |
 7+20          0.5812        1.14  |Q     V   |         |         |         |
 7+25          0.5891        1.14  |Q     V   |         |         |         |
 7+30          0.5970        1.15  |Q     V   |         |         |         |
 7+35          0.6050        1.15  |Q     V   |         |         |         |
 7+40          0.6130        1.16  |Q     V   |         |         |         |
 7+45          0.6210        1.17  |Q     V   |         |         |         |
 7+50          0.6291        1.17  |Q     V   |         |         |         |
 7+55          0.6372        1.18  |Q     V   |         |         |         |
 8+ 0          0.6453        1.18  |Q     V   |         |         |         |
 8+ 5          0.6535        1.19  |Q     V   |         |         |         |
 8+10          0.6617        1.20  |Q      V  |         |         |         |
 8+15          0.6700        1.20  |Q      V  |         |         |         |
 8+20          0.6783        1.21  |Q      V  |         |         |         |
 8+25          0.6867        1.21  |Q      V  |         |         |         |
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  8+30       0.6951       1.22  |Q      V |         |         |         |
  8+35       0.7035       1.23  |Q      V |         |         |         |
  8+40       0.7120       1.23  |Q      V |         |         |         |
  8+45       0.7206       1.24  |Q      V |         |         |         |
  8+50       0.7291       1.25  |Q      V |         |         |         |
  8+55       0.7378       1.25  |Q      V |         |         |         |
  9+ 0       0.7465       1.26  |Q       V|         |         |         |
  9+ 5       0.7552       1.27  |Q       V|         |         |         |
  9+10       0.7640       1.28  |Q       V|         |         |         |
  9+15       0.7728       1.28  |Q       V|         |         |         |
  9+20       0.7817       1.29  |Q       V|         |         |         |
  9+25       0.7906       1.30  |Q       V|         |         |         |
  9+30       0.7996       1.31  |Q       V|         |         |         |
  9+35       0.8087       1.31  |Q       V|         |         |         |
  9+40       0.8178       1.32  |Q       V|         |         |         |
  9+45       0.8269       1.33  |Q        V         |         |         |
  9+50       0.8362       1.34  |Q        V         |         |         |
  9+55       0.8454       1.35  |Q        V         |         |         |
 10+ 0       0.8548       1.36  |Q        V         |         |         |
 10+ 5       0.8642       1.37  |Q        V         |         |         |
 10+10       0.8737       1.38  |Q        V         |         |         |
 10+15       0.8832       1.38  |Q        V         |         |         |
 10+20       0.8928       1.39  |Q        V         |         |         |
 10+25       0.9025       1.40  |Q        V         |         |         |
 10+30       0.9122       1.41  |Q        |V        |         |         |
 10+35       0.9220       1.42  |Q        |V        |         |         |
 10+40       0.9319       1.43  |Q        |V        |         |         |
 10+45       0.9418       1.44  |Q        |V        |         |         |
 10+50       0.9519       1.46  |Q        |V        |         |         |
 10+55       0.9620       1.47  |Q        |V        |         |         |
 11+ 0       0.9721       1.48  |Q        |V        |         |         |
 11+ 5       0.9824       1.49  |Q        |V        |         |         |
 11+10       0.9927       1.50  | Q       | V       |         |         |
 11+15       1.0032       1.51  | Q       | V       |         |         |
 11+20       1.0137       1.53  | Q       | V       |         |         |
 11+25       1.0243       1.54  | Q       | V       |         |         |
 11+30       1.0350       1.55  | Q       | V       |         |         |
 11+35       1.0458       1.57  | Q       | V       |         |         |
 11+40       1.0567       1.58  | Q       | V       |         |         |
 11+45       1.0677       1.59  | Q       | V       |         |         |
 11+50       1.0788       1.61  | Q       |  V      |         |         |
 11+55       1.0899       1.62  | Q       |  V      |         |         |
 12+ 0       1.1013       1.64  | Q       |  V      |         |         |
 12+ 5       1.1121       1.57  | Q       |  V      |         |         |
 12+10       1.1211       1.31  |Q        |  V      |         |         |
 12+15       1.1296       1.23  |Q        |  V      |         |         |
 12+20       1.1379       1.22  |Q        |  V      |         |         |
 12+25       1.1464       1.22  |Q        |  V      |         |         |
 12+30       1.1548       1.23  |Q        |   V     |         |         |
 12+35       1.1634       1.24  |Q        |   V     |         |         |
 12+40       1.1721       1.26  |Q        |   V     |         |         |
 12+45       1.1809       1.28  |Q        |   V     |         |         |
 12+50       1.1898       1.30  |Q        |   V     |         |         |
 12+55       1.1989       1.32  |Q        |   V     |         |         |
 13+ 0       1.2082       1.34  |Q        |   V     |         |         |
 13+ 5       1.2176       1.36  |Q        |   V     |         |         |
 13+10       1.2272       1.39  |Q        |   V     |         |         |
 13+15       1.2369       1.41  |Q        |    V    |         |         |
 13+20       1.2468       1.44  |Q        |    V    |         |         |
 13+25       1.2570       1.47  |Q        |    V    |         |         |
 13+30       1.2673       1.50  | Q       |    V    |         |         |
 13+35       1.2778       1.53  | Q       |    V    |         |         |
 13+40       1.2886       1.57  | Q       |    V    |         |         |
```

13+45	1.2996	1.60
13+50	1.3109	1.64
13+55	1.3224	1.67
14+ 0	1.3342	1.72
14+ 5	1.3463	1.76
14+10	1.3588	1.81
14+15	1.3716	1.86
14+20	1.3848	1.91
14+25	1.3983	1.97
14+30	1.4123	2.03
14+35	1.4268	2.10
14+40	1.4418	2.18
14+45	1.4573	2.25
14+50	1.4734	2.35
14+55	1.4903	2.44
15+ 0	1.5079	2.56
15+ 5	1.5263	2.67
15+10	1.5458	2.83
15+15	1.5663	2.98
15+20	1.5881	3.18
15+25	1.6119	3.45
15+30	1.6391	3.95
15+35	1.6689	4.34
15+40	1.7021	4.82
15+45	1.7390	5.36
15+50	1.7819	6.22
15+55	1.8332	7.45
16+ 0	1.9023	10.03
16+ 5	2.0253	17.87
16+10	2.2278	29.40
16+15	2.3349	15.55
16+20	2.3943	8.62
16+25	2.4364	6.11
16+30	2.4691	4.75
16+35	2.4961	3.91
16+40	2.5189	3.32
16+45	2.5392	2.94
16+50	2.5562	2.48
16+55	2.5719	2.27
17+ 0	2.5863	2.10
17+ 5	2.5999	1.97
17+10	2.6126	1.85
17+15	2.6247	1.75
17+20	2.6362	1.67
17+25	2.6472	1.59
17+30	2.6577	1.53
17+35	2.6678	1.47
17+40	2.6775	1.41
17+45	2.6869	1.36
17+50	2.6959	1.32
17+55	2.7047	1.27
18+ 0	2.7132	1.23
18+ 5	2.7220	1.28
18+10	2.7326	1.53
18+15	2.7435	1.59
18+20	2.7545	1.59
18+25	2.7653	1.57
18+30	2.7760	1.55
18+35	2.7865	1.53
18+40	2.7969	1.51
18+45	2.8072	1.49
18+50	2.8173	1.46
18+55	2.8272	1.44

19+ 0	2.8370	1.42	Q	V
19+ 5	2.8466	1.40	Q	V
19+10	2.8561	1.38	Q	V
19+15	2.8655	1.36	Q	V
19+20	2.8748	1.35	Q	V
19+25	2.8839	1.33	Q	V
19+30	2.8930	1.31	Q	V
19+35	2.9019	1.30	Q	V
19+40	2.9107	1.28	Q	V
19+45	2.9194	1.27	Q	V
19+50	2.9280	1.25	Q	V
19+55	2.9366	1.24	Q	V
20+ 0	2.9450	1.22	Q	V
20+ 5	2.9534	1.21	Q	V
20+10	2.9616	1.20	Q	V
20+15	2.9698	1.19	Q	V
20+20	2.9779	1.18	Q	V
20+25	2.9859	1.16	Q	V
20+30	2.9938	1.15	Q	V
20+35	3.0017	1.14	Q	V
20+40	3.0095	1.13	Q	V
20+45	3.0172	1.12	Q	V
20+50	3.0249	1.11	Q	V
20+55	3.0325	1.10	Q	V
21+ 0	3.0400	1.09	Q	V
21+ 5	3.0474	1.08	Q	V
21+10	3.0548	1.07	Q	V
21+15	3.0622	1.07	Q	V
21+20	3.0695	1.06	Q	V
21+25	3.0767	1.05	Q	V
21+30	3.0839	1.04	Q	V
21+35	3.0910	1.03	Q	V
21+40	3.0980	1.03	Q	V
21+45	3.1050	1.02	Q	V
21+50	3.1120	1.01	Q	V
21+55	3.1189	1.00	Q	V
22+ 0	3.1258	1.00	Q	V
22+ 5	3.1326	0.99	Q	V
22+10	3.1393	0.98	Q	V
22+15	3.1461	0.98	Q	V
22+20	3.1527	0.97	Q	V
22+25	3.1594	0.96	Q	V
22+30	3.1659	0.96	Q	V
22+35	3.1725	0.95	Q	V
22+40	3.1790	0.94	Q	V
22+45	3.1854	0.94	Q	V
22+50	3.1919	0.93	Q	V
22+55	3.1983	0.93	Q	V
23+ 0	3.2046	0.92	Q	V
23+ 5	3.2109	0.92	Q	V
23+10	3.2172	0.91	Q	V
23+15	3.2234	0.90	Q	V
23+20	3.2296	0.90	Q	V
23+25	3.2358	0.89	Q	V
23+30	3.2419	0.89	Q	V
23+35	3.2480	0.88	Q	V
23+40	3.2540	0.88	Q	V
23+45	3.2601	0.87	Q	V
23+50	3.2661	0.87	Q	V
23+55	3.2720	0.87	Q	V
24+ 0	3.2779	0.86	Q	V
24+ 5	3.2829	0.72	Q	V
24+10	3.2847	0.26	Q	V

```
   24+15         3.2854        0.10  Q         |         |         |        V|
   24+20         3.2857        0.05  Q         |         |         |        V|
   24+25         3.2859        0.03  Q         |         |         |        V|
   24+30         3.2860        0.02  Q         |         |         |        V|
   24+35         3.2861        0.01  Q         |         |         |        V|
   24+40         3.2861        0.00  Q         |         |         |          V
----------------------------------------------------------------------
```

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

Study date 07/27/16

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

Program License Serial Number 6083

WATERMAN INDUSTRIAL CENTER
PROPOSED CONDITION BASIN 2
SAN BERNARDINO, CA
07.27.2016 KV

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		
10.25	1	1.59
Rainfall data for year 100		
10.25	6	3.04
Rainfall data for year 100		
10.25	24	6.26

++

******** 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)
90.0	98.0	10.25	1.000	0.040	0.100	0.004

Area-averaged adjusted loss rate Fm (In/Hr) = 0.004

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

Area Area SCS CN SCS CN S Pervious

```
 (Ac.)       Fract          (AMC2)    (AMC3)              Yield Fr
    1.03     0.100          90.0      98.0        0.20      0.962
    9.22     0.900          98.0      98.0        0.20      0.962

Area-averaged catchment yield fraction, Y =  0.962
Area-averaged low loss fraction, Yb =  0.038
User entry of time of concentration  =   0.186 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =      10.25(Ac.)
Catchment Lag time =   0.149 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 55.9044
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.004(In/Hr)
Average low loss rate fraction (Yb) = 0.038 (decimal)
VALLEY DEVELOPED S-Graph proportion =  0.467
VALLEY UNDEVELOPED S-Graph proportion =  0.533
FOOTHILL S-Graph proportion =  0.000
MOUNTAIN S-Graph proportion =  0.000
DESERT S-Graph proportion = -0.000

Computed peak 5-minute rainfall =  0.588(In)
Computed peak 30-minute rainfall =  1.205(In)
Specified peak 1-hour rainfall =  1.590(In)
Computed peak 3-hour rainfall =  2.366(In)
Specified peak 6-hour rainfall =  3.040(In)
Specified peak 24-hour rainfall =  6.260(In)


Rainfall depth area reduction factors:
Using a total area of      10.25(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.588(In)
30-minute factor = 1.000    Adjusted rainfall =  1.204(In)
1-hour factor = 1.000       Adjusted rainfall =  1.589(In)
3-hour factor = 1.000       Adjusted rainfall =  2.366(In)
6-hour factor = 1.000       Adjusted rainfall =  3.040(In)
24-hour factor = 1.000      Adjusted rainfall =  6.260(In)
---------------------------------------------------------------------

                   U n i t   H y d r o g r a p h
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval           'S' Graph          Unit Hydrograph
Number             Mean values          ((CFS))
---------------------------------------------------------------------
                (K =       123.96 (CFS))

  1                6.551                   8.120
  2               37.489                  38.352
  3               71.306                  41.920
  4               84.905                  16.858
  5               90.412                   6.826
  6               93.242                   3.507
  7               95.234                   2.470
  8               96.434                   1.487
  9               97.364                   1.153
 10               98.124                   0.942
 11               98.698                   0.711
 12               99.139                   0.546
 13               99.461                   0.398
 14               99.759                   0.369
 15              100.000                   0.299
---------------------------------------------------------------------
```

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5882	0.5882
2	0.7761	0.1879
3	0.9128	0.1367
4	1.0241	0.1113
5	1.1197	0.0956
6	1.2044	0.0847
7	1.2810	0.0766
8	1.3513	0.0703
9	1.4165	0.0652
10	1.4775	0.0610
11	1.5349	0.0574
12	1.5892	0.0544
13	1.6360	0.0467
14	1.6805	0.0445
15	1.7230	0.0425
16	1.7637	0.0407
17	1.8029	0.0391
18	1.8406	0.0377
19	1.8770	0.0364
20	1.9121	0.0352
21	1.9462	0.0341
22	1.9793	0.0331
23	2.0114	0.0321
24	2.0426	0.0312
25	2.0731	0.0304
26	2.1027	0.0297
27	2.1317	0.0289
28	2.1599	0.0283
29	2.1875	0.0276
30	2.2145	0.0270
31	2.2410	0.0265
32	2.2669	0.0259
33	2.2923	0.0254
34	2.3172	0.0249
35	2.3417	0.0245
36	2.3657	0.0240
37	2.3893	0.0236
38	2.4124	0.0232
39	2.4352	0.0228
40	2.4576	0.0224
41	2.4796	0.0221
42	2.5014	0.0217
43	2.5227	0.0214
44	2.5438	0.0211
45	2.5646	0.0208
46	2.5851	0.0205
47	2.6052	0.0202
48	2.6252	0.0199
49	2.6448	0.0197
50	2.6642	0.0194
51	2.6834	0.0192
52	2.7023	0.0189
53	2.7210	0.0187
54	2.7394	0.0185
55	2.7577	0.0182
56	2.7757	0.0180
57	2.7935	0.0178
58	2.8112	0.0176
59	2.8286	0.0174
60	2.8459	0.0173
61	2.8629	0.0171

62	2.8798	0.0169
63	2.8965	0.0167
64	2.9131	0.0165
65	2.9295	0.0164
66	2.9457	0.0162
67	2.9618	0.0161
68	2.9777	0.0159
69	2.9935	0.0158
70	3.0091	0.0156
71	3.0246	0.0155
72	3.0399	0.0153
73	3.0618	0.0219
74	3.0836	0.0218
75	3.1053	0.0216
76	3.1268	0.0215
77	3.1481	0.0214
78	3.1694	0.0212
79	3.1905	0.0211
80	3.2115	0.0210
81	3.2323	0.0209
82	3.2530	0.0207
83	3.2737	0.0206
84	3.2941	0.0205
85	3.3145	0.0204
86	3.3348	0.0203
87	3.3549	0.0201
88	3.3750	0.0200
89	3.3949	0.0199
90	3.4147	0.0198
91	3.4344	0.0197
92	3.4541	0.0196
93	3.4736	0.0195
94	3.4930	0.0194
95	3.5123	0.0193
96	3.5315	0.0192
97	3.5506	0.0191
98	3.5697	0.0190
99	3.5886	0.0189
100	3.6074	0.0188
101	3.6262	0.0188
102	3.6448	0.0187
103	3.6634	0.0186
104	3.6819	0.0185
105	3.7003	0.0184
106	3.7186	0.0183
107	3.7369	0.0182
108	3.7550	0.0182
109	3.7731	0.0181
110	3.7911	0.0180
111	3.8090	0.0179
112	3.8269	0.0178
113	3.8446	0.0178
114	3.8623	0.0177
115	3.8799	0.0176
116	3.8975	0.0175
117	3.9150	0.0175
118	3.9324	0.0174
119	3.9497	0.0173
120	3.9669	0.0173
121	3.9841	0.0172
122	4.0013	0.0171
123	4.0183	0.0171
124	4.0353	0.0170

125	4.0522	0.0169
126	4.0691	0.0169
127	4.0859	0.0168
128	4.1026	0.0167
129	4.1193	0.0167
130	4.1359	0.0166
131	4.1524	0.0165
132	4.1689	0.0165
133	4.1854	0.0164
134	4.2017	0.0164
135	4.2180	0.0163
136	4.2343	0.0163
137	4.2505	0.0162
138	4.2666	0.0161
139	4.2827	0.0161
140	4.2987	0.0160
141	4.3147	0.0160
142	4.3306	0.0159
143	4.3465	0.0159
144	4.3623	0.0158
145	4.3780	0.0158
146	4.3938	0.0157
147	4.4094	0.0157
148	4.4250	0.0156
149	4.4406	0.0156
150	4.4561	0.0155
151	4.4715	0.0155
152	4.4869	0.0154
153	4.5023	0.0154
154	4.5176	0.0153
155	4.5329	0.0153
156	4.5481	0.0152
157	4.5632	0.0152
158	4.5784	0.0151
159	4.5934	0.0151
160	4.6085	0.0150
161	4.6235	0.0150
162	4.6384	0.0149
163	4.6533	0.0149
164	4.6681	0.0149
165	4.6830	0.0148
166	4.6977	0.0148
167	4.7124	0.0147
168	4.7271	0.0147
169	4.7418	0.0146
170	4.7564	0.0146
171	4.7709	0.0146
172	4.7854	0.0145
173	4.7999	0.0145
174	4.8144	0.0144
175	4.8288	0.0144
176	4.8431	0.0144
177	4.8574	0.0143
178	4.8717	0.0143
179	4.8860	0.0142
180	4.9002	0.0142
181	4.9143	0.0142
182	4.9285	0.0141
183	4.9425	0.0141
184	4.9566	0.0141
185	4.9706	0.0140
186	4.9846	0.0140
187	4.9985	0.0139

188	5.0125	0.0139
189	5.0263	0.0139
190	5.0402	0.0138
191	5.0540	0.0138
192	5.0677	0.0138
193	5.0815	0.0137
194	5.0952	0.0137
195	5.1089	0.0137
196	5.1225	0.0136
197	5.1361	0.0136
198	5.1497	0.0136
199	5.1632	0.0135
200	5.1767	0.0135
201	5.1902	0.0135
202	5.2036	0.0134
203	5.2170	0.0134
204	5.2304	0.0134
205	5.2437	0.0133
206	5.2570	0.0133
207	5.2703	0.0133
208	5.2836	0.0133
209	5.2968	0.0132
210	5.3100	0.0132
211	5.3231	0.0132
212	5.3363	0.0131
213	5.3494	0.0131
214	5.3624	0.0131
215	5.3755	0.0130
216	5.3885	0.0130
217	5.4015	0.0130
218	5.4144	0.0130
219	5.4274	0.0129
220	5.4403	0.0129
221	5.4531	0.0129
222	5.4660	0.0128
223	5.4788	0.0128
224	5.4916	0.0128
225	5.5043	0.0128
226	5.5171	0.0127
227	5.5298	0.0127
228	5.5425	0.0127
229	5.5551	0.0127
230	5.5677	0.0126
231	5.5803	0.0126
232	5.5929	0.0126
233	5.6055	0.0125
234	5.6180	0.0125
235	5.6305	0.0125
236	5.6430	0.0125
237	5.6554	0.0124
238	5.6678	0.0124
239	5.6802	0.0124
240	5.6926	0.0124
241	5.7049	0.0123
242	5.7173	0.0123
243	5.7296	0.0123
244	5.7418	0.0123
245	5.7541	0.0122
246	5.7663	0.0122
247	5.7785	0.0122
248	5.7907	0.0122
249	5.8029	0.0122
250	5.8150	0.0121

251	5.8271	0.0121
252	5.8392	0.0121
253	5.8512	0.0121
254	5.8633	0.0120
255	5.8753	0.0120
256	5.8873	0.0120
257	5.8993	0.0120
258	5.9112	0.0119
259	5.9231	0.0119
260	5.9350	0.0119
261	5.9469	0.0119
262	5.9588	0.0119
263	5.9706	0.0118
264	5.9824	0.0118
265	5.9942	0.0118
266	6.0060	0.0118
267	6.0178	0.0118
268	6.0295	0.0117
269	6.0412	0.0117
270	6.0529	0.0117
271	6.0646	0.0117
272	6.0762	0.0117
273	6.0879	0.0116
274	6.0995	0.0116
275	6.1111	0.0116
276	6.1226	0.0116
277	6.1342	0.0115
278	6.1457	0.0115
279	6.1572	0.0115
280	6.1687	0.0115
281	6.1802	0.0115
282	6.1916	0.0115
283	6.2031	0.0114
284	6.2145	0.0114
285	6.2259	0.0114
286	6.2372	0.0114
287	6.2486	0.0114
288	6.2599	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0003	0.0110
2	0.0114	0.0003	0.0110
3	0.0114	0.0003	0.0111
4	0.0114	0.0003	0.0111
5	0.0115	0.0003	0.0111
6	0.0115	0.0003	0.0111
7	0.0115	0.0003	0.0112
8	0.0115	0.0003	0.0112
9	0.0116	0.0003	0.0112
10	0.0116	0.0003	0.0113
11	0.0116	0.0003	0.0113
12	0.0117	0.0003	0.0113
13	0.0117	0.0003	0.0114
14	0.0117	0.0003	0.0114
15	0.0118	0.0003	0.0114
16	0.0118	0.0003	0.0114
17	0.0118	0.0003	0.0115
18	0.0118	0.0003	0.0115
19	0.0119	0.0003	0.0116
20	0.0119	0.0003	0.0116

21	0.0119	0.0003	0.0116
22	0.0120	0.0003	0.0116
23	0.0120	0.0003	0.0117
24	0.0120	0.0003	0.0117
25	0.0121	0.0003	0.0118
26	0.0121	0.0003	0.0118
27	0.0122	0.0003	0.0118
28	0.0122	0.0003	0.0118
29	0.0122	0.0003	0.0119
30	0.0122	0.0003	0.0119
31	0.0123	0.0003	0.0120
32	0.0123	0.0003	0.0120
33	0.0124	0.0003	0.0120
34	0.0124	0.0003	0.0121
35	0.0124	0.0003	0.0121
36	0.0125	0.0003	0.0121
37	0.0125	0.0003	0.0122
38	0.0125	0.0003	0.0122
39	0.0126	0.0003	0.0123
40	0.0126	0.0003	0.0123
41	0.0127	0.0003	0.0123
42	0.0127	0.0003	0.0124
43	0.0128	0.0003	0.0124
44	0.0128	0.0003	0.0125
45	0.0128	0.0003	0.0125
46	0.0129	0.0003	0.0125
47	0.0129	0.0003	0.0126
48	0.0130	0.0003	0.0126
49	0.0130	0.0003	0.0127
50	0.0130	0.0003	0.0127
51	0.0131	0.0003	0.0128
52	0.0131	0.0003	0.0128
53	0.0132	0.0003	0.0129
54	0.0132	0.0003	0.0129
55	0.0133	0.0003	0.0130
56	0.0133	0.0003	0.0130
57	0.0134	0.0003	0.0130
58	0.0134	0.0003	0.0131
59	0.0135	0.0003	0.0131
60	0.0135	0.0003	0.0132
61	0.0136	0.0003	0.0132
62	0.0136	0.0003	0.0133
63	0.0137	0.0003	0.0133
64	0.0137	0.0003	0.0134
65	0.0138	0.0003	0.0134
66	0.0138	0.0003	0.0135
67	0.0139	0.0003	0.0135
68	0.0139	0.0003	0.0136
69	0.0140	0.0003	0.0137
70	0.0140	0.0003	0.0137
71	0.0141	0.0003	0.0138
72	0.0141	0.0003	0.0138
73	0.0142	0.0003	0.0139
74	0.0142	0.0003	0.0139
75	0.0143	0.0003	0.0140
76	0.0144	0.0003	0.0140
77	0.0144	0.0003	0.0141
78	0.0145	0.0003	0.0141
79	0.0146	0.0003	0.0142
80	0.0146	0.0003	0.0143
81	0.0147	0.0003	0.0144
82	0.0147	0.0003	0.0144
83	0.0148	0.0003	0.0145

84	0.0149	0.0003	0.0145
85	0.0149	0.0003	0.0146
86	0.0150	0.0003	0.0147
87	0.0151	0.0003	0.0147
88	0.0151	0.0003	0.0148
89	0.0152	0.0003	0.0149
90	0.0153	0.0003	0.0149
91	0.0154	0.0003	0.0150
92	0.0154	0.0003	0.0151
93	0.0155	0.0003	0.0152
94	0.0156	0.0003	0.0152
95	0.0157	0.0003	0.0153
96	0.0157	0.0003	0.0154
97	0.0158	0.0003	0.0155
98	0.0159	0.0003	0.0155
99	0.0160	0.0003	0.0156
100	0.0160	0.0003	0.0157
101	0.0161	0.0003	0.0158
102	0.0162	0.0003	0.0159
103	0.0163	0.0003	0.0160
104	0.0164	0.0003	0.0160
105	0.0165	0.0003	0.0162
106	0.0165	0.0003	0.0162
107	0.0167	0.0003	0.0163
108	0.0167	0.0003	0.0164
109	0.0169	0.0003	0.0165
110	0.0169	0.0003	0.0166
111	0.0171	0.0003	0.0167
112	0.0171	0.0003	0.0168
113	0.0173	0.0003	0.0169
114	0.0173	0.0003	0.0170
115	0.0175	0.0003	0.0171
116	0.0175	0.0003	0.0172
117	0.0177	0.0003	0.0174
118	0.0178	0.0003	0.0174
119	0.0179	0.0003	0.0176
120	0.0180	0.0003	0.0177
121	0.0182	0.0003	0.0178
122	0.0182	0.0003	0.0179
123	0.0184	0.0003	0.0181
124	0.0185	0.0003	0.0182
125	0.0187	0.0003	0.0183
126	0.0188	0.0003	0.0184
127	0.0189	0.0003	0.0186
128	0.0190	0.0003	0.0187
129	0.0192	0.0003	0.0189
130	0.0193	0.0003	0.0190
131	0.0195	0.0003	0.0192
132	0.0196	0.0003	0.0193
133	0.0198	0.0003	0.0195
134	0.0199	0.0003	0.0196
135	0.0201	0.0003	0.0198
136	0.0203	0.0003	0.0199
137	0.0205	0.0003	0.0202
138	0.0206	0.0003	0.0203
139	0.0209	0.0003	0.0205
140	0.0210	0.0003	0.0206
141	0.0212	0.0003	0.0209
142	0.0214	0.0003	0.0210
143	0.0216	0.0003	0.0213
144	0.0218	0.0003	0.0215
145	0.0153	0.0003	0.0150
146	0.0155	0.0003	0.0152

147	0.0158	0.0003	0.0154
148	0.0159	0.0003	0.0156
149	0.0162	0.0003	0.0159
150	0.0164	0.0003	0.0161
151	0.0167	0.0003	0.0164
152	0.0169	0.0003	0.0166
153	0.0173	0.0003	0.0169
154	0.0174	0.0003	0.0171
155	0.0178	0.0003	0.0175
156	0.0180	0.0003	0.0177
157	0.0185	0.0003	0.0181
158	0.0187	0.0003	0.0184
159	0.0192	0.0003	0.0188
160	0.0194	0.0003	0.0191
161	0.0199	0.0003	0.0196
162	0.0202	0.0003	0.0199
163	0.0208	0.0003	0.0204
164	0.0211	0.0003	0.0207
165	0.0217	0.0003	0.0214
166	0.0221	0.0003	0.0217
167	0.0228	0.0003	0.0224
168	0.0232	0.0003	0.0228
169	0.0240	0.0003	0.0237
170	0.0245	0.0003	0.0241
171	0.0254	0.0003	0.0251
172	0.0259	0.0003	0.0256
173	0.0270	0.0003	0.0267
174	0.0276	0.0003	0.0273
175	0.0289	0.0003	0.0286
176	0.0297	0.0003	0.0293
177	0.0312	0.0003	0.0309
178	0.0321	0.0003	0.0318
179	0.0341	0.0003	0.0338
180	0.0352	0.0003	0.0349
181	0.0377	0.0003	0.0374
182	0.0391	0.0003	0.0388
183	0.0425	0.0003	0.0422
184	0.0445	0.0003	0.0442
185	0.0544	0.0003	0.0540
186	0.0574	0.0003	0.0571
187	0.0652	0.0003	0.0649
188	0.0703	0.0003	0.0700
189	0.0847	0.0003	0.0844
190	0.0956	0.0003	0.0953
191	0.1367	0.0003	0.1363
192	0.1879	0.0003	0.1876
193	0.5882	0.0003	0.5879
194	0.1113	0.0003	0.1110
195	0.0766	0.0003	0.0763
196	0.0610	0.0003	0.0606
197	0.0467	0.0003	0.0464
198	0.0407	0.0003	0.0404
199	0.0364	0.0003	0.0361
200	0.0331	0.0003	0.0327
201	0.0304	0.0003	0.0301
202	0.0283	0.0003	0.0279
203	0.0265	0.0003	0.0261
204	0.0249	0.0003	0.0246
205	0.0236	0.0003	0.0232
206	0.0224	0.0003	0.0221
207	0.0214	0.0003	0.0211
208	0.0205	0.0003	0.0201
209	0.0197	0.0003	0.0193

210	0.0189	0.0003	0.0186
211	0.0182	0.0003	0.0179
212	0.0176	0.0003	0.0173
213	0.0171	0.0003	0.0167
214	0.0165	0.0003	0.0162
215	0.0161	0.0003	0.0157
216	0.0156	0.0003	0.0153
217	0.0219	0.0003	0.0216
218	0.0215	0.0003	0.0212
219	0.0211	0.0003	0.0208
220	0.0207	0.0003	0.0204
221	0.0204	0.0003	0.0200
222	0.0200	0.0003	0.0197
223	0.0197	0.0003	0.0194
224	0.0194	0.0003	0.0191
225	0.0191	0.0003	0.0188
226	0.0188	0.0003	0.0185
227	0.0186	0.0003	0.0182
228	0.0183	0.0003	0.0180
229	0.0181	0.0003	0.0177
230	0.0178	0.0003	0.0175
231	0.0176	0.0003	0.0173
232	0.0174	0.0003	0.0171
233	0.0172	0.0003	0.0169
234	0.0170	0.0003	0.0167
235	0.0168	0.0003	0.0165
236	0.0166	0.0003	0.0163
237	0.0164	0.0003	0.0161
238	0.0163	0.0003	0.0159
239	0.0161	0.0003	0.0158
240	0.0159	0.0003	0.0156
241	0.0158	0.0003	0.0154
242	0.0156	0.0003	0.0153
243	0.0155	0.0003	0.0151
244	0.0153	0.0003	0.0150
245	0.0152	0.0003	0.0148
246	0.0150	0.0003	0.0147
247	0.0149	0.0003	0.0146
248	0.0148	0.0003	0.0144
249	0.0146	0.0003	0.0143
250	0.0145	0.0003	0.0142
251	0.0144	0.0003	0.0141
252	0.0143	0.0003	0.0139
253	0.0142	0.0003	0.0138
254	0.0141	0.0003	0.0137
255	0.0139	0.0003	0.0136
256	0.0138	0.0003	0.0135
257	0.0137	0.0003	0.0134
258	0.0136	0.0003	0.0133
259	0.0135	0.0003	0.0132
260	0.0134	0.0003	0.0131
261	0.0133	0.0003	0.0130
262	0.0133	0.0003	0.0129
263	0.0132	0.0003	0.0128
264	0.0131	0.0003	0.0127
265	0.0130	0.0003	0.0127
266	0.0129	0.0003	0.0126
267	0.0128	0.0003	0.0125
268	0.0127	0.0003	0.0124
269	0.0127	0.0003	0.0123
270	0.0126	0.0003	0.0122
271	0.0125	0.0003	0.0122
272	0.0124	0.0003	0.0121

```
273            0.0123       0.0003         0.0120
274            0.0123       0.0003         0.0119
275            0.0122       0.0003         0.0119
276            0.0121       0.0003         0.0118
277            0.0121       0.0003         0.0117
278            0.0120       0.0003         0.0117
279            0.0119       0.0003         0.0116
280            0.0119       0.0003         0.0115
281            0.0118       0.0003         0.0115
282            0.0117       0.0003         0.0114
283            0.0117       0.0003         0.0113
284            0.0116       0.0003         0.0113
285            0.0115       0.0003         0.0112
286            0.0115       0.0003         0.0112
287            0.0114       0.0003         0.0111
288            0.0114       0.0003         0.0110
---------------------------------------------------------------------
---------------------------------------------------------------------
Total soil rain loss =      0.10(In)
Total effective rainfall =      6.16(In)
Peak flow rate in flood hydrograph =     35.04(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        10.0      20.0      30.0      40.0
-----------------------------------------------------------------------------
  0+ 5      0.0006      0.09  Q         |         |         |         |
  0+10      0.0041      0.51  Q         |         |         |         |
  0+15      0.0108      0.97  Q         |         |         |         |
  0+20      0.0188      1.16  VQ        |         |         |         |
  0+25      0.0274      1.24  VQ        |         |         |         |
  0+30      0.0362      1.28  VQ        |         |         |         |
  0+35      0.0453      1.31  VQ        |         |         |         |
  0+40      0.0544      1.33  VQ        |         |         |         |
  0+45      0.0637      1.35  VQ        |         |         |         |
  0+50      0.0731      1.36  VQ        |         |         |         |
  0+55      0.0826      1.37  VQ        |         |         |         |
  1+ 0      0.0921      1.38  VQ        |         |         |         |
  1+ 5      0.1017      1.39  VQ        |         |         |         |
  1+10      0.1113      1.40  VQ        |         |         |         |
  1+15      0.1210      1.41  VQ        |         |         |         |
  1+20      0.1307      1.41  VQ        |         |         |         |
  1+25      0.1404      1.41  |Q        |         |         |         |
  1+30      0.1502      1.42  |Q        |         |         |         |
  1+35      0.1600      1.42  |Q        |         |         |         |
  1+40      0.1698      1.43  |Q        |         |         |         |
  1+45      0.1797      1.43  |Q        |         |         |         |
  1+50      0.1896      1.43  |Q        |         |         |         |
  1+55      0.1995      1.44  |Q        |         |         |         |
  2+ 0      0.2094      1.44  |Q        |         |         |         |
  2+ 5      0.2194      1.45  |Q        |         |         |         |
  2+10      0.2293      1.45  |Q        |         |         |         |
  2+15      0.2394      1.46  |Q        |         |         |         |
  2+20      0.2494      1.46  |Q        |         |         |         |
  2+25      0.2595      1.46  |Q        |         |         |         |
  2+30      0.2696      1.47  |QV       |         |         |         |
  2+35      0.2798      1.47  |QV       |         |         |         |
  2+40      0.2899      1.48  |QV       |         |         |         |
```

