Thienes Engineering, Inc.
CIVIL ENGINEERING LAND SURVEYING

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

RIDER AND PATTERSON BUSINESS CENTER
SOUTHWEST CORNER OF RIDER STREET AND PATTESON AVENUE
RIVERSIDE COUNTY, CA

PREPARED FOR

WESTERN REALCO
500 NEWPORT CENTER DRIVE, SUITE 630
NEWPORT BEACH, CA 92660
PH. (949) 720-3787

MAY 27, 2021
REVISED: DECEMBER 7, 2021
REVISED: JULY 19, 2022
REVISED: OCTOBER 26, 2022

JOB NO. 3958

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BLVD.
LA MIRADA, CALIFORNIA 90638
(714) 521-4811

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

RIDER AND PATTERSON BUSINESS CENTER

PREPARED UNDER
THE SUPERVISION OF

10/26/2022

REINHARD STENZEL, PE DATE:
R.C.E. 56155
EXP. 12/31/22

INTRODUCTION

A: PROJECT LOCATION

The project site is located on the southeast corner of Rider Street and Patterson Avenue in unincorporated Riverside County. See following page for vicinity map.

B: STUDY PURPOSE

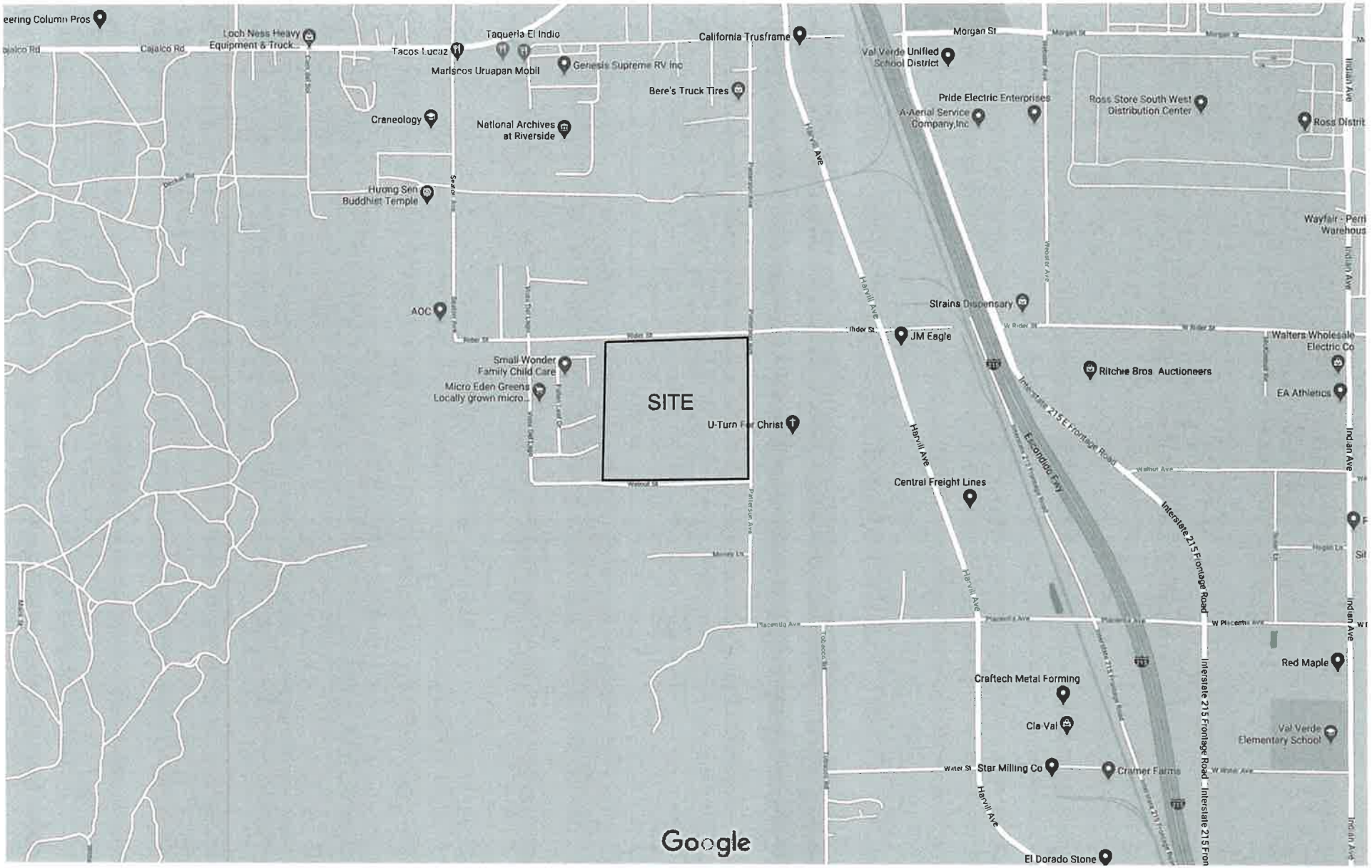
The purpose of this study is to determine the existing condition and proposed condition 100-year peak flow rates from the project site and offsite areas.

C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

Reinhard Stenzel
Brian Weil
Ricky Hwa

Google Maps



VICINITY MAP

Map data ©2021 500 ft

DISCUSSION

The project site encompasses approximately 31.52 acres. Proposed improvements include one warehouse type building with approximately 583,900 square feet. There will be truck yards located on the northerly and southerly sides of the building, plus vehicle parking on the easterly side. There will be a water quality basin at the northeast corner of the site. Landscaping is located along the perimeter of the site and smaller areas throughout the site.

A public storm drain in Rider Street will be required to drain the project site and offsite areas. The Rider Street storm drain is constructed up to Harvill Street to the east and will be extended westerly along the site frontage.

Master Drainage Plan

The June 1991 revised Perris Valley Area Master Drainage Plan (MDP) shows that the project site is tabled to Lateral H-11.1. This is a proposed storm drain system in Rider Street from Patterson Avenue (upstream limits) to Harvill Avenue. The drain continues southerly in Harvill Avenue to Lateral H-11 located at the prolongation of Walnut Avenue.

Hydrology calculations for Lateral H-11.1 indicate 5 separate subareas adding to 88.8 acres at the upstream portion of Lateral H-11.1 (Node 31). Land usage from the calculations is predominately single family 1/4 acre lots with a smaller area of single family 1.0 acre lots. The available hydrology map does not indicate the individual subareas, just the total area at Rider Street. The MDP indicates a 36" storm drain in Rider Street and a 69" storm drain in Harvill Avenue. The respective 100-year peak flow rates at Rider Street and Harvill Avenue from the MDP are 131 cfs and 168 cfs.

There was a revision to the Perris Valley Area MDP in April, 2006 by Engineering Solutions. These updates did not affect Laterals H-11 or H-11.1 See Appendix "A" for Master Drainage Plan reference material.

Existing Storm Drains

Lateral H-11, located at Harvill Avenue and Walnut Street, is constructed. Storm drain plans prepared by Albert Webb and Associates include a 60" lateral in Harvill Avenue. Huitt-Zollars plans continue the Harvill Avenue storm drain to Rider Street with a 72" storm drain. Once at Rider Street, the 72" storm drain continues westerly approximately 125'. The storm drain then transitions to a 60" pipe then immediately to a 30" storm drain that continues westerly approximately 200' to join an existing 30" in Rider Street. Plans for the upstream portion of the 30" storm drain were not available from the City or County.

There is no evidence of the Rider Street storm drain extending to the intersection of Rider Street and Patterson Avenue. The existing 30" storm drain does not have the capacity to convey the MDP peak flow rates.

See Appendix "A" for reference storm drain plans.

FEMA Flood Zone

The project site is located within FEMA Flood Zone X (unshaded) per Map No. 06065C1410G, effective August 28, 2008. Flood Zone X (unshaded) is defined as "areas to be determined outside of the 0.2% annual chance floodplain".

Existing Condition

As previously mentioned, the MDP includes offsite areas that are tributary to the project site under existing conditions. Offsite areas tributary to the project site are based on recent aerial topography, google street view and Riverside County Flood Control and Water Conservation District photo map with 4' contour intervals. Overall, the calculated offsite area is similar to the MDP area.

Under existing condition, offsite runoff enter the project site at several locations. The largest tributary area is from offsite areas located south of Walnut Street. Here, approximately 29.0 acres drains to Walnut Street. There is an existing low point at Walnut Street near the southwest corner of the project site (at node 201 on existing condition hydrology map) where these flow enter the site. The 100-year peak flow rate at this location is approximately 45.8 cfs.

Additional offsite areas enter the project site from three existing streets to the west. From south to north, the three streets are Sunny Canyon Street, Wildwood Lane and Norrisgrove Drive. Here, the streets simply end near the westerly property line where runoff continues to sheet flow into the project site. Offsite tributary areas at each location were determined. The respective 100-year peak flow rates are 7.1 cfs, 6.0 cfs and 17.4 cfs.

The site is currently a vacant dirt lot with sparse natural grasses and vegetation. Runoff from the project site generally drains to the northeasterly corner of the site via natural drainage courses. As mentioned above, the project site accepts offsite runoff. A hydrologic model was established for the offsite areas than continues through the project site and adds in area from the site. The total 100-year peak flow rate from the project site including the offsite areas is approximately 134.1 cfs over 87.20 acres.