```
 2+45        0.3001       1.48    |QV         |          |          |          |
 2+50        0.3104       1.49    |QV         |          |          |          |
 2+55        0.3206       1.49    |QV         |          |          |          |
 3+ 0        0.3309       1.50    |QV         |          |          |          |
 3+ 5        0.3412       1.50    |QV         |          |          |          |
 3+10        0.3516       1.50    |QV         |          |          |          |
 3+15        0.3620       1.51    |QV         |          |          |          |
 3+20        0.3724       1.51    |QV         |          |          |          |
 3+25        0.3829       1.52    |QV         |          |          |          |
 3+30        0.3934       1.52    |QV         |          |          |          |
 3+35        0.4039       1.53    |Q V        |          |          |          |
 3+40        0.4145       1.53    |Q V        |          |          |          |
 3+45        0.4251       1.54    |Q V        |          |          |          |
 3+50        0.4357       1.54    |Q V        |          |          |          |
 3+55        0.4464       1.55    |Q V        |          |          |          |
 4+ 0        0.4571       1.55    |Q V        |          |          |          |
 4+ 5        0.4678       1.56    |Q V        |          |          |          |
 4+10        0.4786       1.56    |Q V        |          |          |          |
 4+15        0.4894       1.57    |Q V        |          |          |          |
 4+20        0.5002       1.58    |Q V        |          |          |          |
 4+25        0.5111       1.58    |Q V        |          |          |          |
 4+30        0.5220       1.59    |Q V        |          |          |          |
 4+35        0.5330       1.59    |Q  V       |          |          |          |
 4+40        0.5440       1.60    |Q  V       |          |          |          |
 4+45        0.5550       1.60    |Q  V       |          |          |          |
 4+50        0.5661       1.61    |Q  V       |          |          |          |
 4+55        0.5772       1.61    |Q  V       |          |          |          |
 5+ 0        0.5884       1.62    |Q  V       |          |          |          |
 5+ 5        0.5996       1.63    |Q  V       |          |          |          |
 5+10        0.6108       1.63    |Q  V       |          |          |          |
 5+15        0.6221       1.64    |Q  V       |          |          |          |
 5+20        0.6334       1.64    |Q  V       |          |          |          |
 5+25        0.6448       1.65    |Q  V       |          |          |          |
 5+30        0.6562       1.66    |Q  V       |          |          |          |
 5+35        0.6677       1.66    |Q   V      |          |          |          |
 5+40        0.6792       1.67    |Q   V      |          |          |          |
 5+45        0.6907       1.68    |Q   V      |          |          |          |
 5+50        0.7023       1.68    |Q   V      |          |          |          |
 5+55        0.7139       1.69    |Q   V      |          |          |          |
 6+ 0        0.7256       1.70    |Q   V      |          |          |          |
 6+ 5        0.7373       1.70    |Q   V      |          |          |          |
 6+10        0.7491       1.71    |Q   V      |          |          |          |
 6+15        0.7609       1.72    |Q   V      |          |          |          |
 6+20        0.7728       1.72    |Q   V      |          |          |          |
 6+25        0.7847       1.73    |Q   V      |          |          |          |
 6+30        0.7967       1.74    |Q    V     |          |          |          |
 6+35        0.8087       1.75    |Q    V     |          |          |          |
 6+40        0.8208       1.75    |Q    V     |          |          |          |
 6+45        0.8329       1.76    |Q    V     |          |          |          |
 6+50        0.8451       1.77    |Q    V     |          |          |          |
 6+55        0.8573       1.78    |Q    V     |          |          |          |
 7+ 0        0.8696       1.78    |Q    V     |          |          |          |
 7+ 5        0.8819       1.79    |Q    V     |          |          |          |
 7+10        0.8943       1.80    |Q    V     |          |          |          |
 7+15        0.9068       1.81    |Q    V     |          |          |          |
 7+20        0.9193       1.82    |Q    V     |          |          |          |
 7+25        0.9318       1.82    |Q     V    |          |          |          |
 7+30        0.9444       1.83    |Q     V    |          |          |          |
 7+35        0.9571       1.84    |Q     V    |          |          |          |
 7+40        0.9699       1.85    |Q     V    |          |          |          |
 7+45        0.9827       1.86    |Q     V    |          |          |          |
 7+50        0.9955       1.87    |Q     V    |          |          |          |
 7+55        1.0084       1.88    |Q     V    |          |          |          |
```

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  8+ 0          1.0214         1.89  |Q     V  |         |         |         |
  8+ 5          1.0345         1.90  |Q     V  |         |         |         |
  8+10          1.0476         1.90  |Q     V  |         |         |         |
  8+15          1.0608         1.91  |Q      V |         |         |         |
  8+20          1.0740         1.92  |Q      V |         |         |         |
  8+25          1.0874         1.93  |Q      V |         |         |         |
  8+30          1.1008         1.94  |Q      V |         |         |         |
  8+35          1.1142         1.95  |Q      V |         |         |         |
  8+40          1.1278         1.97  |Q      V |         |         |         |
  8+45          1.1414         1.98  |Q      V |         |         |         |
  8+50          1.1550         1.99  |Q      V |         |         |         |
  8+55          1.1688         2.00  |Q      V |         |         |         |
  9+ 0          1.1826         2.01  | Q     V |         |         |         |
  9+ 5          1.1965         2.02  | Q      V|         |         |         |
  9+10          1.2105         2.03  | Q      V|         |         |         |
  9+15          1.2246         2.04  | Q      V|         |         |         |
  9+20          1.2388         2.06  | Q      V|         |         |         |
  9+25          1.2530         2.07  | Q      V|         |         |         |
  9+30          1.2673         2.08  | Q      V|         |         |         |
  9+35          1.2818         2.09  | Q      V|         |         |         |
  9+40          1.2963         2.11  | Q      V|         |         |         |
  9+45          1.3108         2.12  | Q      V|         |         |         |
  9+50          1.3255         2.13  | Q       V         |         |         |
  9+55          1.3403         2.15  | Q       V         |         |         |
 10+ 0          1.3552         2.16  | Q       V         |         |         |
 10+ 5          1.3702         2.17  | Q       V         |         |         |
 10+10          1.3852         2.19  | Q       V         |         |         |
 10+15          1.4004         2.20  | Q       V         |         |         |
 10+20          1.4157         2.22  | Q       V         |         |         |
 10+25          1.4311         2.23  | Q       V         |         |         |
 10+30          1.4465         2.25  | Q       V         |         |         |
 10+35          1.4621         2.27  | Q       |V        |         |         |
 10+40          1.4779         2.28  | Q       |V        |         |         |
 10+45          1.4937         2.30  | Q       |V        |         |         |
 10+50          1.5096         2.32  | Q       |V        |         |         |
 10+55          1.5257         2.33  | Q       |V        |         |         |
 11+ 0          1.5419         2.35  | Q       |V        |         |         |
 11+ 5          1.5582         2.37  | Q       |V        |         |         |
 11+10          1.5747         2.39  | Q       |V        |         |         |
 11+15          1.5913         2.41  | Q       | V       |         |         |
 11+20          1.6080         2.43  | Q       | V       |         |         |
 11+25          1.6248         2.45  | Q       | V       |         |         |
 11+30          1.6418         2.47  | Q       | V       |         |         |
 11+35          1.6590         2.49  | Q       | V       |         |         |
 11+40          1.6763         2.51  | Q       | V       |         |         |
 11+45          1.6937         2.53  | Q       | V       |         |         |
 11+50          1.7113         2.56  | Q       |  V      |         |         |
 11+55          1.7291         2.58  | Q       |  V      |         |         |
 12+ 0          1.7471         2.61  | Q       |  V      |         |         |
 12+ 5          1.7648         2.58  | Q       |  V      |         |         |
 12+10          1.7809         2.34  | Q       |  V      |         |         |
 12+15          1.7953         2.09  | Q       |  V      |         |         |
 12+20          1.8091         2.00  | Q       |  V      |         |         |
 12+25          1.8228         1.98  |Q        |  V      |         |         |
 12+30          1.8364         1.99  |Q        |  V      |         |         |
 12+35          1.8502         2.00  |Q        |   V     |         |         |
 12+40          1.8641         2.02  | Q       |   V     |         |         |
 12+45          1.8781         2.04  | Q       |   V     |         |         |
 12+50          1.8924         2.07  | Q       |   V     |         |         |
 12+55          1.9068         2.09  | Q       |   V     |         |         |
 13+ 0          1.9214         2.13  | Q       |   V     |         |         |
 13+ 5          1.9363         2.16  | Q       |   V     |         |         |
 13+10          1.9514         2.19  | Q       |   V     |         |         |
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13+15       1.9668      2.23  | Q       |   V     |         |         |
13+20       1.9824      2.27  | Q       |    V    |         |         |
13+25       1.9984      2.32  | Q       |    V    |         |         |
13+30       2.0146      2.36  | Q       |    V    |         |         |
13+35       2.0312      2.41  | Q       |    V    |         |         |
13+40       2.0482      2.46  | Q       |    V    |         |         |
13+45       2.0655      2.51  | Q       |    V    |         |         |
13+50       2.0831      2.57  | Q       |    V    |         |         |
13+55       2.1012      2.63  | Q       |    V    |         |         |
14+ 0       2.1198      2.69  | Q       |     V   |         |         |
14+ 5       2.1387      2.76  | Q       |     V   |         |         |
14+10       2.1582      2.83  | Q       |     V   |         |         |
14+15       2.1782      2.91  | Q       |     V   |         |         |
14+20       2.1988      2.99  | Q       |     V   |         |         |
14+25       2.2200      3.07  |  Q      |     V   |         |         |
14+30       2.2418      3.17  |  Q      |      V  |         |         |
14+35       2.2643      3.27  |  Q      |      V  |         |         |
14+40       2.2876      3.38  |  Q      |      V  |         |         |
14+45       2.3118      3.50  |  Q      |      V  |         |         |
14+50       2.3368      3.64  |  Q      |      V  |         |         |
14+55       2.3629      3.78  |  Q      |      V  |         |         |
15+ 0       2.3900      3.95  |  Q      |       V |         |         |
15+ 5       2.4185      4.13  |   Q     |       V |         |         |
15+10       2.4483      4.33  |   Q     |       V |         |         |
15+15       2.4797      4.56  |   Q     |       V |         |         |
15+20       2.5130      4.84  |   Q     |        V|         |         |
15+25       2.5488      5.19  |    Q    |        V|         |         |
15+30       2.5885      5.76  |    Q    |        V|         |         |
15+35       2.6327      6.43  |     Q   |         V         |         |
15+40       2.6816      7.10  |      Q  |         V         |         |
15+45       2.7359      7.88  |      Q  |         V         |         |
15+50       2.7975      8.94  |       Q |         |V        |         |
15+55       2.8697     10.48  |         Q         |V        |         |
16+ 0       2.9611     13.27  |         |  Q      | V       |         |
16+ 5       3.1027     20.55  |         |         Q  V      |         |
16+10       3.3439     35.04  |         |         |    V    |    Q    |
16+15       3.5815     34.49  |         |         |      V  |   Q     |
16+20       3.7217     20.36  |         |         Q       V |         |
16+25       3.8127     13.21  |         |  Q      |       V |         |
16+30       3.8798      9.75  |        Q|         |        V|         |
16+35       3.9340      7.86  |      Q  |         |        V|         |
16+40       3.9786      6.48  |     Q   |         |         V         |
16+45       4.0176      5.66  |    Q    |         |         V         |
16+50       4.0523      5.04  |    Q    |         |         V         |
16+55       4.0834      4.52  |   Q     |         |         |V        |
17+ 0       4.1116      4.09  |   Q     |         |         |V        |
17+ 5       4.1373      3.74  |  Q      |         |         |V        |
17+10       4.1612      3.46  |  Q      |         |         |V        |
17+15       4.1832      3.20  |  Q      |         |         |V        |
17+20       4.2030      2.87  | Q       |         |         |V        |
17+25       4.2217      2.71  | Q       |         |         | V       |
17+30       4.2394      2.58  | Q       |         |         | V       |
17+35       4.2564      2.46  | Q       |         |         | V       |
17+40       4.2727      2.36  | Q       |         |         | V       |
17+45       4.2883      2.27  | Q       |         |         | V       |
17+50       4.3033      2.19  | Q       |         |         | V       |
17+55       4.3179      2.11  | Q       |         |         | V       |
18+ 0       4.3320      2.04  | Q       |         |         | V       |
18+ 5       4.3460      2.04  | Q       |         |         |  V      |
18+10       4.3614      2.24  | Q       |         |         |  V      |
18+15       4.3784      2.46  | Q       |         |         |  V      |
18+20       4.3957      2.52  | Q       |         |         |  V      |
18+25       4.4131      2.52  | Q       |         |         |  V      |
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18+30     4.4302     2.49 | Q       |         |         |  V      |
18+35     4.4472     2.46 | Q       |         |         |  V      |
18+40     4.4639     2.43 | Q       |         |         |  V      |
18+45     4.4805     2.40 | Q       |         |         |   V     |
18+50     4.4968     2.37 | Q       |         |         |   V     |
18+55     4.5128     2.33 | Q       |         |         |   V     |
19+ 0     4.5287     2.30 | Q       |         |         |   V     |
19+ 5     4.5443     2.27 | Q       |         |         |   V     |
19+10     4.5598     2.24 | Q       |         |         |   V     |
19+15     4.5750     2.21 | Q       |         |         |   V     |
19+20     4.5900     2.18 | Q       |         |         |   V     |
19+25     4.6049     2.15 | Q       |         |         |   V     |
19+30     4.6195     2.13 | Q       |         |         |    V    |
19+35     4.6340     2.10 | Q       |         |         |    V    |
19+40     4.6483     2.08 | Q       |         |         |    V    |
19+45     4.6624     2.05 | Q       |         |         |    V    |
19+50     4.6763     2.03 | Q       |         |         |    V    |
19+55     4.6901     2.00 | Q       |         |         |    V    |
20+ 0     4.7038     1.98 |Q        |         |         |    V    |
20+ 5     4.7173     1.96 |Q        |         |         |    V    |
20+10     4.7307     1.94 |Q        |         |         |    V    |
20+15     4.7439     1.92 |Q        |         |         |     V   |
20+20     4.7570     1.90 |Q        |         |         |     V   |
20+25     4.7699     1.88 |Q        |         |         |     V   |
20+30     4.7828     1.86 |Q        |         |         |     V   |
20+35     4.7955     1.85 |Q        |         |         |     V   |
20+40     4.8081     1.83 |Q        |         |         |     V   |
20+45     4.8206     1.81 |Q        |         |         |     V   |
20+50     4.8329     1.80 |Q        |         |         |     V   |
20+55     4.8452     1.78 |Q        |         |         |     V   |
21+ 0     4.8573     1.76 |Q        |         |         |     V   |
21+ 5     4.8694     1.75 |Q        |         |         |      V  |
21+10     4.8813     1.73 |Q        |         |         |      V  |
21+15     4.8932     1.72 |Q        |         |         |      V  |
21+20     4.9049     1.71 |Q        |         |         |      V  |
21+25     4.9166     1.69 |Q        |         |         |      V  |
21+30     4.9282     1.68 |Q        |         |         |      V  |
21+35     4.9396     1.67 |Q        |         |         |      V  |
21+40     4.9510     1.65 |Q        |         |         |      V  |
21+45     4.9623     1.64 |Q        |         |         |      V  |
21+50     4.9735     1.63 |Q        |         |         |      V  |
21+55     4.9847     1.62 |Q        |         |         |      V  |
22+ 0     4.9957     1.61 |Q        |         |         |      V  |
22+ 5     5.0067     1.59 |Q        |         |         |       V |
22+10     5.0176     1.58 |Q        |         |         |       V |
22+15     5.0285     1.57 |Q        |         |         |       V |
22+20     5.0392     1.56 |Q        |         |         |       V |
22+25     5.0499     1.55 |Q        |         |         |       V |
22+30     5.0605     1.54 |Q        |         |         |       V |
22+35     5.0711     1.53 |Q        |         |         |       V |
22+40     5.0815     1.52 |Q        |         |         |       V |
22+45     5.0919     1.51 |Q        |         |         |       V |
22+50     5.1023     1.50 |Q        |         |         |       V |
22+55     5.1126     1.49 |Q        |         |         |       V |
23+ 0     5.1228     1.48 |Q        |         |         |       V |
23+ 5     5.1329     1.47 |Q        |         |         |        V|
23+10     5.1430     1.47 |Q        |         |         |        V|
23+15     5.1531     1.46 |Q        |         |         |        V|
23+20     5.1631     1.45 |Q        |         |         |        V|
23+25     5.1730     1.44 |Q        |         |         |        V|
23+30     5.1828     1.43 |Q        |         |         |        V|
23+35     5.1926     1.42 |Q        |         |         |        V|
23+40     5.2024     1.42 |Q        |         |         |        V|
```

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   23+45        5.2121       1.41  |Q          |          |          |        V|
   23+50        5.2217       1.40  |Q          |          |          |        V|
   23+55        5.2313       1.39  |Q          |          |          |        V|
   24+ 0        5.2409       1.39  |Q          |          |          |        V|
   24+ 5        5.2498       1.29  |Q          |          |          |        V|
   24+10        5.2557       0.86  Q           |          |          |        V|
   24+15        5.2584       0.40  Q           |          |          |        V|
   24+20        5.2599       0.21  Q           |          |          |        V|
   24+25        5.2608       0.13  Q           |          |          |        V|
   24+30        5.2614       0.09  Q           |          |          |        V|
   24+35        5.2619       0.07  Q           |          |          |        V|
   24+40        5.2622       0.05  Q           |          |          |        V|
   24+45        5.2625       0.04  Q           |          |          |        V|
   24+50        5.2627       0.03  Q           |          |          |        V|
   24+55        5.2628       0.02  Q           |          |          |        V|
   25+ 0        5.2629       0.01  Q           |          |          |        V|
   25+ 5        5.2629       0.01  Q           |          |          |        V|
   25+10        5.2629       0.00  Q           |          |          |         V
-----------------------------------------------------------------------
```

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

Study date 07/27/16

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

Program License Serial Number 6083

WATERMAN INDUSTRIAL CENTER
PROPOSED CONDITION BASIN 3
SAN BERNARDINO, CA
07.27.2016 KV

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		
1.99	1	1.59
Rainfall data for year 100		
1.99	6	3.04
Rainfall data for year 100		
1.99	24	6.26

++

******** 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)
90.0	98.0	1.99	1.000	0.040	0.100	0.004

Area-averaged adjusted loss rate Fm (In/Hr) = 0.004

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

Area   Area   SCS CN   SCS CN   S   Pervious

```
 (Ac.)       Fract          (AMC2)    (AMC3)           Yield Fr
     0.20    0.100          90.0      98.0       0.20     0.962
     1.79    0.900          98.0      98.0       0.20     0.962

Area-averaged catchment yield fraction, Y =  0.962
Area-averaged low loss fraction, Yb =  0.038
User entry of time of concentration  =   0.104 (hours)
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =       1.99(Ac.)
Catchment Lag time =   0.083 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 100.4791
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.004(In/Hr)
Average low loss rate fraction (Yb) = 0.038 (decimal)
VALLEY DEVELOPED S-Graph proportion =  0.467
VALLEY UNDEVELOPED S-Graph proportion =  0.533
FOOTHILL S-Graph proportion =  0.000
MOUNTAIN S-Graph proportion =  0.000
DESERT S-Graph proportion = -0.000

Computed peak 5-minute rainfall =  0.588(In)
Computed peak 30-minute rainfall =  1.205(In)
Specified peak 1-hour rainfall =  1.590(In)
Computed peak 3-hour rainfall =  2.366(In)
Specified peak 6-hour rainfall =  3.040(In)
Specified peak 24-hour rainfall =  6.260(In)


Rainfall depth area reduction factors:
Using a total area of      1.99(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.588(In)
30-minute factor = 1.000    Adjusted rainfall =  1.205(In)
1-hour factor = 1.000       Adjusted rainfall =  1.590(In)
3-hour factor = 1.000       Adjusted rainfall =  2.366(In)
6-hour factor = 1.000       Adjusted rainfall =  3.040(In)
24-hour factor = 1.000      Adjusted rainfall =  6.260(In)
---------------------------------------------------------------------

                  U n i t   H y d r o g r a p h
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values           ((CFS))
---------------------------------------------------------------------
               (K =        24.07 (CFS))