See Appendix "B" for existing condition hydrology calculations and Appendix "E" for existing condition hydrology map.

Proposed Condition

Proposed conditions will continue to convey offsite tributary flows. However, with the proposed improvements, offsite flows will be intercepted by catch basins at the respective streets and then conveyed northerly through a separate storm drain to the proposed extension of the Rider Street storm drain system. Collecting these flows separately in a proposed offsite storm drain will ensure that offsite flows will not comingle with onsite runoff. The proposed offsite storm drain will collect runoff from Walnut Street, Sunny Canyon Street, Wildwood Lane, and Norrisgrove Drive, then continue northerly to Rider Street.

For onsite runoffs, the south half of the proposed building and the southerly truck yard, plus a portion of the westerly offsite berm between the site and the residential neighborhood further west (Nodes 100-112, 11.60 acres onsite plus 1.51 acres offsite, totaling 13.11 acres) will drain to catch basins in the truck yard. Runoffs from these areas will then be conveyed to a proposed 144-inch C.M.P. system within the truck yard for underground detention, in order to reduce proposed condition runoffs to existing condition discharge from the site (see "Detention" section below). Discharge from the 144" C.M.P. system will be conveyed northerly via a proposed private storm drain to the north-easterly water quality basin for treatment, then further north via a proposed lateral to the extended Rider Street storm drain. The proposed condition 100-year peak flow rate from the southerly portion of the site, plus tributary offsite area, is approximately 33.7 cfs.

The easterly parking lot (Nodes 120-132, 3.64 acres) will drain to catch basins in the parking lot. Runoffs will then be conveyed to a proposed 96" C.M.P. system within the parking lot for underground detention. Similarly, discharge from the 96" C.M.P. system, plus an entry driveway fronting Patterson Avenue at Node 135 (0.27 acres, Q100=0.6 cfs), will be conveyed northerly to the water quality basin, then further north to the extended Rider Street storm drain. The proposed condition 100-year peak flow rate from the easterly parking lot is approximately 10.9 cfs (10.3 cfs from Nodes 120-132 + 0.6 cfs from driveway at Node 135).

The north half of the proposed building and the northerly truck yard, plus a portion of the westerly offsite berm between the site and the residential neighborhood further west (Nodes 140-152, 11.71 acres onsite plus 1.23 acres offsite, totaling 12.94 acres) will drain to catch basins in the truck yard. Runoffs from these areas will then be conveyed to a proposed 96" C.M.P. system within the truck yard for underground detention. Discharge from the 96" C.M.P. system will be conveyed easterly via another proposed private storm drain to the water quality basin, then further north to the extended Rider Street storm drain. The proposed condition 100-year peak flow rate from the building's north half, the northerly truck yard and tributary offsite area is approximately 34.2 cfs.

The northerly drive aisle (north of the site's northerly truck yard) and the northerly frontage landscape, plus a smaller portion of the westerly offsite berm (Nodes 160-172, 1.21 acres onsite plus 0.09 acre offsite, totaling 1.30 acres) will drain to catch basins in the drive aisle and frontage landscape, respectively. Runoffs will then be conveyed easterly via another

proposed private storm drain to the water quality basin and then, similarly, further north to the extended Rider Street storm drain. The proposed condition 100-year peak flow rate from these northerly drive aisle, frontage landscape and tributary offsite area is approximately 2.9 cfs.

The proposed condition 100-year peak flow rate from the project site plus tributary offsite areas, discharging to the extended Rider Street storm drain via proposed onsite storm drains, is approximately 78.9 cfs over 33.55 acres. See "Detention" section below for onsite detention in proposed 96" C.M.P. systems, which will determine the storage volumes required to reduce proposed condition site runoff to existing condition site discharge.

The proposed southerly landscape fronting Walnut Street (0.41 acre) will surface drain to Walnut Street. The proposed easterly landscapes (0.09 acre south of entry driveway, 0.30 acre north of entry driveway) fronting Patterson Avenue will surface drain to Patterson Avenue.

See Appendix "B" for proposed condition hydrology calculations, and Appendix "E" for proposed condition hydrology map and conceptual storm drain plans. Also included in Appendix "B" are the 100-year peak flow rates tributary to the proposed offsite storm drain system.

Detention

While the project site drains to an existing Master Plan storm drain system, peak flow mitigation for the site is required since there are downstream areas without adequate storm drain facilities. Storms to be studied will include the 1-hour, 3-hour, 6-hour and 24-hour duration events for the 100-year return frequency. Underground detention in each C.M.P. system (144" C.M.P. in the southerly truck yard, 96" C.M.P. in the easterly parking lot and northerly truck yard), with an appropriately sized outlet, will ensure that none of these storm events has a higher peak discharge in proposed condition than in existing condition.

Runoff from the offsite areas south and west of the project site tributary to the Rider Street storm drain extension (80.1 fs) will continue to discharge undetained. Also, the addition of peak flow rate at Patterson Avenue relative to the Rider Street storm drain (9.6 cfs) contributes without detention. To ensure no additional peak flow rate is added to the Rider Street storm drain, the 100-year peak flow rate of 131.0 cfs will be maintained at the intersection of Rider Street and Patterson Avenue. This leaves approximately 41.3 cfs allowed from the project site (131.0 cfs – 80.1 cfs – 9.6 cfs).

Hydrograph parameters are as follows:

- The loss rate is determined using an AMC II condition.
- Undeveloped condition Low Loss=90%
- Basin site Low Loss=10%
- Rainfall values from the Riverside County Hydrology Manual

Discharge is limited by a riser inside an outlet manhole structure downstream of each C.M.P. underground detention system, via holes at the bottom and at variable heights on the riser. The 100-year 24-hour storm event results in the largest difference between existing condition and proposed condition discharge volumes. Therefore, the total required underground storage volume for the project site is determined by the 100-year 24-hour storm event. See following tables for a summary of existing and proposed condition storm volumes for the project site.

Existing Condition 100-Year Storm Volumes from Entire Site (29.96 acres)

Entire Site	1-Hour	3-Hour	6-Hour	24-Hour
Volume (AC-FT)	2.18	2.16	2.41	2.74
Volume (CF)	95,100	94,203	104,967	119,350

Proposed Condition 100-Year Storm Volumes in South Truck Yard (13.11 acres)

South Truck Yard	1-Hour	3-Hour	6-Hour	24-Hour
Volume (AC-FT)	1.30	1.97	2.73	5.11
Volume (CF)	56,813	86,014	118,754	222,712

Proposed Condition 100-Year Storm Volumes in East Parking Lot (3.91 acres)

East Parking Lot	1-Hour	3-Hour	6-Hour	24-Hour
Volume (AC-FT)	0.39	0.59	0.81	1.52
Volume (CF)	16,946	25,654	35,419	66,424

Proposed Condition 100-Year Storm Volumes in North Truck Yard (12.94 acres)

North Truck Yard	1-Hour	3-Hour	6-Hour	24-Hour
Volume (AC-FT)	1.29	1.95	2.69	5.05
Volume (CF)	56,075	84,898	117,216	219,824

Total Proposed Condition 100-Year Storm Volumes from Entire Site (29.96 acres)

Entire Site	1-Hour	3-Hour	6-Hour	24-Hour
Volume (AC-FT)	2.98	4.52	6.23	11.68
Volume (CF)	129,834	196,566	271,389	508,960

Volume Differences between Existing and Proposed Condition 100-Year Storms

Entire Site	1-Hour	3-Hour	6-Hour	24-Hour
Volume (AC-FT)	0.80	2.36	3.82	8.94
Volume (CF)	34,734	102,363	166,422	389,610

Per above hydrograph volumes, the 100-year 24-hour storm event results in the largest volume difference between existing and proposed conditions, for a total difference of 8.94 ac-ft or 389,610 CF. This total required storage volume is prorated for the three sets of proposed C.M.P. underground detention systems, with 170,487 CF required in the south truck yard, 50,847 CF required in the east parking lot, and 168,276 CF required in the north truck yard.

The proposed onsite storm drain system, including an outlet structure downstream of each C.M.P. underground detention system, will be sized during the project's final design phase to sufficiently restrict proposed condition flow rate to existing condition discharge rate. Note, these peak flow rates are the same as the overall Master Plan peak flow rate at the same location. Therefore, the increased imperviousness from the site compared to original Master Plan hydrology does not adversely affect downstream systems.

See Appendix "C" for detention calculations.

Methodology

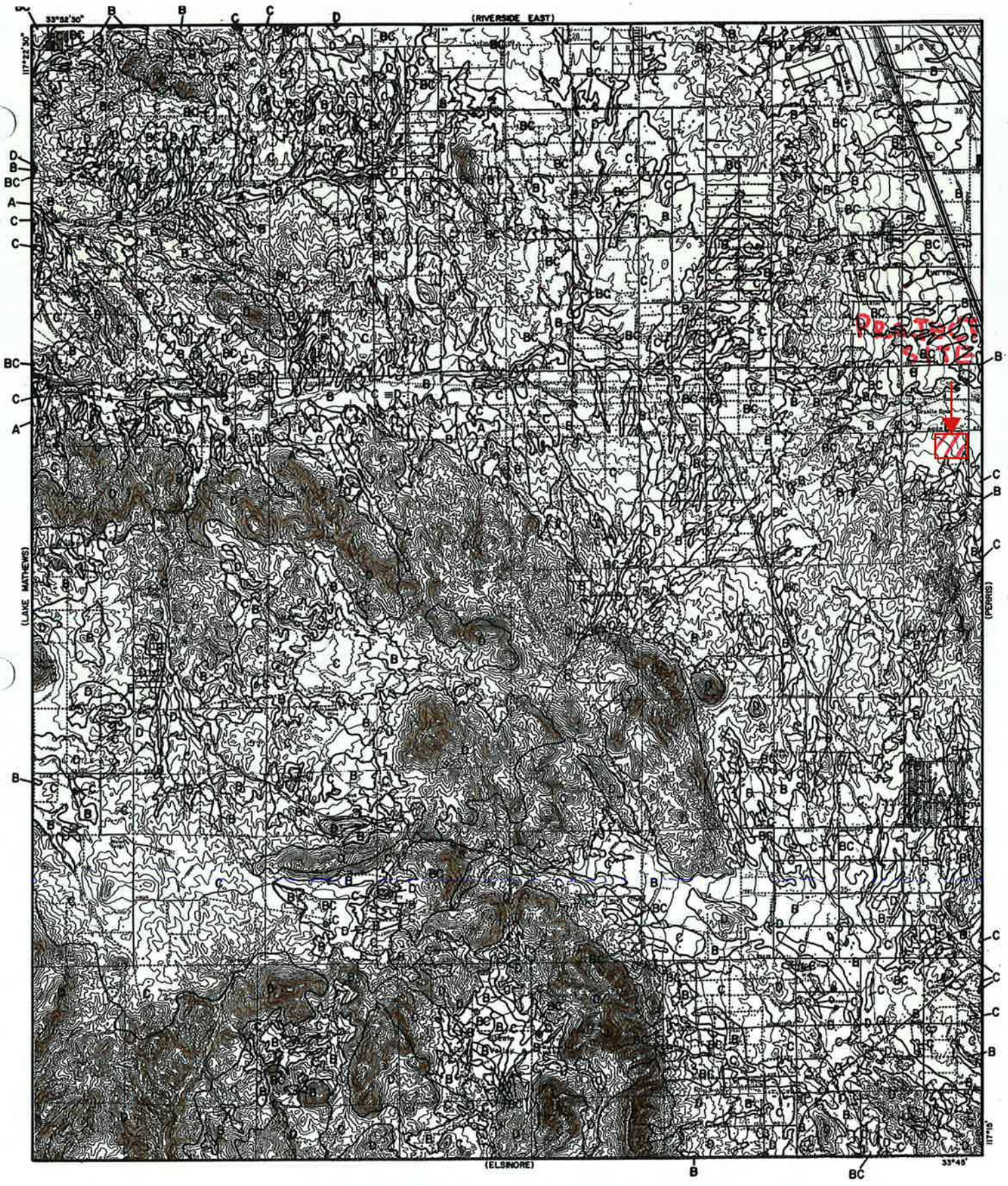
Hydrology calculations were computed using Riverside County Rational Method program (by Advance Engineering Software). The soil type is "B" per the Riverside County Hydrology Manual. See Appendix "A" for reference materials.

WSPG was used for hydraulic calculations. See Appendix "D" for pipe hydraulics pertinent to the proposed offsite storm drain system.

APPENDIX	DESCRIPTION
A	REFERENCE MATERIALS
B	HYDROLOGY CALCULATIONS
C	DETENTION CALCULATIONS
D	HYDRAULIC CALCULATIONS
E	HYDROLOGY MAP