  1               18.413                   4.431
  2               73.327                  13.216
  3               90.158                   4.051
  4               94.876                   1.135
  5               96.984                   0.507
  6               98.349                   0.328
  7               99.194                   0.203
  8              100.000                   0.194
---------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number            (In)                  (In)
  1              0.5884               0.5884
  2              0.7764               0.1880
  3              0.9131               0.1367
  4              1.0245               0.1114
  5              1.1201               0.0956
```

6	1.2049	0.0847
7	1.2815	0.0766
8	1.3518	0.0703
9	1.4170	0.0652
10	1.4780	0.0610
11	1.5355	0.0574
12	1.5899	0.0544
13	1.6366	0.0467
14	1.6810	0.0445
15	1.7235	0.0425
16	1.7642	0.0407
17	1.8034	0.0391
18	1.8411	0.0377
19	1.8774	0.0364
20	1.9126	0.0352
21	1.9466	0.0341
22	1.9797	0.0330
23	2.0118	0.0321
24	2.0430	0.0312
25	2.0734	0.0304
26	2.1030	0.0296
27	2.1319	0.0289
28	2.1602	0.0282
29	2.1878	0.0276
30	2.2148	0.0270
31	2.2412	0.0264
32	2.2671	0.0259
33	2.2925	0.0254
34	2.3174	0.0249
35	2.3418	0.0244
36	2.3658	0.0240
37	2.3894	0.0236
38	2.4125	0.0232
39	2.4353	0.0228
40	2.4577	0.0224
41	2.4798	0.0221
42	2.5015	0.0217
43	2.5229	0.0214
44	2.5439	0.0211
45	2.5647	0.0208
46	2.5852	0.0205
47	2.6053	0.0202
48	2.6253	0.0199
49	2.6449	0.0197
50	2.6643	0.0194
51	2.6835	0.0192
52	2.7024	0.0189
53	2.7211	0.0187
54	2.7395	0.0185
55	2.7578	0.0182
56	2.7758	0.0180
57	2.7936	0.0178
58	2.8113	0.0176
59	2.8287	0.0174
60	2.8460	0.0173
61	2.8630	0.0171
62	2.8799	0.0169
63	2.8966	0.0167
64	2.9132	0.0165
65	2.9296	0.0164
66	2.9458	0.0162
67	2.9619	0.0161
68	2.9778	0.0159

69	2.9935	0.0158
70	3.0092	0.0156
71	3.0246	0.0155
72	3.0400	0.0153
73	3.0619	0.0219
74	3.0837	0.0218
75	3.1053	0.0216
76	3.1268	0.0215
77	3.1482	0.0214
78	3.1694	0.0212
79	3.1906	0.0211
80	3.2115	0.0210
81	3.2324	0.0209
82	3.2531	0.0207
83	3.2737	0.0206
84	3.2942	0.0205
85	3.3146	0.0204
86	3.3349	0.0203
87	3.3550	0.0201
88	3.3751	0.0200
89	3.3950	0.0199
90	3.4148	0.0198
91	3.4345	0.0197
92	3.4541	0.0196
93	3.4736	0.0195
94	3.4931	0.0194
95	3.5124	0.0193
96	3.5316	0.0192
97	3.5507	0.0191
98	3.5697	0.0190
99	3.5887	0.0189
100	3.6075	0.0188
101	3.6263	0.0188
102	3.6449	0.0187
103	3.6635	0.0186
104	3.6820	0.0185
105	3.7004	0.0184
106	3.7187	0.0183
107	3.7370	0.0182
108	3.7551	0.0182
109	3.7732	0.0181
110	3.7912	0.0180
111	3.8091	0.0179
112	3.8269	0.0178
113	3.8447	0.0178
114	3.8624	0.0177
115	3.8800	0.0176
116	3.8976	0.0175
117	3.9150	0.0175
118	3.9324	0.0174
119	3.9498	0.0173
120	3.9670	0.0173
121	3.9842	0.0172
122	4.0013	0.0171
123	4.0184	0.0171
124	4.0354	0.0170
125	4.0523	0.0169
126	4.0692	0.0169
127	4.0860	0.0168
128	4.1027	0.0167
129	4.1194	0.0167
130	4.1360	0.0166
131	4.1525	0.0165

132	4.1690	0.0165
133	4.1854	0.0164
134	4.2018	0.0164
135	4.2181	0.0163
136	4.2344	0.0163
137	4.2506	0.0162
138	4.2667	0.0161
139	4.2828	0.0161
140	4.2988	0.0160
141	4.3148	0.0160
142	4.3307	0.0159
143	4.3466	0.0159
144	4.3624	0.0158
145	4.3781	0.0158
146	4.3938	0.0157
147	4.4095	0.0157
148	4.4251	0.0156
149	4.4406	0.0156
150	4.4561	0.0155
151	4.4716	0.0155
152	4.4870	0.0154
153	4.5024	0.0154
154	4.5177	0.0153
155	4.5329	0.0153
156	4.5482	0.0152
157	4.5633	0.0152
158	4.5784	0.0151
159	4.5935	0.0151
160	4.6085	0.0150
161	4.6235	0.0150
162	4.6385	0.0149
163	4.6534	0.0149
164	4.6682	0.0149
165	4.6830	0.0148
166	4.6978	0.0148
167	4.7125	0.0147
168	4.7272	0.0147
169	4.7418	0.0146
170	4.7564	0.0146
171	4.7710	0.0146
172	4.7855	0.0145
173	4.8000	0.0145
174	4.8144	0.0144
175	4.8288	0.0144
176	4.8432	0.0144
177	4.8575	0.0143
178	4.8718	0.0143
179	4.8860	0.0142
180	4.9002	0.0142
181	4.9144	0.0142
182	4.9285	0.0141
183	4.9426	0.0141
184	4.9567	0.0141
185	4.9707	0.0140
186	4.9847	0.0140
187	4.9986	0.0139
188	5.0125	0.0139
189	5.0264	0.0139
190	5.0402	0.0138
191	5.0540	0.0138
192	5.0678	0.0138
193	5.0816	0.0137
194	5.0953	0.0137

195	5.1089	0.0137
196	5.1226	0.0136
197	5.1362	0.0136
198	5.1497	0.0136
199	5.1633	0.0135
200	5.1768	0.0135
201	5.1902	0.0135
202	5.2037	0.0134
203	5.2171	0.0134
204	5.2305	0.0134
205	5.2438	0.0133
206	5.2571	0.0133
207	5.2704	0.0133
208	5.2836	0.0133
209	5.2969	0.0132
210	5.3101	0.0132
211	5.3232	0.0132
212	5.3364	0.0131
213	5.3495	0.0131
214	5.3625	0.0131
215	5.3756	0.0130
216	5.3886	0.0130
217	5.4016	0.0130
218	5.4145	0.0130
219	5.4274	0.0129
220	5.4403	0.0129
221	5.4532	0.0129
222	5.4661	0.0128
223	5.4789	0.0128
224	5.4917	0.0128
225	5.5044	0.0128
226	5.5172	0.0127
227	5.5299	0.0127
228	5.5425	0.0127
229	5.5552	0.0127
230	5.5678	0.0126
231	5.5804	0.0126
232	5.5930	0.0126
233	5.6055	0.0125
234	5.6181	0.0125
235	5.6306	0.0125
236	5.6430	0.0125
237	5.6555	0.0124
238	5.6679	0.0124
239	5.6803	0.0124
240	5.6927	0.0124
241	5.7050	0.0123
242	5.7173	0.0123
243	5.7296	0.0123
244	5.7419	0.0123
245	5.7542	0.0122
246	5.7664	0.0122
247	5.7786	0.0122
248	5.7908	0.0122
249	5.8029	0.0122
250	5.8151	0.0121
251	5.8272	0.0121
252	5.8392	0.0121
253	5.8513	0.0121
254	5.8633	0.0120
255	5.8754	0.0120
256	5.8874	0.0120
257	5.8993	0.0120

258	5.9113	0.0119
259	5.9232	0.0119
260	5.9351	0.0119
261	5.9470	0.0119
262	5.9589	0.0119
263	5.9707	0.0118
264	5.9825	0.0118
265	5.9943	0.0118
266	6.0061	0.0118
267	6.0178	0.0118
268	6.0296	0.0117
269	6.0413	0.0117
270	6.0530	0.0117
271	6.0646	0.0117
272	6.0763	0.0117
273	6.0879	0.0116
274	6.0995	0.0116
275	6.1111	0.0116
276	6.1227	0.0116
277	6.1342	0.0115
278	6.1458	0.0115
279	6.1573	0.0115
280	6.1688	0.0115
281	6.1802	0.0115
282	6.1917	0.0115
283	6.2031	0.0114
284	6.2145	0.0114
285	6.2259	0.0114
286	6.2373	0.0114
287	6.2486	0.0114
288	6.2600	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0003	0.0110
2	0.0114	0.0003	0.0110
3	0.0114	0.0003	0.0111
4	0.0114	0.0003	0.0111
5	0.0115	0.0003	0.0111
6	0.0115	0.0003	0.0111
7	0.0115	0.0003	0.0112
8	0.0115	0.0003	0.0112
9	0.0116	0.0003	0.0112
10	0.0116	0.0003	0.0113
11	0.0116	0.0003	0.0113
12	0.0117	0.0003	0.0113
13	0.0117	0.0003	0.0114
14	0.0117	0.0003	0.0114
15	0.0118	0.0003	0.0114
16	0.0118	0.0003	0.0114
17	0.0118	0.0003	0.0115
18	0.0118	0.0003	0.0115
19	0.0119	0.0003	0.0116
20	0.0119	0.0003	0.0116
21	0.0119	0.0003	0.0116
22	0.0120	0.0003	0.0116
23	0.0120	0.0003	0.0117
24	0.0120	0.0003	0.0117
25	0.0121	0.0003	0.0118
26	0.0121	0.0003	0.0118
27	0.0122	0.0003	0.0118

28	0.0122	0.0003	0.0118
29	0.0122	0.0003	0.0119
30	0.0122	0.0003	0.0119
31	0.0123	0.0003	0.0120
32	0.0123	0.0003	0.0120
33	0.0124	0.0003	0.0120
34	0.0124	0.0003	0.0121
35	0.0124	0.0003	0.0121
36	0.0125	0.0003	0.0121
37	0.0125	0.0003	0.0122
38	0.0125	0.0003	0.0122
39	0.0126	0.0003	0.0123
40	0.0126	0.0003	0.0123
41	0.0127	0.0003	0.0123
42	0.0127	0.0003	0.0124
43	0.0128	0.0003	0.0124
44	0.0128	0.0003	0.0125
45	0.0128	0.0003	0.0125
46	0.0129	0.0003	0.0125
47	0.0129	0.0003	0.0126
48	0.0130	0.0003	0.0126
49	0.0130	0.0003	0.0127
50	0.0130	0.0003	0.0127
51	0.0131	0.0003	0.0128
52	0.0131	0.0003	0.0128
53	0.0132	0.0003	0.0129
54	0.0132	0.0003	0.0129
55	0.0133	0.0003	0.0130
56	0.0133	0.0003	0.0130
57	0.0134	0.0003	0.0130
58	0.0134	0.0003	0.0131
59	0.0135	0.0003	0.0131
60	0.0135	0.0003	0.0132
61	0.0136	0.0003	0.0132
62	0.0136	0.0003	0.0133
63	0.0137	0.0003	0.0133
64	0.0137	0.0003	0.0134
65	0.0138	0.0003	0.0134
66	0.0138	0.0003	0.0135
67	0.0139	0.0003	0.0135
68	0.0139	0.0003	0.0136
69	0.0140	0.0003	0.0137
70	0.0140	0.0003	0.0137
71	0.0141	0.0003	0.0138
72	0.0141	0.0003	0.0138
73	0.0142	0.0003	0.0139
74	0.0142	0.0003	0.0139
75	0.0143	0.0003	0.0140
76	0.0144	0.0003	0.0140
77	0.0144	0.0003	0.0141
78	0.0145	0.0003	0.0141
79	0.0146	0.0003	0.0142
80	0.0146	0.0003	0.0143
81	0.0147	0.0003	0.0144
82	0.0147	0.0003	0.0144
83	0.0148	0.0003	0.0145
84	0.0149	0.0003	0.0145
85	0.0149	0.0003	0.0146
86	0.0150	0.0003	0.0147
87	0.0151	0.0003	0.0147
88	0.0151	0.0003	0.0148
89	0.0152	0.0003	0.0149
90	0.0153	0.0003	0.0149

91	0.0154	0.0003	0.0150
92	0.0154	0.0003	0.0151
93	0.0155	0.0003	0.0152
94	0.0156	0.0003	0.0152
95	0.0157	0.0003	0.0153
96	0.0157	0.0003	0.0154
97	0.0158	0.0003	0.0155
98	0.0159	0.0003	0.0155
99	0.0160	0.0003	0.0156
100	0.0160	0.0003	0.0157
101	0.0161	0.0003	0.0158
102	0.0162	0.0003	0.0159
103	0.0163	0.0003	0.0160
104	0.0164	0.0003	0.0160
105	0.0165	0.0003	0.0162
106	0.0165	0.0003	0.0162
107	0.0167	0.0003	0.0163
108	0.0167	0.0003	0.0164
109	0.0169	0.0003	0.0165
110	0.0169	0.0003	0.0166
111	0.0171	0.0003	0.0167
112	0.0171	0.0003	0.0168
113	0.0173	0.0003	0.0169
114	0.0173	0.0003	0.0170
115	0.0175	0.0003	0.0171
116	0.0175	0.0003	0.0172
117	0.0177	0.0003	0.0174
118	0.0178	0.0003	0.0174
119	0.0179	0.0003	0.0176
120	0.0180	0.0003	0.0177
121	0.0182	0.0003	0.0178
122	0.0182	0.0003	0.0179
123	0.0184	0.0003	0.0181
124	0.0185	0.0003	0.0182
125	0.0187	0.0003	0.0183
126	0.0188	0.0003	0.0184
127	0.0189	0.0003	0.0186
128	0.0190	0.0003	0.0187
129	0.0192	0.0003	0.0189
130	0.0193	0.0003	0.0190
131	0.0195	0.0003	0.0192
132	0.0196	0.0003	0.0193
133	0.0198	0.0003	0.0195
134	0.0199	0.0003	0.0196
135	0.0201	0.0003	0.0198
136	0.0203	0.0003	0.0199
137	0.0205	0.0003	0.0202
138	0.0206	0.0003	0.0203
139	0.0209	0.0003	0.0205
140	0.0210	0.0003	0.0206
141	0.0212	0.0003	0.0209
142	0.0214	0.0003	0.0210
143	0.0216	0.0003	0.0213
144	0.0218	0.0003	0.0215
145	0.0153	0.0003	0.0150
146	0.0155	0.0003	0.0151
147	0.0158	0.0003	0.0154
148	0.0159	0.0003	0.0156
149	0.0162	0.0003	0.0159
150	0.0164	0.0003	0.0161
151	0.0167	0.0003	0.0164
152	0.0169	0.0003	0.0166
153	0.0173	0.0003	0.0169

154	0.0174	0.0003	0.0171
155	0.0178	0.0003	0.0175
156	0.0180	0.0003	0.0177
157	0.0185	0.0003	0.0181
158	0.0187	0.0003	0.0184
159	0.0192	0.0003	0.0188
160	0.0194	0.0003	0.0191
161	0.0199	0.0003	0.0196
162	0.0202	0.0003	0.0199
163	0.0208	0.0003	0.0204
164	0.0211	0.0003	0.0207
165	0.0217	0.0003	0.0214
166	0.0221	0.0003	0.0217
167	0.0228	0.0003	0.0224
168	0.0232	0.0003	0.0228
169	0.0240	0.0003	0.0237
170	0.0244	0.0003	0.0241
171	0.0254	0.0003	0.0251
172	0.0259	0.0003	0.0256
173	0.0270	0.0003	0.0267
174	0.0276	0.0003	0.0273
175	0.0289	0.0003	0.0286
176	0.0296	0.0003	0.0293
177	0.0312	0.0003	0.0309
178	0.0321	0.0003	0.0318
179	0.0341	0.0003	0.0337
180	0.0352	0.0003	0.0348
181	0.0377	0.0003	0.0374
182	0.0391	0.0003	0.0388
183	0.0425	0.0003	0.0422
184	0.0445	0.0003	0.0441
185	0.0544	0.0003	0.0541
186	0.0574	0.0003	0.0571
187	0.0652	0.0003	0.0649
188	0.0703	0.0003	0.0700
189	0.0847	0.0003	0.0844
190	0.0956	0.0003	0.0953
191	0.1367	0.0003	0.1364
192	0.1880	0.0003	0.1877
193	0.5884	0.0003	0.5881
194	0.1114	0.0003	0.1110
195	0.0766	0.0003	0.0763
196	0.0610	0.0003	0.0607
197	0.0467	0.0003	0.0464
198	0.0407	0.0003	0.0404
199	0.0364	0.0003	0.0360
200	0.0330	0.0003	0.0327
201	0.0304	0.0003	0.0301
202	0.0282	0.0003	0.0279
203	0.0264	0.0003	0.0261
204	0.0249	0.0003	0.0246
205	0.0236	0.0003	0.0232
206	0.0224	0.0003	0.0221
207	0.0214	0.0003	0.0211
208	0.0205	0.0003	0.0201
209	0.0197	0.0003	0.0193
210	0.0189	0.0003	0.0186
211	0.0182	0.0003	0.0179
212	0.0176	0.0003	0.0173
213	0.0171	0.0003	0.0167
214	0.0165	0.0003	0.0162
215	0.0161	0.0003	0.0157
216	0.0156	0.0003	0.0153

217	0.0219	0.0003	0.0216
218	0.0215	0.0003	0.0212
219	0.0211	0.0003	0.0208
220	0.0207	0.0003	0.0204
221	0.0204	0.0003	0.0200
222	0.0200	0.0003	0.0197
223	0.0197	0.0003	0.0194
224	0.0194	0.0003	0.0191
225	0.0191	0.0003	0.0188
226	0.0188	0.0003	0.0185
227	0.0186	0.0003	0.0182
228	0.0183	0.0003	0.0180
229	0.0181	0.0003	0.0177
230	0.0178	0.0003	0.0175
231	0.0176	0.0003	0.0173
232	0.0174	0.0003	0.0171
233	0.0172	0.0003	0.0169
234	0.0170	0.0003	0.0167
235	0.0168	0.0003	0.0165
236	0.0166	0.0003	0.0163
237	0.0164	0.0003	0.0161
238	0.0163	0.0003	0.0159
239	0.0161	0.0003	0.0158
240	0.0159	0.0003	0.0156
241	0.0158	0.0003	0.0154
242	0.0156	0.0003	0.0153
243	0.0155	0.0003	0.0151
244	0.0153	0.0003	0.0150
245	0.0152	0.0003	0.0148
246	0.0150	0.0003	0.0147
247	0.0149	0.0003	0.0146
248	0.0148	0.0003	0.0144
249	0.0146	0.0003	0.0143
250	0.0145	0.0003	0.0142
251	0.0144	0.0003	0.0141
252	0.0143	0.0003	0.0139
253	0.0142	0.0003	0.0138
254	0.0141	0.0003	0.0137
255	0.0139	0.0003	0.0136
256	0.0138	0.0003	0.0135
257	0.0137	0.0003	0.0134
258	0.0136	0.0003	0.0133
259	0.0135	0.0003	0.0132
260	0.0134	0.0003	0.0131
261	0.0133	0.0003	0.0130
262	0.0133	0.0003	0.0129
263	0.0132	0.0003	0.0128
264	0.0131	0.0003	0.0127
265	0.0130	0.0003	0.0127
266	0.0129	0.0003	0.0126
267	0.0128	0.0003	0.0125
268	0.0127	0.0003	0.0124
269	0.0127	0.0003	0.0123
270	0.0126	0.0003	0.0122
271	0.0125	0.0003	0.0122
272	0.0124	0.0003	0.0121
273	0.0123	0.0003	0.0120
274	0.0123	0.0003	0.0119
275	0.0122	0.0003	0.0119
276	0.0121	0.0003	0.0118
277	0.0121	0.0003	0.0117
278	0.0120	0.0003	0.0117
279	0.0119	0.0003	0.0116

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280              0.0119           0.0003              0.0115
281              0.0118           0.0003              0.0115
282              0.0117           0.0003              0.0114
283              0.0117           0.0003              0.0113
284              0.0116           0.0003              0.0113
285              0.0115           0.0003              0.0112
286              0.0115           0.0003              0.0112
287              0.0114           0.0003              0.0111
288              0.0114           0.0003              0.0110
--------------------------------------------------------------------
--------------------------------------------------------------------
Total soil rain loss =      0.10(In)
Total effective rainfall =      6.16(In)
Peak flow rate in flood hydrograph =      9.28(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       0.0003      0.05  Q          |          |          |          |
  0+10       0.0017      0.19  Q          |          |          |          |
  0+15       0.0033      0.24  Q          |          |          |          |
  0+20       0.0051      0.25  VQ         |          |          |          |
  0+25       0.0068      0.26  VQ         |          |          |          |
  0+30       0.0087      0.26  VQ         |          |          |          |
  0+35       0.0105      0.27  VQ         |          |          |          |
  0+40       0.0123      0.27  VQ         |          |          |          |
  0+45       0.0142      0.27  VQ         |          |          |          |
  0+50       0.0160      0.27  VQ         |          |          |          |
  0+55       0.0179      0.27  VQ         |          |          |          |
  1+ 0       0.0198      0.27  VQ         |          |          |          |
  1+ 5       0.0217      0.27  VQ         |          |          |          |
  1+10       0.0235      0.27  VQ         |          |          |          |
  1+15       0.0254      0.27  VQ         |          |          |          |
  1+20       0.0273      0.27  |Q         |          |          |          |
  1+25       0.0292      0.28  |Q         |          |          |          |
  1+30       0.0311      0.28  |Q         |          |          |          |
  1+35       0.0330      0.28  |Q         |          |          |          |
  1+40       0.0349      0.28  |Q         |          |          |          |
  1+45       0.0369      0.28  |Q         |          |          |          |
  1+50       0.0388      0.28  |Q         |          |          |          |
  1+55       0.0407      0.28  |Q         |          |          |          |
  2+ 0       0.0426      0.28  |Q         |          |          |          |
  2+ 5       0.0446      0.28  |Q         |          |          |          |
  2+10       0.0465      0.28  |Q         |          |          |          |
  2+15       0.0485      0.28  |Q         |          |          |          |
  2+20       0.0504      0.28  |Q         |          |          |          |
  2+25       0.0524      0.28  |QV        |          |          |          |
  2+30       0.0544      0.29  |QV        |          |          |          |
  2+35       0.0563      0.29  |QV        |          |          |          |
  2+40       0.0583      0.29  |QV        |          |          |          |
  2+45       0.0603      0.29  |QV        |          |          |          |
  2+50       0.0623      0.29  |QV        |          |          |          |
  2+55       0.0643      0.29  |QV        |          |          |          |
  3+ 0       0.0663      0.29  |QV        |          |          |          |
  3+ 5       0.0683      0.29  |QV        |          |          |          |
  3+10       0.0703      0.29  |QV        |          |          |          |
  3+15       0.0724      0.29  |QV        |          |          |          |
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  3+20       0.0744      0.29  |QV        |          |          |          |
  3+25       0.0764      0.30  |QV        |          |          |          |
  3+30       0.0785      0.30  |Q V       |          |          |          |
  3+35       0.0805      0.30  |Q V       |          |          |          |
  3+40       0.0826      0.30  |Q V       |          |          |          |
  3+45       0.0846      0.30  |Q V       |          |          |          |
  3+50       0.0867      0.30  |Q V       |          |          |          |
  3+55       0.0888      0.30  |Q V       |          |          |          |
  4+ 0       0.0909      0.30  |Q V       |          |          |          |
  4+ 5       0.0930      0.30  |Q V       |          |          |          |
  4+10       0.0951      0.30  |Q V       |          |          |          |
  4+15       0.0972      0.31  |Q V       |          |          |          |
  4+20       0.0993      0.31  |Q V       |          |          |          |
  4+25       0.1014      0.31  |Q V       |          |          |          |
  4+30       0.1035      0.31  |Q  V      |          |          |          |
  4+35       0.1057      0.31  |Q  V      |          |          |          |
  4+40       0.1078      0.31  |Q  V      |          |          |          |
  4+45       0.1100      0.31  |Q  V      |          |          |          |
  4+50       0.1121      0.31  |Q  V      |          |          |          |
  4+55       0.1143      0.31  |Q  V      |          |          |          |
  5+ 0       0.1165      0.32  |Q  V      |          |          |          |
  5+ 5       0.1186      0.32  |Q  V      |          |          |          |
  5+10       0.1208      0.32  |Q  V      |          |          |          |
  5+15       0.1230      0.32  |Q  V      |          |          |          |
  5+20       0.1252      0.32  |Q  V      |          |          |          |
  5+25       0.1275      0.32  |Q  V      |          |          |          |
  5+30       0.1297      0.32  |Q   V     |          |          |          |
  5+35       0.1319      0.32  |Q   V     |          |          |          |
  5+40       0.1342      0.33  |Q   V     |          |          |          |
  5+45       0.1364      0.33  |Q   V     |          |          |          |
  5+50       0.1387      0.33  |Q   V     |          |          |          |
  5+55       0.1409      0.33  |Q   V     |          |          |          |
  6+ 0       0.1432      0.33  |Q   V     |          |          |          |
  6+ 5       0.1455      0.33  |Q   V     |          |          |          |
  6+10       0.1478      0.33  |Q   V     |          |          |          |
  6+15       0.1501      0.33  |Q   V     |          |          |          |
  6+20       0.1524      0.34  |Q   V     |          |          |          |
  6+25       0.1547      0.34  |Q    V    |          |          |          |
  6+30       0.1571      0.34  |Q    V    |          |          |          |
  6+35       0.1594      0.34  |Q    V    |          |          |          |
  6+40       0.1618      0.34  |Q    V    |          |          |          |
  6+45       0.1641      0.34  |Q    V    |          |          |          |
  6+50       0.1665      0.34  |Q    V    |          |          |          |
  6+55       0.1689      0.35  |Q    V    |          |          |          |
  7+ 0       0.1713      0.35  |Q    V    |          |          |          |
  7+ 5       0.1737      0.35  |Q    V    |          |          |          |
  7+10       0.1761      0.35  |Q    V    |          |          |          |
  7+15       0.1785      0.35  |Q    V    |          |          |          |
  7+20       0.1810      0.35  |Q     V   |          |          |          |
  7+25       0.1834      0.36  |Q     V   |          |          |          |
  7+30       0.1859      0.36  |Q     V   |          |          |          |
  7+35       0.1884      0.36  |Q     V   |          |          |          |
  7+40       0.1908      0.36  |Q     V   |          |          |          |
  7+45       0.1933      0.36  |Q     V   |          |          |          |
  7+50       0.1958      0.36  |Q     V   |          |          |          |
  7+55       0.1984      0.37  |Q     V   |          |          |          |
  8+ 0       0.2009      0.37  |Q     V   |          |          |          |
  8+ 5       0.2035      0.37  |Q     V   |          |          |          |
  8+10       0.2060      0.37  |Q      V  |          |          |          |
  8+15       0.2086      0.37  |Q      V  |          |          |          |
  8+20       0.2112      0.38  |Q      V  |          |          |          |
  8+25       0.2138      0.38  |Q      V  |          |          |          |
  8+30       0.2164      0.38  |Q      V  |          |          |          |
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 8+35     0.2190     0.38  |Q      V |         |         |         |
 8+40     0.2217     0.38  |Q      V |         |         |         |
 8+45     0.2243     0.39  |Q      V |         |         |         |
 8+50     0.2270     0.39  |Q      V |         |         |         |
 8+55     0.2297     0.39  |Q      V |         |         |         |
 9+ 0     0.2324     0.39  |Q       V|         |         |         |
 9+ 5     0.2351     0.39  |Q       V|         |         |         |
 9+10     0.2378     0.40  |Q       V|         |         |         |
 9+15     0.2406     0.40  |Q       V|         |         |         |
 9+20     0.2433     0.40  |Q       V|         |         |         |
 9+25     0.2461     0.40  |Q       V|         |         |         |
 9+30     0.2489     0.41  |Q       V|         |         |         |
 9+35     0.2517     0.41  |Q       V|         |         |         |
 9+40     0.2546     0.41  |Q       V|         |         |         |
 9+45     0.2574     0.41  |Q        V         |         |         |
 9+50     0.2603     0.42  |Q        V         |         |         |
 9+55     0.2632     0.42  |Q        V         |         |         |
10+ 0     0.2661     0.42  |Q        V         |         |         |
10+ 5     0.2690     0.42  |Q        V         |         |         |
10+10     0.2719     0.43  |Q        V         |         |         |
10+15     0.2749     0.43  |Q        V         |         |         |
10+20     0.2779     0.43  |Q        V         |         |         |
10+25     0.2809     0.44  |Q        V         |         |         |
10+30     0.2839     0.44  |Q        |V        |         |         |
10+35     0.2870     0.44  |Q        |V        |         |         |
10+40     0.2901     0.45  |Q        |V        |         |         |
10+45     0.2932     0.45  |Q        |V        |         |         |
10+50     0.2963     0.45  |Q        |V        |         |         |
10+55     0.2994     0.46  |Q        |V        |         |         |
11+ 0     0.3026     0.46  |Q        |V        |         |         |
11+ 5     0.3058     0.46  |Q        |V        |         |         |
11+10     0.3090     0.47  |Q        | V       |         |         |
11+15     0.3122     0.47  |Q        | V       |         |         |
11+20     0.3155     0.48  |Q        | V       |         |         |
11+25     0.3188     0.48  |Q        | V       |         |         |
11+30     0.3222     0.48  |Q        | V       |         |         |
11+35     0.3255     0.49  |Q        | V       |         |         |
11+40     0.3289     0.49  |Q        | V       |         |         |
11+45     0.3323     0.50  |Q        |  V      |         |         |
11+50     0.3358     0.50  | Q       |  V      |         |         |
11+55     0.3393     0.51  | Q       |  V      |         |         |
12+ 0     0.3428     0.51  | Q       |  V      |         |         |
12+ 5     0.3461     0.49  |Q        |  V      |         |         |
12+10     0.3489     0.40  |Q        |  V      |         |         |
12+15     0.3515     0.38  |Q        |  V      |         |         |
12+20     0.3541     0.38  |Q        |  V      |         |         |
12+25     0.3567     0.38  |Q        |  V      |         |         |
12+30     0.3594     0.38  |Q        |   V     |         |         |
12+35     0.3620     0.39  |Q        |   V     |         |         |
12+40     0.3647     0.39  |Q        |   V     |         |         |
12+45     0.3675     0.40  |Q        |   V     |         |         |
12+50     0.3702     0.40  |Q        |   V     |         |         |
12+55     0.3731     0.41  |Q        |   V     |         |         |
13+ 0     0.3760     0.42  |Q        |   V     |         |         |
13+ 5     0.3789     0.43  |Q        |   V     |         |         |
13+10     0.3819     0.43  |Q        |   V     |         |         |
13+15     0.3849     0.44  |Q        |    V    |         |         |
13+20     0.3880     0.45  |Q        |    V    |         |         |
13+25     0.3911     0.46  |Q        |    V    |         |         |
13+30     0.3944     0.47  |Q        |    V    |         |         |
13+35     0.3977     0.48  |Q        |    V    |         |         |
13+40     0.4010     0.49  |Q        |    V    |         |         |
13+45     0.4044     0.50  |Q        |    V    |         |         |
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13+50       0.4080      0.51  | Q       |    V    |         |         |
13+55       0.4115      0.52  | Q       |     V   |         |         |
14+ 0       0.4152      0.54  | Q       |     V   |         |         |
14+ 5       0.4190      0.55  | Q       |     V   |         |         |
14+10       0.4229      0.56  | Q       |     V   |         |         |
14+15       0.4269      0.58  | Q       |     V   |         |         |
14+20       0.4310      0.60  | Q       |     V   |         |         |
14+25       0.4352      0.61  | Q       |      V  |         |         |
14+30       0.4396      0.63  | Q       |      V  |         |         |
14+35       0.4441      0.65  | Q       |      V  |         |         |
14+40       0.4487      0.68  | Q       |      V  |         |         |
14+45       0.4536      0.70  | Q       |      V  |         |         |
14+50       0.4586      0.73  | Q       |      V  |         |         |
14+55       0.4639      0.76  |  Q      |       V |         |         |
15+ 0       0.4694      0.80  |  Q      |       V |         |         |
15+ 5       0.4751      0.83  |  Q      |       V |         |         |
15+10       0.4812      0.88  |  Q      |       V |         |         |
15+15       0.4876      0.93  |  Q      |        V|         |         |
15+20       0.4944      0.99  |  Q      |        V|         |         |
15+25       0.5019      1.08  |   Q     |        V|         |         |
15+30       0.5104      1.24  |   Q     |        V|         |         |
15+35       0.5198      1.36  |    Q    |         V         |         |
15+40       0.5302      1.51  |     Q   |         V         |         |
15+45       0.5418      1.68  |     Q   |         |V        |         |
15+50       0.5553      1.96  |      Q  |         |V        |         |
15+55       0.5715      2.36  |        Q|         | V       |         |
16+ 0       0.5935      3.19  |         | Q       |  V      |         |
16+ 5       0.6337      5.84  |         |         |  QV     |         |
16+10       0.6977      9.28  |         |         |      V  |      Q  |
16+15       0.7289      4.53  |         |       Q |       V |         |
16+20       0.7466      2.57  |         Q         |        V|         |
16+25       0.7593      1.85  |      Q  |         |        V|         |
16+30       0.7692      1.44  |    Q    |         |         V         |
16+35       0.7774      1.18  |   Q     |         |         V         |
16+40       0.7844      1.03  |   Q     |         |         V         |
16+45       0.7902      0.84  |  Q      |         |         V         |
16+50       0.7954      0.76  |  Q      |         |         |V        |
16+55       0.8002      0.70  | Q       |         |         |V        |
17+ 0       0.8047      0.65  | Q       |         |         |V        |
17+ 5       0.8089      0.61  | Q       |         |         |V        |
17+10       0.8128      0.57  | Q       |         |         |V        |
17+15       0.8165      0.54  | Q       |         |         |V        |
17+20       0.8201      0.52  | Q       |         |         | V       |
17+25       0.8235      0.49  |Q        |         |         | V       |
17+30       0.8267      0.47  |Q        |         |         | V       |
17+35       0.8298      0.45  |Q        |         |         | V       |
17+40       0.8329      0.44  |Q        |         |         | V       |
17+45       0.8358      0.42  |Q        |         |         | V       |
17+50       0.8386      0.41  |Q        |         |         | V       |
17+55       0.8413      0.39  |Q        |         |         | V       |
18+ 0       0.8439      0.38  |Q        |         |         |  V      |
18+ 5       0.8467      0.40  |Q        |         |         |  V      |
18+10       0.8500      0.48  |Q        |         |         |  V      |
18+15       0.8534      0.50  |Q        |         |         |  V      |
18+20       0.8568      0.49  |Q        |         |         |  V      |
18+25       0.8602      0.49  |Q        |         |         |  V      |
18+30       0.8635      0.48  |Q        |         |         |  V      |
18+35       0.8668      0.48  |Q        |         |         |  V      |
18+40       0.8700      0.47  |Q        |         |         |   V     |
18+45       0.8732      0.46  |Q        |         |         |   V     |
18+50       0.8763      0.45  |Q        |         |         |   V     |
18+55       0.8794      0.45  |Q        |         |         |   V     |
19+ 0       0.8824      0.44  |Q        |         |         |   V     |
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19+ 5       0.8854      0.43  |Q        |         |         |   V     |
19+10       0.8884      0.43  |Q        |         |         |   V     |
19+15       0.8913      0.42  |Q        |         |         |   V     |
19+20       0.8942      0.42  |Q        |         |         |    V    |
19+25       0.8970      0.41  |Q        |         |         |    V    |
19+30       0.8998      0.41  |Q        |         |         |    V    |
19+35       0.9026      0.40  |Q        |         |         |    V    |
19+40       0.9053      0.40  |Q        |         |         |    V    |
19+45       0.9080      0.39  |Q        |         |         |    V    |
19+50       0.9107      0.39  |Q        |         |         |    V    |
19+55       0.9134      0.38  |Q        |         |         |    V    |
20+ 0       0.9160      0.38  |Q        |         |         |    V    |
20+ 5       0.9186      0.38  |Q        |         |         |    V    |
20+10       0.9211      0.37  |Q        |         |         |     V   |
20+15       0.9237      0.37  |Q        |         |         |     V   |
20+20       0.9262      0.37  |Q        |         |         |     V   |
20+25       0.9287      0.36  |Q        |         |         |     V   |
20+30       0.9311      0.36  |Q        |         |         |     V   |
20+35       0.9336      0.35  |Q        |         |         |     V   |
20+40       0.9360      0.35  |Q        |         |         |     V   |
20+45       0.9384      0.35  |Q        |         |         |     V   |
20+50       0.9408      0.35  |Q        |         |         |     V   |
20+55       0.9431      0.34  |Q        |         |         |     V   |
21+ 0       0.9455      0.34  |Q        |         |         |      V  |
21+ 5       0.9478      0.34  |Q        |         |         |      V  |
21+10       0.9501      0.33  |Q        |         |         |      V  |
21+15       0.9524      0.33  |Q        |         |         |      V  |
21+20       0.9546      0.33  |Q        |         |         |      V  |
21+25       0.9569      0.33  |Q        |         |         |      V  |
21+30       0.9591      0.32  |Q        |         |         |      V  |
21+35       0.9613      0.32  |Q        |         |         |      V  |
21+40       0.9635      0.32  |Q        |         |         |      V  |
21+45       0.9657      0.32  |Q        |         |         |      V  |
21+50       0.9679      0.31  |Q        |         |         |      V  |
21+55       0.9700      0.31  |Q        |         |         |      V  |
22+ 0       0.9721      0.31  |Q        |         |         |       V |
22+ 5       0.9743      0.31  |Q        |         |         |       V |
22+10       0.9764      0.31  |Q        |         |         |       V |
22+15       0.9784      0.30  |Q        |         |         |       V |
22+20       0.9805      0.30  |Q        |         |         |       V |
22+25       0.9826      0.30  |Q        |         |         |       V |
22+30       0.9846      0.30  |Q        |         |         |       V |
22+35       0.9867      0.30  |Q        |         |         |       V |
22+40       0.9887      0.29  |Q        |         |         |       V |
22+45       0.9907      0.29  |Q        |         |         |       V |
22+50       0.9927      0.29  |Q        |         |         |       V |
22+55       0.9947      0.29  |Q        |         |         |       V |
23+ 0       0.9966      0.29  |Q        |         |         |        V|
23+ 5       0.9986      0.28  |Q        |         |         |        V|
23+10       1.0005      0.28  |Q        |         |         |        V|
23+15       1.0025      0.28  |Q        |         |         |        V|
23+20       1.0044      0.28  |Q        |         |         |        V|
23+25       1.0063      0.28  |Q        |         |         |        V|
23+30       1.0082      0.28  |Q        |         |         |        V|
23+35       1.0101      0.27  |Q        |         |         |        V|
23+40       1.0120      0.27  |Q        |         |         |        V|
23+45       1.0139      0.27  |Q        |         |         |        V|
23+50       1.0157      0.27  |Q        |         |         |        V|
23+55       1.0176      0.27  |Q        |         |         |        V|
24+ 0       1.0194      0.27  |Q        |         |         |        V|
24+ 5       1.0209      0.22  Q         |         |         |        V|
24+10       1.0214      0.07  Q         |         |         |        V|
24+15       1.0216      0.03  Q         |         |         |        V|
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   24+20        1.0217      0.01  Q         |         |         |       V|
   24+25        1.0217      0.01  Q         |         |         |       V|
   24+30        1.0218      0.00  Q         |         |         |       V|
   24+35        1.0218      0.00  Q         |         |         |        V
-----------------------------------------------------------------------
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U n i t   H y d r o g r a p h   A n a l y s i s

Study date 07/27/16

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

Program License Serial Number 6083

WATERMAN INDUSTRIAL CENTER
PROPOSED CONDITION BASIN 4
SAN BERNARDINO, CA
07.27.2016 KV

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		
0.00	1	1.59
0.49	1	0.01
Rainfall data for year 100		
0.49	6	3.04
Rainfall data for year 100		
0.49	24	6.26

++

******** 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)
90.0	98.0	0.49	1.000	0.040	0.100	0.004

Area-averaged adjusted loss rate Fm (In/Hr) = 0.004

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.05	0.100	90.0	98.0	0.20	0.962
0.44	0.900	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.962
Area-averaged low loss fraction, Yb = 0.038
User entry of time of concentration = 0.121 (hours)
+++
Watershed area = 0.49(Ac.)
Catchment Lag time = 0.096 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 86.4454
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.004(In/Hr)
Average low loss rate fraction (Yb) = 0.038 (decimal)
VALLEY DEVELOPED S-Graph proportion = 0.467
VALLEY UNDEVELOPED S-Graph proportion = 0.533
FOOTHILL S-Graph proportion = 0.000
MOUNTAIN S-Graph proportion = 0.000
DESERT S-Graph proportion = -0.000

Computed peak 5-minute rainfall = 0.004(In)
Computed peak 30-minute rainfall = 0.008(In)
Specified peak 1-hour rainfall = 0.010(In)
Computed peak 3-hour rainfall = 0.333(In)
Specified peak 6-hour rainfall = 3.040(In)
Specified peak 24-hour rainfall = 6.260(In)

Rainfall depth area reduction factors:
Using a total area of 0.49(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000	Adjusted rainfall = 0.004(In)
30-minute factor = 1.000	Adjusted rainfall = 0.008(In)
1-hour factor = 1.000	Adjusted rainfall = 0.010(In)
3-hour factor = 1.000	Adjusted rainfall = 0.333(In)
6-hour factor = 1.000	Adjusted rainfall = 3.040(In)
24-hour factor = 1.000	Adjusted rainfall = 6.260(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 = 5.93 (CFS))	
1	14.173	0.840
2	65.265	3.028
3	87.173	1.298
4	92.993	0.345
5	95.812	0.167
6	97.358	0.092
7	98.449	0.065
8	99.167	0.043
9	99.652	0.029
10	100.000	0.021

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.0037	0.0037
2	0.0049	0.0012

3	0.0057	0.0009
4	0.0064	0.0007
5	0.0070	0.0006
6	0.0076	0.0005
7	0.0081	0.0005
8	0.0085	0.0004
9	0.0089	0.0004
10	0.0093	0.0004
11	0.0097	0.0004
12	0.0100	0.0003
13	0.0129	0.0029
14	0.0164	0.0034
15	0.0204	0.0040
16	0.0250	0.0047
17	0.0304	0.0053
18	0.0365	0.0061
19	0.0433	0.0069
20	0.0510	0.0077
21	0.0596	0.0086
22	0.0692	0.0095
23	0.0797	0.0105
24	0.0913	0.0116
25	0.1040	0.0127
26	0.1179	0.0139
27	0.1330	0.0151
28	0.1493	0.0164
29	0.1670	0.0177
30	0.1861	0.0191
31	0.2066	0.0205
32	0.2286	0.0220
33	0.2522	0.0236
34	0.2774	0.0252
35	0.3043	0.0269
36	0.3329	0.0286
37	0.3634	0.0304
38	0.3956	0.0323
39	0.4298	0.0342
40	0.4660	0.0362
41	0.5042	0.0382
42	0.5445	0.0403
43	0.5869	0.0425
44	0.6316	0.0447
45	0.6785	0.0470
46	0.7278	0.0493
47	0.7795	0.0517
48	0.8337	0.0542
49	0.8904	0.0567
50	0.9497	0.0593
51	1.0116	0.0619
52	1.0763	0.0647
53	1.1437	0.0674
54	1.2140	0.0703
55	1.2872	0.0732
56	1.3634	0.0762
57	1.4426	0.0792
58	1.5249	0.0823
59	1.6104	0.0855
60	1.6991	0.0887
61	1.7911	0.0920
62	1.8865	0.0954
63	1.9853	0.0988
64	2.0877	0.1023
65	2.1935	0.1059

66	2.3030	0.1095
67	2.4162	0.1132
68	2.5332	0.1170
69	2.6540	0.1208
70	2.7787	0.1247
71	2.9073	0.1287
72	3.0400	0.1327
73	3.0619	0.0219
74	3.0837	0.0218
75	3.1053	0.0216
76	3.1269	0.0215
77	3.1482	0.0214
78	3.1695	0.0212
79	3.1906	0.0211
80	3.2116	0.0210
81	3.2324	0.0209
82	3.2531	0.0207
83	3.2737	0.0206
84	3.2942	0.0205
85	3.3146	0.0204
86	3.3349	0.0203
87	3.3550	0.0201
88	3.3751	0.0200
89	3.3950	0.0199
90	3.4148	0.0198
91	3.4345	0.0197
92	3.4541	0.0196
93	3.4737	0.0195
94	3.4931	0.0194
95	3.5124	0.0193
96	3.5316	0.0192
97	3.5507	0.0191
98	3.5697	0.0190
99	3.5887	0.0189
100	3.6075	0.0188
101	3.6263	0.0188
102	3.6449	0.0187
103	3.6635	0.0186
104	3.6820	0.0185
105	3.7004	0.0184
106	3.7187	0.0183
107	3.7370	0.0182
108	3.7551	0.0182
109	3.7732	0.0181
110	3.7912	0.0180
111	3.8091	0.0179
112	3.8270	0.0178
113	3.8447	0.0178
114	3.8624	0.0177
115	3.8800	0.0176
116	3.8976	0.0175
117	3.9150	0.0175
118	3.9324	0.0174
119	3.9498	0.0173
120	3.9670	0.0173
121	3.9842	0.0172
122	4.0014	0.0171
123	4.0184	0.0171
124	4.0354	0.0170
125	4.0523	0.0169
126	4.0692	0.0169
127	4.0860	0.0168
128	4.1027	0.0167

129	4.1194	0.0167
130	4.1360	0.0166
131	4.1525	0.0165
132	4.1690	0.0165
133	4.1854	0.0164
134	4.2018	0.0164
135	4.2181	0.0163
136	4.2344	0.0163
137	4.2506	0.0162
138	4.2667	0.0161
139	4.2828	0.0161
140	4.2988	0.0160
141	4.3148	0.0160
142	4.3307	0.0159
143	4.3466	0.0159
144	4.3624	0.0158
145	4.3781	0.0158
146	4.3938	0.0157
147	4.4095	0.0157
148	4.4251	0.0156
149	4.4407	0.0156
150	4.4562	0.0155
151	4.4716	0.0155
152	4.4870	0.0154
153	4.5024	0.0154
154	4.5177	0.0153
155	4.5330	0.0153
156	4.5482	0.0152
157	4.5633	0.0152
158	4.5785	0.0151
159	4.5935	0.0151
160	4.6086	0.0150
161	4.6235	0.0150
162	4.6385	0.0149
163	4.6534	0.0149
164	4.6682	0.0149
165	4.6830	0.0148
166	4.6978	0.0148
167	4.7125	0.0147
168	4.7272	0.0147
169	4.7419	0.0146
170	4.7565	0.0146
171	4.7710	0.0146
172	4.7855	0.0145
173	4.8000	0.0145
174	4.8144	0.0144
175	4.8288	0.0144
176	4.8432	0.0144
177	4.8575	0.0143
178	4.8718	0.0143
179	4.8860	0.0142
180	4.9002	0.0142
181	4.9144	0.0142
182	4.9285	0.0141
183	4.9426	0.0141
184	4.9567	0.0141
185	4.9707	0.0140
186	4.9847	0.0140
187	4.9986	0.0139
188	5.0125	0.0139
189	5.0264	0.0139
190	5.0403	0.0138
191	5.0541	0.0138

192	5.0678	0.0138
193	5.0816	0.0137
194	5.0953	0.0137
195	5.1089	0.0137
196	5.1226	0.0136
197	5.1362	0.0136
198	5.1497	0.0136
199	5.1633	0.0135
200	5.1768	0.0135
201	5.1903	0.0135
202	5.2037	0.0134
203	5.2171	0.0134
204	5.2305	0.0134
205	5.2438	0.0133
206	5.2571	0.0133
207	5.2704	0.0133
208	5.2837	0.0133
209	5.2969	0.0132
210	5.3101	0.0132
211	5.3232	0.0132
212	5.3364	0.0131
213	5.3495	0.0131
214	5.3625	0.0131
215	5.3756	0.0130
216	5.3886	0.0130
217	5.4016	0.0130
218	5.4145	0.0130
219	5.4275	0.0129
220	5.4404	0.0129
221	5.4532	0.0129
222	5.4661	0.0128
223	5.4789	0.0128
224	5.4917	0.0128
225	5.5044	0.0128
226	5.5172	0.0127
227	5.5299	0.0127
228	5.5426	0.0127
229	5.5552	0.0127
230	5.5678	0.0126
231	5.5804	0.0126
232	5.5930	0.0126
233	5.6056	0.0125
234	5.6181	0.0125
235	5.6306	0.0125
236	5.6430	0.0125
237	5.6555	0.0124
238	5.6679	0.0124
239	5.6803	0.0124
240	5.6927	0.0124
241	5.7050	0.0123
242	5.7174	0.0123
243	5.7296	0.0123
244	5.7419	0.0123
245	5.7542	0.0122
246	5.7664	0.0122
247	5.7786	0.0122
248	5.7908	0.0122
249	5.8029	0.0122
250	5.8151	0.0121
251	5.8272	0.0121
252	5.8393	0.0121
253	5.8513	0.0121
254	5.8634	0.0120

255	5.8754	0.0120
256	5.8874	0.0120
257	5.8993	0.0120
258	5.9113	0.0119
259	5.9232	0.0119
260	5.9351	0.0119
261	5.9470	0.0119
262	5.9589	0.0119
263	5.9707	0.0118
264	5.9825	0.0118
265	5.9943	0.0118
266	6.0061	0.0118
267	6.0179	0.0118
268	6.0296	0.0117
269	6.0413	0.0117
270	6.0530	0.0117
271	6.0647	0.0117
272	6.0763	0.0117
273	6.0879	0.0116
274	6.0995	0.0116
275	6.1111	0.0116
276	6.1227	0.0116
277	6.1343	0.0115
278	6.1458	0.0115
279	6.1573	0.0115
280	6.1688	0.0115
281	6.1803	0.0115
282	6.1917	0.0115
283	6.2031	0.0114
284	6.2145	0.0114
285	6.2259	0.0114
286	6.2373	0.0114
287	6.2487	0.0114
288	6.2600	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0003	0.0110
2	0.0114	0.0003	0.0110
3	0.0114	0.0003	0.0111
4	0.0114	0.0003	0.0111
5	0.0115	0.0003	0.0111
6	0.0115	0.0003	0.0111
7	0.0115	0.0003	0.0112
8	0.0115	0.0003	0.0112
9	0.0116	0.0003	0.0112
10	0.0116	0.0003	0.0113
11	0.0116	0.0003	0.0113
12	0.0117	0.0003	0.0113
13	0.0117	0.0003	0.0114
14	0.0117	0.0003	0.0114
15	0.0118	0.0003	0.0114
16	0.0118	0.0003	0.0114
17	0.0118	0.0003	0.0115
18	0.0118	0.0003	0.0115
19	0.0119	0.0003	0.0116
20	0.0119	0.0003	0.0116
21	0.0119	0.0003	0.0116
22	0.0120	0.0003	0.0116
23	0.0120	0.0003	0.0117
24	0.0120	0.0003	0.0117

25	0.0121	0.0003	0.0118
26	0.0121	0.0003	0.0118
27	0.0122	0.0003	0.0118
28	0.0122	0.0003	0.0118
29	0.0122	0.0003	0.0119
30	0.0122	0.0003	0.0119
31	0.0123	0.0003	0.0120
32	0.0123	0.0003	0.0120
33	0.0124	0.0003	0.0120
34	0.0124	0.0003	0.0121
35	0.0124	0.0003	0.0121
36	0.0125	0.0003	0.0121
37	0.0125	0.0003	0.0122
38	0.0125	0.0003	0.0122
39	0.0126	0.0003	0.0123
40	0.0126	0.0003	0.0123
41	0.0127	0.0003	0.0123
42	0.0127	0.0003	0.0124
43	0.0128	0.0003	0.0124
44	0.0128	0.0003	0.0125
45	0.0128	0.0003	0.0125
46	0.0129	0.0003	0.0125
47	0.0129	0.0003	0.0126
48	0.0130	0.0003	0.0126
49	0.0130	0.0003	0.0127
50	0.0130	0.0003	0.0127
51	0.0131	0.0003	0.0128
52	0.0131	0.0003	0.0128
53	0.0132	0.0003	0.0129
54	0.0132	0.0003	0.0129
55	0.0133	0.0003	0.0130
56	0.0133	0.0003	0.0130
57	0.0134	0.0003	0.0130
58	0.0134	0.0003	0.0131
59	0.0135	0.0003	0.0131
60	0.0135	0.0003	0.0132
61	0.0136	0.0003	0.0132
62	0.0136	0.0003	0.0133
63	0.0137	0.0003	0.0133
64	0.0137	0.0003	0.0134
65	0.0138	0.0003	0.0134
66	0.0138	0.0003	0.0135
67	0.0139	0.0003	0.0135
68	0.0139	0.0003	0.0136
69	0.0140	0.0003	0.0137
70	0.0140	0.0003	0.0137
71	0.0141	0.0003	0.0138
72	0.0141	0.0003	0.0138
73	0.0142	0.0003	0.0139
74	0.0142	0.0003	0.0139
75	0.0143	0.0003	0.0140
76	0.0144	0.0003	0.0140
77	0.0144	0.0003	0.0141
78	0.0145	0.0003	0.0141
79	0.0146	0.0003	0.0142
80	0.0146	0.0003	0.0143
81	0.0147	0.0003	0.0144
82	0.0147	0.0003	0.0144
83	0.0148	0.0003	0.0145
84	0.0149	0.0003	0.0145
85	0.0149	0.0003	0.0146
86	0.0150	0.0003	0.0147
87	0.0151	0.0003	0.0147

88	0.0151	0.0003	0.0148
89	0.0152	0.0003	0.0149
90	0.0153	0.0003	0.0149
91	0.0154	0.0003	0.0150
92	0.0154	0.0003	0.0151
93	0.0155	0.0003	0.0152
94	0.0156	0.0003	0.0152
95	0.0157	0.0003	0.0153
96	0.0157	0.0003	0.0154
97	0.0158	0.0003	0.0155
98	0.0159	0.0003	0.0155
99	0.0160	0.0003	0.0156
100	0.0160	0.0003	0.0157
101	0.0161	0.0003	0.0158
102	0.0162	0.0003	0.0159
103	0.0163	0.0003	0.0160
104	0.0164	0.0003	0.0160
105	0.0165	0.0003	0.0162
106	0.0165	0.0003	0.0162
107	0.0167	0.0003	0.0163
108	0.0167	0.0003	0.0164
109	0.0169	0.0003	0.0165
110	0.0169	0.0003	0.0166
111	0.0171	0.0003	0.0167
112	0.0171	0.0003	0.0168
113	0.0173	0.0003	0.0169
114	0.0173	0.0003	0.0170
115	0.0175	0.0003	0.0171
116	0.0175	0.0003	0.0172
117	0.0177	0.0003	0.0174
118	0.0178	0.0003	0.0174
119	0.0179	0.0003	0.0176
120	0.0180	0.0003	0.0177
121	0.0182	0.0003	0.0178
122	0.0182	0.0003	0.0179
123	0.0184	0.0003	0.0181
124	0.0185	0.0003	0.0182
125	0.0187	0.0003	0.0183
126	0.0188	0.0003	0.0184
127	0.0189	0.0003	0.0186
128	0.0190	0.0003	0.0187
129	0.0192	0.0003	0.0189
130	0.0193	0.0003	0.0190
131	0.0195	0.0003	0.0192
132	0.0196	0.0003	0.0193
133	0.0198	0.0003	0.0195
134	0.0199	0.0003	0.0196
135	0.0201	0.0003	0.0198
136	0.0203	0.0003	0.0199
137	0.0205	0.0003	0.0202
138	0.0206	0.0003	0.0203
139	0.0209	0.0003	0.0205
140	0.0210	0.0003	0.0206
141	0.0212	0.0003	0.0209
142	0.0214	0.0003	0.0210
143	0.0216	0.0003	0.0213
144	0.0218	0.0003	0.0215
145	0.1327	0.0003	0.1324
146	0.1287	0.0003	0.1283
147	0.1208	0.0003	0.1205
148	0.1170	0.0003	0.1166
149	0.1095	0.0003	0.1092
150	0.1059	0.0003	0.1055

151	0.0988	0.0003	0.0985
152	0.0954	0.0003	0.0951
153	0.0887	0.0003	0.0884
154	0.0855	0.0003	0.0852
155	0.0792	0.0003	0.0789
156	0.0762	0.0003	0.0758
157	0.0703	0.0003	0.0700
158	0.0674	0.0003	0.0671
159	0.0619	0.0003	0.0616
160	0.0593	0.0003	0.0590
161	0.0542	0.0003	0.0538
162	0.0517	0.0003	0.0514
163	0.0470	0.0003	0.0466
164	0.0447	0.0003	0.0443
165	0.0403	0.0003	0.0400
166	0.0382	0.0003	0.0379
167	0.0342	0.0003	0.0339
168	0.0323	0.0003	0.0319
169	0.0286	0.0003	0.0283
170	0.0269	0.0003	0.0266
171	0.0236	0.0003	0.0233
172	0.0220	0.0003	0.0217
173	0.0191	0.0003	0.0187
174	0.0177	0.0003	0.0174
175	0.0151	0.0003	0.0148
176	0.0139	0.0003	0.0135
177	0.0116	0.0003	0.0113
178	0.0105	0.0003	0.0102
179	0.0086	0.0003	0.0083
180	0.0077	0.0003	0.0074
181	0.0061	0.0002	0.0058
182	0.0053	0.0002	0.0051
183	0.0040	0.0002	0.0039
184	0.0034	0.0001	0.0033
185	0.0003	0.0000	0.0003
186	0.0004	0.0000	0.0003
187	0.0004	0.0000	0.0004
188	0.0004	0.0000	0.0004
189	0.0005	0.0000	0.0005
190	0.0006	0.0000	0.0006
191	0.0009	0.0000	0.0008
192	0.0012	0.0000	0.0011
193	0.0037	0.0001	0.0036
194	0.0007	0.0000	0.0007
195	0.0005	0.0000	0.0005
196	0.0004	0.0000	0.0004
197	0.0029	0.0001	0.0028
198	0.0047	0.0002	0.0045
199	0.0069	0.0003	0.0066
200	0.0095	0.0003	0.0092
201	0.0127	0.0003	0.0124
202	0.0164	0.0003	0.0160
203	0.0205	0.0003	0.0202
204	0.0252	0.0003	0.0249
205	0.0304	0.0003	0.0301
206	0.0362	0.0003	0.0358
207	0.0425	0.0003	0.0421
208	0.0493	0.0003	0.0490
209	0.0567	0.0003	0.0564
210	0.0647	0.0003	0.0643
211	0.0732	0.0003	0.0729
212	0.0823	0.0003	0.0820
213	0.0920	0.0003	0.0917

214	0.1023	0.0003	0.1020
215	0.1132	0.0003	0.1129
216	0.1247	0.0003	0.1244
217	0.0219	0.0003	0.0216
218	0.0215	0.0003	0.0212
219	0.0211	0.0003	0.0208
220	0.0207	0.0003	0.0204
221	0.0204	0.0003	0.0200
222	0.0200	0.0003	0.0197
223	0.0197	0.0003	0.0194
224	0.0194	0.0003	0.0191
225	0.0191	0.0003	0.0188
226	0.0188	0.0003	0.0185
227	0.0186	0.0003	0.0182
228	0.0183	0.0003	0.0180
229	0.0181	0.0003	0.0177
230	0.0178	0.0003	0.0175
231	0.0176	0.0003	0.0173
232	0.0174	0.0003	0.0171
233	0.0172	0.0003	0.0169
234	0.0170	0.0003	0.0167
235	0.0168	0.0003	0.0165
236	0.0166	0.0003	0.0163
237	0.0164	0.0003	0.0161
238	0.0163	0.0003	0.0159
239	0.0161	0.0003	0.0158
240	0.0159	0.0003	0.0156
241	0.0158	0.0003	0.0154
242	0.0156	0.0003	0.0153
243	0.0155	0.0003	0.0151
244	0.0153	0.0003	0.0150
245	0.0152	0.0003	0.0148
246	0.0150	0.0003	0.0147
247	0.0149	0.0003	0.0146
248	0.0148	0.0003	0.0144
249	0.0146	0.0003	0.0143
250	0.0145	0.0003	0.0142
251	0.0144	0.0003	0.0141
252	0.0143	0.0003	0.0139
253	0.0142	0.0003	0.0138
254	0.0141	0.0003	0.0137
255	0.0139	0.0003	0.0136
256	0.0138	0.0003	0.0135
257	0.0137	0.0003	0.0134
258	0.0136	0.0003	0.0133
259	0.0135	0.0003	0.0132
260	0.0134	0.0003	0.0131
261	0.0133	0.0003	0.0130
262	0.0133	0.0003	0.0129
263	0.0132	0.0003	0.0128
264	0.0131	0.0003	0.0127
265	0.0130	0.0003	0.0127
266	0.0129	0.0003	0.0126
267	0.0128	0.0003	0.0125
268	0.0127	0.0003	0.0124
269	0.0127	0.0003	0.0123
270	0.0126	0.0003	0.0122
271	0.0125	0.0003	0.0122
272	0.0124	0.0003	0.0121
273	0.0123	0.0003	0.0120
274	0.0123	0.0003	0.0119
275	0.0122	0.0003	0.0119
276	0.0121	0.0003	0.0118

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277            0.0121          0.0003             0.0117
278            0.0120          0.0003             0.0117
279            0.0119          0.0003             0.0116
280            0.0119          0.0003             0.0115
281            0.0118          0.0003             0.0115
282            0.0117          0.0003             0.0114
283            0.0117          0.0003             0.0113
284            0.0116          0.0003             0.0113
285            0.0115          0.0003             0.0112
286            0.0115          0.0003             0.0112
287            0.0114          0.0003             0.0111
288            0.0114          0.0003             0.0110
--------------------------------------------------------------------
--------------------------------------------------------------------
Total soil rain loss =      0.09(In)
Total effective rainfall =      6.17(In)
Peak flow rate in flood hydrograph =      0.68(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      0.04  Q         |          |          |          |
  0+15      0.0007      0.06  Q         |          |          |          |
  0+20      0.0012      0.06  Q         |          |          |          |
  0+25      0.0016      0.06  Q         |          |          |          |
  0+30      0.0020      0.06  Q         |          |          |          |
  0+35      0.0025      0.06  Q         |          |          |          |
  0+40      0.0029      0.07  Q         |          |          |          |
  0+45      0.0034      0.07  Q         |          |          |          |
  0+50      0.0039      0.07  Q         |          |          |          |
  0+55      0.0043      0.07  Q         |          |          |          |
  1+ 0      0.0048      0.07  Q         |          |          |          |
  1+ 5      0.0052      0.07  Q         |          |          |          |
  1+10      0.0057      0.07  Q         |          |          |          |
  1+15      0.0062      0.07  Q         |          |          |          |
  1+20      0.0066      0.07  QV        |          |          |          |
  1+25      0.0071      0.07  QV        |          |          |          |
  1+30      0.0076      0.07  QV        |          |          |          |
  1+35      0.0080      0.07  QV        |          |          |          |
  1+40      0.0085      0.07  QV        |          |          |          |
  1+45      0.0090      0.07  QV        |          |          |          |
  1+50      0.0094      0.07  QV        |          |          |          |
  1+55      0.0099      0.07  QV        |          |          |          |
  2+ 0      0.0104      0.07  QV        |          |          |          |
  2+ 5      0.0109      0.07  QV        |          |          |          |
  2+10      0.0114      0.07  QV        |          |          |          |
  2+15      0.0118      0.07  QV        |          |          |          |
  2+20      0.0123      0.07  QV        |          |          |          |
  2+25      0.0128      0.07  Q V       |          |          |          |
  2+30      0.0133      0.07  Q V       |          |          |          |
  2+35      0.0138      0.07  Q V       |          |          |          |
  2+40      0.0143      0.07  Q V       |          |          |          |
  2+45      0.0147      0.07  Q V       |          |          |          |
  2+50      0.0152      0.07  Q V       |          |          |          |
  2+55      0.0157      0.07  Q V       |          |          |          |
  3+ 0      0.0162      0.07  Q V       |          |          |          |
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3+ 5      0.0167      0.07  Q V       |         |         |         |
3+10      0.0172      0.07  Q V       |         |         |         |
3+15      0.0177      0.07  Q V       |         |         |         |
3+20      0.0182      0.07  Q V       |         |         |         |
3+25      0.0187      0.07  Q V       |         |         |         |
3+30      0.0192      0.07  Q  V      |         |         |         |
3+35      0.0197      0.07  Q  V      |         |         |         |
3+40      0.0202      0.07  Q  V      |         |         |         |
3+45      0.0207      0.07  Q  V      |         |         |         |
3+50      0.0212      0.07  Q  V      |         |         |         |
3+55      0.0218      0.07  Q  V      |         |         |         |
4+ 0      0.0223      0.07  Q  V      |         |         |         |
4+ 5      0.0228      0.07  Q  V      |         |         |         |
4+10      0.0233      0.07  Q  V      |         |         |         |
4+15      0.0238      0.08  Q  V      |         |         |         |
4+20      0.0243      0.08  Q  V      |         |         |         |
4+25      0.0249      0.08  Q  V      |         |         |         |
4+30      0.0254      0.08  Q   V     |         |         |         |
4+35      0.0259      0.08  Q   V     |         |         |         |
4+40      0.0264      0.08  Q   V     |         |         |         |
4+45      0.0270      0.08  Q   V     |         |         |         |
4+50      0.0275      0.08  Q   V     |         |         |         |
4+55      0.0280      0.08  Q   V     |         |         |         |
5+ 0      0.0286      0.08  Q   V     |         |         |         |
5+ 5      0.0291      0.08  Q   V     |         |         |         |
5+10      0.0296      0.08  Q   V     |         |         |         |
5+15      0.0302      0.08  Q   V     |         |         |         |
5+20      0.0307      0.08  Q   V     |         |         |         |
5+25      0.0313      0.08  Q   V     |         |         |         |
5+30      0.0318      0.08  Q    V    |         |         |         |
5+35      0.0324      0.08  Q    V    |         |         |         |
5+40      0.0329      0.08  Q    V    |         |         |         |
5+45      0.0335      0.08  Q    V    |         |         |         |
5+50      0.0340      0.08  Q    V    |         |         |         |
5+55      0.0346      0.08  Q    V    |         |         |         |
6+ 0      0.0351      0.08  Q    V    |         |         |         |
6+ 5      0.0357      0.08  Q    V    |         |         |         |
6+10      0.0363      0.08  Q    V    |         |         |         |
6+15      0.0368      0.08  Q    V    |         |         |         |
6+20      0.0374      0.08  Q    V    |         |         |         |
6+25      0.0380      0.08  Q     V   |         |         |         |
6+30      0.0386      0.08  Q     V   |         |         |         |
6+35      0.0391      0.08  Q     V   |         |         |         |
6+40      0.0397      0.08  Q     V   |         |         |         |
6+45      0.0403      0.08  Q     V   |         |         |         |
6+50      0.0409      0.08  Q     V   |         |         |         |
6+55      0.0415      0.09  Q     V   |         |         |         |
7+ 0      0.0420      0.09  Q     V   |         |         |         |
7+ 5      0.0426      0.09  Q     V   |         |         |         |
7+10      0.0432      0.09  Q     V   |         |         |         |
7+15      0.0438      0.09  Q     V   |         |         |         |
7+20      0.0444      0.09  Q      V  |         |         |         |
7+25      0.0450      0.09  Q      V  |         |         |         |
7+30      0.0456      0.09  Q      V  |         |         |         |
7+35      0.0462      0.09  Q      V  |         |         |         |
7+40      0.0469      0.09  Q      V  |         |         |         |
7+45      0.0475      0.09  Q      V  |         |         |         |
7+50      0.0481      0.09  Q      V  |         |         |         |
7+55      0.0487      0.09  Q      V  |         |         |         |
8+ 0      0.0493      0.09  Q      V  |         |         |         |
8+ 5      0.0500      0.09  Q      V  |         |         |         |
8+10      0.0506      0.09  Q       V |         |         |         |
8+15      0.0512      0.09  Q       V |         |         |         |
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 8+20         0.0519      0.09  Q       V |         |         |         |
 8+25         0.0525      0.09  Q       V |         |         |         |
 8+30         0.0531      0.09  Q       V |         |         |         |
 8+35         0.0538      0.09  Q       V |         |         |         |
 8+40         0.0544      0.09  Q       V |         |         |         |
 8+45         0.0551      0.09  Q       V |         |         |         |
 8+50         0.0558      0.10  Q       V |         |         |         |
 8+55         0.0564      0.10  Q       V |         |         |         |
 9+ 0         0.0571      0.10  Q        V|         |         |         |
 9+ 5         0.0577      0.10  Q        V|         |         |         |
 9+10         0.0584      0.10  Q        V|         |         |         |
 9+15         0.0591      0.10  Q        V|         |         |         |
 9+20         0.0598      0.10  Q        V|         |         |         |
 9+25         0.0605      0.10  Q        V|         |         |         |
 9+30         0.0611      0.10  Q        V|         |         |         |
 9+35         0.0618      0.10  Q        V|         |         |         |
 9+40         0.0625      0.10  Q        V|         |         |         |
 9+45         0.0632      0.10  Q         V         |         |         |
 9+50         0.0639      0.10  Q         V         |         |         |
 9+55         0.0646      0.10  Q         V         |         |         |
10+ 0         0.0654      0.10  Q         V         |         |         |
10+ 5         0.0661      0.10  Q         V         |         |         |
10+10         0.0668      0.11  Q         V         |         |         |
10+15         0.0675      0.11  Q         V         |         |         |
10+20         0.0683      0.11  Q         V         |         |         |
10+25         0.0690      0.11  Q         V         |         |         |
10+30         0.0698      0.11  Q         |V        |         |         |
10+35         0.0705      0.11  Q         |V        |         |         |
10+40         0.0713      0.11  Q         |V        |         |         |
10+45         0.0720      0.11  Q         |V        |         |         |
10+50         0.0728      0.11  Q         |V        |         |         |
10+55         0.0736      0.11  Q         |V        |         |         |
11+ 0         0.0743      0.11  Q         |V        |         |         |
11+ 5         0.0751      0.11  Q         |V        |         |         |
11+10         0.0759      0.11  Q         | V       |         |         |
11+15         0.0767      0.12  Q         | V       |         |         |
11+20         0.0775      0.12  Q         | V       |         |         |
11+25         0.0783      0.12  Q         | V       |         |         |
11+30         0.0792      0.12  Q         | V       |         |         |
11+35         0.0800      0.12  Q         | V       |         |         |
11+40         0.0808      0.12  Q         | V       |         |         |
11+45         0.0816      0.12  Q         | V       |         |         |
11+50         0.0825      0.12  Q         |  V      |         |         |
11+55         0.0834      0.12  Q         |  V      |         |         |
12+ 0         0.0842      0.13  Q         |  V      |         |         |
12+ 5         0.0857      0.22  Q         |  V      |         |         |
12+10         0.0895      0.55  | Q       |   V     |         |         |
12+15         0.0942      0.68  | Q       |   V     |         |         |
12+20         0.0989      0.68  | Q       |    V    |         |         |
12+25         0.1035      0.67  | Q       |     V   |         |         |
12+30         0.1080      0.65  | Q       |      V  |         |         |
12+35         0.1123      0.63  | Q       |      V  |         |         |
12+40         0.1164      0.60  | Q       |       V |         |         |
12+45         0.1204      0.57  | Q       |        V|         |         |
12+50         0.1241      0.54  | Q       |        V|         |         |
12+55         0.1277      0.52  | Q       |         V         |         |
13+ 0         0.1310      0.49  |Q        |         V         |         |
13+ 5         0.1342      0.46  |Q        |         |V        |         |
13+10         0.1372      0.43  |Q        |         |V        |         |
13+15         0.1400      0.41  |Q        |         | V       |         |
13+20         0.1426      0.38  |Q        |         | V       |         |
13+25         0.1451      0.36  |Q        |         |  V      |         |
13+30         0.1474      0.33  |Q        |         |  V      |         |
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13+35       0.1495      0.31  |Q        |         |  V      |         |
13+40       0.1515      0.29  |Q        |         |   V     |         |
13+45       0.1534      0.27  |Q        |         |   V     |         |
13+50       0.1551      0.25  Q         |         |   V     |         |
13+55       0.1567      0.23  Q         |         |   V     |         |
14+ 0       0.1582      0.21  Q         |         |    V    |         |
14+ 5       0.1595      0.20  Q         |         |    V    |         |
14+10       0.1608      0.18  Q         |         |    V    |         |
14+15       0.1619      0.16  Q         |         |    V    |         |
14+20       0.1629      0.15  Q         |         |    V    |         |
14+25       0.1638      0.13  Q         |         |     V   |         |
14+30       0.1647      0.12  Q         |         |     V   |         |
14+35       0.1654      0.11  Q         |         |     V   |         |
14+40       0.1661      0.10  Q         |         |     V   |         |
14+45       0.1666      0.08  Q         |         |     V   |         |
14+50       0.1671      0.07  Q         |         |     V   |         |
14+55       0.1676      0.06  Q         |         |     V   |         |
15+ 0       0.1680      0.06  Q         |         |     V   |         |
15+ 5       0.1683      0.05  Q         |         |     V   |         |
15+10       0.1686      0.04  Q         |         |     V   |         |
15+15       0.1688      0.03  Q         |         |     V   |         |
15+20       0.1690      0.03  Q         |         |     V   |         |
15+25       0.1691      0.02  Q         |         |     V   |         |
15+30       0.1692      0.01  Q         |         |     V   |         |
15+35       0.1692      0.01  Q         |         |     V   |         |
15+40       0.1693      0.00  Q         |         |     V   |         |
15+45       0.1693      0.00  Q         |         |     V   |         |
15+50       0.1693      0.00  Q         |         |     V   |         |
15+55       0.1693      0.00  Q         |         |     V   |         |
16+ 0       0.1694      0.00  Q         |         |     V   |         |
16+ 5       0.1694      0.01  Q         |         |     V   |         |
16+10       0.1695      0.01  Q         |         |     V   |         |
16+15       0.1696      0.01  Q         |         |     V   |         |
16+20       0.1696      0.00  Q         |         |     V   |         |
16+25       0.1696      0.01  Q         |         |     V   |         |
16+30       0.1697      0.01  Q         |         |     V   |         |
16+35       0.1699      0.02  Q         |         |     V   |         |
16+40       0.1701      0.03  Q         |         |      V  |         |
16+45       0.1705      0.05  Q         |         |      V  |         |
16+50       0.1709      0.07  Q         |         |      V  |         |
16+55       0.1715      0.09  Q         |         |      V  |         |
17+ 0       0.1723      0.11  Q         |         |      V  |         |
17+ 5       0.1732      0.14  Q         |         |      V  |         |
17+10       0.1743      0.17  Q         |         |      V  |         |
17+15       0.1757      0.20  Q         |         |      V  |         |
17+20       0.1773      0.23  Q         |         |       V |         |
17+25       0.1792      0.27  |Q        |         |       V |         |
17+30       0.1814      0.31  |Q        |         |       V |         |
17+35       0.1838      0.36  |Q        |         |        V|         |
17+40       0.1867      0.41  |Q        |         |        V|         |
17+45       0.1898      0.46  |Q        |         |         V         |
17+50       0.1934      0.52  | Q       |         |         V         |
17+55       0.1974      0.58  | Q       |         |         |V        |
18+ 0       0.2018      0.64  | Q       |         |         | V       |
18+ 5       0.2060      0.61  | Q       |         |         | V       |
18+10       0.2082      0.32  |Q        |         |         |  V      |
18+15       0.2095      0.19  Q         |         |         |  V      |
18+20       0.2106      0.16  Q         |         |         |  V      |
18+25       0.2116      0.14  Q         |         |         |  V      |
18+30       0.2125      0.13  Q         |         |         |  V      |
18+35       0.2134      0.13  Q         |         |         |  V      |
18+40       0.2142      0.12  Q         |         |         |   V     |
18+45       0.2150      0.12  Q         |         |         |   V     |
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18+50          0.2158          0.11  Q         |         |         |   V     |
18+55          0.2166          0.11  Q         |         |         |   V     |
19+ 0          0.2173          0.11  Q         |         |         |   V     |
19+ 5          0.2181          0.11  Q         |         |         |   V     |
19+10          0.2188          0.11  Q         |         |         |   V     |
19+15          0.2195          0.10  Q         |         |         |   V     |
19+20          0.2202          0.10  Q         |         |         |   V     |
19+25          0.2209          0.10  Q         |         |         |    V    |
19+30          0.2216          0.10  Q         |         |         |    V    |
19+35          0.2223          0.10  Q         |         |         |    V    |
19+40          0.2230          0.10  Q         |         |         |    V    |
19+45          0.2236          0.10  Q         |         |         |    V    |
19+50          0.2243          0.10  Q         |         |         |    V    |
19+55          0.2250          0.09  Q         |         |         |    V    |
20+ 0          0.2256          0.09  Q         |         |         |    V    |
20+ 5          0.2262          0.09  Q         |         |         |    V    |
20+10          0.2269          0.09  Q         |         |         |     V   |
20+15          0.2275          0.09  Q         |         |         |     V   |
20+20          0.2281          0.09  Q         |         |         |     V   |
20+25          0.2287          0.09  Q         |         |         |     V   |
20+30          0.2293          0.09  Q         |         |         |     V   |
20+35          0.2299          0.09  Q         |         |         |     V   |
20+40          0.2305          0.09  Q         |         |         |     V   |
20+45          0.2311          0.09  Q         |         |         |     V   |
20+50          0.2317          0.09  Q         |         |         |     V   |
20+55          0.2323          0.08  Q         |         |         |     V   |
21+ 0          0.2329          0.08  Q         |         |         |     V   |
21+ 5          0.2334          0.08  Q         |         |         |      V  |
21+10          0.2340          0.08  Q         |         |         |      V  |
21+15          0.2346          0.08  Q         |         |         |      V  |
21+20          0.2351          0.08  Q         |         |         |      V  |
21+25          0.2357          0.08  Q         |         |         |      V  |
21+30          0.2362          0.08  Q         |         |         |      V  |
21+35          0.2368          0.08  Q         |         |         |      V  |
21+40          0.2373          0.08  Q         |         |         |      V  |
21+45          0.2379          0.08  Q         |         |         |      V  |
21+50          0.2384          0.08  Q         |         |         |      V  |
21+55          0.2389          0.08  Q         |         |         |      V  |
22+ 0          0.2394          0.08  Q         |         |         |       V |
22+ 5          0.2400          0.08  Q         |         |         |       V |
22+10          0.2405          0.08  Q         |         |         |       V |
22+15          0.2410          0.07  Q         |         |         |       V |
22+20          0.2415          0.07  Q         |         |         |       V |
22+25          0.2420          0.07  Q         |         |         |       V |
22+30          0.2425          0.07  Q         |         |         |       V |
22+35          0.2430          0.07  Q         |         |         |       V |
22+40          0.2435          0.07  Q         |         |         |       V |
22+45          0.2440          0.07  Q         |         |         |       V |
22+50          0.2445          0.07  Q         |         |         |       V |
22+55          0.2450          0.07  Q         |         |         |       V |
23+ 0          0.2455          0.07  Q         |         |         |       V |
23+ 5          0.2460          0.07  Q         |         |         |        V|
23+10          0.2465          0.07  Q         |         |         |        V|
23+15          0.2469          0.07  Q         |         |         |        V|
23+20          0.2474          0.07  Q         |         |         |        V|
23+25          0.2479          0.07  Q         |         |         |        V|
23+30          0.2483          0.07  Q         |         |         |        V|
23+35          0.2488          0.07  Q         |         |         |        V|
23+40          0.2493          0.07  Q         |         |         |        V|
23+45          0.2497          0.07  Q         |         |         |        V|
23+50          0.2502          0.07  Q         |         |         |        V|
23+55          0.2507          0.07  Q         |         |         |        V|
24+ 0          0.2511          0.07  Q         |         |         |        V|
```

```
 24+ 5        0.2515      0.06  Q         |          |          |         V|
 24+10        0.2517      0.02  Q         |          |          |         V|
 24+15        0.2517      0.01  Q         |          |          |         V|
 24+20        0.2517      0.00  Q         |          |          |         V|
 24+25        0.2518      0.00  Q         |          |          |         V|
 24+30        0.2518      0.00  Q         |          |          |         V|
 24+35        0.2518      0.00  Q         |          |          |         V|
 24+40        0.2518      0.00  Q         |          |          |         V|
 24+45        0.2518      0.00  Q         |          |          |         V|
-----------------------------------------------------------------------
```