APPENDIX A

REFERENCE MATERIALS



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

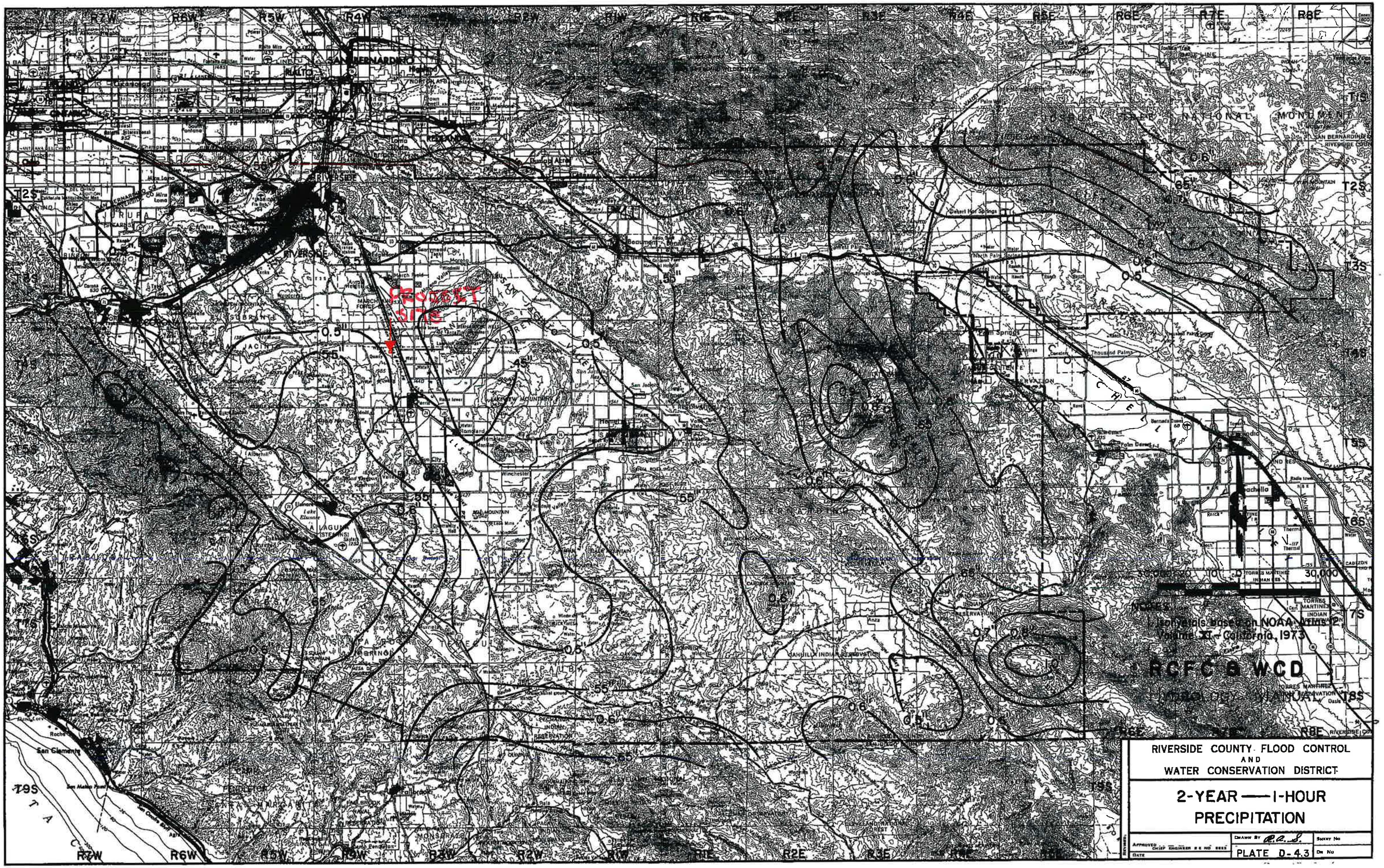
HYDROLOGY MANUAL

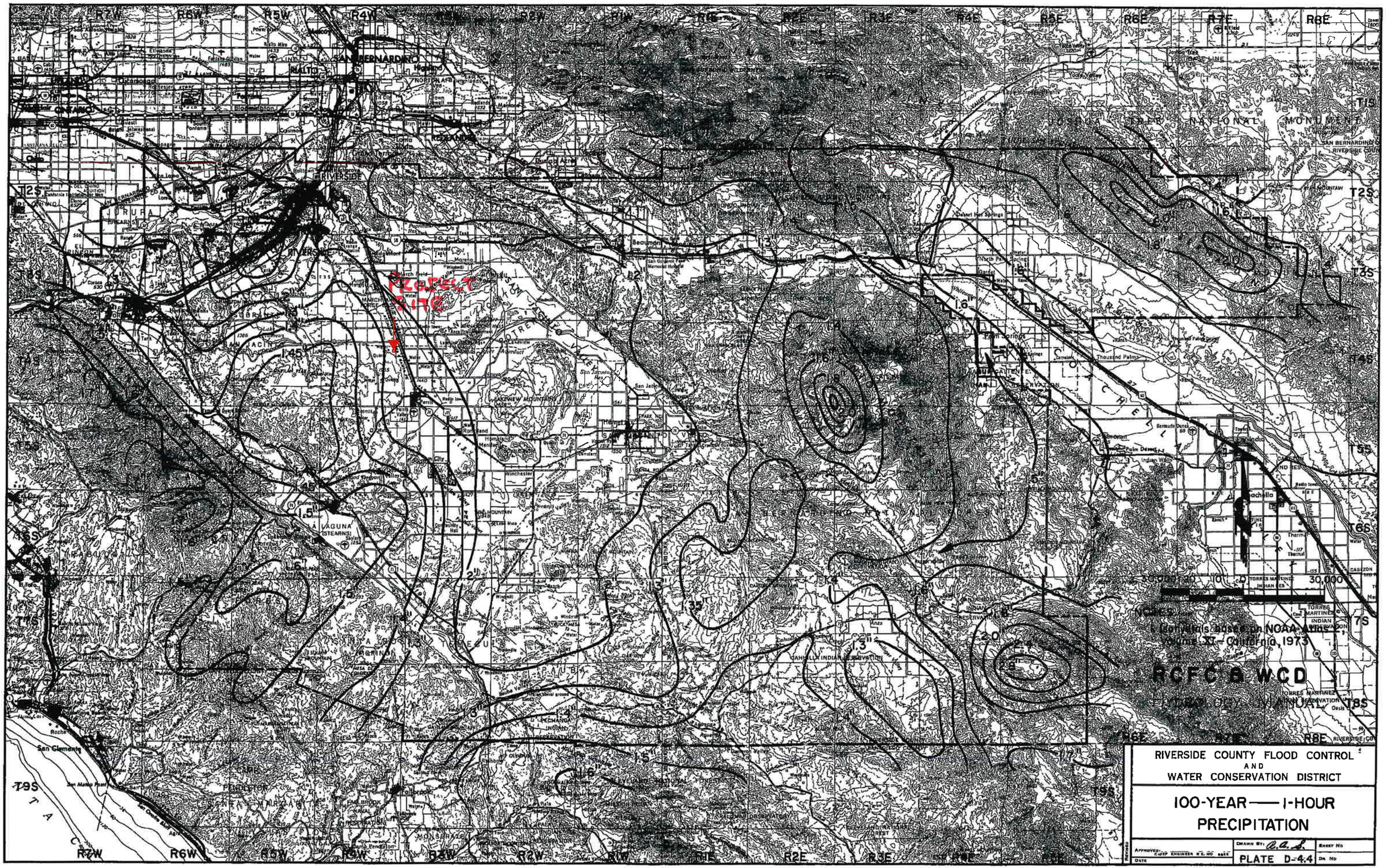
N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR STEELE PEAK

PLATE C-1.29


PROJECT SITE
RCFC & WCD
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR —— 1-HOUR PRECIPITATION
PLATE D-4.3



RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

100-YEAR — 1-HOUR PRECIPITATION

APPROVED: CHIEF ENGINEER R.C.F.C. & W.C.D. DATE

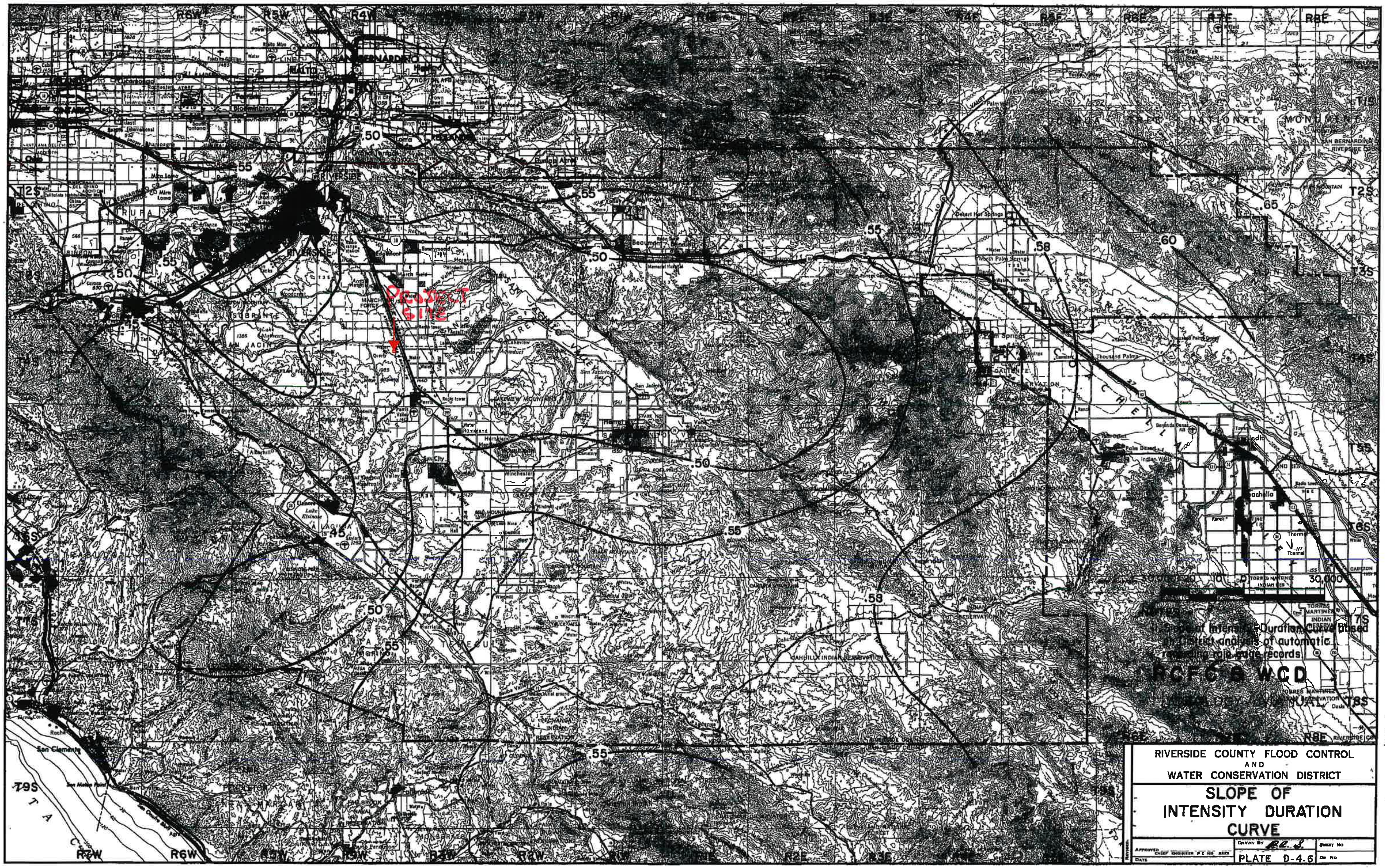
DRAWN BY: R.A.S.

SHEET NO

PLATE D-4.4

DR NO

REVISED



RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

SLOPE OF INTENSITY DURATION CURVE

APPROVED CHIEF ENGINEER	DRAWN BY R.A.S.	SHEET NO
DATE	PLATE D-4.6	OF NO

Project Site

Notes:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973.