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

Study date 07/27/16

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

Program License Serial Number 6083

WATERMAN INDUSTRIAL CENTER
PROPOSED CONDITION BASIN 5
SAN BERNARDINO, CA
07.27.2016   KV

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		
0.61	1	1.59
Rainfall data for year 100		
0.61	6	3.04
Rainfall data for year 100		
0.61	24	6.26

++

******** 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)
90.0	98.0	0.61	1.000	0.040	0.100	0.004

Area-averaged adjusted loss rate Fm (In/Hr) = 0.004

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

Area   Area   SCS CN   SCS CN   S   Pervious

```
 (Ac.)       Fract          (AMC2)    (AMC3)             Yield Fr
     0.06    0.100          90.0      98.0       0.20     0.962
     0.55    0.900          98.0      98.0       0.20     0.962

Area-averaged catchment yield fraction, Y =  0.962
Area-averaged low loss fraction, Yb =  0.038
User entry of time of concentration  =   0.115 (hours)
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =       0.61(Ac.)
Catchment Lag time =   0.092 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 90.3205
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.004(In/Hr)
Average low loss rate fraction (Yb) = 0.038 (decimal)
VALLEY DEVELOPED S-Graph proportion =  0.467
VALLEY UNDEVELOPED S-Graph proportion =  0.533
FOOTHILL S-Graph proportion =  0.000
MOUNTAIN S-Graph proportion =  0.000
DESERT S-Graph proportion = -0.000

Computed peak 5-minute rainfall =  0.588(In)
Computed peak 30-minute rainfall =  1.205(In)
Specified peak 1-hour rainfall =  1.590(In)
Computed peak 3-hour rainfall =  2.366(In)
Specified peak 6-hour rainfall =  3.040(In)
Specified peak 24-hour rainfall =  6.260(In)


Rainfall depth area reduction factors:
Using a total area of      0.61(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.588(In)
30-minute factor = 1.000    Adjusted rainfall =  1.205(In)
1-hour factor = 1.000       Adjusted rainfall =  1.590(In)
3-hour factor = 1.000       Adjusted rainfall =  2.366(In)
6-hour factor = 1.000       Adjusted rainfall =  3.040(In)
24-hour factor = 1.000      Adjusted rainfall =  6.260(In)
---------------------------------------------------------------------

                        U n i t  H y d r o g r a p h
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval          'S' Graph          Unit Hydrograph
Number            Mean values             ((CFS))
---------------------------------------------------------------------
               (K =         7.38 (CFS))

  1                15.302                    1.129
  2                67.767                    3.870
  3                88.138                    1.503
  4                93.816                    0.419
  5                96.166                    0.173
  6                97.668                    0.111
  7                98.690                    0.075
  8                99.343                    0.048
  9               100.000                    0.024
---------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number             (In)                 (In)
  1               0.5885               0.5885
  2               0.7765               0.1880
  3               0.9132               0.1367
  4               1.0246               0.1114
```

5	1.1202	0.0957
6	1.2050	0.0847
7	1.2816	0.0766
8	1.3519	0.0703
9	1.4171	0.0652
10	1.4781	0.0610
11	1.5356	0.0574
12	1.5900	0.0544
13	1.6367	0.0467
14	1.6811	0.0445
15	1.7236	0.0425
16	1.7643	0.0407
17	1.8035	0.0391
18	1.8411	0.0377
19	1.8775	0.0364
20	1.9127	0.0352
21	1.9467	0.0341
22	1.9798	0.0330
23	2.0118	0.0321
24	2.0431	0.0312
25	2.0735	0.0304
26	2.1031	0.0296
27	2.1320	0.0289
28	2.1602	0.0282
29	2.1878	0.0276
30	2.2148	0.0270
31	2.2412	0.0264
32	2.2671	0.0259
33	2.2925	0.0254
34	2.3174	0.0249
35	2.3418	0.0244
36	2.3658	0.0240
37	2.3894	0.0236
38	2.4125	0.0232
39	2.4353	0.0228
40	2.4577	0.0224
41	2.4798	0.0221
42	2.5015	0.0217
43	2.5229	0.0214
44	2.5439	0.0211
45	2.5647	0.0208
46	2.5852	0.0205
47	2.6054	0.0202
48	2.6253	0.0199
49	2.6449	0.0197
50	2.6643	0.0194
51	2.6835	0.0192
52	2.7024	0.0189
53	2.7211	0.0187
54	2.7395	0.0185
55	2.7578	0.0182
56	2.7758	0.0180
57	2.7937	0.0178
58	2.8113	0.0176
59	2.8287	0.0174
60	2.8460	0.0172
61	2.8630	0.0171
62	2.8799	0.0169
63	2.8966	0.0167
64	2.9132	0.0165
65	2.9296	0.0164
66	2.9458	0.0162
67	2.9619	0.0161