RCFC & WCD

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

2-YEAR — 3-HOUR PRECIPITATION

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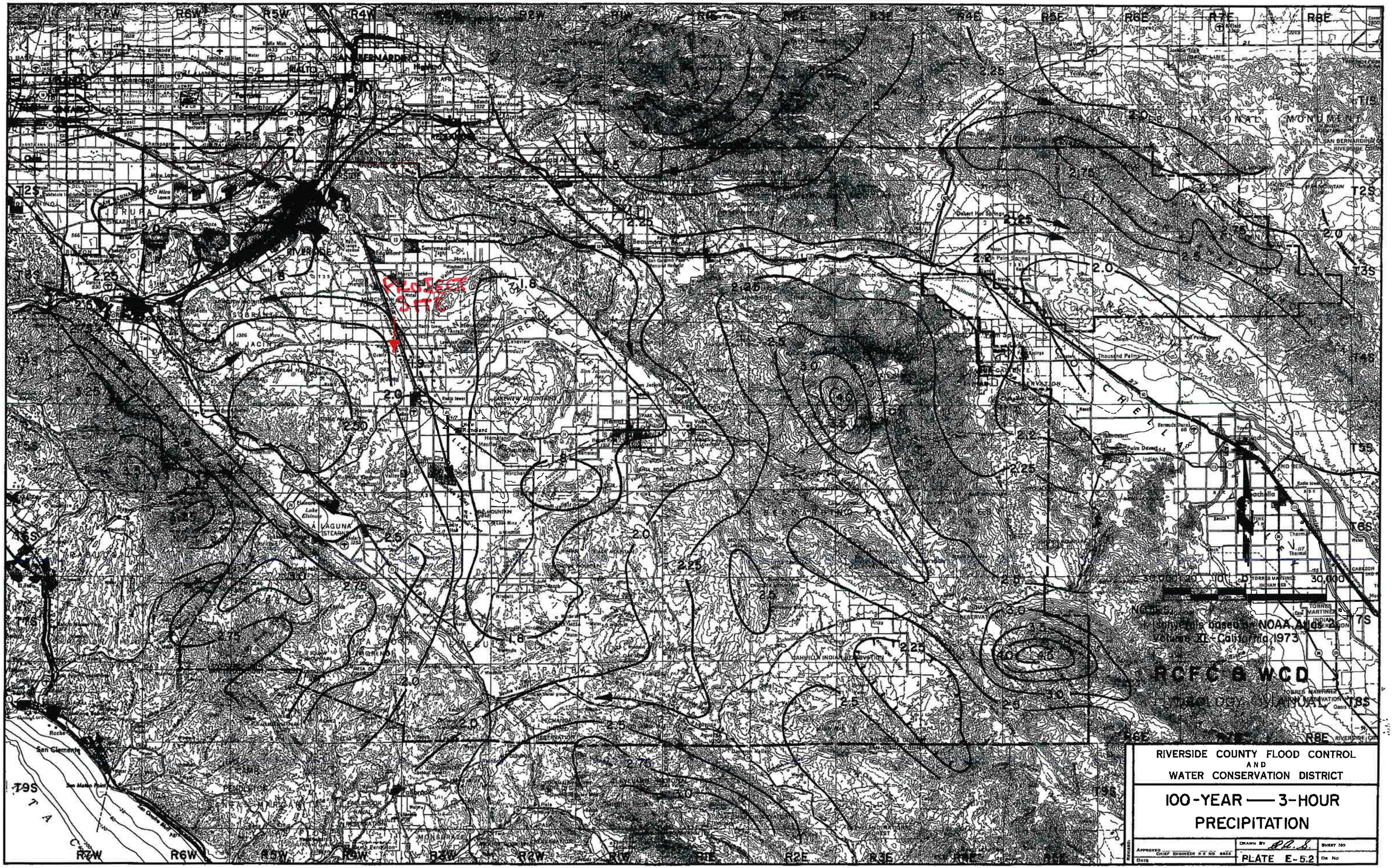
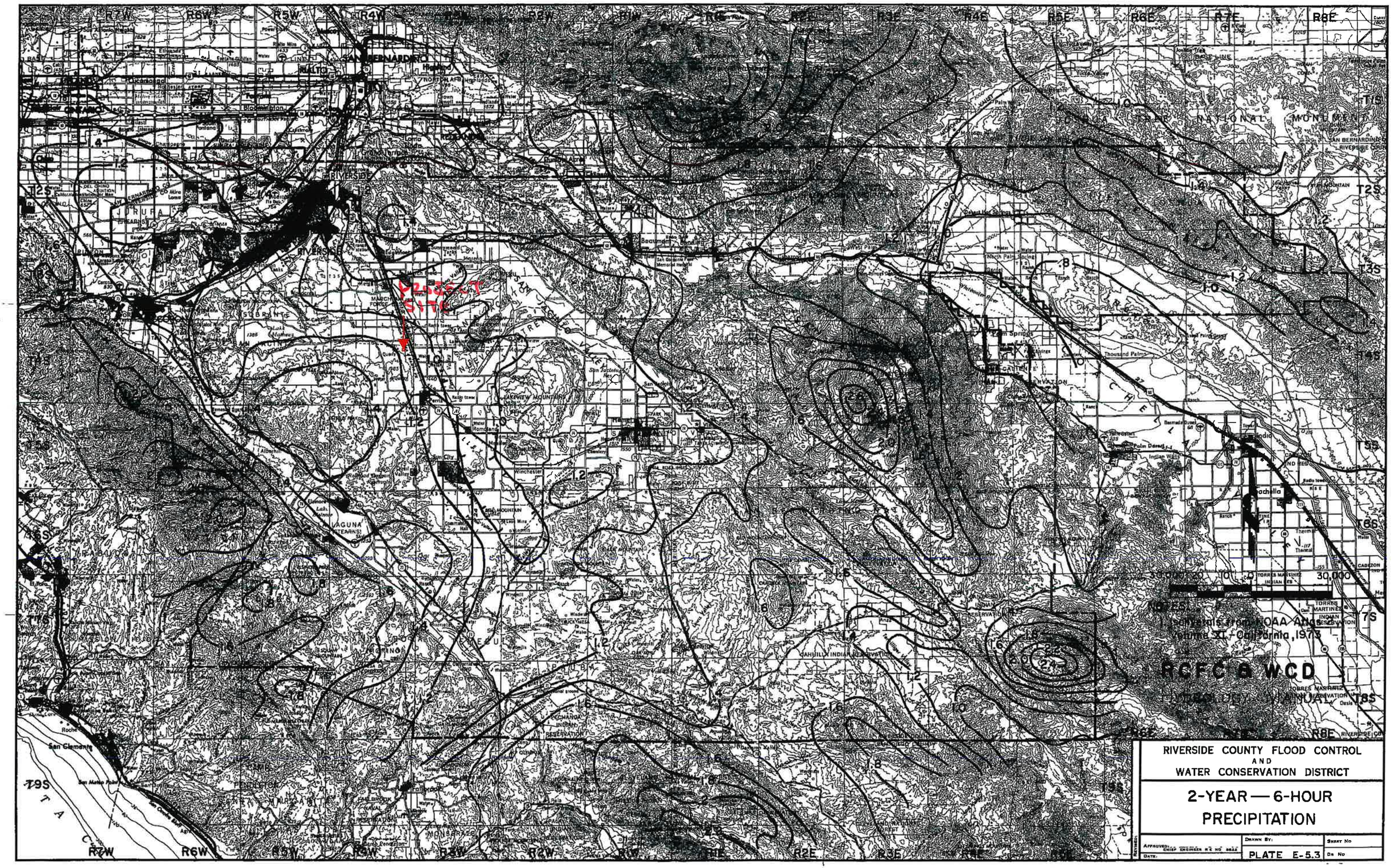

PROJECT SITE
SAN BERNARDINO
RIVERSIDE
NATIONAL MONUMENT
RCFC & WCD
HYDROLOGY MANUAL
Notes:
Isohyets based on NOAA Atlas
Volume XI - California, 1973
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
100-YEAR — 3-HOUR
PRECIPITATION
PLATE E-5.2



RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

2-YEAR — 6-HOUR PRECIPITATION

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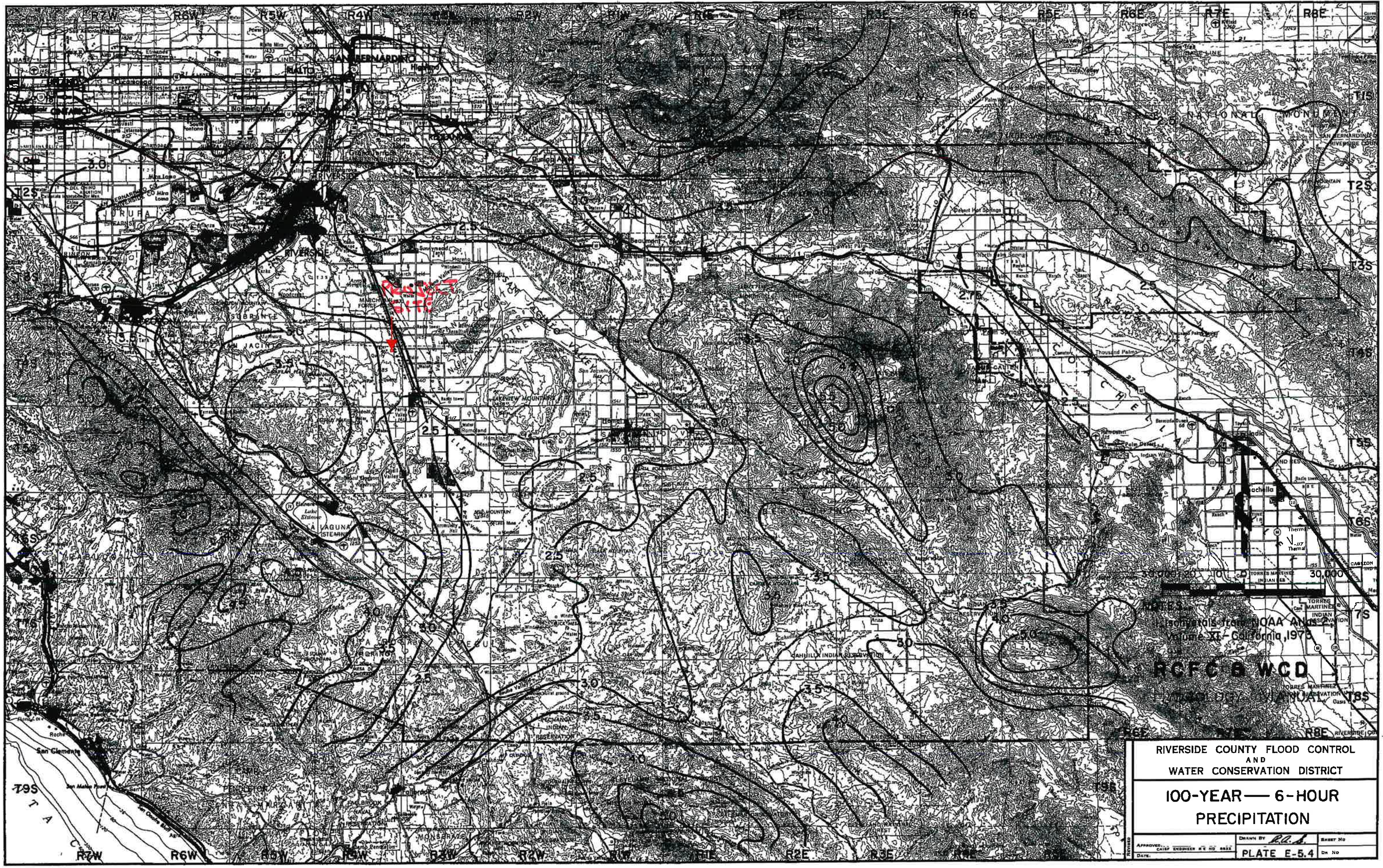
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San Clemente
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
100-YEAR — 6-HOUR
PRECIPITATION
DRAWN BY R.A.S.
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CHIEF ENGINEER
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PLATE E-5.4
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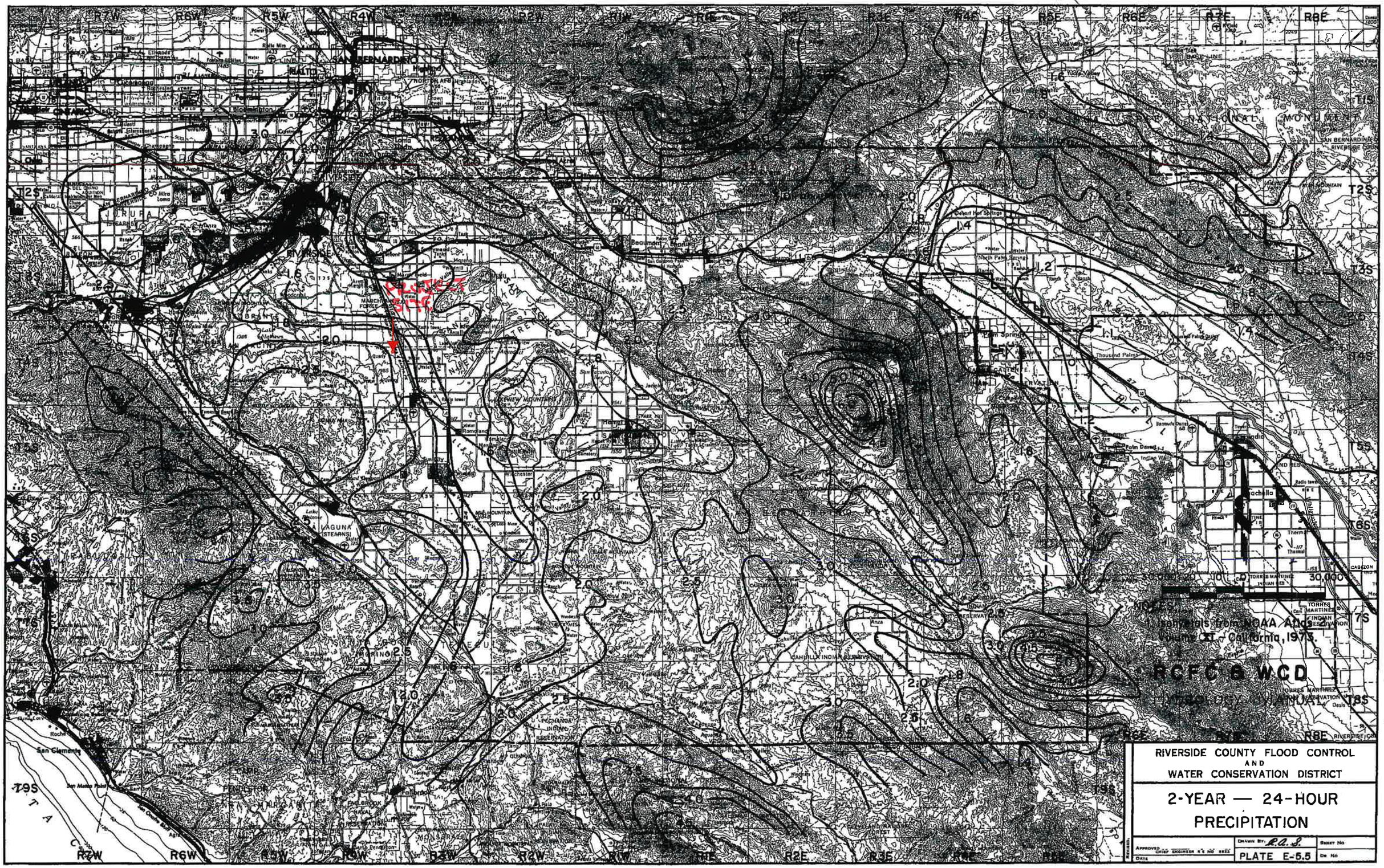
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
2-YEAR — 24-HOUR
PRECIPITATION
PLATE E-5.5
Isohyetals from NOAA Atlas 2
Volume XI - California, 1973.
RCFC & WCD
MANUALLY
SAN BERNARDINO
RIVERSIDE
CORONA
NORCO
MORENO
HEMET
SAN JACINTO
BEAUMONT
PERRIS
MURRIETA
TEMECULA
LAKE ELSINORE
CANYON LAKE
LAKE MATHEWS
LAKE PERRIS
LAKE SKINNER
SAN JACINTO MOUNTAINS
SAN BERNARDINO MOUNTAINS
SANTA ROSA MOUNTAINS
PALM SPRINGS
CATHEDRAL CITY
RANCHO MIRAGE
PALM DESERT
INDIO
COACHELLA
LA QUINTA
INDIO HILLS
MECCA HILLS
SALTON SEA
SAN JACINTO WILDERNESS
SAN BERNARDINO NATIONAL FOREST
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO
RIVERSIDE COUNTY
SAN JACINTO
SAN JACINTO INDIAN RESERVATION
CAHUILLA INDIAN RESERVATION
TORRES MARTINEZ INDIAN RESERVATION
AGUANGA INDIAN RESERVATION
PECHANGA INDIAN RESERVATION
SAN MANUEL INDIAN RESERVATION
SOBOBA INDIAN RESERVATION
SAN JACINTO RIVER
SANTA ANA RIVER
TEMECULA CREEK
SAN MATEO CANYON WASH
SAN MATEO CANYON
SAN ONOFRE CREEK
SAN ONOFRE MOUNTAIN
SAN CLEMENTE
SAN MATEO POINT
SAN ONOFRE BLUFF
ROCHE
PENDLETON
MARINE CORPS BASE
CAMP PENDLETON
FALLBROOK
VISTA
ESCONDIDO
LAGUNA MOUNTAINS
LAKE HENSHAW
LAKE WOHLFORD
LAKE CAHUILLA
LAKE TAMARISK
LAKE SUBSIDENCE
LAKE ELEANOR
LAKE SAN JACINTO
LAKE MORENO
LAKE MATHEWS
LAKE PERRIS
LAKE SKINNER
LAKE ELSINORE
CANYON LAKE
SALTON SEA
MARCH AIR FORCE BASE
NORTON AFB
RIVERSIDE
CORONA
NORCO
MORENO
HEMET
SAN JACINTO
BEAUMONT
PERRIS
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TEMECULA
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SAN BERNARDINO MOUNTAINS
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PALM SPRINGS
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RANCHO MIRAGE
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PECHANGA INDIAN RESERVATION
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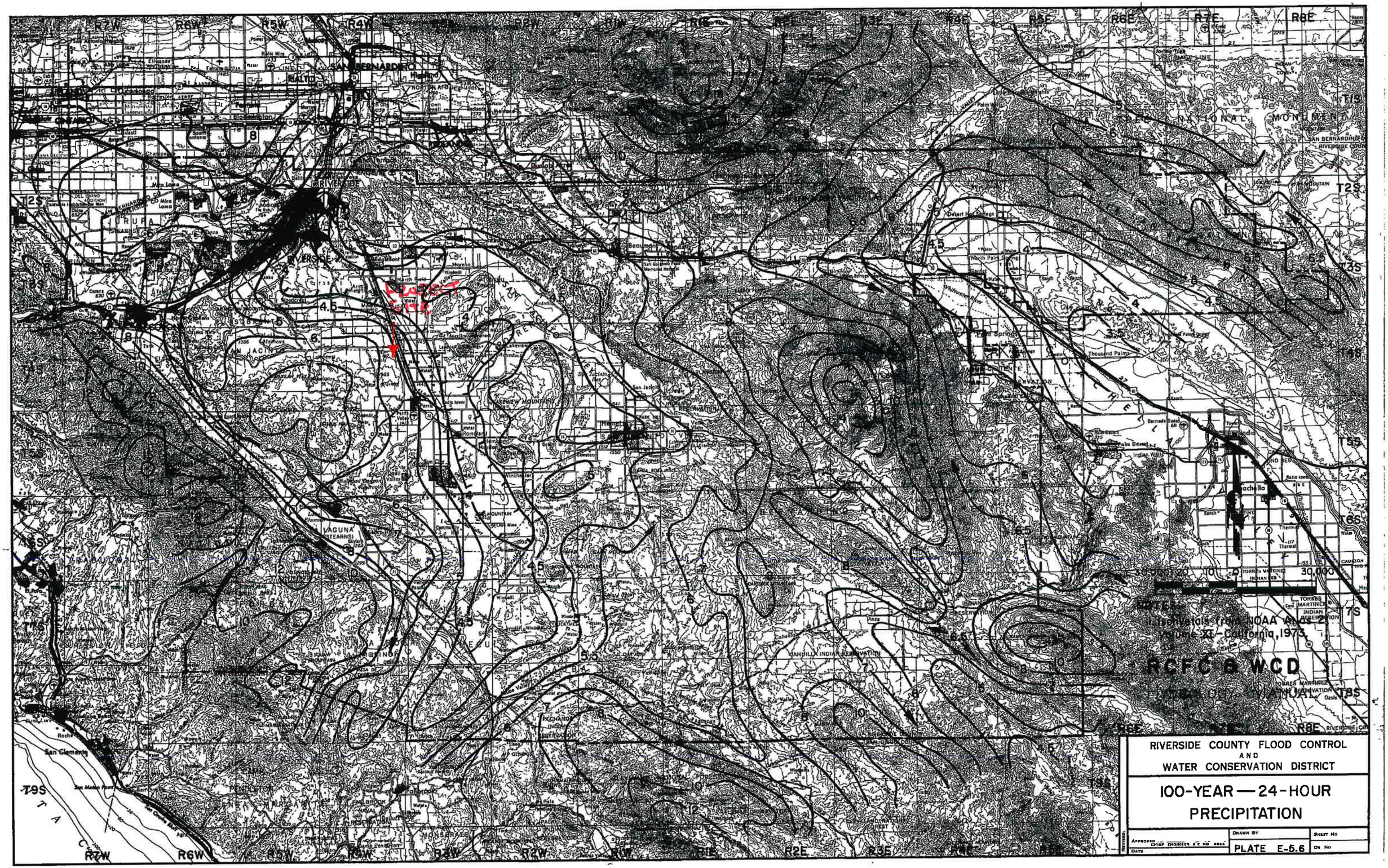
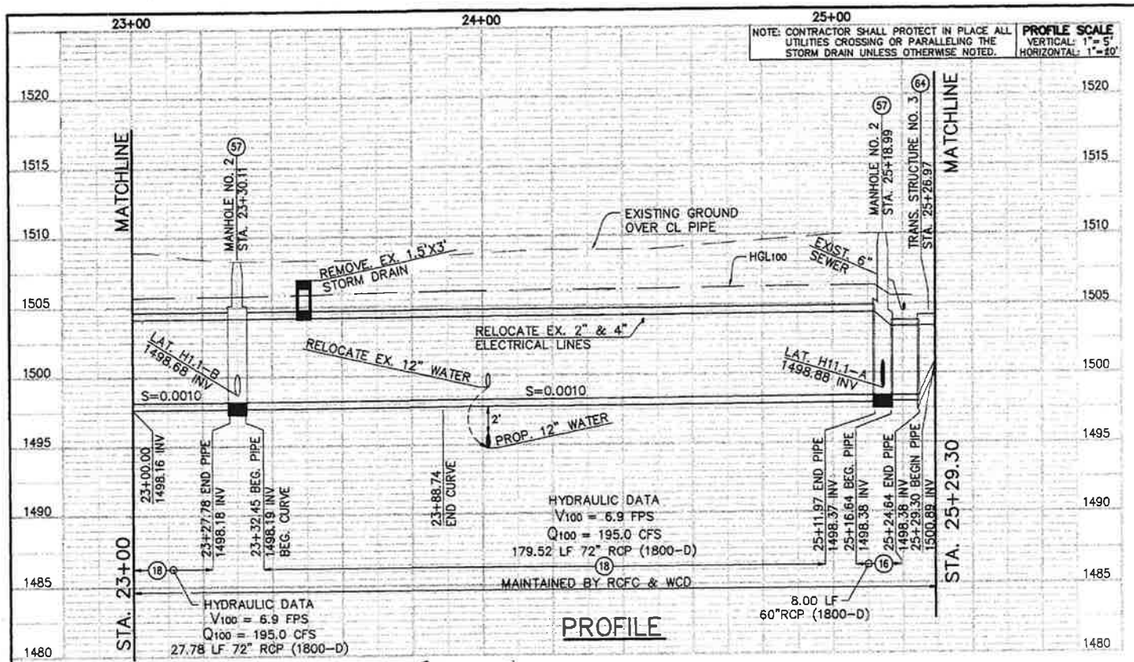