68	2.9778	0.0159
69	2.9936	0.0158
70	3.0092	0.0156
71	3.0247	0.0155
72	3.0400	0.0153
73	3.0619	0.0219
74	3.0837	0.0218
75	3.1053	0.0216
76	3.1269	0.0215
77	3.1482	0.0214
78	3.1695	0.0212
79	3.1906	0.0211
80	3.2115	0.0210
81	3.2324	0.0209
82	3.2531	0.0207
83	3.2737	0.0206
84	3.2942	0.0205
85	3.3146	0.0204
86	3.3349	0.0203
87	3.3550	0.0201
88	3.3751	0.0200
89	3.3950	0.0199
90	3.4148	0.0198
91	3.4345	0.0197
92	3.4541	0.0196
93	3.4737	0.0195
94	3.4931	0.0194
95	3.5124	0.0193
96	3.5316	0.0192
97	3.5507	0.0191
98	3.5697	0.0190
99	3.5887	0.0189
100	3.6075	0.0188
101	3.6263	0.0188
102	3.6449	0.0187
103	3.6635	0.0186
104	3.6820	0.0185
105	3.7004	0.0184
106	3.7187	0.0183
107	3.7370	0.0182
108	3.7551	0.0182
109	3.7732	0.0181
110	3.7912	0.0180
111	3.8091	0.0179
112	3.8270	0.0178
113	3.8447	0.0178
114	3.8624	0.0177
115	3.8800	0.0176
116	3.8976	0.0175
117	3.9150	0.0175
118	3.9324	0.0174
119	3.9498	0.0173
120	3.9670	0.0173
121	3.9842	0.0172
122	4.0014	0.0171
123	4.0184	0.0171
124	4.0354	0.0170
125	4.0523	0.0169
126	4.0692	0.0169
127	4.0860	0.0168
128	4.1027	0.0167
129	4.1194	0.0167
130	4.1360	0.0166

131	4.1525	0.0165
132	4.1690	0.0165
133	4.1854	0.0164
134	4.2018	0.0164
135	4.2181	0.0163
136	4.2344	0.0163
137	4.2506	0.0162
138	4.2667	0.0161
139	4.2828	0.0161
140	4.2988	0.0160
141	4.3148	0.0160
142	4.3307	0.0159
143	4.3466	0.0159
144	4.3624	0.0158
145	4.3781	0.0158
146	4.3938	0.0157
147	4.4095	0.0157
148	4.4251	0.0156
149	4.4407	0.0156
150	4.4562	0.0155
151	4.4716	0.0155
152	4.4870	0.0154
153	4.5024	0.0154
154	4.5177	0.0153
155	4.5329	0.0153
156	4.5482	0.0152
157	4.5633	0.0152
158	4.5785	0.0151
159	4.5935	0.0151
160	4.6086	0.0150
161	4.6235	0.0150
162	4.6385	0.0149
163	4.6534	0.0149
164	4.6682	0.0149
165	4.6830	0.0148
166	4.6978	0.0148
167	4.7125	0.0147
168	4.7272	0.0147
169	4.7419	0.0146
170	4.7565	0.0146
171	4.7710	0.0146
172	4.7855	0.0145
173	4.8000	0.0145
174	4.8144	0.0144
175	4.8288	0.0144
176	4.8432	0.0144
177	4.8575	0.0143
178	4.8718	0.0143
179	4.8860	0.0142
180	4.9002	0.0142
181	4.9144	0.0142
182	4.9285	0.0141
183	4.9426	0.0141
184	4.9567	0.0141
185	4.9707	0.0140
186	4.9847	0.0140
187	4.9986	0.0139
188	5.0125	0.0139
189	5.0264	0.0139
190	5.0403	0.0138
191	5.0541	0.0138
192	5.0678	0.0138
193	5.0816	0.0137

194	5.0953	0.0137
195	5.1089	0.0137
196	5.1226	0.0136
197	5.1362	0.0136
198	5.1497	0.0136
199	5.1633	0.0135
200	5.1768	0.0135
201	5.1903	0.0135
202	5.2037	0.0134
203	5.2171	0.0134
204	5.2305	0.0134
205	5.2438	0.0133
206	5.2571	0.0133
207	5.2704	0.0133
208	5.2837	0.0133
209	5.2969	0.0132
210	5.3101	0.0132
211	5.3232	0.0132
212	5.3364	0.0131
213	5.3495	0.0131
214	5.3625	0.0131
215	5.3756	0.0130
216	5.3886	0.0130
217	5.4016	0.0130
218	5.4145	0.0130
219	5.4275	0.0129
220	5.4404	0.0129
221	5.4532	0.0129
222	5.4661	0.0128
223	5.4789	0.0128
224	5.4917	0.0128
225	5.5044	0.0128
226	5.5172	0.0127
227	5.5299	0.0127
228	5.5426	0.0127
229	5.5552	0.0127
230	5.5678	0.0126
231	5.5804	0.0126
232	5.5930	0.0126
233	5.6056	0.0125
234	5.6181	0.0125
235	5.6306	0.0125
236	5.6430	0.0125
237	5.6555	0.0124
238	5.6679	0.0124
239	5.6803	0.0124
240	5.6927	0.0124
241	5.7050	0.0123
242	5.7174	0.0123
243	5.7296	0.0123
244	5.7419	0.0123
245	5.7542	0.0122
246	5.7664	0.0122
247	5.7786	0.0122
248	5.7908	0.0122
249	5.8029	0.0122
250	5.8151	0.0121
251	5.8272	0.0121
252	5.8393	0.0121
253	5.8513	0.0121
254	5.8634	0.0120
255	5.8754	0.0120
256	5.8874	0.0120

257	5.8993	0.0120
258	5.9113	0.0119
259	5.9232	0.0119
260	5.9351	0.0119
261	5.9470	0.0119
262	5.9589	0.0119
263	5.9707	0.0118
264	5.9825	0.0118
265	5.9943	0.0118
266	6.0061	0.0118
267	6.0178	0.0118
268	6.0296	0.0117
269	6.0413	0.0117
270	6.0530	0.0117
271	6.0647	0.0117
272	6.0763	0.0117
273	6.0879	0.0116
274	6.0995	0.0116
275	6.1111	0.0116
276	6.1227	0.0116
277	6.1343	0.0115
278	6.1458	0.0115
279	6.1573	0.0115
280	6.1688	0.0115
281	6.1802	0.0115
282	6.1917	0.0115
283	6.2031	0.0114
284	6.2145	0.0114
285	6.2259	0.0114
286	6.2373	0.0114
287	6.2487	0.0114
288	6.2600	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0003	0.0110
2	0.0114	0.0003	0.0110
3	0.0114	0.0003	0.0111
4	0.0114	0.0003	0.0111
5	0.0115	0.0003	0.0111
6	0.0115	0.0003	0.0111
7	0.0115	0.0003	0.0112
8	0.0115	0.0003	0.0112
9	0.0116	0.0003	0.0112
10	0.0116	0.0003	0.0113
11	0.0116	0.0003	0.0113
12	0.0117	0.0003	0.0113
13	0.0117	0.0003	0.0114
14	0.0117	0.0003	0.0114
15	0.0118	0.0003	0.0114
16	0.0118	0.0003	0.0114
17	0.0118	0.0003	0.0115
18	0.0118	0.0003	0.0115
19	0.0119	0.0003	0.0116
20	0.0119	0.0003	0.0116
21	0.0119	0.0003	0.0116
22	0.0120	0.0003	0.0116
23	0.0120	0.0003	0.0117
24	0.0120	0.0003	0.0117
25	0.0121	0.0003	0.0118
26	0.0121	0.0003	0.0118

27	0.0122	0.0003	0.0118
28	0.0122	0.0003	0.0118
29	0.0122	0.0003	0.0119
30	0.0122	0.0003	0.0119
31	0.0123	0.0003	0.0120
32	0.0123	0.0003	0.0120
33	0.0124	0.0003	0.0120
34	0.0124	0.0003	0.0121
35	0.0124	0.0003	0.0121
36	0.0125	0.0003	0.0121
37	0.0125	0.0003	0.0122
38	0.0125	0.0003	0.0122
39	0.0126	0.0003	0.0123
40	0.0126	0.0003	0.0123
41	0.0127	0.0003	0.0123
42	0.0127	0.0003	0.0124
43	0.0128	0.0003	0.0124
44	0.0128	0.0003	0.0125
45	0.0128	0.0003	0.0125
46	0.0129	0.0003	0.0125
47	0.0129	0.0003	0.0126
48	0.0130	0.0003	0.0126
49	0.0130	0.0003	0.0127
50	0.0130	0.0003	0.0127
51	0.0131	0.0003	0.0128
52	0.0131	0.0003	0.0128
53	0.0132	0.0003	0.0129
54	0.0132	0.0003	0.0129
55	0.0133	0.0003	0.0130
56	0.0133	0.0003	0.0130
57	0.0134	0.0003	0.0130
58	0.0134	0.0003	0.0131
59	0.0135	0.0003	0.0131
60	0.0135	0.0003	0.0132
61	0.0136	0.0003	0.0132
62	0.0136	0.0003	0.0133
63	0.0137	0.0003	0.0133
64	0.0137	0.0003	0.0134
65	0.0138	0.0003	0.0134
66	0.0138	0.0003	0.0135
67	0.0139	0.0003	0.0135
68	0.0139	0.0003	0.0136
69	0.0140	0.0003	0.0137
70	0.0140	0.0003	0.0137
71	0.0141	0.0003	0.0138
72	0.0141	0.0003	0.0138
73	0.0142	0.0003	0.0139
74	0.0142	0.0003	0.0139
75	0.0143	0.0003	0.0140
76	0.0144	0.0003	0.0140
77	0.0144	0.0003	0.0141
78	0.0145	0.0003	0.0141
79	0.0146	0.0003	0.0142
80	0.0146	0.0003	0.0143
81	0.0147	0.0003	0.0144
82	0.0147	0.0003	0.0144
83	0.0148	0.0003	0.0145
84	0.0149	0.0003	0.0145
85	0.0149	0.0003	0.0146
86	0.0150	0.0003	0.0147
87	0.0151	0.0003	0.0147
88	0.0151	0.0003	0.0148
89	0.0152	0.0003	0.0149

90	0.0153	0.0003	0.0149
91	0.0154	0.0003	0.0150
92	0.0154	0.0003	0.0151
93	0.0155	0.0003	0.0152
94	0.0156	0.0003	0.0152
95	0.0157	0.0003	0.0153
96	0.0157	0.0003	0.0154
97	0.0158	0.0003	0.0155
98	0.0159	0.0003	0.0155
99	0.0160	0.0003	0.0156
100	0.0160	0.0003	0.0157
101	0.0161	0.0003	0.0158
102	0.0162	0.0003	0.0159
103	0.0163	0.0003	0.0160
104	0.0164	0.0003	0.0160
105	0.0165	0.0003	0.0162
106	0.0165	0.0003	0.0162
107	0.0167	0.0003	0.0163
108	0.0167	0.0003	0.0164
109	0.0169	0.0003	0.0165
110	0.0169	0.0003	0.0166
111	0.0171	0.0003	0.0167
112	0.0171	0.0003	0.0168
113	0.0173	0.0003	0.0169
114	0.0173	0.0003	0.0170
115	0.0175	0.0003	0.0171
116	0.0175	0.0003	0.0172
117	0.0177	0.0003	0.0174
118	0.0178	0.0003	0.0174
119	0.0179	0.0003	0.0176
120	0.0180	0.0003	0.0177
121	0.0182	0.0003	0.0178
122	0.0182	0.0003	0.0179
123	0.0184	0.0003	0.0181
124	0.0185	0.0003	0.0182
125	0.0187	0.0003	0.0183
126	0.0188	0.0003	0.0184
127	0.0189	0.0003	0.0186
128	0.0190	0.0003	0.0187
129	0.0192	0.0003	0.0189
130	0.0193	0.0003	0.0190
131	0.0195	0.0003	0.0192
132	0.0196	0.0003	0.0193
133	0.0198	0.0003	0.0195
134	0.0199	0.0003	0.0196
135	0.0201	0.0003	0.0198
136	0.0203	0.0003	0.0199
137	0.0205	0.0003	0.0202
138	0.0206	0.0003	0.0203
139	0.0209	0.0003	0.0205
140	0.0210	0.0003	0.0206
141	0.0212	0.0003	0.0209
142	0.0214	0.0003	0.0210
143	0.0216	0.0003	0.0213
144	0.0218	0.0003	0.0215
145	0.0153	0.0003	0.0150
146	0.0155	0.0003	0.0151
147	0.0158	0.0003	0.0154
148	0.0159	0.0003	0.0156
149	0.0162	0.0003	0.0159
150	0.0164	0.0003	0.0161
151	0.0167	0.0003	0.0164
152	0.0169	0.0003	0.0166

153	0.0172	0.0003	0.0169
154	0.0174	0.0003	0.0171
155	0.0178	0.0003	0.0175
156	0.0180	0.0003	0.0177
157	0.0185	0.0003	0.0181
158	0.0187	0.0003	0.0184
159	0.0192	0.0003	0.0188
160	0.0194	0.0003	0.0191
161	0.0199	0.0003	0.0196
162	0.0202	0.0003	0.0199
163	0.0208	0.0003	0.0204
164	0.0211	0.0003	0.0207
165	0.0217	0.0003	0.0214
166	0.0221	0.0003	0.0217
167	0.0228	0.0003	0.0224
168	0.0232	0.0003	0.0228
169	0.0240	0.0003	0.0237
170	0.0244	0.0003	0.0241
171	0.0254	0.0003	0.0250
172	0.0259	0.0003	0.0256
173	0.0270	0.0003	0.0267
174	0.0276	0.0003	0.0273
175	0.0289	0.0003	0.0286
176	0.0296	0.0003	0.0293
177	0.0312	0.0003	0.0309
178	0.0321	0.0003	0.0318
179	0.0341	0.0003	0.0337
180	0.0352	0.0003	0.0348
181	0.0377	0.0003	0.0373
182	0.0391	0.0003	0.0388
183	0.0425	0.0003	0.0422
184	0.0445	0.0003	0.0441
185	0.0544	0.0003	0.0541
186	0.0574	0.0003	0.0571
187	0.0652	0.0003	0.0649
188	0.0703	0.0003	0.0700
189	0.0847	0.0003	0.0844
190	0.0957	0.0003	0.0953
191	0.1367	0.0003	0.1364
192	0.1880	0.0003	0.1877
193	0.5885	0.0003	0.5881
194	0.1114	0.0003	0.1110
195	0.0766	0.0003	0.0763
196	0.0610	0.0003	0.0607
197	0.0467	0.0003	0.0464
198	0.0407	0.0003	0.0404
199	0.0364	0.0003	0.0360
200	0.0330	0.0003	0.0327
201	0.0304	0.0003	0.0301
202	0.0282	0.0003	0.0279
203	0.0264	0.0003	0.0261
204	0.0249	0.0003	0.0246
205	0.0236	0.0003	0.0232
206	0.0224	0.0003	0.0221
207	0.0214	0.0003	0.0211
208	0.0205	0.0003	0.0201
209	0.0197	0.0003	0.0193
210	0.0189	0.0003	0.0186
211	0.0182	0.0003	0.0179
212	0.0176	0.0003	0.0173
213	0.0171	0.0003	0.0167
214	0.0165	0.0003	0.0162
215	0.0161	0.0003	0.0157

216	0.0156	0.0003	0.0153
217	0.0219	0.0003	0.0216
218	0.0215	0.0003	0.0212
219	0.0211	0.0003	0.0208
220	0.0207	0.0003	0.0204
221	0.0204	0.0003	0.0200
222	0.0200	0.0003	0.0197
223	0.0197	0.0003	0.0194
224	0.0194	0.0003	0.0191
225	0.0191	0.0003	0.0188
226	0.0188	0.0003	0.0185
227	0.0186	0.0003	0.0182
228	0.0183	0.0003	0.0180
229	0.0181	0.0003	0.0177
230	0.0178	0.0003	0.0175
231	0.0176	0.0003	0.0173
232	0.0174	0.0003	0.0171
233	0.0172	0.0003	0.0169
234	0.0170	0.0003	0.0167
235	0.0168	0.0003	0.0165
236	0.0166	0.0003	0.0163
237	0.0164	0.0003	0.0161
238	0.0163	0.0003	0.0159
239	0.0161	0.0003	0.0158
240	0.0159	0.0003	0.0156
241	0.0158	0.0003	0.0154
242	0.0156	0.0003	0.0153
243	0.0155	0.0003	0.0151
244	0.0153	0.0003	0.0150
245	0.0152	0.0003	0.0148
246	0.0150	0.0003	0.0147
247	0.0149	0.0003	0.0146
248	0.0148	0.0003	0.0144
249	0.0146	0.0003	0.0143
250	0.0145	0.0003	0.0142
251	0.0144	0.0003	0.0141
252	0.0143	0.0003	0.0139
253	0.0142	0.0003	0.0138
254	0.0141	0.0003	0.0137
255	0.0139	0.0003	0.0136
256	0.0138	0.0003	0.0135
257	0.0137	0.0003	0.0134
258	0.0136	0.0003	0.0133
259	0.0135	0.0003	0.0132
260	0.0134	0.0003	0.0131
261	0.0133	0.0003	0.0130
262	0.0133	0.0003	0.0129
263	0.0132	0.0003	0.0128
264	0.0131	0.0003	0.0127
265	0.0130	0.0003	0.0127
266	0.0129	0.0003	0.0126
267	0.0128	0.0003	0.0125
268	0.0127	0.0003	0.0124
269	0.0127	0.0003	0.0123
270	0.0126	0.0003	0.0122
271	0.0125	0.0003	0.0122
272	0.0124	0.0003	0.0121
273	0.0123	0.0003	0.0120
274	0.0123	0.0003	0.0119
275	0.0122	0.0003	0.0119
276	0.0121	0.0003	0.0118
277	0.0121	0.0003	0.0117
278	0.0120	0.0003	0.0117

279	0.0119	0.0003	0.0116
280	0.0119	0.0003	0.0115
281	0.0118	0.0003	0.0115
282	0.0117	0.0003	0.0114
283	0.0117	0.0003	0.0113
284	0.0116	0.0003	0.0113
285	0.0115	0.0003	0.0112
286	0.0115	0.0003	0.0112
287	0.0114	0.0003	0.0111
288	0.0114	0.0003	0.0110

Total soil rain loss = 0.10(In)
Total effective rainfall = 6.16(In)
Peak flow rate in flood hydrograph = 2.78(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	0.0005	0.06	Q				
0+15	0.0010	0.07	Q				
0+20	0.0015	0.08	Q				
0+25	0.0020	0.08	Q				
0+30	0.0026	0.08	Q				
0+35	0.0031	0.08	Q				
0+40	0.0037	0.08	Q				
0+45	0.0043	0.08	Q				
0+50	0.0048	0.08	Q				
0+55	0.0054	0.08	Q				
1+ 0	0.0060	0.08	Q				
1+ 5	0.0065	0.08	Q				
1+10	0.0071	0.08	Q				
1+15	0.0077	0.08	Q				
1+20	0.0083	0.08	QV				
1+25	0.0089	0.08	QV				
1+30	0.0094	0.08	QV				
1+35	0.0100	0.08	QV				
1+40	0.0106	0.08	QV				
1+45	0.0112	0.09	QV				
1+50	0.0118	0.09	QV				
1+55	0.0124	0.09	QV				
2+ 0	0.0130	0.09	QV				
2+ 5	0.0135	0.09	QV				
2+10	0.0141	0.09	QV				
2+15	0.0147	0.09	QV				
2+20	0.0153	0.09	QV				
2+25	0.0159	0.09	Q V				
2+30	0.0165	0.09	Q V				
2+35	0.0171	0.09	Q V				
2+40	0.0177	0.09	Q V				
2+45	0.0184	0.09	Q V				
2+50	0.0190	0.09	Q V				
2+55	0.0196	0.09	Q V				
3+ 0	0.0202	0.09	Q V				
3+ 5	0.0208	0.09	Q V				
3+10	0.0214	0.09	Q V				

```
3+15       0.0220      0.09  Q V       |         |         |         |
3+20       0.0227      0.09  Q V       |         |         |         |
3+25       0.0233      0.09  Q V       |         |         |         |
3+30       0.0239      0.09  Q  V      |         |         |         |
3+35       0.0245      0.09  Q  V      |         |         |         |
3+40       0.0252      0.09  Q  V      |         |         |         |
3+45       0.0258      0.09  Q  V      |         |         |         |
3+50       0.0264      0.09  Q  V      |         |         |         |
3+55       0.0271      0.09  Q  V      |         |         |         |
4+ 0       0.0277      0.09  Q  V      |         |         |         |
4+ 5       0.0283      0.09  Q  V      |         |         |         |
4+10       0.0290      0.09  Q  V      |         |         |         |
4+15       0.0296      0.09  Q  V      |         |         |         |
4+20       0.0303      0.09  Q  V      |         |         |         |
4+25       0.0309      0.09  Q  V      |         |         |         |
4+30       0.0316      0.09  Q   V     |         |         |         |
4+35       0.0322      0.09  Q   V     |         |         |         |
4+40       0.0329      0.10  Q   V     |         |         |         |
4+45       0.0335      0.10  Q   V     |         |         |         |
4+50       0.0342      0.10  Q   V     |         |         |         |
4+55       0.0348      0.10  Q   V     |         |         |         |
5+ 0       0.0355      0.10  Q   V     |         |         |         |
5+ 5       0.0362      0.10  Q   V     |         |         |         |
5+10       0.0368      0.10  Q   V     |         |         |         |
5+15       0.0375      0.10  Q   V     |         |         |         |
5+20       0.0382      0.10  Q   V     |         |         |         |
5+25       0.0389      0.10  Q   V     |         |         |         |
5+30       0.0395      0.10  Q    V    |         |         |         |
5+35       0.0402      0.10  Q    V    |         |         |         |
5+40       0.0409      0.10  Q    V    |         |         |         |
5+45       0.0416      0.10  Q    V    |         |         |         |
5+50       0.0423      0.10  Q    V    |         |         |         |
5+55       0.0430      0.10  Q    V    |         |         |         |
6+ 0       0.0437      0.10  Q    V    |         |         |         |
6+ 5       0.0444      0.10  Q    V    |         |         |         |
6+10       0.0451      0.10  Q    V    |         |         |         |
6+15       0.0458      0.10  Q    V    |         |         |         |
6+20       0.0465      0.10  Q    V    |         |         |         |
6+25       0.0472      0.10  Q     V   |         |         |         |
6+30       0.0479      0.10  Q     V   |         |         |         |
6+35       0.0486      0.10  Q     V   |         |         |         |
6+40       0.0493      0.10  Q     V   |         |         |         |
6+45       0.0501      0.10  Q     V   |         |         |         |
6+50       0.0508      0.11  Q     V   |         |         |         |
6+55       0.0515      0.11  Q     V   |         |         |         |
7+ 0       0.0522      0.11  Q     V   |         |         |         |
7+ 5       0.0530      0.11  Q     V   |         |         |         |
7+10       0.0537      0.11  Q     V   |         |         |         |
7+15       0.0545      0.11  Q     V   |         |         |         |
7+20       0.0552      0.11  Q      V  |         |         |         |
7+25       0.0559      0.11  Q      V  |         |         |         |
7+30       0.0567      0.11  Q      V  |         |         |         |
7+35       0.0575      0.11  Q      V  |         |         |         |
7+40       0.0582      0.11  Q      V  |         |         |         |
7+45       0.0590      0.11  Q      V  |         |         |         |
7+50       0.0597      0.11  Q      V  |         |         |         |
7+55       0.0605      0.11  Q      V  |         |         |         |
8+ 0       0.0613      0.11  Q      V  |         |         |         |
8+ 5       0.0621      0.11  Q      V  |         |         |         |
8+10       0.0628      0.11  Q       V |         |         |         |
8+15       0.0636      0.11  Q       V |         |         |         |
8+20       0.0644      0.11  Q       V |         |         |         |
8+25       0.0652      0.12  Q       V |         |         |         |
```

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 8+30       0.0660      0.12  Q       V |         |         |         |
 8+35       0.0668      0.12  Q       V |         |         |         |
 8+40       0.0676      0.12  Q       V |         |         |         |
 8+45       0.0684      0.12  Q       V |         |         |         |
 8+50       0.0692      0.12  Q       V |         |         |         |
 8+55       0.0701      0.12  Q       V |         |         |         |
 9+ 0       0.0709      0.12  Q        V|         |         |         |
 9+ 5       0.0717      0.12  Q        V|         |         |         |
 9+10       0.0726      0.12  Q        V|         |         |         |
 9+15       0.0734      0.12  Q        V|         |         |         |
 9+20       0.0742      0.12  Q        V|         |         |         |
 9+25       0.0751      0.12  Q        V|         |         |         |
 9+30       0.0759      0.12  Q        V|         |         |         |
 9+35       0.0768      0.12  Q        V|         |         |         |
 9+40       0.0777      0.13  Q        V|         |         |         |
 9+45       0.0785      0.13  Q         V         |         |         |
 9+50       0.0794      0.13  Q         V         |         |         |
 9+55       0.0803      0.13  Q         V         |         |         |
10+ 0       0.0812      0.13  Q         V         |         |         |
10+ 5       0.0821      0.13  Q         V         |         |         |
10+10       0.0830      0.13  Q         V         |         |         |
10+15       0.0839      0.13  Q         V         |         |         |
10+20       0.0848      0.13  Q         V         |         |         |
10+25       0.0857      0.13  Q         V         |         |         |
10+30       0.0866      0.13  Q         |V        |         |         |
10+35       0.0876      0.14  Q         |V        |         |         |
10+40       0.0885      0.14  Q         |V        |         |         |
10+45       0.0894      0.14  Q         |V        |         |         |
10+50       0.0904      0.14  Q         |V        |         |         |
10+55       0.0914      0.14  Q         |V        |         |         |
11+ 0       0.0923      0.14  Q         |V        |         |         |
11+ 5       0.0933      0.14  Q         |V        |         |         |
11+10       0.0943      0.14  Q         | V       |         |         |
11+15       0.0953      0.14  Q         | V       |         |         |
11+20       0.0963      0.15  Q         | V       |         |         |
11+25       0.0973      0.15  Q         | V       |         |         |
11+30       0.0983      0.15  Q         | V       |         |         |
11+35       0.0993      0.15  Q         | V       |         |         |
11+40       0.1004      0.15  Q         | V       |         |         |
11+45       0.1014      0.15  Q         | V       |         |         |
11+50       0.1025      0.15  Q         |  V      |         |         |
11+55       0.1035      0.15  Q         |  V      |         |         |
12+ 0       0.1046      0.16  Q         |  V      |         |         |
12+ 5       0.1056      0.15  Q         |  V      |         |         |
12+10       0.1065      0.13  Q         |  V      |         |         |
12+15       0.1073      0.12  Q         |  V      |         |         |
12+20       0.1081      0.12  Q         |  V      |         |         |
12+25       0.1089      0.12  Q         |  V      |         |         |
12+30       0.1097      0.12  Q         |   V     |         |         |
12+35       0.1105      0.12  Q         |   V     |         |         |
12+40       0.1113      0.12  Q         |   V     |         |         |
12+45       0.1122      0.12  Q         |   V     |         |         |
12+50       0.1130      0.12  Q         |   V     |         |         |
12+55       0.1139      0.13  Q         |   V     |         |         |
13+ 0       0.1148      0.13  Q         |   V     |         |         |
13+ 5       0.1156      0.13  Q         |   V     |         |         |
13+10       0.1166      0.13  Q         |   V     |         |         |
13+15       0.1175      0.13  Q         |    V    |         |         |
13+20       0.1184      0.14  Q         |    V    |         |         |
13+25       0.1194      0.14  Q         |    V    |         |         |
13+30       0.1204      0.14  Q         |    V    |         |         |
13+35       0.1214      0.15  Q         |    V    |         |         |
13+40       0.1224      0.15  Q         |    V    |         |         |
```

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13+45       0.1234      0.15  Q         |    V    |         |         |
13+50       0.1245      0.16  Q         |    V    |         |         |
13+55       0.1256      0.16  Q         |     V   |         |         |
14+ 0       0.1267      0.16  Q         |     V   |         |         |
14+ 5       0.1279      0.17  Q         |     V   |         |         |
14+10       0.1291      0.17  Q         |     V   |         |         |
14+15       0.1303      0.18  Q         |     V   |         |         |
14+20       0.1315      0.18  Q         |     V   |         |         |
14+25       0.1328      0.19  Q         |      V  |         |         |
14+30       0.1341      0.19  Q         |      V  |         |         |
14+35       0.1355      0.20  Q         |      V  |         |         |
14+40       0.1369      0.21  Q         |      V  |         |         |
14+45       0.1384      0.21  Q         |      V  |         |         |
14+50       0.1399      0.22  Q         |      V  |         |         |
14+55       0.1415      0.23  Q         |       V |         |         |
15+ 0       0.1432      0.24  Q         |       V |         |         |
15+ 5       0.1449      0.25  |Q        |       V |         |         |
15+10       0.1468      0.27  |Q        |       V |         |         |
15+15       0.1487      0.28  |Q        |        V|         |         |
15+20       0.1508      0.30  |Q        |        V|         |         |
15+25       0.1531      0.33  |Q        |        V|         |         |
15+30       0.1556      0.37  |Q        |        V|         |         |
15+35       0.1585      0.41  |Q        |         V         |         |
15+40       0.1616      0.46  |Q        |         V         |         |
15+45       0.1651      0.51  |  Q      |         |V        |         |
15+50       0.1692      0.59  |  Q      |         |V        |         |
15+55       0.1740      0.70  |  Q      |         | V       |         |
16+ 0       0.1805      0.95  |   Q     |         |  V      |         |
16+ 5       0.1920      1.67  |     Q   |         |   V     |         |
16+10       0.2111      2.78  |         |Q        |      V  |         |
16+15       0.2216      1.52  |     Q   |         |       V |         |
16+20       0.2274      0.84  |   Q     |         |        V|         |
16+25       0.2314      0.59  |  Q      |         |        V|         |
16+30       0.2346      0.46  |Q        |         |         V         |
16+35       0.2371      0.37  |Q        |         |         V         |
16+40       0.2393      0.32  |Q        |         |         V         |
16+45       0.2412      0.27  |Q        |         |         V         |
16+50       0.2428      0.24  Q         |         |         |V        |
16+55       0.2443      0.22  Q         |         |         |V        |
17+ 0       0.2457      0.20  Q         |         |         |V        |
17+ 5       0.2470      0.19  Q         |         |         |V        |
17+10       0.2482      0.18  Q         |         |         |V        |
17+15       0.2493      0.17  Q         |         |         |V        |
17+20       0.2504      0.16  Q         |         |         | V       |
17+25       0.2515      0.15  Q         |         |         | V       |
17+30       0.2525      0.15  Q         |         |         | V       |
17+35       0.2534      0.14  Q         |         |         | V       |
17+40       0.2543      0.13  Q         |         |         | V       |
17+45       0.2552      0.13  Q         |         |         | V       |
17+50       0.2561      0.13  Q         |         |         | V       |
17+55       0.2569      0.12  Q         |         |         | V       |
18+ 0       0.2577      0.12  Q         |         |         |  V      |
18+ 5       0.2586      0.12  Q         |         |         |  V      |
18+10       0.2596      0.14  Q         |         |         |  V      |
18+15       0.2606      0.15  Q         |         |         |  V      |
18+20       0.2616      0.15  Q         |         |         |  V      |
18+25       0.2627      0.15  Q         |         |         |  V      |
18+30       0.2637      0.15  Q         |         |         |  V      |
18+35       0.2647      0.15  Q         |         |         |  V      |
18+40       0.2657      0.14  Q         |         |         |   V     |
18+45       0.2667      0.14  Q         |         |         |   V     |
18+50       0.2676      0.14  Q         |         |         |   V     |
18+55       0.2686      0.14  Q         |         |         |   V     |
```

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19+ 0       0.2695      0.14  Q         |         |         |   V     |
19+ 5       0.2704      0.13  Q         |         |         |   V     |
19+10       0.2713      0.13  Q         |         |         |   V     |
19+15       0.2722      0.13  Q         |         |         |   V     |
19+20       0.2731      0.13  Q         |         |         |   V     |
19+25       0.2739      0.13  Q         |         |         |    V    |
19+30       0.2748      0.12  Q         |         |         |    V    |
19+35       0.2757      0.12  Q         |         |         |    V    |
19+40       0.2765      0.12  Q         |         |         |    V    |
19+45       0.2773      0.12  Q         |         |         |    V    |
19+50       0.2781      0.12  Q         |         |         |    V    |
19+55       0.2790      0.12  Q         |         |         |    V    |
20+ 0       0.2798      0.12  Q         |         |         |    V    |
20+ 5       0.2805      0.12  Q         |         |         |    V    |
20+10       0.2813      0.11  Q         |         |         |     V   |
20+15       0.2821      0.11  Q         |         |         |     V   |
20+20       0.2829      0.11  Q         |         |         |     V   |
20+25       0.2836      0.11  Q         |         |         |     V   |
20+30       0.2844      0.11  Q         |         |         |     V   |
20+35       0.2851      0.11  Q         |         |         |     V   |
20+40       0.2859      0.11  Q         |         |         |     V   |
20+45       0.2866      0.11  Q         |         |         |     V   |
20+50       0.2873      0.11  Q         |         |         |     V   |
20+55       0.2881      0.10  Q         |         |         |     V   |
21+ 0       0.2888      0.10  Q         |         |         |      V  |
21+ 5       0.2895      0.10  Q         |         |         |      V  |
21+10       0.2902      0.10  Q         |         |         |      V  |
21+15       0.2909      0.10  Q         |         |         |      V  |
21+20       0.2916      0.10  Q         |         |         |      V  |
21+25       0.2923      0.10  Q         |         |         |      V  |
21+30       0.2929      0.10  Q         |         |         |      V  |
21+35       0.2936      0.10  Q         |         |         |      V  |
21+40       0.2943      0.10  Q         |         |         |      V  |
21+45       0.2950      0.10  Q         |         |         |      V  |
21+50       0.2956      0.10  Q         |         |         |      V  |
21+55       0.2963      0.10  Q         |         |         |      V  |
22+ 0       0.2969      0.09  Q         |         |         |       V |
22+ 5       0.2976      0.09  Q         |         |         |       V |
22+10       0.2982      0.09  Q         |         |         |       V |
22+15       0.2989      0.09  Q         |         |         |       V |
22+20       0.2995      0.09  Q         |         |         |       V |
22+25       0.3001      0.09  Q         |         |         |       V |
22+30       0.3007      0.09  Q         |         |         |       V |
22+35       0.3014      0.09  Q         |         |         |       V |
22+40       0.3020      0.09  Q         |         |         |       V |
22+45       0.3026      0.09  Q         |         |         |       V |
22+50       0.3032      0.09  Q         |         |         |       V |
22+55       0.3038      0.09  Q         |         |         |       V |
23+ 0       0.3044      0.09  Q         |         |         |        V|
23+ 5       0.3050      0.09  Q         |         |         |        V|
23+10       0.3056      0.09  Q         |         |         |        V|
23+15       0.3062      0.09  Q         |         |         |        V|
23+20       0.3068      0.09  Q         |         |         |        V|
23+25       0.3074      0.08  Q         |         |         |        V|
23+30       0.3080      0.08  Q         |         |         |        V|
23+35       0.3085      0.08  Q         |         |         |        V|
23+40       0.3091      0.08  Q         |         |         |        V|
23+45       0.3097      0.08  Q         |         |         |        V|
23+50       0.3103      0.08  Q         |         |         |        V|
23+55       0.3108      0.08  Q         |         |         |        V|
24+ 0       0.3114      0.08  Q         |         |         |        V|
24+ 5       0.3119      0.07  Q         |         |         |        V|
24+10       0.3120      0.03  Q         |         |         |        V|
```

```
    24+15          0.3121        0.01  Q           |           |           |         V|
    24+20          0.3121        0.00  Q           |           |           |         V|
    24+25          0.3122        0.00  Q           |           |           |         V|
    24+30          0.3122        0.00  Q           |           |           |         V|
    24+35          0.3122        0.00  Q           |           |           |         V|
    24+40          0.3122        0.00  Q           |           |           |         V|
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U n i t   H y d r o g r a p h   A n a l y s i s

Study date 07/27/16

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

Program License Serial Number 6083

WATERMAN INDUSTRIAL CENTER
PROPOSED CONDITION BASIN 6
SAN BERNARDINO, CA
07.27.2016   KV

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			
	2.71	1	1.59
Rainfall data for year 100			
	2.71	6	3.04
Rainfall data for year 100			
	2.71	24	6.26

+++

******** 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)
90.0	98.0	2.71	1.000	0.040	0.100	0.004

Area-averaged adjusted loss rate Fm (In/Hr) = 0.004

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

Area   Area   SCS CN   SCS CN   S   Pervious

```
 (Ac.)       Fract          (AMC2)    (AMC3)              Yield Fr
     0.27    0.100          90.0      98.0       0.20      0.962
     2.44    0.900          98.0      98.0       0.20      0.962

Area-averaged catchment yield fraction, Y =  0.962
Area-averaged low loss fraction, Yb =  0.038
User entry of time of concentration  =   0.101 (hours)
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Watershed area =       2.71(Ac.)
Catchment Lag time =   0.081 hours
Unit interval =   5.000 minutes
Unit interval percentage of lag time = 103.1353
Hydrograph baseflow =     0.00(CFS)
Average maximum watershed loss rate(Fm) =  0.004(In/Hr)
Average low loss rate fraction (Yb) = 0.038 (decimal)
VALLEY DEVELOPED S-Graph proportion =  0.467
VALLEY UNDEVELOPED S-Graph proportion =  0.533
FOOTHILL S-Graph proportion =  0.000
MOUNTAIN S-Graph proportion =  0.000
DESERT S-Graph proportion = -0.000

Computed peak 5-minute rainfall =  0.588(In)
Computed peak 30-minute rainfall =  1.205(In)
Specified peak 1-hour rainfall =  1.590(In)
Computed peak 3-hour rainfall =  2.366(In)
Specified peak 6-hour rainfall =  3.040(In)
Specified peak 24-hour rainfall =  6.260(In)


Rainfall depth area reduction factors:
Using a total area of       2.71(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000     Adjusted rainfall =  0.588(In)
30-minute factor = 1.000    Adjusted rainfall =  1.205(In)
1-hour factor = 1.000       Adjusted rainfall =  1.590(In)
3-hour factor = 1.000       Adjusted rainfall =  2.366(In)
6-hour factor = 1.000       Adjusted rainfall =  3.040(In)
24-hour factor = 1.000      Adjusted rainfall =  6.260(In)
---------------------------------------------------------------------

                        U n i t   H y d r o g r a p h
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Interval           'S' Graph          Unit Hydrograph
Number             Mean values            ((CFS))
---------------------------------------------------------------------
                 (K =        32.77 (CFS))

  1                19.255                  6.311
  2                74.566                 18.128
  3                90.592                  5.252
  4                95.121                  1.484
  5                97.175                  0.673
  6                98.497                  0.433
  7                99.299                  0.263
  8               100.000                  0.230
---------------------------------------------------------------------
Peak Unit   Adjusted mass rainfall  Unit rainfall
Number              (In)               (In)
  1               0.5884             0.5884
  2               0.7764             0.1880
  3               0.9131             0.1367
  4               1.0245             0.1114
  5               1.1201             0.0956
```

6	1.2048	0.0847
7	1.2815	0.0766
8	1.3518	0.0703
9	1.4170	0.0652
10	1.4780	0.0610
11	1.5354	0.0574
12	1.5898	0.0544
13	1.6365	0.0467
14	1.6810	0.0445
15	1.7235	0.0425
16	1.7642	0.0407
17	1.8033	0.0391
18	1.8410	0.0377
19	1.8774	0.0364
20	1.9125	0.0352
21	1.9466	0.0341
22	1.9797	0.0330
23	2.0118	0.0321
24	2.0430	0.0312
25	2.0734	0.0304
26	2.1030	0.0296
27	2.1319	0.0289
28	2.1602	0.0282
29	2.1878	0.0276
30	2.2148	0.0270
31	2.2412	0.0264
32	2.2671	0.0259
33	2.2925	0.0254
34	2.3174	0.0249
35	2.3418	0.0244
36	2.3658	0.0240
37	2.3894	0.0236
38	2.4125	0.0232
39	2.4353	0.0228
40	2.4577	0.0224
41	2.4798	0.0221
42	2.5015	0.0217
43	2.5228	0.0214
44	2.5439	0.0211
45	2.5647	0.0208
46	2.5851	0.0205
47	2.6053	0.0202
48	2.6253	0.0199
49	2.6449	0.0197
50	2.6643	0.0194
51	2.6835	0.0192
52	2.7024	0.0189
53	2.7211	0.0187
54	2.7395	0.0185
55	2.7578	0.0182
56	2.7758	0.0180
57	2.7936	0.0178
58	2.8113	0.0176
59	2.8287	0.0174
60	2.8459	0.0173
61	2.8630	0.0171
62	2.8799	0.0169
63	2.8966	0.0167
64	2.9132	0.0165
65	2.9296	0.0164
66	2.9458	0.0162
67	2.9618	0.0161
68	2.9778	0.0159

69	2.9935	0.0158
70	3.0092	0.0156
71	3.0246	0.0155
72	3.0400	0.0153
73	3.0619	0.0219
74	3.0837	0.0218
75	3.1053	0.0216
76	3.1268	0.0215
77	3.1482	0.0214
78	3.1694	0.0212
79	3.1905	0.0211
80	3.2115	0.0210
81	3.2324	0.0209
82	3.2531	0.0207
83	3.2737	0.0206
84	3.2942	0.0205
85	3.3146	0.0204
86	3.3349	0.0203
87	3.3550	0.0201
88	3.3750	0.0200
89	3.3950	0.0199
90	3.4148	0.0198
91	3.4345	0.0197
92	3.4541	0.0196
93	3.4736	0.0195
94	3.4931	0.0194
95	3.5124	0.0193
96	3.5316	0.0192
97	3.5507	0.0191
98	3.5697	0.0190
99	3.5887	0.0189
100	3.6075	0.0188
101	3.6263	0.0188
102	3.6449	0.0187
103	3.6635	0.0186
104	3.6820	0.0185
105	3.7004	0.0184
106	3.7187	0.0183
107	3.7369	0.0182
108	3.7551	0.0182
109	3.7732	0.0181
110	3.7912	0.0180
111	3.8091	0.0179
112	3.8269	0.0178
113	3.8447	0.0178
114	3.8624	0.0177
115	3.8800	0.0176
116	3.8976	0.0175
117	3.9150	0.0175
118	3.9324	0.0174
119	3.9498	0.0173
120	3.9670	0.0173
121	3.9842	0.0172
122	4.0013	0.0171
123	4.0184	0.0171
124	4.0354	0.0170
125	4.0523	0.0169
126	4.0692	0.0169
127	4.0860	0.0168
128	4.1027	0.0167
129	4.1194	0.0167
130	4.1360	0.0166
131	4.1525	0.0165

132	4.1690	0.0165
133	4.1854	0.0164
134	4.2018	0.0164
135	4.2181	0.0163
136	4.2344	0.0163
137	4.2505	0.0162
138	4.2667	0.0161
139	4.2828	0.0161
140	4.2988	0.0160
141	4.3148	0.0160
142	4.3307	0.0159
143	4.3465	0.0159
144	4.3624	0.0158
145	4.3781	0.0158
146	4.3938	0.0157
147	4.4095	0.0157
148	4.4251	0.0156
149	4.4406	0.0156
150	4.4561	0.0155
151	4.4716	0.0155
152	4.4870	0.0154
153	4.5024	0.0154
154	4.5177	0.0153
155	4.5329	0.0153
156	4.5481	0.0152
157	4.5633	0.0152
158	4.5784	0.0151
159	4.5935	0.0151
160	4.6085	0.0150
161	4.6235	0.0150
162	4.6385	0.0149
163	4.6534	0.0149
164	4.6682	0.0149
165	4.6830	0.0148
166	4.6978	0.0148
167	4.7125	0.0147
168	4.7272	0.0147
169	4.7418	0.0146
170	4.7564	0.0146
171	4.7710	0.0146
172	4.7855	0.0145
173	4.8000	0.0145
174	4.8144	0.0144
175	4.8288	0.0144
176	4.8432	0.0144
177	4.8575	0.0143
178	4.8718	0.0143
179	4.8860	0.0142
180	4.9002	0.0142
181	4.9144	0.0142
182	4.9285	0.0141
183	4.9426	0.0141
184	4.9567	0.0141
185	4.9707	0.0140
186	4.9847	0.0140
187	4.9986	0.0139
188	5.0125	0.0139
189	5.0264	0.0139
190	5.0402	0.0138
191	5.0540	0.0138
192	5.0678	0.0138
193	5.0815	0.0137
194	5.0953	0.0137

195	5.1089	0.0137
196	5.1226	0.0136
197	5.1362	0.0136
198	5.1497	0.0136
199	5.1633	0.0135
200	5.1768	0.0135
201	5.1902	0.0135
202	5.2037	0.0134
203	5.2171	0.0134
204	5.2305	0.0134
205	5.2438	0.0133
206	5.2571	0.0133
207	5.2704	0.0133
208	5.2836	0.0133
209	5.2969	0.0132
210	5.3101	0.0132
211	5.3232	0.0132
212	5.3363	0.0131
213	5.3494	0.0131
214	5.3625	0.0131
215	5.3756	0.0130
216	5.3886	0.0130
217	5.4016	0.0130
218	5.4145	0.0130
219	5.4274	0.0129
220	5.4403	0.0129
221	5.4532	0.0129
222	5.4661	0.0128
223	5.4789	0.0128
224	5.4917	0.0128
225	5.5044	0.0128
226	5.5171	0.0127
227	5.5299	0.0127
228	5.5425	0.0127
229	5.5552	0.0127
230	5.5678	0.0126
231	5.5804	0.0126
232	5.5930	0.0126
233	5.6055	0.0125
234	5.6181	0.0125
235	5.6306	0.0125
236	5.6430	0.0125
237	5.6555	0.0124
238	5.6679	0.0124
239	5.6803	0.0124
240	5.6927	0.0124
241	5.7050	0.0123
242	5.7173	0.0123
243	5.7296	0.0123
244	5.7419	0.0123
245	5.7542	0.0122
246	5.7664	0.0122
247	5.7786	0.0122
248	5.7908	0.0122
249	5.8029	0.0122
250	5.8150	0.0121
251	5.8272	0.0121
252	5.8392	0.0121
253	5.8513	0.0121
254	5.8633	0.0120
255	5.8754	0.0120
256	5.8874	0.0120
257	5.8993	0.0120

258	5.9113	0.0119
259	5.9232	0.0119
260	5.9351	0.0119
261	5.9470	0.0119
262	5.9588	0.0119
263	5.9707	0.0118
264	5.9825	0.0118
265	5.9943	0.0118
266	6.0061	0.0118
267	6.0178	0.0118
268	6.0296	0.0117
269	6.0413	0.0117
270	6.0530	0.0117
271	6.0646	0.0117
272	6.0763	0.0117
273	6.0879	0.0116
274	6.0995	0.0116
275	6.1111	0.0116
276	6.1227	0.0116
277	6.1342	0.0115
278	6.1458	0.0115
279	6.1573	0.0115
280	6.1688	0.0115
281	6.1802	0.0115
282	6.1917	0.0115
283	6.2031	0.0114
284	6.2145	0.0114
285	6.2259	0.0114
286	6.2373	0.0114
287	6.2486	0.0114
288	6.2600	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0003	0.0110
2	0.0114	0.0003	0.0110
3	0.0114	0.0003	0.0111
4	0.0114	0.0003	0.0111
5	0.0115	0.0003	0.0111
6	0.0115	0.0003	0.0111
7	0.0115	0.0003	0.0112
8	0.0115	0.0003	0.0112
9	0.0116	0.0003	0.0112
10	0.0116	0.0003	0.0113
11	0.0116	0.0003	0.0113
12	0.0117	0.0003	0.0113
13	0.0117	0.0003	0.0114
14	0.0117	0.0003	0.0114
15	0.0118	0.0003	0.0114
16	0.0118	0.0003	0.0114
17	0.0118	0.0003	0.0115
18	0.0118	0.0003	0.0115
19	0.0119	0.0003	0.0116
20	0.0119	0.0003	0.0116
21	0.0119	0.0003	0.0116
22	0.0120	0.0003	0.0116
23	0.0120	0.0003	0.0117
24	0.0120	0.0003	0.0117
25	0.0121	0.0003	0.0118
26	0.0121	0.0003	0.0118
27	0.0122	0.0003	0.0118

28	0.0122	0.0003	0.0118
29	0.0122	0.0003	0.0119
30	0.0122	0.0003	0.0119
31	0.0123	0.0003	0.0120
32	0.0123	0.0003	0.0120
33	0.0124	0.0003	0.0120
34	0.0124	0.0003	0.0121
35	0.0124	0.0003	0.0121
36	0.0125	0.0003	0.0121
37	0.0125	0.0003	0.0122
38	0.0125	0.0003	0.0122
39	0.0126	0.0003	0.0123
40	0.0126	0.0003	0.0123
41	0.0127	0.0003	0.0123
42	0.0127	0.0003	0.0124
43	0.0128	0.0003	0.0124
44	0.0128	0.0003	0.0125
45	0.0128	0.0003	0.0125
46	0.0129	0.0003	0.0125
47	0.0129	0.0003	0.0126
48	0.0130	0.0003	0.0126
49	0.0130	0.0003	0.0127
50	0.0130	0.0003	0.0127
51	0.0131	0.0003	0.0128
52	0.0131	0.0003	0.0128
53	0.0132	0.0003	0.0129
54	0.0132	0.0003	0.0129
55	0.0133	0.0003	0.0130
56	0.0133	0.0003	0.0130
57	0.0134	0.0003	0.0130
58	0.0134	0.0003	0.0131
59	0.0135	0.0003	0.0131
60	0.0135	0.0003	0.0132
61	0.0136	0.0003	0.0132
62	0.0136	0.0003	0.0133
63	0.0137	0.0003	0.0133
64	0.0137	0.0003	0.0134
65	0.0138	0.0003	0.0134
66	0.0138	0.0003	0.0135
67	0.0139	0.0003	0.0135
68	0.0139	0.0003	0.0136
69	0.0140	0.0003	0.0137
70	0.0140	0.0003	0.0137
71	0.0141	0.0003	0.0138
72	0.0141	0.0003	0.0138
73	0.0142	0.0003	0.0139
74	0.0142	0.0003	0.0139
75	0.0143	0.0003	0.0140
76	0.0144	0.0003	0.0140
77	0.0144	0.0003	0.0141
78	0.0145	0.0003	0.0141
79	0.0146	0.0003	0.0142
80	0.0146	0.0003	0.0143
81	0.0147	0.0003	0.0144
82	0.0147	0.0003	0.0144
83	0.0148	0.0003	0.0145
84	0.0149	0.0003	0.0145
85	0.0149	0.0003	0.0146
86	0.0150	0.0003	0.0147
87	0.0151	0.0003	0.0147
88	0.0151	0.0003	0.0148
89	0.0152	0.0003	0.0149
90	0.0153	0.0003	0.0149

91	0.0154	0.0003	0.0150
92	0.0154	0.0003	0.0151
93	0.0155	0.0003	0.0152
94	0.0156	0.0003	0.0152
95	0.0157	0.0003	0.0153
96	0.0157	0.0003	0.0154
97	0.0158	0.0003	0.0155
98	0.0159	0.0003	0.0155
99	0.0160	0.0003	0.0156
100	0.0160	0.0003	0.0157
101	0.0161	0.0003	0.0158
102	0.0162	0.0003	0.0159
103	0.0163	0.0003	0.0160
104	0.0164	0.0003	0.0160
105	0.0165	0.0003	0.0162
106	0.0165	0.0003	0.0162
107	0.0167	0.0003	0.0163
108	0.0167	0.0003	0.0164
109	0.0169	0.0003	0.0165
110	0.0169	0.0003	0.0166
111	0.0171	0.0003	0.0167
112	0.0171	0.0003	0.0168
113	0.0173	0.0003	0.0169
114	0.0173	0.0003	0.0170
115	0.0175	0.0003	0.0171
116	0.0175	0.0003	0.0172
117	0.0177	0.0003	0.0174
118	0.0178	0.0003	0.0174
119	0.0179	0.0003	0.0176
120	0.0180	0.0003	0.0177
121	0.0182	0.0003	0.0178
122	0.0182	0.0003	0.0179
123	0.0184	0.0003	0.0181
124	0.0185	0.0003	0.0182
125	0.0187	0.0003	0.0183
126	0.0188	0.0003	0.0184
127	0.0189	0.0003	0.0186
128	0.0190	0.0003	0.0187
129	0.0192	0.0003	0.0189
130	0.0193	0.0003	0.0190
131	0.0195	0.0003	0.0192
132	0.0196	0.0003	0.0193
133	0.0198	0.0003	0.0195
134	0.0199	0.0003	0.0196
135	0.0201	0.0003	0.0198
136	0.0203	0.0003	0.0199
137	0.0205	0.0003	0.0202
138	0.0206	0.0003	0.0203
139	0.0209	0.0003	0.0205
140	0.0210	0.0003	0.0206
141	0.0212	0.0003	0.0209
142	0.0214	0.0003	0.0210
143	0.0216	0.0003	0.0213
144	0.0218	0.0003	0.0215
145	0.0153	0.0003	0.0150
146	0.0155	0.0003	0.0151
147	0.0158	0.0003	0.0154
148	0.0159	0.0003	0.0156
149	0.0162	0.0003	0.0159
150	0.0164	0.0003	0.0161
151	0.0167	0.0003	0.0164
152	0.0169	0.0003	0.0166
153	0.0173	0.0003	0.0169

154	0.0174	0.0003	0.0171
155	0.0178	0.0003	0.0175
156	0.0180	0.0003	0.0177
157	0.0185	0.0003	0.0181
158	0.0187	0.0003	0.0184
159	0.0192	0.0003	0.0188
160	0.0194	0.0003	0.0191
161	0.0199	0.0003	0.0196
162	0.0202	0.0003	0.0199
163	0.0208	0.0003	0.0204
164	0.0211	0.0003	0.0207
165	0.0217	0.0003	0.0214
166	0.0221	0.0003	0.0217
167	0.0228	0.0003	0.0224
168	0.0232	0.0003	0.0228
169	0.0240	0.0003	0.0237
170	0.0244	0.0003	0.0241
171	0.0254	0.0003	0.0251
172	0.0259	0.0003	0.0256
173	0.0270	0.0003	0.0267
174	0.0276	0.0003	0.0273
175	0.0289	0.0003	0.0286
176	0.0296	0.0003	0.0293
177	0.0312	0.0003	0.0309
178	0.0321	0.0003	0.0318
179	0.0341	0.0003	0.0337
180	0.0352	0.0003	0.0348
181	0.0377	0.0003	0.0374
182	0.0391	0.0003	0.0388
183	0.0425	0.0003	0.0422
184	0.0445	0.0003	0.0441
185	0.0544	0.0003	0.0540
186	0.0574	0.0003	0.0571
187	0.0652	0.0003	0.0649
188	0.0703	0.0003	0.0700
189	0.0847	0.0003	0.0844
190	0.0956	0.0003	0.0953
191	0.1367	0.0003	0.1364
192	0.1880	0.0003	0.1877
193	0.5884	0.0003	0.5881
194	0.1114	0.0003	0.1110
195	0.0766	0.0003	0.0763
196	0.0610	0.0003	0.0607
197	0.0467	0.0003	0.0464
198	0.0407	0.0003	0.0404
199	0.0364	0.0003	0.0360
200	0.0330	0.0003	0.0327
201	0.0304	0.0003	0.0301
202	0.0282	0.0003	0.0279
203	0.0264	0.0003	0.0261
204	0.0249	0.0003	0.0246
205	0.0236	0.0003	0.0232
206	0.0224	0.0003	0.0221
207	0.0214	0.0003	0.0211
208	0.0205	0.0003	0.0201
209	0.0197	0.0003	0.0193
210	0.0189	0.0003	0.0186
211	0.0182	0.0003	0.0179
212	0.0176	0.0003	0.0173
213	0.0171	0.0003	0.0167
214	0.0165	0.0003	0.0162
215	0.0161	0.0003	0.0157
216	0.0156	0.0003	0.0153

217	0.0219	0.0003	0.0216
218	0.0215	0.0003	0.0212
219	0.0211	0.0003	0.0208
220	0.0207	0.0003	0.0204
221	0.0204	0.0003	0.0200
222	0.0200	0.0003	0.0197
223	0.0197	0.0003	0.0194
224	0.0194	0.0003	0.0191
225	0.0191	0.0003	0.0188
226	0.0188	0.0003	0.0185
227	0.0186	0.0003	0.0182
228	0.0183	0.0003	0.0180
229	0.0181	0.0003	0.0177
230	0.0178	0.0003	0.0175
231	0.0176	0.0003	0.0173
232	0.0174	0.0003	0.0171
233	0.0172	0.0003	0.0169
234	0.0170	0.0003	0.0167
235	0.0168	0.0003	0.0165
236	0.0166	0.0003	0.0163
237	0.0164	0.0003	0.0161
238	0.0163	0.0003	0.0159
239	0.0161	0.0003	0.0158
240	0.0159	0.0003	0.0156
241	0.0158	0.0003	0.0154
242	0.0156	0.0003	0.0153
243	0.0155	0.0003	0.0151
244	0.0153	0.0003	0.0150
245	0.0152	0.0003	0.0148
246	0.0150	0.0003	0.0147
247	0.0149	0.0003	0.0146
248	0.0148	0.0003	0.0144
249	0.0146	0.0003	0.0143
250	0.0145	0.0003	0.0142
251	0.0144	0.0003	0.0141
252	0.0143	0.0003	0.0139
253	0.0142	0.0003	0.0138
254	0.0141	0.0003	0.0137
255	0.0139	0.0003	0.0136
256	0.0138	0.0003	0.0135
257	0.0137	0.0003	0.0134
258	0.0136	0.0003	0.0133
259	0.0135	0.0003	0.0132
260	0.0134	0.0003	0.0131
261	0.0133	0.0003	0.0130
262	0.0133	0.0003	0.0129
263	0.0132	0.0003	0.0128
264	0.0131	0.0003	0.0127
265	0.0130	0.0003	0.0127
266	0.0129	0.0003	0.0126
267	0.0128	0.0003	0.0125
268	0.0127	0.0003	0.0124
269	0.0127	0.0003	0.0123
270	0.0126	0.0003	0.0122
271	0.0125	0.0003	0.0122
272	0.0124	0.0003	0.0121
273	0.0123	0.0003	0.0120
274	0.0123	0.0003	0.0119
275	0.0122	0.0003	0.0119
276	0.0121	0.0003	0.0118
277	0.0121	0.0003	0.0117
278	0.0120	0.0003	0.0117
279	0.0119	0.0003	0.0116

280	0.0119	0.0003	0.0115
281	0.0118	0.0003	0.0115
282	0.0117	0.0003	0.0114
283	0.0117	0.0003	0.0113
284	0.0116	0.0003	0.0113
285	0.0115	0.0003	0.0112
286	0.0115	0.0003	0.0112
287	0.0114	0.0003	0.0111
288	0.0114	0.0003	0.0110

```
----------------------------------------------------------------------
----------------------------------------------------------------------
Total soil rain loss =      0.10(In)
Total effective rainfall =       6.16(In)
Peak flow rate in flood hydrograph =      12.68(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      0.0005      0.07  Q          |          |          |          |
  0+10      0.0023      0.27  Q          |          |          |          |
  0+15      0.0046      0.33  Q          |          |          |          |
  0+20      0.0070      0.34  Q          |          |          |          |
  0+25      0.0094      0.35  Q          |          |          |          |
  0+30      0.0119      0.36  Q          |          |          |          |
  0+35      0.0144      0.36  Q          |          |          |          |
  0+40      0.0169      0.37  Q          |          |          |          |
  0+45      0.0194      0.37  Q          |          |          |          |
  0+50      0.0219      0.37  Q          |          |          |          |
  0+55      0.0245      0.37  Q          |          |          |          |
  1+ 0      0.0270      0.37  Q          |          |          |          |
  1+ 5      0.0296      0.37  Q          |          |          |          |
  1+10      0.0321      0.37  Q          |          |          |          |
  1+15      0.0347      0.37  Q          |          |          |          |
  1+20      0.0373      0.37  QV         |          |          |          |
  1+25      0.0399      0.37  QV         |          |          |          |
  1+30      0.0425      0.38  QV         |          |          |          |
  1+35      0.0451      0.38  QV         |          |          |          |
  1+40      0.0477      0.38  QV         |          |          |          |
  1+45      0.0503      0.38  QV         |          |          |          |
  1+50      0.0529      0.38  QV         |          |          |          |
  1+55      0.0555      0.38  QV         |          |          |          |
  2+ 0      0.0582      0.38  QV         |          |          |          |
  2+ 5      0.0608      0.38  QV         |          |          |          |
  2+10      0.0634      0.38  QV         |          |          |          |
  2+15      0.0661      0.39  QV         |          |          |          |
  2+20      0.0688      0.39  QV         |          |          |          |
  2+25      0.0714      0.39  Q V        |          |          |          |
  2+30      0.0741      0.39  Q V        |          |          |          |
  2+35      0.0768      0.39  Q V        |          |          |          |
  2+40      0.0795      0.39  Q V        |          |          |          |
  2+45      0.0822      0.39  Q V        |          |          |          |
  2+50      0.0849      0.39  Q V        |          |          |          |
  2+55      0.0877      0.40  Q V        |          |          |          |
  3+ 0      0.0904      0.40  Q V        |          |          |          |
  3+ 5      0.0931      0.40  Q V        |          |          |          |
  3+10      0.0959      0.40  Q V        |          |          |          |
  3+15      0.0986      0.40  Q V        |          |          |          |
```

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3+20        0.1014        0.40   Q V       |         |         |         |
3+25        0.1042        0.40   Q V       |         |         |         |
3+30        0.1070        0.40   Q  V      |         |         |         |
3+35        0.1097        0.41   Q  V      |         |         |         |
3+40        0.1125        0.41   Q  V      |         |         |         |
3+45        0.1154        0.41   Q  V      |         |         |         |
3+50        0.1182        0.41   Q  V      |         |         |         |
3+55        0.1210        0.41   Q  V      |         |         |         |
4+ 0        0.1238        0.41   Q  V      |         |         |         |
4+ 5        0.1267        0.41   Q  V      |         |         |         |
4+10        0.1296        0.42   Q  V      |         |         |         |
4+15        0.1324        0.42   Q  V      |         |         |         |
4+20        0.1353        0.42   Q  V      |         |         |         |
4+25        0.1382        0.42   Q  V      |         |         |         |
4+30        0.1411        0.42   Q   V     |         |         |         |
4+35        0.1440        0.42   Q   V     |         |         |         |
4+40        0.1469        0.42   Q   V     |         |         |         |
4+45        0.1498        0.43   Q   V     |         |         |         |
4+50        0.1528        0.43   Q   V     |         |         |         |
4+55        0.1557        0.43   Q   V     |         |         |         |
5+ 0        0.1587        0.43   Q   V     |         |         |         |
5+ 5        0.1617        0.43   Q   V     |         |         |         |
5+10        0.1647        0.43   Q   V     |         |         |         |
5+15        0.1676        0.43   Q   V     |         |         |         |
5+20        0.1707        0.44   Q   V     |         |         |         |
5+25        0.1737        0.44   Q   V     |         |         |         |
5+30        0.1767        0.44   Q    V    |         |         |         |
5+35        0.1797        0.44   Q    V    |         |         |         |
5+40        0.1828        0.44   Q    V    |         |         |         |
5+45        0.1859        0.44   Q    V    |         |         |         |
5+50        0.1889        0.45   Q    V    |         |         |         |
5+55        0.1920        0.45   Q    V    |         |         |         |
6+ 0        0.1951        0.45   Q    V    |         |         |         |
6+ 5        0.1982        0.45   Q    V    |         |         |         |
6+10        0.2014        0.45   Q    V    |         |         |         |
6+15        0.2045        0.46   Q    V    |         |         |         |
6+20        0.2077        0.46   Q    V    |         |         |         |
6+25        0.2108        0.46   Q     V   |         |         |         |
6+30        0.2140        0.46   Q     V   |         |         |         |
6+35        0.2172        0.46   Q     V   |         |         |         |
6+40        0.2204        0.47   Q     V   |         |         |         |
6+45        0.2236        0.47   Q     V   |         |         |         |
6+50        0.2268        0.47   Q     V   |         |         |         |
6+55        0.2301        0.47   Q     V   |         |         |         |
7+ 0        0.2334        0.47   Q     V   |         |         |         |
7+ 5        0.2366        0.48   Q     V   |         |         |         |
7+10        0.2399        0.48   Q     V   |         |         |         |
7+15        0.2432        0.48   Q     V   |         |         |         |
7+20        0.2466        0.48   Q      V  |         |         |         |
7+25        0.2499        0.48   Q      V  |         |         |         |
7+30        0.2532        0.49   Q      V  |         |         |         |
7+35        0.2566        0.49   Q      V  |         |         |         |
7+40        0.2600        0.49   Q      V  |         |         |         |
7+45        0.2634        0.49   Q      V  |         |         |         |
7+50        0.2668        0.50   Q      V  |         |         |         |
7+55        0.2703        0.50   Q      V  |         |         |         |
8+ 0        0.2737        0.50   |Q     V  |         |         |         |
8+ 5        0.2772        0.50   |Q     V  |         |         |         |
8+10        0.2807        0.51   |Q      V |         |         |         |
8+15        0.2842        0.51   |Q      V |         |         |         |
8+20        0.2877        0.51   |Q      V |         |         |         |
8+25        0.2912        0.51   |Q      V |         |         |         |
8+30        0.2948        0.52   |Q      V |         |         |         |
```

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  8+35      0.2984     0.52  |Q      V |         |         |         |
  8+40      0.3020     0.52  |Q      V |         |         |         |
  8+45      0.3056     0.53  |Q      V |         |         |         |
  8+50      0.3092     0.53  |Q      V |         |         |         |
  8+55      0.3129     0.53  |Q      V |         |         |         |
  9+ 0      0.3166     0.53  |Q       V|         |         |         |
  9+ 5      0.3203     0.54  |Q       V|         |         |         |
  9+10      0.3240     0.54  |Q       V|         |         |         |
  9+15      0.3277     0.54  |Q       V|         |         |         |
  9+20      0.3315     0.55  |Q       V|         |         |         |
  9+25      0.3353     0.55  |Q       V|         |         |         |
  9+30      0.3391     0.55  |Q       V|         |         |         |
  9+35      0.3429     0.56  |Q       V|         |         |         |
  9+40      0.3468     0.56  |Q       V|         |         |         |
  9+45      0.3507     0.56  |Q        V         |         |         |
  9+50      0.3546     0.57  |Q        V         |         |         |
  9+55      0.3585     0.57  |Q        V         |         |         |
 10+ 0      0.3625     0.58  |Q        V         |         |         |
 10+ 5      0.3665     0.58  |Q        V         |         |         |
 10+10      0.3705     0.58  |Q        V         |         |         |
 10+15      0.3745     0.59  |Q        V         |         |         |
 10+20      0.3786     0.59  |Q        V         |         |         |
 10+25      0.3827     0.59  |Q        |V        |         |         |
 10+30      0.3868     0.60  |Q        |V        |         |         |
 10+35      0.3910     0.60  |Q        |V        |         |         |
 10+40      0.3951     0.61  |Q        |V        |         |         |
 10+45      0.3994     0.61  |Q        |V        |         |         |
 10+50      0.4036     0.62  |Q        |V        |         |         |
 10+55      0.4079     0.62  |Q        |V        |         |         |
 11+ 0      0.4122     0.63  |Q        |V        |         |         |
 11+ 5      0.4166     0.63  |Q        |V        |         |         |
 11+10      0.4209     0.64  |Q        | V       |         |         |
 11+15      0.4254     0.64  |Q        | V       |         |         |
 11+20      0.4298     0.65  |Q        | V       |         |         |
 11+25      0.4343     0.65  |Q        | V       |         |         |
 11+30      0.4389     0.66  |Q        | V       |         |         |
 11+35      0.4434     0.66  |Q        | V       |         |         |
 11+40      0.4480     0.67  |Q        | V       |         |         |
 11+45      0.4527     0.68  |Q        |  V      |         |         |
 11+50      0.4574     0.68  |Q        |  V      |         |         |
 11+55      0.4621     0.69  |Q        |  V      |         |         |
 12+ 0      0.4669     0.70  |Q        |  V      |         |         |
 12+ 5      0.4715     0.66  |Q        |  V      |         |         |
 12+10      0.4752     0.55  |Q        |  V      |         |         |
 12+15      0.4788     0.52  |Q        |  V      |         |         |
 12+20      0.4823     0.51  |Q        |  V      |         |         |
 12+25      0.4859     0.52  |Q        |  V      |         |         |
 12+30      0.4895     0.52  |Q        |   V     |         |         |
 12+35      0.4931     0.53  |Q        |   V     |         |         |
 12+40      0.4968     0.53  |Q        |   V     |         |         |
 12+45      0.5005     0.54  |Q        |   V     |         |         |
 12+50      0.5043     0.55  |Q        |   V     |         |         |
 12+55      0.5082     0.56  |Q        |   V     |         |         |
 13+ 0      0.5121     0.57  |Q        |   V     |         |         |
 13+ 5      0.5161     0.58  |Q        |   V     |         |         |
 13+10      0.5202     0.59  |Q        |   V     |         |         |
 13+15      0.5243     0.60  |Q        |    V    |         |         |
 13+20      0.5285     0.61  |Q        |    V    |         |         |
 13+25      0.5328     0.62  |Q        |    V    |         |         |
 13+30      0.5372     0.64  |Q        |    V    |         |         |
 13+35      0.5417     0.65  |Q        |    V    |         |         |
 13+40      0.5462     0.66  |Q        |    V    |         |         |
 13+45      0.5509     0.68  |Q        |    V    |         |         |
```