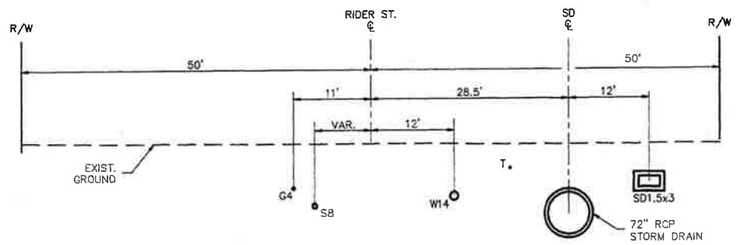
Isohyetals from NOAA Atlas 2, Volume XI - California, 1973.

RCFC & WCD

HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT	
100-YEAR — 24-HOUR PRECIPITATION	
APPROVED CHIEF ENGINEER R.C.F.C. & W.C.D. DATE	DRAWN BY
	PLATE E-5.6
	SHEET NO
	DR. NO





SECTION AT STA 25+00.00
TYPICAL FROM STA. 24+00.00 TO 25+11.97

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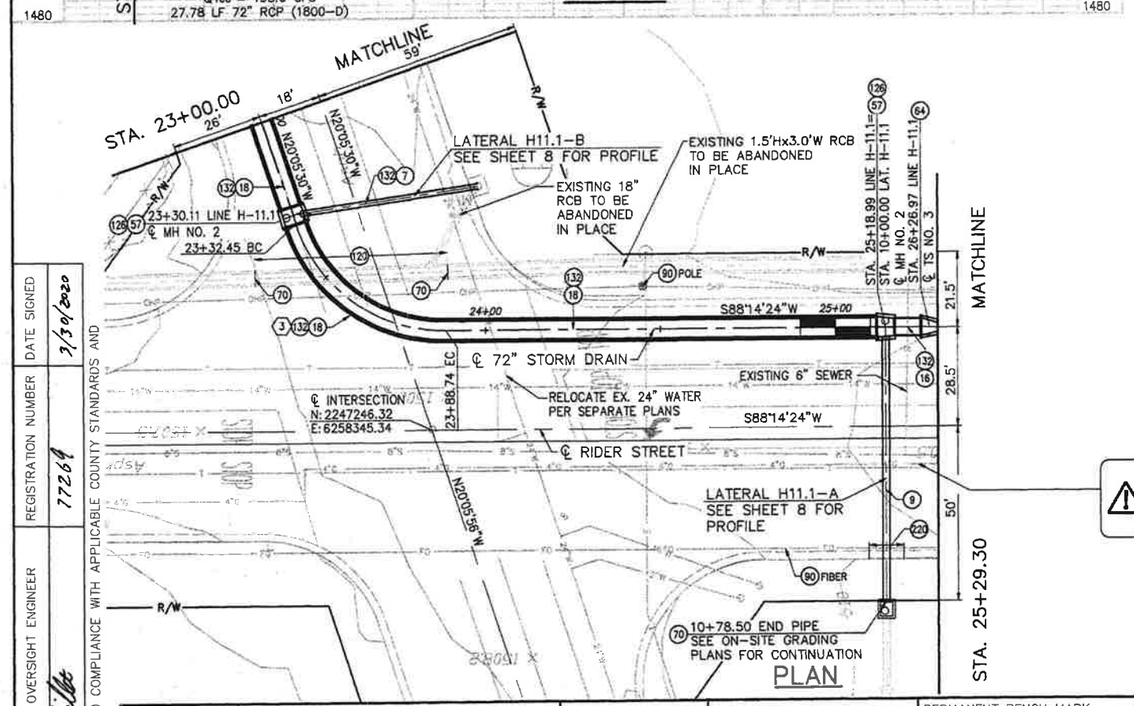
Δ	71°40'06.60"
L	56.29'
T	32.50'
B.C.	23+39.28
E.C.	23+95.57
P.I. NORTHING	2247225.14
P.I. EASTING	6258372.26

MANHOLE / JUNCTION STRUCTURE DATA					
LATERAL	℄ STATION	WALL STATION	STRUCTURE	A	C
H11.1-B	23+30.11	23+30.50	MH NO. 2	80°	-
H11.1-A	25+18.99	25.18.99	MH NO. 2	90°	-



CAUTION!!!
HIGH PRESSURE GAS LINE. USE EXTREME CAUTION AND PROTECT GAS LINE IN PLACE WHILE WORKING IN THIS AREA. CONTRACTOR TO VERIFY LOCATION & ELEVATION PRIOR TO CONSTRUCTION!