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13+50       0.5557      0.70  |Q        |    V    |         |         |
13+55       0.5606      0.71  |Q        |     V   |         |         |
14+ 0       0.5656      0.73  |Q        |     V   |         |         |
14+ 5       0.5708      0.75  |Q        |     V   |         |         |
14+10       0.5761      0.77  |Q        |     V   |         |         |
14+15       0.5815      0.79  |Q        |     V   |         |         |
14+20       0.5871      0.81  |Q        |     V   |         |         |
14+25       0.5928      0.84  |Q        |      V  |         |         |
14+30       0.5988      0.86  |Q        |      V  |         |         |
14+35       0.6049      0.89  |Q        |      V  |         |         |
14+40       0.6113      0.93  |Q        |      V  |         |         |
14+45       0.6179      0.96  |Q        |      V  |         |         |
14+50       0.6248      1.00  |Q        |      V  |         |         |
14+55       0.6319      1.04  | Q       |       V |         |         |
15+ 0       0.6394      1.09  | Q       |       V |         |         |
15+ 5       0.6473      1.14  | Q       |       V |         |         |
15+10       0.6556      1.20  | Q       |       V |         |         |
15+15       0.6643      1.27  | Q       |        V|         |         |
15+20       0.6736      1.36  | Q       |        V|         |         |
15+25       0.6838      1.48  | Q       |        V|         |         |
15+30       0.6955      1.69  |  Q      |        V|         |         |
15+35       0.7083      1.86  |  Q      |         V         |         |
15+40       0.7225      2.06  |   Q     |         V         |         |
15+45       0.7383      2.30  |   Q     |         |V        |         |
15+50       0.7568      2.68  |    Q    |         |V        |         |
15+55       0.7790      3.23  |     Q   |         | V       |         |
16+ 0       0.8092      4.39  |       Q |         |  V      |         |
16+ 5       0.8649      8.09  |         |     Q   |   V     |         |
16+10       0.9523     12.68  |         |         |    Q V  |         |
16+15       0.9938      6.03  |         | Q       |        V |         |
16+20       1.0176      3.45  |     Q   |         |         V|         |
16+25       1.0348      2.49  |   Q     |         |         V|         |
16+30       1.0481      1.94  |  Q      |         |         V         |
16+35       1.0591      1.59  |  Q      |         |         V         |
16+40       1.0686      1.38  | Q       |         |         V         |
16+45       1.0764      1.14  | Q       |         |         V         |
16+50       1.0835      1.03  | Q       |         |         |V        |
16+55       1.0900      0.95  |Q        |         |         |V        |
17+ 0       1.0960      0.88  |Q        |         |         |V        |
17+ 5       1.1017      0.82  |Q        |         |         |V        |
17+10       1.1070      0.78  |Q        |         |         |V        |
17+15       1.1121      0.74  |Q        |         |         |V        |
17+20       1.1169      0.70  |Q        |         |         | V       |
17+25       1.1216      0.67  |Q        |         |         | V       |
17+30       1.1260      0.64  |Q        |         |         | V       |
17+35       1.1302      0.62  |Q        |         |         | V       |
17+40       1.1343      0.59  |Q        |         |         | V       |
17+45       1.1383      0.57  |Q        |         |         | V       |
17+50       1.1421      0.55  |Q        |         |         | V       |
17+55       1.1458      0.54  |Q        |         |         | V       |
18+ 0       1.1494      0.52  |Q        |         |         |  V      |
18+ 5       1.1531      0.55  |Q        |         |         |  V      |
18+10       1.1577      0.66  |Q        |         |         |  V      |
18+15       1.1623      0.68  |Q        |         |         |  V      |
18+20       1.1670      0.67  |Q        |         |         |  V      |
18+25       1.1715      0.67  |Q        |         |         |  V      |
18+30       1.1761      0.66  |Q        |         |         |  V      |
18+35       1.1805      0.65  |Q        |         |         |  V      |
18+40       1.1849      0.64  |Q        |         |         |   V     |
18+45       1.1892      0.63  |Q        |         |         |   V     |
18+50       1.1935      0.62  |Q        |         |         |   V     |
18+55       1.1977      0.61  |Q        |         |         |   V     |
19+ 0       1.2018      0.60  |Q        |         |         |   V     |
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19+ 5       1.2059      0.59  |Q        |         |         |   V     |
19+10       1.2099      0.58  |Q        |         |         |   V     |
19+15       1.2139      0.58  |Q        |         |         |   V     |
19+20       1.2178      0.57  |Q        |         |         |    V    |
19+25       1.2217      0.56  |Q        |         |         |    V    |
19+30       1.2255      0.55  |Q        |         |         |    V    |
19+35       1.2293      0.55  |Q        |         |         |    V    |
19+40       1.2330      0.54  |Q        |         |         |    V    |
19+45       1.2367      0.54  |Q        |         |         |    V    |
19+50       1.2403      0.53  |Q        |         |         |    V    |
19+55       1.2439      0.52  |Q        |         |         |    V    |
20+ 0       1.2475      0.52  |Q        |         |         |    V    |
20+ 5       1.2510      0.51  |Q        |         |         |    V    |
20+10       1.2545      0.51  |Q        |         |         |     V   |
20+15       1.2580      0.50  |Q        |         |         |     V   |
20+20       1.2614      0.50  Q         |         |         |     V   |
20+25       1.2648      0.49  Q         |         |         |     V   |
20+30       1.2682      0.49  Q         |         |         |     V   |
20+35       1.2715      0.48  Q         |         |         |     V   |
20+40       1.2748      0.48  Q         |         |         |     V   |
20+45       1.2780      0.47  Q         |         |         |     V   |
20+50       1.2813      0.47  Q         |         |         |     V   |
20+55       1.2845      0.47  Q         |         |         |     V   |
21+ 0       1.2877      0.46  Q         |         |         |      V  |
21+ 5       1.2908      0.46  Q         |         |         |      V  |
21+10       1.2940      0.45  Q         |         |         |      V  |
21+15       1.2971      0.45  Q         |         |         |      V  |
21+20       1.3001      0.45  Q         |         |         |      V  |
21+25       1.3032      0.44  Q         |         |         |      V  |
21+30       1.3062      0.44  Q         |         |         |      V  |
21+35       1.3092      0.44  Q         |         |         |      V  |
21+40       1.3122      0.43  Q         |         |         |      V  |
21+45       1.3152      0.43  Q         |         |         |      V  |
21+50       1.3181      0.43  Q         |         |         |      V  |
21+55       1.3211      0.42  Q         |         |         |      V  |
22+ 0       1.3240      0.42  Q         |         |         |       V |
22+ 5       1.3268      0.42  Q         |         |         |       V |
22+10       1.3297      0.42  Q         |         |         |       V |
22+15       1.3325      0.41  Q         |         |         |       V |
22+20       1.3354      0.41  Q         |         |         |       V |
22+25       1.3382      0.41  Q         |         |         |       V |
22+30       1.3410      0.40  Q         |         |         |       V |
22+35       1.3437      0.40  Q         |         |         |       V |
22+40       1.3465      0.40  Q         |         |         |       V |
22+45       1.3492      0.40  Q         |         |         |       V |
22+50       1.3519      0.39  Q         |         |         |       V |
22+55       1.3546      0.39  Q         |         |         |       V |
23+ 0       1.3573      0.39  Q         |         |         |        V|
23+ 5       1.3600      0.39  Q         |         |         |        V|
23+10       1.3626      0.39  Q         |         |         |        V|
23+15       1.3653      0.38  Q         |         |         |        V|
23+20       1.3679      0.38  Q         |         |         |        V|
23+25       1.3705      0.38  Q         |         |         |        V|
23+30       1.3731      0.38  Q         |         |         |        V|
23+35       1.3757      0.37  Q         |         |         |        V|
23+40       1.3782      0.37  Q         |         |         |        V|
23+45       1.3808      0.37  Q         |         |         |        V|
23+50       1.3833      0.37  Q         |         |         |        V|
23+55       1.3858      0.37  Q         |         |         |        V|
24+ 0       1.3883      0.36  Q         |         |         |        V|
24+ 5       1.3904      0.29  Q         |         |         |        V|
24+10       1.3910      0.09  Q         |         |         |        V|
24+15       1.3912      0.03  Q         |         |         |        V|
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  24+20        1.3914       0.02  Q          |          |          |        V|
  24+25        1.3914       0.01  Q          |          |          |        V|
  24+30        1.3915       0.01  Q          |          |          |        V|
  24+35        1.3915       0.00  Q          |          |          |         V
-----------------------------------------------------------------------------
```

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

Study date 01/11/17

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

Program License Serial Number 6083

WATERMAN INDUSTRIAL CENTER
PROPOSED CONDITION BASIN 7
SAN BERNARDINO, CA
01.11.2017 TCM

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	1.56	1	1.59
Rainfall data for year 100	1.56	6	3.04
Rainfall data for year 100	1.56	24	6.26

++

******** 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)
90.0	98.0	1.56	1.000	0.040	0.100	0.004

Area-averaged adjusted loss rate Fm (In/Hr) = 0.004

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

Area   Area   SCS CN   SCS CN   S   Pervious

(Ac.)	Fract	(AMC2)	(AMC3)		Yield Fr
0.16	0.100	90.0	98.0	0.20	0.962
1.40	0.900	98.0	98.0	0.20	0.962

Area-averaged catchment yield fraction, Y = 0.962
Area-averaged low loss fraction, Yb = 0.038
User entry of time of concentration = 0.166 (hours)
+++
Watershed area = 1.56(Ac.)
Catchment Lag time = 0.133 hours
Unit interval = 5.000 minutes
Unit interval percentage of lag time = 62.7510
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.004(In/Hr)
Average low loss rate fraction (Yb) = 0.038 (decimal)
VALLEY DEVELOPED S-Graph proportion = 0.467
VALLEY UNDEVELOPED S-Graph proportion = 0.533
FOOTHILL S-Graph proportion = 0.000
MOUNTAIN S-Graph proportion = 0.000
DESERT S-Graph proportion = -0.000

Computed peak 5-minute rainfall = 0.588(In)
Computed peak 30-minute rainfall = 1.205(In)
Specified peak 1-hour rainfall = 1.590(In)
Computed peak 3-hour rainfall = 2.366(In)
Specified peak 6-hour rainfall = 3.040(In)
Specified peak 24-hour rainfall = 6.260(In)

Rainfall depth area reduction factors:
Using a total area of 1.56(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000	Adjusted rainfall = 0.588(In)
30-minute factor = 1.000	Adjusted rainfall = 1.205(In)
1-hour factor = 1.000	Adjusted rainfall = 1.590(In)
3-hour factor = 1.000	Adjusted rainfall = 2.366(In)
6-hour factor = 1.000	Adjusted rainfall = 3.040(In)
24-hour factor = 1.000	Adjusted rainfall = 6.260(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 = 18.87 (CFS))	
1	8.037	1.516
2	44.847	6.945
3	76.798	6.028
4	87.797	2.075
5	92.091	0.810
6	94.733	0.498
7	96.215	0.280
8	97.291	0.203
9	98.149	0.162
10	98.777	0.119
11	99.239	0.087
12	99.582	0.065
13	100.000	0.032

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)

1	0.5884	0.5884
2	0.7764	0.1880
3	0.9131	0.1367
4	1.0245	0.1114
5	1.1202	0.0957
6	1.2049	0.0847
7	1.2815	0.0766
8	1.3519	0.0703
9	1.4171	0.0652
10	1.4781	0.0610
11	1.5355	0.0574
12	1.5899	0.0544
13	1.6366	0.0467
14	1.6811	0.0445
15	1.7236	0.0425
16	1.7643	0.0407
17	1.8034	0.0391
18	1.8411	0.0377
19	1.8774	0.0364
20	1.9126	0.0352
21	1.9467	0.0341
22	1.9797	0.0330
23	2.0118	0.0321
24	2.0430	0.0312
25	2.0734	0.0304
26	2.1030	0.0296
27	2.1320	0.0289
28	2.1602	0.0282
29	2.1878	0.0276
30	2.2148	0.0270
31	2.2412	0.0264
32	2.2671	0.0259
33	2.2925	0.0254
34	2.3174	0.0249
35	2.3418	0.0244
36	2.3658	0.0240
37	2.3894	0.0236
38	2.4125	0.0232
39	2.4353	0.0228
40	2.4577	0.0224
41	2.4798	0.0221
42	2.5015	0.0217
43	2.5229	0.0214
44	2.5439	0.0211
45	2.5647	0.0208
46	2.5852	0.0205
47	2.6054	0.0202
48	2.6253	0.0199
49	2.6449	0.0197
50	2.6643	0.0194
51	2.6835	0.0192
52	2.7024	0.0189
53	2.7211	0.0187
54	2.7395	0.0185
55	2.7578	0.0182
56	2.7758	0.0180
57	2.7936	0.0178
58	2.8113	0.0176
59	2.8287	0.0174
60	2.8460	0.0172
61	2.8630	0.0171
62	2.8799	0.0169
63	2.8966	0.0167

64	2.9132	0.0165
65	2.9296	0.0164
66	2.9458	0.0162
67	2.9619	0.0161
68	2.9778	0.0159
69	2.9935	0.0158
70	3.0092	0.0156
71	3.0246	0.0155
72	3.0400	0.0153
73	3.0619	0.0219
74	3.0837	0.0218
75	3.1053	0.0216
76	3.1268	0.0215
77	3.1482	0.0214
78	3.1695	0.0212
79	3.1906	0.0211
80	3.2115	0.0210
81	3.2324	0.0209
82	3.2531	0.0207
83	3.2737	0.0206
84	3.2942	0.0205
85	3.3146	0.0204
86	3.3349	0.0203
87	3.3550	0.0201
88	3.3751	0.0200
89	3.3950	0.0199
90	3.4148	0.0198
91	3.4345	0.0197
92	3.4541	0.0196
93	3.4737	0.0195
94	3.4931	0.0194
95	3.5124	0.0193
96	3.5316	0.0192
97	3.5507	0.0191
98	3.5697	0.0190
99	3.5887	0.0189
100	3.6075	0.0188
101	3.6263	0.0188
102	3.6449	0.0187
103	3.6635	0.0186
104	3.6820	0.0185
105	3.7004	0.0184
106	3.7187	0.0183
107	3.7370	0.0182
108	3.7551	0.0182
109	3.7732	0.0181
110	3.7912	0.0180
111	3.8091	0.0179
112	3.8270	0.0178
113	3.8447	0.0178
114	3.8624	0.0177
115	3.8800	0.0176
116	3.8976	0.0175
117	3.9150	0.0175
118	3.9324	0.0174
119	3.9498	0.0173
120	3.9670	0.0173
121	3.9842	0.0172
122	4.0013	0.0171
123	4.0184	0.0171
124	4.0354	0.0170
125	4.0523	0.0169
126	4.0692	0.0169

127	4.0860	0.0168
128	4.1027	0.0167
129	4.1194	0.0167
130	4.1360	0.0166
131	4.1525	0.0165
132	4.1690	0.0165
133	4.1854	0.0164
134	4.2018	0.0164
135	4.2181	0.0163
136	4.2344	0.0163
137	4.2506	0.0162
138	4.2667	0.0161
139	4.2828	0.0161
140	4.2988	0.0160
141	4.3148	0.0160
142	4.3307	0.0159
143	4.3466	0.0159
144	4.3624	0.0158
145	4.3781	0.0158
146	4.3938	0.0157
147	4.4095	0.0157
148	4.4251	0.0156
149	4.4406	0.0156
150	4.4562	0.0155
151	4.4716	0.0155
152	4.4870	0.0154
153	4.5024	0.0154
154	4.5177	0.0153
155	4.5329	0.0153
156	4.5482	0.0152
157	4.5633	0.0152
158	4.5784	0.0151
159	4.5935	0.0151
160	4.6086	0.0150
161	4.6235	0.0150
162	4.6385	0.0149
163	4.6534	0.0149
164	4.6682	0.0149
165	4.6830	0.0148
166	4.6978	0.0148
167	4.7125	0.0147
168	4.7272	0.0147
169	4.7419	0.0146
170	4.7565	0.0146
171	4.7710	0.0146
172	4.7855	0.0145
173	4.8000	0.0145
174	4.8144	0.0144
175	4.8288	0.0144
176	4.8432	0.0144
177	4.8575	0.0143
178	4.8718	0.0143
179	4.8860	0.0142
180	4.9002	0.0142
181	4.9144	0.0142
182	4.9285	0.0141
183	4.9426	0.0141
184	4.9567	0.0141
185	4.9707	0.0140
186	4.9847	0.0140
187	4.9986	0.0139
188	5.0125	0.0139
189	5.0264	0.0139

190	5.0402	0.0138
191	5.0541	0.0138
192	5.0678	0.0138
193	5.0816	0.0137
194	5.0953	0.0137
195	5.1089	0.0137
196	5.1226	0.0136
197	5.1362	0.0136
198	5.1497	0.0136
199	5.1633	0.0135
200	5.1768	0.0135
201	5.1902	0.0135
202	5.2037	0.0134
203	5.2171	0.0134
204	5.2305	0.0134
205	5.2438	0.0133
206	5.2571	0.0133
207	5.2704	0.0133
208	5.2837	0.0133
209	5.2969	0.0132
210	5.3101	0.0132
211	5.3232	0.0132
212	5.3364	0.0131
213	5.3495	0.0131
214	5.3625	0.0131
215	5.3756	0.0130
216	5.3886	0.0130
217	5.4016	0.0130
218	5.4145	0.0130
219	5.4274	0.0129
220	5.4403	0.0129
221	5.4532	0.0129
222	5.4661	0.0128
223	5.4789	0.0128
224	5.4917	0.0128
225	5.5044	0.0128
226	5.5172	0.0127
227	5.5299	0.0127
228	5.5425	0.0127
229	5.5552	0.0127
230	5.5678	0.0126
231	5.5804	0.0126
232	5.5930	0.0126
233	5.6055	0.0125
234	5.6181	0.0125
235	5.6306	0.0125
236	5.6430	0.0125
237	5.6555	0.0124
238	5.6679	0.0124
239	5.6803	0.0124
240	5.6927	0.0124
241	5.7050	0.0123
242	5.7173	0.0123
243	5.7296	0.0123
244	5.7419	0.0123
245	5.7542	0.0122
246	5.7664	0.0122
247	5.7786	0.0122
248	5.7908	0.0122
249	5.8029	0.0122
250	5.8151	0.0121
251	5.8272	0.0121
252	5.8392	0.0121

253	5.8513	0.0121
254	5.8633	0.0120
255	5.8754	0.0120
256	5.8874	0.0120
257	5.8993	0.0120
258	5.9113	0.0119
259	5.9232	0.0119
260	5.9351	0.0119
261	5.9470	0.0119
262	5.9589	0.0119
263	5.9707	0.0118
264	5.9825	0.0118
265	5.9943	0.0118
266	6.0061	0.0118
267	6.0178	0.0118
268	6.0296	0.0117
269	6.0413	0.0117
270	6.0530	0.0117
271	6.0646	0.0117
272	6.0763	0.0117
273	6.0879	0.0116
274	6.0995	0.0116
275	6.1111	0.0116
276	6.1227	0.0116
277	6.1342	0.0115
278	6.1458	0.0115
279	6.1573	0.0115
280	6.1688	0.0115
281	6.1802	0.0115
282	6.1917	0.0115
283	6.2031	0.0114
284	6.2145	0.0114
285	6.2259	0.0114
286	6.2373	0.0114
287	6.2487	0.0114
288	6.2600	0.0113

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0113	0.0003	0.0110
2	0.0114	0.0003	0.0110
3	0.0114	0.0003	0.0111
4	0.0114	0.0003	0.0111
5	0.0115	0.0003	0.0111
6	0.0115	0.0003	0.0111
7	0.0115	0.0003	0.0112
8	0.0115	0.0003	0.0112
9	0.0116	0.0003	0.0112
10	0.0116	0.0003	0.0113
11	0.0116	0.0003	0.0113
12	0.0117	0.0003	0.0113
13	0.0117	0.0003	0.0114
14	0.0117	0.0003	0.0114
15	0.0118	0.0003	0.0114
16	0.0118	0.0003	0.0114
17	0.0118	0.0003	0.0115
18	0.0118	0.0003	0.0115
19	0.0119	0.0003	0.0116
20	0.0119	0.0003	0.0116
21	0.0119	0.0003	0.0116
22	0.0120	0.0003	0.0116

23	0.0120	0.0003	0.0117
24	0.0120	0.0003	0.0117
25	0.0121	0.0003	0.0118
26	0.0121	0.0003	0.0118
27	0.0122	0.0003	0.0118
28	0.0122	0.0003	0.0118
29	0.0122	0.0003	0.0119
30	0.0122	0.0003	0.0119
31	0.0123	0.0003	0.0120
32	0.0123	0.0003	0.0120
33	0.0124	0.0003	0.0120
34	0.0124	0.0003	0.0121
35	0.0124	0.0003	0.0121
36	0.0125	0.0003	0.0121
37	0.0125	0.0003	0.0122
38	0.0125	0.0003	0.0122
39	0.0126	0.0003	0.0123
40	0.0126	0.0003	0.0123
41	0.0127	0.0003	0.0123
42	0.0127	0.0003	0.0124
43	0.0128	0.0003	0.0124
44	0.0128	0.0003	0.0125
45	0.0128	0.0003	0.0125
46	0.0129	0.0003	0.0125
47	0.0129	0.0003	0.0126
48	0.0130	0.0003	0.0126
49	0.0130	0.0003	0.0127
50	0.0130	0.0003	0.0127
51	0.0131	0.0003	0.0128
52	0.0131	0.0003	0.0128
53	0.0132	0.0003	0.0129
54	0.0132	0.0003	0.0129
55	0.0133	0.0003	0.0130
56	0.0133	0.0003	0.0130
57	0.0134	0.0003	0.0130
58	0.0134	0.0003	0.0131
59	0.0135	0.0003	0.0131
60	0.0135	0.0003	0.0132
61	0.0136	0.0003	0.0132
62	0.0136	0.0003	0.0133
63	0.0137	0.0003	0.0133
64	0.0137	0.0003	0.0134
65	0.0138	0.0003	0.0134
66	0.0138	0.0003	0.0135
67	0.0139	0.0003	0.0135
68	0.0139	0.0003	0.0136
69	0.0140	0.0003	0.0137
70	0.0140	0.0003	0.0137
71	0.0141	0.0003	0.0138
72	0.0141	0.0003	0.0138
73	0.0142	0.0003	0.0139
74	0.0142	0.0003	0.0139
75	0.0143	0.0003	0.0140
76	0.0144	0.0003	0.0140
77	0.0144	0.0003	0.0141
78	0.0145	0.0003	0.0141
79	0.0146	0.0003	0.0142
80	0.0146	0.0003	0.0143
81	0.0147	0.0003	0.0144
82	0.0147	0.0003	0.0144
83	0.0148	0.0003	0.0145
84	0.0149	0.0003	0.0145
85	0.0149	0.0003	0.0146

86	0.0150	0.0003	0.0147
87	0.0151	0.0003	0.0147
88	0.0151	0.0003	0.0148
89	0.0152	0.0003	0.0149
90	0.0153	0.0003	0.0149
91	0.0154	0.0003	0.0150
92	0.0154	0.0003	0.0151
93	0.0155	0.0003	0.0152
94	0.0156	0.0003	0.0152
95	0.0157	0.0003	0.0153
96	0.0157	0.0003	0.0154
97	0.0158	0.0003	0.0155
98	0.0159	0.0003	0.0155
99	0.0160	0.0003	0.0156
100	0.0160	0.0003	0.0157
101	0.0161	0.0003	0.0158
102	0.0162	0.0003	0.0159
103	0.0163	0.0003	0.0160
104	0.0164	0.0003	0.0160
105	0.0165	0.0003	0.0162
106	0.0165	0.0003	0.0162
107	0.0167	0.0003	0.0163
108	0.0167	0.0003	0.0164
109	0.0169	0.0003	0.0165
110	0.0169	0.0003	0.0166
111	0.0171	0.0003	0.0167
112	0.0171	0.0003	0.0168
113	0.0173	0.0003	0.0169
114	0.0173	0.0003	0.0170
115	0.0175	0.0003	0.0171
116	0.0175	0.0003	0.0172
117	0.0177	0.0003	0.0174
118	0.0178	0.0003	0.0174
119	0.0179	0.0003	0.0176
120	0.0180	0.0003	0.0177
121	0.0182	0.0003	0.0178
122	0.0182	0.0003	0.0179
123	0.0184	0.0003	0.0181
124	0.0185	0.0003	0.0182
125	0.0187	0.0003	0.0183
126	0.0188	0.0003	0.0184
127	0.0189	0.0003	0.0186
128	0.0190	0.0003	0.0187
129	0.0192	0.0003	0.0189
130	0.0193	0.0003	0.0190
131	0.0195	0.0003	0.0192
132	0.0196	0.0003	0.0193
133	0.0198	0.0003	0.0195
134	0.0199	0.0003	0.0196
135	0.0201	0.0003	0.0198
136	0.0203	0.0003	0.0199
137	0.0205	0.0003	0.0202
138	0.0206	0.0003	0.0203
139	0.0209	0.0003	0.0205
140	0.0210	0.0003	0.0206
141	0.0212	0.0003	0.0209
142	0.0214	0.0003	0.0210
143	0.0216	0.0003	0.0213
144	0.0218	0.0003	0.0215
145	0.0153	0.0003	0.0150
146	0.0155	0.0003	0.0151
147	0.0158	0.0003	0.0154
148	0.0159	0.0003	0.0156

149	0.0162	0.0003	0.0159
150	0.0164	0.0003	0.0161
151	0.0167	0.0003	0.0164
152	0.0169	0.0003	0.0166
153	0.0172	0.0003	0.0169
154	0.0174	0.0003	0.0171
155	0.0178	0.0003	0.0175
156	0.0180	0.0003	0.0177
157	0.0185	0.0003	0.0181
158	0.0187	0.0003	0.0184
159	0.0192	0.0003	0.0188
160	0.0194	0.0003	0.0191
161	0.0199	0.0003	0.0196
162	0.0202	0.0003	0.0199
163	0.0208	0.0003	0.0204
164	0.0211	0.0003	0.0207
165	0.0217	0.0003	0.0214
166	0.0221	0.0003	0.0217
167	0.0228	0.0003	0.0224
168	0.0232	0.0003	0.0228
169	0.0240	0.0003	0.0237
170	0.0244	0.0003	0.0241
171	0.0254	0.0003	0.0250
172	0.0259	0.0003	0.0256
173	0.0270	0.0003	0.0267
174	0.0276	0.0003	0.0273
175	0.0289	0.0003	0.0286
176	0.0296	0.0003	0.0293
177	0.0312	0.0003	0.0309
178	0.0321	0.0003	0.0318
179	0.0341	0.0003	0.0337
180	0.0352	0.0003	0.0348
181	0.0377	0.0003	0.0373
182	0.0391	0.0003	0.0388
183	0.0425	0.0003	0.0422
184	0.0445	0.0003	0.0441
185	0.0544	0.0003	0.0541
186	0.0574	0.0003	0.0571
187	0.0652	0.0003	0.0649
188	0.0703	0.0003	0.0700
189	0.0847	0.0003	0.0844
190	0.0957	0.0003	0.0953
191	0.1367	0.0003	0.1364
192	0.1880	0.0003	0.1877
193	0.5884	0.0003	0.5881
194	0.1114	0.0003	0.1110
195	0.0766	0.0003	0.0763
196	0.0610	0.0003	0.0607
197	0.0467	0.0003	0.0464
198	0.0407	0.0003	0.0404
199	0.0364	0.0003	0.0360
200	0.0330	0.0003	0.0327
201	0.0304	0.0003	0.0301
202	0.0282	0.0003	0.0279
203	0.0264	0.0003	0.0261
204	0.0249	0.0003	0.0246
205	0.0236	0.0003	0.0232
206	0.0224	0.0003	0.0221
207	0.0214	0.0003	0.0211
208	0.0205	0.0003	0.0201
209	0.0197	0.0003	0.0193
210	0.0189	0.0003	0.0186
211	0.0182	0.0003	0.0179

212	0.0176	0.0003	0.0173
213	0.0171	0.0003	0.0167
214	0.0165	0.0003	0.0162
215	0.0161	0.0003	0.0157
216	0.0156	0.0003	0.0153
217	0.0219	0.0003	0.0216
218	0.0215	0.0003	0.0212
219	0.0211	0.0003	0.0208
220	0.0207	0.0003	0.0204
221	0.0204	0.0003	0.0200
222	0.0200	0.0003	0.0197
223	0.0197	0.0003	0.0194
224	0.0194	0.0003	0.0191
225	0.0191	0.0003	0.0188
226	0.0188	0.0003	0.0185
227	0.0186	0.0003	0.0182
228	0.0183	0.0003	0.0180
229	0.0181	0.0003	0.0177
230	0.0178	0.0003	0.0175
231	0.0176	0.0003	0.0173
232	0.0174	0.0003	0.0171
233	0.0172	0.0003	0.0169
234	0.0170	0.0003	0.0167
235	0.0168	0.0003	0.0165
236	0.0166	0.0003	0.0163
237	0.0164	0.0003	0.0161
238	0.0163	0.0003	0.0159
239	0.0161	0.0003	0.0158
240	0.0159	0.0003	0.0156
241	0.0158	0.0003	0.0154
242	0.0156	0.0003	0.0153
243	0.0155	0.0003	0.0151
244	0.0153	0.0003	0.0150
245	0.0152	0.0003	0.0148
246	0.0150	0.0003	0.0147
247	0.0149	0.0003	0.0146
248	0.0148	0.0003	0.0144
249	0.0146	0.0003	0.0143
250	0.0145	0.0003	0.0142
251	0.0144	0.0003	0.0141
252	0.0143	0.0003	0.0139
253	0.0142	0.0003	0.0138
254	0.0141	0.0003	0.0137
255	0.0139	0.0003	0.0136
256	0.0138	0.0003	0.0135
257	0.0137	0.0003	0.0134
258	0.0136	0.0003	0.0133
259	0.0135	0.0003	0.0132
260	0.0134	0.0003	0.0131
261	0.0133	0.0003	0.0130
262	0.0133	0.0003	0.0129
263	0.0132	0.0003	0.0128
264	0.0131	0.0003	0.0127
265	0.0130	0.0003	0.0127
266	0.0129	0.0003	0.0126
267	0.0128	0.0003	0.0125
268	0.0127	0.0003	0.0124
269	0.0127	0.0003	0.0123
270	0.0126	0.0003	0.0122
271	0.0125	0.0003	0.0122
272	0.0124	0.0003	0.0121
273	0.0123	0.0003	0.0120
274	0.0123	0.0003	0.0119

```
275                0.0122            0.0003              0.0119
276                0.0121            0.0003              0.0118
277                0.0121            0.0003              0.0117
278                0.0120            0.0003              0.0117
279                0.0119            0.0003              0.0116
280                0.0119            0.0003              0.0115
281                0.0118            0.0003              0.0115
282                0.0117            0.0003              0.0114
283                0.0117            0.0003              0.0113
284                0.0116            0.0003              0.0113
285                0.0115            0.0003              0.0112
286                0.0115            0.0003              0.0112
287                0.0114            0.0003              0.0111
288                0.0114            0.0003              0.0110
--------------------------------------------------------------------
--------------------------------------------------------------------
Total soil rain loss =      0.10(In)
Total effective rainfall =      6.16(In)
Peak flow rate in flood hydrograph =      5.84(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       0.02  Q          |         |         |         |
  0+10      0.0008       0.09  Q          |         |         |         |
  0+15      0.0019       0.16  Q          |         |         |         |
  0+20      0.0031       0.18  Q          |         |         |         |
  0+25      0.0044       0.19  Q          |         |         |         |
  0+30      0.0058       0.20  Q          |         |         |         |
  0+35      0.0072       0.20  Q          |         |         |         |
  0+40      0.0086       0.20  Q          |         |         |         |
  0+45      0.0100       0.21  Q          |         |         |         |
  0+50      0.0115       0.21  Q          |         |         |         |
  0+55      0.0129       0.21  Q          |         |         |         |
  1+ 0      0.0144       0.21  Q          |         |         |         |
  1+ 5      0.0158       0.21  Q          |         |         |         |
  1+10      0.0173       0.21  Q          |         |         |         |
  1+15      0.0188       0.21  Q          |         |         |         |
  1+20      0.0203       0.21  QV         |         |         |         |
  1+25      0.0217       0.21  QV         |         |         |         |
  1+30      0.0232       0.22  QV         |         |         |         |
  1+35      0.0247       0.22  QV         |         |         |         |
  1+40      0.0262       0.22  QV         |         |         |         |
  1+45      0.0277       0.22  QV         |         |         |         |
  1+50      0.0292       0.22  QV         |         |         |         |
  1+55      0.0307       0.22  QV         |         |         |         |
  2+ 0      0.0322       0.22  QV         |         |         |         |
  2+ 5      0.0337       0.22  QV         |         |         |         |
  2+10      0.0352       0.22  QV         |         |         |         |
  2+15      0.0368       0.22  QV         |         |         |         |
  2+20      0.0383       0.22  QV         |         |         |         |
  2+25      0.0398       0.22  QV         |         |         |         |
  2+30      0.0414       0.22  Q V        |         |         |         |
  2+35      0.0429       0.22  Q V        |         |         |         |
  2+40      0.0444       0.22  Q V        |         |         |         |
  2+45      0.0460       0.23  Q V        |         |         |         |
  2+50      0.0475       0.23  Q V        |         |         |         |
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2+55       0.0491      0.23  Q V       |         |         |         |
3+ 0       0.0507      0.23  Q V       |         |         |         |
3+ 5       0.0522      0.23  Q V       |         |         |         |
3+10       0.0538      0.23  Q V       |         |         |         |
3+15       0.0554      0.23  Q V       |         |         |         |
3+20       0.0570      0.23  Q V       |         |         |         |
3+25       0.0586      0.23  Q V       |         |         |         |
3+30       0.0602      0.23  Q  V      |         |         |         |
3+35       0.0618      0.23  Q  V      |         |         |         |
3+40       0.0634      0.23  Q  V      |         |         |         |
3+45       0.0650      0.23  Q  V      |         |         |         |
3+50       0.0666      0.23  Q  V      |         |         |         |
3+55       0.0682      0.24  Q  V      |         |         |         |
4+ 0       0.0698      0.24  Q  V      |         |         |         |
4+ 5       0.0715      0.24  Q  V      |         |         |         |
4+10       0.0731      0.24  Q  V      |         |         |         |
4+15       0.0748      0.24  Q  V      |         |         |         |
4+20       0.0764      0.24  Q  V      |         |         |         |
4+25       0.0781      0.24  Q  V      |         |         |         |
4+30       0.0797      0.24  Q  V      |         |         |         |
4+35       0.0814      0.24  Q   V     |         |         |         |
4+40       0.0831      0.24  Q   V     |         |         |         |
4+45       0.0847      0.24  Q   V     |         |         |         |
4+50       0.0864      0.24  Q   V     |         |         |         |
4+55       0.0881      0.25  Q   V     |         |         |         |
5+ 0       0.0898      0.25  Q   V     |         |         |         |
5+ 5       0.0915      0.25  Q   V     |         |         |         |
5+10       0.0932      0.25  Q   V     |         |         |         |
5+15       0.0949      0.25  Q   V     |         |         |         |
5+20       0.0966      0.25  Q   V     |         |         |         |
5+25       0.0984      0.25  |Q  V     |         |         |         |
5+30       0.1001      0.25  |Q   V    |         |         |         |
5+35       0.1018      0.25  |Q   V    |         |         |         |
5+40       0.1036      0.25  |Q   V    |         |         |         |
5+45       0.1053      0.25  |Q   V    |         |         |         |
5+50       0.1071      0.26  |Q   V    |         |         |         |
5+55       0.1089      0.26  |Q   V    |         |         |         |
6+ 0       0.1107      0.26  |Q   V    |         |         |         |
6+ 5       0.1124      0.26  |Q   V    |         |         |         |
6+10       0.1142      0.26  |Q   V    |         |         |         |
6+15       0.1160      0.26  |Q   V    |         |         |         |
6+20       0.1178      0.26  |Q   V    |         |         |         |
6+25       0.1196      0.26  |Q   V    |         |         |         |
6+30       0.1215      0.26  |Q    V   |         |         |         |
6+35       0.1233      0.27  |Q    V   |         |         |         |
6+40       0.1251      0.27  |Q    V   |         |         |         |
6+45       0.1270      0.27  |Q    V   |         |         |         |
6+50       0.1288      0.27  |Q    V   |         |         |         |
6+55       0.1307      0.27  |Q    V   |         |         |         |
7+ 0       0.1325      0.27  |Q    V   |         |         |         |
7+ 5       0.1344      0.27  |Q    V   |         |         |         |
7+10       0.1363      0.27  |Q    V   |         |         |         |
7+15       0.1382      0.27  |Q    V   |         |         |         |
7+20       0.1401      0.28  |Q     V  |         |         |         |
7+25       0.1420      0.28  |Q     V  |         |         |         |
7+30       0.1439      0.28  |Q     V  |         |         |         |
7+35       0.1458      0.28  |Q     V  |         |         |         |
7+40       0.1478      0.28  |Q     V  |         |         |         |
7+45       0.1497      0.28  |Q     V  |         |         |         |
7+50       0.1517      0.28  |Q     V  |         |         |         |
7+55       0.1536      0.29  |Q     V  |         |         |         |
8+ 0       0.1556      0.29  |Q     V  |         |         |         |
8+ 5       0.1576      0.29  |Q     V  |         |         |         |
```

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  8+10      0.1596      0.29  |Q     V  |         |         |         |
  8+15      0.1616      0.29  |Q      V |         |         |         |
  8+20      0.1636      0.29  |Q      V |         |         |         |
  8+25      0.1656      0.29  |Q      V |         |         |         |
  8+30      0.1677      0.30  |Q      V |         |         |         |
  8+35      0.1697      0.30  |Q      V |         |         |         |
  8+40      0.1718      0.30  |Q      V |         |         |         |
  8+45      0.1739      0.30  |Q      V |         |         |         |
  8+50      0.1759      0.30  |Q      V |         |         |         |
  8+55      0.1780      0.30  |Q      V |         |         |         |
  9+ 0      0.1801      0.31  |Q       V|         |         |         |
  9+ 5      0.1822      0.31  |Q       V|         |         |         |
  9+10      0.1844      0.31  |Q       V|         |         |         |
  9+15      0.1865      0.31  |Q       V|         |         |         |
  9+20      0.1887      0.31  |Q       V|         |         |         |
  9+25      0.1908      0.31  |Q       V|         |         |         |
  9+30      0.1930      0.32  |Q       V|         |         |         |
  9+35      0.1952      0.32  |Q       V|         |         |         |
  9+40      0.1974      0.32  |Q       V|         |         |         |
  9+45      0.1996      0.32  |Q       V|         |         |         |
  9+50      0.2019      0.32  |Q        V         |         |         |
  9+55      0.2041      0.33  |Q        V         |         |         |
 10+ 0      0.2064      0.33  |Q        V         |         |         |
 10+ 5      0.2086      0.33  |Q        V         |         |         |
 10+10      0.2109      0.33  |Q        V         |         |         |
 10+15      0.2132      0.34  |Q        V         |         |         |
 10+20      0.2156      0.34  |Q        V         |         |         |
 10+25      0.2179      0.34  |Q        V         |         |         |
 10+30      0.2203      0.34  |Q        |V        |         |         |
 10+35      0.2226      0.34  |Q        |V        |         |         |
 10+40      0.2250      0.35  |Q        |V        |         |         |
 10+45      0.2274      0.35  |Q        |V        |         |         |
 10+50      0.2299      0.35  |Q        |V        |         |         |
 10+55      0.2323      0.35  |Q        |V        |         |         |
 11+ 0      0.2348      0.36  |Q        |V        |         |         |
 11+ 5      0.2373      0.36  |Q        |V        |         |         |
 11+10      0.2398      0.36  |Q        | V       |         |         |
 11+15      0.2423      0.37  |Q        | V       |         |         |
 11+20      0.2448      0.37  |Q        | V       |         |         |
 11+25      0.2474      0.37  |Q        | V       |         |         |
 11+30      0.2500      0.38  |Q        | V       |         |         |
 11+35      0.2526      0.38  |Q        | V       |         |         |
 11+40      0.2552      0.38  |Q        | V       |         |         |
 11+45      0.2579      0.39  |Q        | V       |         |         |
 11+50      0.2606      0.39  |Q        |  V      |         |         |
 11+55      0.2633      0.39  |Q        |  V      |         |         |
 12+ 0      0.2660      0.40  |Q        |  V      |         |         |
 12+ 5      0.2687      0.39  |Q        |  V      |         |         |
 12+10      0.2711      0.35  |Q        |  V      |         |         |
 12+15      0.2732      0.31  |Q        |  V      |         |         |
 12+20      0.2753      0.30  |Q        |  V      |         |         |
 12+25      0.2773      0.30  |Q        |  V      |         |         |
 12+30      0.2794      0.30  |Q        |  V      |         |         |
 12+35      0.2815      0.30  |Q        |   V     |         |         |
 12+40      0.2836      0.31  |Q        |   V     |         |         |
 12+45      0.2857      0.31  |Q        |   V     |         |         |
 12+50      0.2879      0.31  |Q        |   V     |         |         |
 12+55      0.2901      0.32  |Q        |   V     |         |         |
 13+ 0      0.2923      0.32  |Q        |   V     |         |         |
 13+ 5      0.2946      0.33  |Q        |   V     |         |         |
 13+10      0.2969      0.33  |Q        |   V     |         |         |
 13+15      0.2992      0.34  |Q        |   V     |         |         |
 13+20      0.3016      0.35  |Q        |    V    |         |         |
```

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13+25    0.3040    0.35  |Q        |    V    |         |         |
13+30    0.3065    0.36  |Q        |    V    |         |         |
13+35    0.3091    0.37  |Q        |    V    |         |         |
13+40    0.3116    0.38  |Q        |    V    |         |         |
13+45    0.3143    0.38  |Q        |    V    |         |         |
13+50    0.3170    0.39  |Q        |    V    |         |         |
13+55    0.3198    0.40  |Q        |     V   |         |         |
14+ 0    0.3226    0.41  |Q        |     V   |         |         |
14+ 5    0.3255    0.42  |Q        |     V   |         |         |
14+10    0.3285    0.43  |Q        |     V   |         |         |
14+15    0.3315    0.44  |Q        |     V   |         |         |
14+20    0.3347    0.46  |Q        |     V   |         |         |
14+25    0.3379    0.47  |Q        |     V   |         |         |
14+30    0.3412    0.48  |Q        |      V  |         |         |
14+35    0.3447    0.50  | Q       |      V  |         |         |
14+40    0.3482    0.52  | Q       |      V  |         |         |
14+45    0.3519    0.54  | Q       |      V  |         |         |
14+50    0.3558    0.56  | Q       |      V  |         |         |
14+55    0.3598    0.58  | Q       |       V |         |         |
15+ 0    0.3639    0.61  | Q       |       V |         |         |
15+ 5    0.3683    0.63  | Q       |       V |         |         |
15+10    0.3729    0.67  | Q       |       V |         |         |
15+15    0.3777    0.70  | Q       |       V |         |         |
15+20    0.3828    0.74  | Q       |        V|         |         |
15+25    0.3883    0.80  |  Q      |        V|         |         |
15+30    0.3945    0.90  |  Q      |        V|         |         |
15+35    0.4014    1.00  |  Q      |         V         |         |
15+40    0.4090    1.10  |   Q     |         V         |         |
15+45    0.4174    1.23  |   Q     |         V         |         |
15+50    0.4271    1.40  |    Q    |         |V        |         |
15+55    0.4384    1.65  |     Q   |         |V        |         |
16+ 0    0.4530    2.12  |       Q |         | V       |         |
16+ 5    0.4762    3.37  |         |  Q      |  V      |         |
16+10    0.5164    5.84  |         |         |  Q V    |         |
16+15    0.5511    5.04  |         |         Q      V  |         |
16+20    0.5705    2.80  |         |Q        |       V |         |
16+25    0.5831    1.84  |      Q  |         |        V|         |
16+30    0.5928    1.41  |    Q    |         |        V|         |
16+35    0.6005    1.11  |   Q     |         |         V         |
16+40    0.6069    0.94  |  Q      |         |         V         |
16+45    0.6126    0.82  |  Q      |         |         V         |
16+50    0.6176    0.73  | Q       |         |         V         |
16+55    0.6221    0.65  | Q       |         |         |V        |
17+ 0    0.6261    0.59  | Q       |         |         |V        |
17+ 5    0.6298    0.53  | Q       |         |         |V        |
17+10    0.6331    0.48  |Q        |         |         |V        |
17+15    0.6361    0.45  |Q        |         |         |V        |
17+20    0.6391    0.42  |Q        |         |         |V        |
17+25    0.6418    0.40  |Q        |         |         | V       |
17+30    0.6445    0.38  |Q        |         |         | V       |
17+35    0.6470    0.37  |Q        |         |         | V       |
17+40    0.6494    0.35  |Q        |         |         | V       |
17+45    0.6518    0.34  |Q        |         |         | V       |
17+50    0.6540    0.33  |Q        |         |         | V       |
17+55    0.6562    0.32  |Q        |         |         | V       |
18+ 0    0.6583    0.31  |Q        |         |         | V       |
18+ 5    0.6604    0.31  |Q        |         |         |  V      |
18+10    0.6628    0.35  |Q        |         |         |  V      |
18+15    0.6654    0.38  |Q        |         |         |  V      |
18+20    0.6681    0.38  |Q        |         |         |  V      |
18+25    0.6707    0.38  |Q        |         |         |  V      |
18+30    0.6733    0.38  |Q        |         |         |  V      |
18+35    0.6759    0.37  |Q        |         |         |  V      |
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18+40       0.6784      0.37  |Q        |         |         |  V      |
18+45       0.6809      0.36  |Q        |         |         |   V     |
18+50       0.6834      0.36  |Q        |         |         |   V     |
18+55       0.6858      0.35  |Q        |         |         |   V     |
19+ 0       0.6882      0.35  |Q        |         |         |   V     |
19+ 5       0.6906      0.34  |Q        |         |         |   V     |
19+10       0.6929      0.34  |Q        |         |         |   V     |
19+15       0.6952      0.33  |Q        |         |         |   V     |
19+20       0.6975      0.33  |Q        |         |         |   V     |
19+25       0.6998      0.33  |Q        |         |         |    V    |
19+30       0.7020      0.32  |Q        |         |         |    V    |
19+35       0.7042      0.32  |Q        |         |         |    V    |
19+40       0.7063      0.31  |Q        |         |         |    V    |
19+45       0.7085      0.31  |Q        |         |         |    V    |
19+50       0.7106      0.31  |Q        |         |         |    V    |
19+55       0.7127      0.30  |Q        |         |         |    V    |
20+ 0       0.7147      0.30  |Q        |         |         |    V    |
20+ 5       0.7168      0.30  |Q        |         |         |    V    |
20+10       0.7188      0.29  |Q        |         |         |    V    |
20+15       0.7208      0.29  |Q        |         |         |     V   |
20+20       0.7228      0.29  |Q        |         |         |     V   |
20+25       0.7247      0.28  |Q        |         |         |     V   |
20+30       0.7267      0.28  |Q        |         |         |     V   |
20+35       0.7286      0.28  |Q        |         |         |     V   |
20+40       0.7305      0.28  |Q        |         |         |     V   |
20+45       0.7324      0.27  |Q        |         |         |     V   |
20+50       0.7343      0.27  |Q        |         |         |     V   |
20+55       0.7361      0.27  |Q        |         |         |     V   |
21+ 0       0.7380      0.27  |Q        |         |         |     V   |
21+ 5       0.7398      0.26  |Q        |         |         |      V  |
21+10       0.7416      0.26  |Q        |         |         |      V  |
21+15       0.7434      0.26  |Q        |         |         |      V  |
21+20       0.7452      0.26  |Q        |         |         |      V  |
21+25       0.7469      0.26  |Q        |         |         |      V  |
21+30       0.7487      0.25  |Q        |         |         |      V  |
21+35       0.7504      0.25  |Q        |         |         |      V  |
21+40       0.7522      0.25  |Q        |         |         |      V  |
21+45       0.7539      0.25  Q         |         |         |      V  |
21+50       0.7556      0.25  Q         |         |         |      V  |
21+55       0.7573      0.25  Q         |         |         |      V  |
22+ 0       0.7589      0.24  Q         |         |         |      V  |
22+ 5       0.7606      0.24  Q         |         |         |       V |
22+10       0.7623      0.24  Q         |         |         |       V |
22+15       0.7639      0.24  Q         |         |         |       V |
22+20       0.7655      0.24  Q         |         |         |       V |
22+25       0.7671      0.24  Q         |         |         |       V |
22+30       0.7688      0.23  Q         |         |         |       V |
22+35       0.7703      0.23  Q         |         |         |       V |
22+40       0.7719      0.23  Q         |         |         |       V |
22+45       0.7735      0.23  Q         |         |         |       V |
22+50       0.7751      0.23  Q         |         |         |       V |
22+55       0.7766      0.23  Q         |         |         |       V |
23+ 0       0.7782      0.22  Q         |         |         |       V |
23+ 5       0.7797      0.22  Q         |         |         |        V|
23+10       0.7813      0.22  Q         |         |         |        V|
23+15       0.7828      0.22  Q         |         |         |        V|
23+20       0.7843      0.22  Q         |         |         |        V|
23+25       0.7858      0.22  Q         |         |         |        V|
23+30       0.7873      0.22  Q         |         |         |        V|
23+35       0.7888      0.22  Q         |         |         |        V|
23+40       0.7903      0.21  Q         |         |         |        V|
23+45       0.7917      0.21  Q         |         |         |        V|
23+50       0.7932      0.21  Q         |         |         |        V|
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23+55	0.7946	0.21	Q	|	|	|	V|
24+ 0	0.7961	0.21	Q	|	|	|	V|
24+ 5	0.7974	0.19	Q	|	|	|	V|
24+10	0.7982	0.12	Q	|	|	|	V|
24+15	0.7985	0.05	Q	|	|	|	V|
24+20	0.7987	0.03	Q	|	|	|	V|
24+25	0.7988	0.02	Q	|	|	|	V|
24+30	0.7989	0.01	Q	|	|	|	V|
24+35	0.7989	0.01	Q	|	|	|	V|
24+40	0.7990	0.01	Q	|	|	|	V|
24+45	0.7990	0.00	Q	|	|	|	V|
24+50	0.7990	0.00	Q	|	|	|	V|
24+55	0.7990	0.00	Q	|	|	|	V|
25+ 0	0.7990	0.00	Q	|	|	|	V|

NorCal Engineering
Soils and Geotechnical Consultants
10641 Humbolt Street Los Alamitos, CA 90720
(562) 799-9469 Fax (562) 799-9459

April 29, 2015 Project Number 18053-15

Newcastle Partners, Inc.
4740 Green River Road, Suite 118
Corona, California 92880

Attn.: Mr. Jackson Smith

RE: **Soil Infiltration Study** - Proposed Industrial Warehouse Development - Located at the Southwest Corner of Waterman Avenue and Dumas Drive, in the City of San Bernardino, California

Dear Mr. Smith:

Pursuant to your request, this firm has performed a Soils Infiltration Study for the above referenced project in accordance with your approval of proposal dated March 31, 2015. The purpose of this study is to evaluate the feasibility of an on-site drainage disposal system for the proposed industrial warehouse development. The scope of work included the following: 1) site reconnaissance; 2) subsurface geotechnical exploration; 3) double ring infiltration testing; 4) engineering analysis of field and laboratory data; and 5) preparation of a report.

It is proposed to construct an industrial warehouse development consisting of a concrete tilt-up building totaling 562,763 square feet on the 25-acre subject property as shown on the attached Site Plan. The proposed concrete tilt-up building will be supported by a conventional slab-on-grade foundation system with perimeter-spread footings and isolated interior footings. Other improvements will consist of new concrete and/or asphalt pavement and hardscape. It is assumed that the proposed grading for the development will include minor cut and fill procedures. The proposed on-site drainage disposal system will consist of shallow detention basin situated along the south property perimeter.

Site Description

The subject property is located at the southwest corner of Waterman Avenue and Dumas Drive, in the City of San Bernardino. The generally rectangular shaped parcel is elongated in an east to west direction with topography of the relatively level property descending gradually from north to south on the order of a few feet. A majority of the site is currently undeveloped land covered with a low to moderate growth of vegetation cover consisting of natural grasses and weeds. A few small residences are situated along the frontage of Dumas Drive.

Field Exploration

The testing was conducted on April 20, 2015 and consisted of using the double ring infiltrometer at three (3) locations to determine the infiltration rate of the proposed drainage disposal system. The location of these tests is shown on the attached Site Plan. These test locations were excavated by a backhoe to depths ranging between 5 and 10 feet below ground surface (bgs). No caving occurred to the depth of these test excavations and no groundwater was encountered.

Detailed description of the subsurface soils is shown on the attached test excavations logs in Appendix B. In general, the site was found to be underlain by alluvial deposits consisting of light grey, sandy SILT. These soils were noted to be firm and damp to moist.

Infiltration Test Procedure and Results

The infiltration test consisted of the double ring infiltration test per ASTM Method D 3385. "The double ring infiltrometer method consists of driving two open cylinders, one inside the other, into the ground, partially filling the ring with water or other liquid, and then maintaining the liquid at a constant level. The volume of liquid added to the inner ring, to maintain the liquid level constant is the measure of the volume of liquid that infiltrates the soil.

The volume infiltrated during timed intervals is converted to an incremental infiltration velocity, usually expressed in centimeters per hour or inches per hour and plotted verses elapsed time. The maximum-steady state or average incremental infiltration velocity, depending on the purpose/application of the test is equivalent to the infiltration rate".

Along the bottom of the infiltration test pits, dual infiltration rings were inserted 7 cm vertically into the soil by an impact-absorbing hammer. Guelph tubes, also referred to as bubblers were installed to maintain constant water level in each of the rings. Water levels were maintained at a constant level in both the inner ring and annular space between rings throughout the test, to prevent flow of water from one ring to the other.

The volume of liquid used during each measured time interval was converted into an incremental infiltration velocity of both the inner ring in the annular space using the following equations:

For the inner ring calculated as follows:

$Vir = \Delta Vir / (Air \Delta t)$

where:

Vir = inner ring incremental infiltration velocity, cm/hr

ΔVir = volume of water used during time interval to maintain constant head in the inner ring, cm^3

Air = internal area of the inner ting, cm^2

Δt = time interval, hr

The last reading was used for design purposes in each of the test pits. The testing data sheets are attached in Appendix B and summarized in the table below. These excavations were immediately backfilled with the excavated soils and compacted. The double ring infiltration results are shown in Appendix B.

Test No.	Depth (feet bgs)	Soil Type	Infiltration Rate (cm/hr)	Infiltration Rate (in/hr)
1	5'	Sandy Silt	6.0	2.4
2	10'	Sandy Silt	19.3	77.2
3	7.5'	Sandy Silt	6.3	2.5

Groundwater Information

Our firm had recently performed a "Geotechnical Engineering Investigation" dated April 30, 2015 for the subject property and excavated ten (10) exploratory trenches to depths ranging between 5 and 15 feet and an exploratory boring to 50 feet. Groundwater was encountered at a depth of 40 feet below ground surface. The exposed sidewalls of our trenches and borings did not reveal any evidence (mottling, etc.) that groundwater had been near the surface.

Discussion of Results

The use of an on-site disposal system by means of a shallow infiltration system appears to be geotechnically feasible for future development. Based upon the results of our testing, the subsurface soils encountered in the proposed on-site drainage disposal system shall utilize a conservative design rate of 2.5 in/hr. All systems must meet the latest city and/or county specifications and California Regional Water Quality Control Board (CRWQCB) requirements.

It is our opinion that the site is suitable for stormwater infiltration without increasing the potential of settlement of proposed and existing structures located either on or adjacent to the subject site. In addition, the potential for hydro-consolidation and the susceptibility for any ground settlements are considered very low. Foundations shall be set back a minimum distance of 10 feet from the drainage disposal system and the bottom of footing shall be a minimum of 10 feet from the expected zone of saturation. The boundary of the zone of saturation may be assumed to project downward from the top of the permeable portion of the disposal system at an inclination of 1 to 1 or flatter, as determined by the soils engineer.

Closure

The recommendations and conclusions contained in this report are based upon the soil conditions uncovered in our test excavations. No warranty of the soil condition between our excavations is implied. NorCal Engineering should be notified for possible further recommendations if unexpected to unfavorable conditions are encountered during construction phase.

This firm should have the opportunity to review the final plans to verify that all our recommendations are incorporated. This report and all conclusions are subject to the review of the controlling authorities for the project. Our representative should be present during the grading operations and construction phase to certify that such recommendations are complied within the field.

This geotechnical investigation has been conducted in a manner consistent with the level of care and skill exercised by members of our profession currently practicing under similar conditions in the Southern California area. All work was performed under the supervision of the Geotechnical Engineer. No other warranty, expressed or implied is made. No other warranty, expressed or implied is made.

We appreciate this opportunity to be of service to you. If you have any further questions, please do not hesitate to contact the undersigned.

Respectfully submitted,
NORCAL ENGINEERING

Keith D. Tucker
Project Engineer
R.G.E. 841

REGISTERED PROFESSIONAL ENGINEER
KEITH D. TUCKER
No. 841
Exp. 12/31/16
GEOTECHNICAL
STATE OF CALIFORNIA

Scott D. Spensiero
Project Manager

List of Appendices
(in order of appearance)

Appendix A

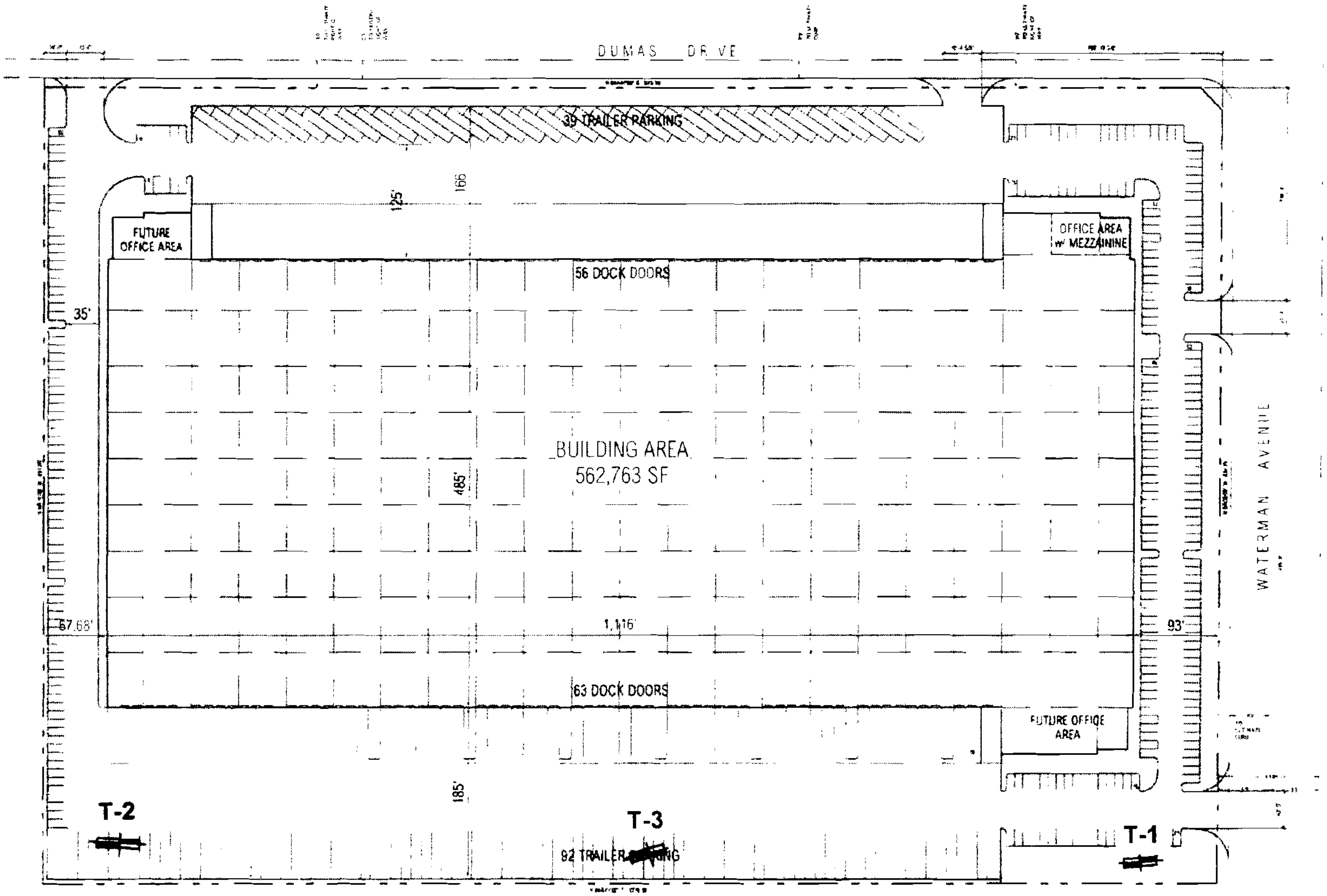
Site Plan

Appendix B

Log of Trenches T-1 to T-3

Field Test Data

Appendix A



1 INCH = 100 FEET

NorCal Engineering
SOILS AND GEOTECHNICAL CONSULTANTS

PROJECT 18053-15	**DATE** APRIL 2015

SITE PLAN

Appendix B

MAJOR DIVISION			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL. SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION <u>RETAINED</u> ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS <u>LARGER</u> THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVEL-LY SANDS, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION <u>PASSING</u> ON NO. 4 SIEVE	SANDS WITH FINE (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS <u>SMALLER</u> THAN NO 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT <u>GREATER</u> THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

UNIFIED SOIL CLASSIFICATION SYSTEM

KEY:

- Indicates 2.5-inch Inside Diameter. Ring Sample.
- Indicates 2-inch OD Split Spoon Sample (SPT).
- Indicates Shelby Tube Sample.
- Indicates No Recovery.
- Indicates SPT with 140# Hammer 30 in. Drop.
- Indicates Bulk Sample.
- Indicates Small Bag Sample.
- Indicates Non-Standard
- Indicates Core Run.

COMPONENT PROPORTIONS

DESCRIPTIVE TERMS	RANGE OF PROPORTION
Trace	1 - 5%
Few	5 - 10%
Little	10 - 20%
Some	20 - 35%
And	35 - 50%

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5mm) to No. 200 (0.074mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074 mm)

MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
DAMP	Some perceptible moisture; below optimum
MOIST	No visible water; near optimum moisture content
WET	Visible free water, usually soil is below water table.

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N -VALUE

COHESIONLESS SOILS		COHESIVE SOILS		
Density	N (blows/ft)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	Very Soft	0 to 2	< 250
Loose	4 to 10	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	Very Stiff	15 to 30	2000 - 4000
		Hard	over 30	> 4000

Newcastle Partners 18053-15	Log of Trench T-1

Boring Location: SWC Waterman & Dumas	
Date of Drilling: 4/20/15	Groundwater Depth: None Encountered
Drilling Method: Backhoe	
Hammer Weight:	Drop:
Surface Elevation: Not Measured	

Depth (feet)	Lith-ology		Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: % Passing 200 Sieve
0		GWT not encountered	FILL Sandy SILT Light grey, soft, damp					
			NATURAL Sandy SILT Light grey, firm, damp					
5			Boring completed at depth of 5'					
10								
15								
20								
25								
30								
35								

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Newcastle Partners 18053-15	Log of Trench T-2

Boring Location: SWC Waterman & Dumas	
Date of Drilling: 4/20/15	Groundwater Depth: None Encountered
Drilling Method: Backhoe	
Hammer Weight:	Drop:
Surface Elevation: Not Measured	

Depth (feet)	Lithology	Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: % Passing 200 Sieve
0		FILL Sandy SILT Light grey, soft, damp					
	GWT not encountered	NATURAL Sandy SILT Light grey, firm, damp					
5							
		Boring completed at depth of 7.5'					
10							
15							
20							
25							
30							
35							

Newcastle Partners
18053-15

Log of Trench T-3

Boring Location: SWC Waterman & Dumas	
Date of Drilling: 4/20/15	**Groundwater Depth: None Encountered**
Drilling Method: Backhoe	
Hammer Weight:	**Drop:**
Surface Elevation: Not Measured	

Depth (feet)	Lith-ology		Material Description	Samples: Type	Samples: Blow Counts	Laboratory: Moisture	Laboratory: Dry Density	Laboratory: % Passing 200 Sieve
0		GWT not encountered	FILL Sandy SILT Light grey, soft, damp					
			NATURAL Sandy SILT Light grey, firm, damp					
5								
10			Boring completed at depth of 10'					
15								
20								
25								
30								
35								

NorCal Engineering

HORCAL ENGINEERING

SOILS AND GEOTECHNICAL CONSULTANTS

Project:	**Newcastle Partners**
Project No:	18053-15
Date:	4/20/15
Test No.	T1
Depth:	5'
Tested By:	

	TIME (hr/min)	CHANGE TIME (min)	CUMULATIVE TIME (min)	INNER RING READING (cm)	INNER RING FLOW (cc)	OUTER RING READING (cm)	OUTER RING CHANGE (cm)	OUTER RING FLOW (cc)	INNER RING INF RATE (cm/hr)	OUTER RING INF RATE (cm/hr)	INNER RING INF RATE (ft/hr)
1	7:23			129.3			231.9				
	7:28	5	5	131.2	1.9		233.5	1.7			
2	7:28			131.2			233.5				
	7:33	5	10	132.4	1.2		234.7	1.2			
3	7:33			132.4			234.7				
	7:38	5	15	133.2	0.8		235.2	0.5			
4	7:38			133.2			235.2				
	7:43	5	20	133.5	0.3		236.0	0.8			
5	7:43			133.5			236.0				
	7:48	5	25	134.0	0.5		236.5	0.5			
6	7:48			134.0			236.5				
	7:53	5	30	134.5	0.5		232.0	0.5	6.0	6.0	
7	7:53			129.0			232.0				
	7:58	5	35	129.5	0.5		232.6	0.6	6.0	7.2	
8	7:58			129.5			232.6				
	8:03	5	40	130.0	0.5		233.2	0.6	6.0	7.2	
9	8:03			130.0			233.2				
	8:08	5	45	130.5	0.5		233.8	0.6	6.0	7.2	
10	8:08			130.5			233.8				
	8:13	5	50	131.0	0.5		234.4	0.6	6.0	7.2	
11	8:13			131.0			234.4				
	8:18	5	55	131.5	0.5		235.2	0.8	6.0	9.6	
12	8:18			131.5			235.2				
	8:23	5	60	132.0	0.5		235.8		6.0	---	

NORCAL ENGINEERING

SOILS AND GEOTECHNICAL CONSULTANTS

Project:	**Newcastle Partners**
Project No:	18053-15
Date:	4/20/15
Test No.	T2
Depth:	10'
Tested By:	

	TIME (hr/min)	CHANGE TIME (min)	CUMULATIVE TIME (min)	INNER RING READING (cm)	INNER RING FLOW (cc)	OUTER RING READING (cm)	OUTER RING CHANGE (cm)	OUTER RING FLOW (cc)	INNER RING INF RATE (cm/hr)	OUTER RING INF RATE (cm/hr)	INNER RING INF RATE (ft/hr)
1	8:59			135.2			258.0				
	9:00	1	1	138.3	3.1		261.2	3.2			
2	9:00			129.1			253.2				
	9:01	1	2	132.5	3.4		256.3	3.1			
3	9:01			129.8			252.4				
	9:02	1	3	133.2	3.4		255.1	2.7			
4	9:02			129.7			251.0				
	9:03	1	4	132.9	3.2		253.5	2.5			
5	9:03			132.9			253.5				
	9:04	1	5	135.3	2.4		256.8	3.3			
6	9:04			129.3			252.8				
	9:05	1	6	132.4	3.1		255.6	2.8	186	168	
7	9:05			128.0			251.4				
	9:06	1	7	131.2	3.2		254.3	2.9	192	174	
8	9:06			131.2			254.3				
	9:07	1	8	133.8	2.6		257.0	2.7	156	162	
9	9:07			130.3			253.0				
	9:08	1	9	133.7	3.4		255.8	2.8	204	168	
10	9:08			128.9			253.8				
	9:09	1	10	132.5	3.6		256.4	2.6	216	156	
11	9:09			132.5			256.4				
	9:10	1	11	135.8	3.3		259.0	2.6	198	156	
12	9:10			132.0			255.4				
	9:11	1	12	135.3	3.3		257.7	2.3	198	138	

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SOILS AND GEOTECHNICAL CONSULTANTS

Project:	Newcastle Partners
Project No:	18053-15
Date:	4/20/15
Test No.	T3
Depth:	7.5'
Tested By:	

	TIME (hr/min)	CHANGE TIME (min)	CUMULATIVE TIME (min)	INNER RING READING (cm)	INNER RING FLOW (cc)	OUTER RING READING (cm)	OUTER RING CHANGE (cm)	OUTER RING FLOW (cc)	INNER RING INF RATE (cm/hr)	OUTER RING INF RATE (cm/hr)	INNER RING INF RATE (ft/hr)
1	9:38			133.2			255.3				
	9:48	10	10	135.3	2.1		258.0	2.7			
2	9:48			129.8			251.0				
	9:58	10	20	132.0	2.2		254.0	3.0			
3	9:58			132.0			254.0				
	10:08	10	30	134.1	2.1		255.5	1.5			
4	10:08			134.1			255.5				
	10:18	10	40	135.3	1.2		257.1	1.6			
5	10:18			135.3			257.1				
	10:28	10	50	136.5	1.2		258.7	1.6			
6	10:28			130.3			252.6				
	10:38	10	60	131.9	1.6		254.3	1.7			
7	10:38			131.9			254.3				
	10:48	10	70	133.2	1.3		255.8	1.5	7.8	9.0	
8	10:48			133.2			255.8				
	10:58	10	80	134.2	1.0		257.0	1.2	6.0	7.2	
9	10:58			129.0			233.0				
	11:08	10	90	130.0	1.0		254.2	1.2	6.0	7.2	
10	11:08			130.0			254.2				
	11:18	10	100	131.0	1.0		255.6	1.4	6.0	8.4	
11	11:18			131.0			255.6				
	11:28	10	110	132.0	1.0		256.8	1.2	6.0	7.2	
12	11:28			132.0			256.8				
	11:38	10	120	133.0	1.0		258.0	1.2	6.0	7.2	