N

20' 0 20'

CONSTRUCTION NOTES

7. INSTALL 18" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
9. INSTALL 24" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
10. INSTALL 30" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
16. INSTALL 60" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
18. INSTALL 72" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
57. CONSTRUCT MANHOLE NO. 2 PER R.C.F.C. & WCD STD. PLAN MH252
64. CONSTRUCT TRANSITION STRUCTURE NO. 3 PER R.C.F.C. & WCD STD. PLAN TS303
70. CONSTRUCT CONCRETE BULKHEAD PER R.C.F.C. & W.C.D. STANDARD M816
90. PROTECT IN PLACE (ITEM AS INDICATED ON PLAN)
120. REMOVE 1.5'x3' RCB CULVERT
126. ADJUST MANHOLE RIM TO GRADE AFTER FINAL SURFACE HAS BEEN INSTALLED
132. SAWCUT, REMOVE AND REPLACE EXISTING AC OVER AB PAVEMENT IN KIND AFTER CONSTRUCTION PER COUNTY OF RIVERSIDE STD. 818
220. SAWCUT AND REMOVE EXISTING CURB & GUTTER AND REPLACE IN KIND

IP 190028
PPT 180023

RECMD COUNTY OVERSIGHT ENGINEER — DATE SIGNED 3/30/2020
REGISTRATION NUMBER 77269
APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 400 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: JOHNNY MURAD
R.C.E. 67512 EXPIRES 6-30-21 DATE 11-19-19

NO. 67512 REGISTERED PROFESSIONAL ENGINEER JOHNNY MURAD EXPIRATION 6-30-2021 CIVIL STATE OF CALIFORNIA

DESIGNED BY: J.M.
DRAWN BY: H-Z STAFF
CONSTR. SET:
CHECKED BY: J.M.
P8 NUMBER: 230834

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

PERMANENT BENCH MARK
3¼" ALUMINUM DISC ON TOP OF CURB 1300' WEST OF ATSF RAILROAD TRACK, NORTH CURB OF RIDER STREET, STAMPED METROPOLITAN WATER DISCTRICT, BM 435
ELEVATION = 1512.59' (NGVD 29)

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE

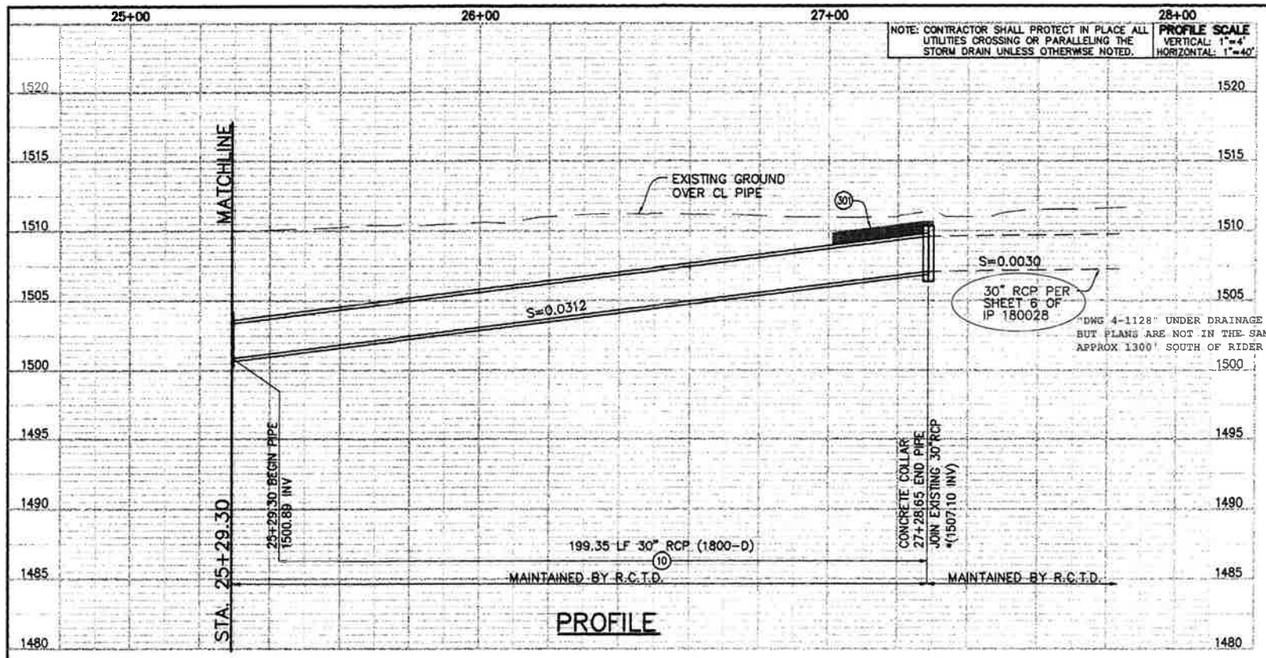
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 04.14.2020
APPROVED BY: DATE: 4/20/2020

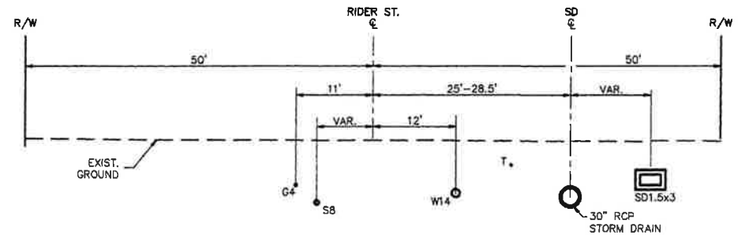
PERRIS VALLEY MDP
LATERAL H-11.1, STAGE NO.2

RIDER STREET
STA. 23+00.00 TO 25+29.30

PROJECT NO. 4-0-00501
DRAWING NO. 4-1147
SHEET NO. 6 OF 8

968-N
JCLJ 02/27/2020



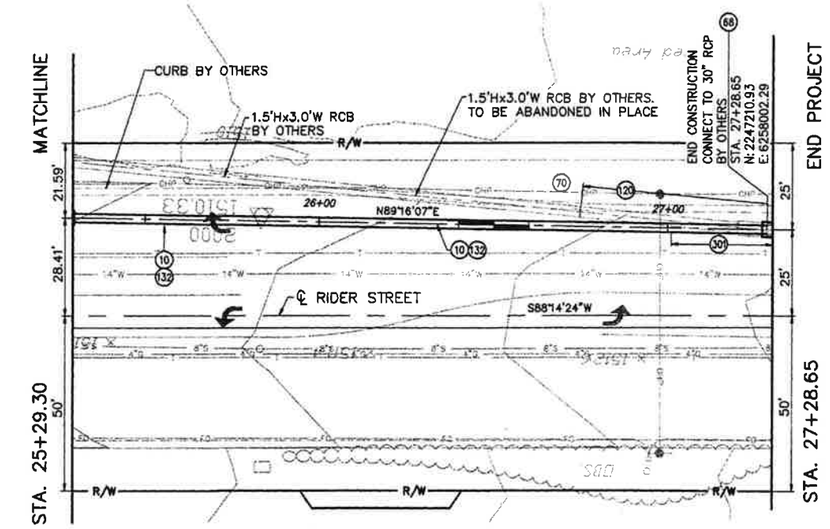


"DWG 4-1128" UNDER DRAINAGE RESEARCH FOLDER MATCHES REFERENCE BUT PLANS ARE NOT IN THE SAME AREA AS THIS IS CLAIMING. THOSE PLANS FALL APPROX 1300' SOUTH OF RIDER STREET ON HARVILL.

SECTION AT STA 26+50.00

TYPICAL FROM STA. 26+00.00 TO 27+28.65

10' 0 10'



PLAN

N

20' 0 20'

CONSTRUCTION NOTES

(10) INSTALL 30" RCP (D-LOAD AND PROFILE AS SHOWN ON PLANS)
(68) CONSTRUCT CONCRETE COLLAR PER R.C.F.C. & W.C.D. STD. PLAN M803
(70) CONSTRUCT CONCRETE BULKHEAD PER R.C.F.C. & W.C.D. STANDARD MB16
(120) REMOVE 1.5'x3' RCB CULVERT
(132) SAWCUT, REMOVE AND REPLACE EXISTING AC OVER AB PAVEMENT IN KIND AFTER CONSTRUCTION PER COUNTY OF RIVERSIDE STD. 818
(30) INSTALL CONCRETE SLURRY PER R.C.F.C. & W.C.D STD. M815

* NOTE: HORIZONTAL AND VERTICAL LOCATIONS TO BE VERIFIED IN THE FIELD AND ENGINEER NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.

IP 190028
PPT 180023

RECMD COUNTY OVERSIGHT ENGINEER | REGISTRATION NUMBER | DATE SIGNED
SC | 77269 | 3/19/2020

APPROVED AS TO COMPLIANCE WITH APPLICABLE COUNTY STANDARDS AND PRACTICES

REGISTERED PROFESSIONAL ENGINEER JOHNNY MURAD NO. 67512 EXPIRATION 6-30-2020 CIVIL STATE OF CALIFORNIA

HUITT-ZOLLARS
Huitt-Zollars, Inc. Ontario
3990 CONCOURS, SUITE 450 * ONTARIO, CALIFORNIA 91764 * (909) 941-7799
PREPARED UNDER THE SUPERVISION OF: JOHNNY MURAD R.C.E. 67512 EXPIRES 6-30-22 DATE 11-19-19

DESIGNED BY: J.M.
DRAWN BY: H-Z STAFF
CONSTR. SET:
CHECKED BY: J.M.
PB NUMBER: 230834

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

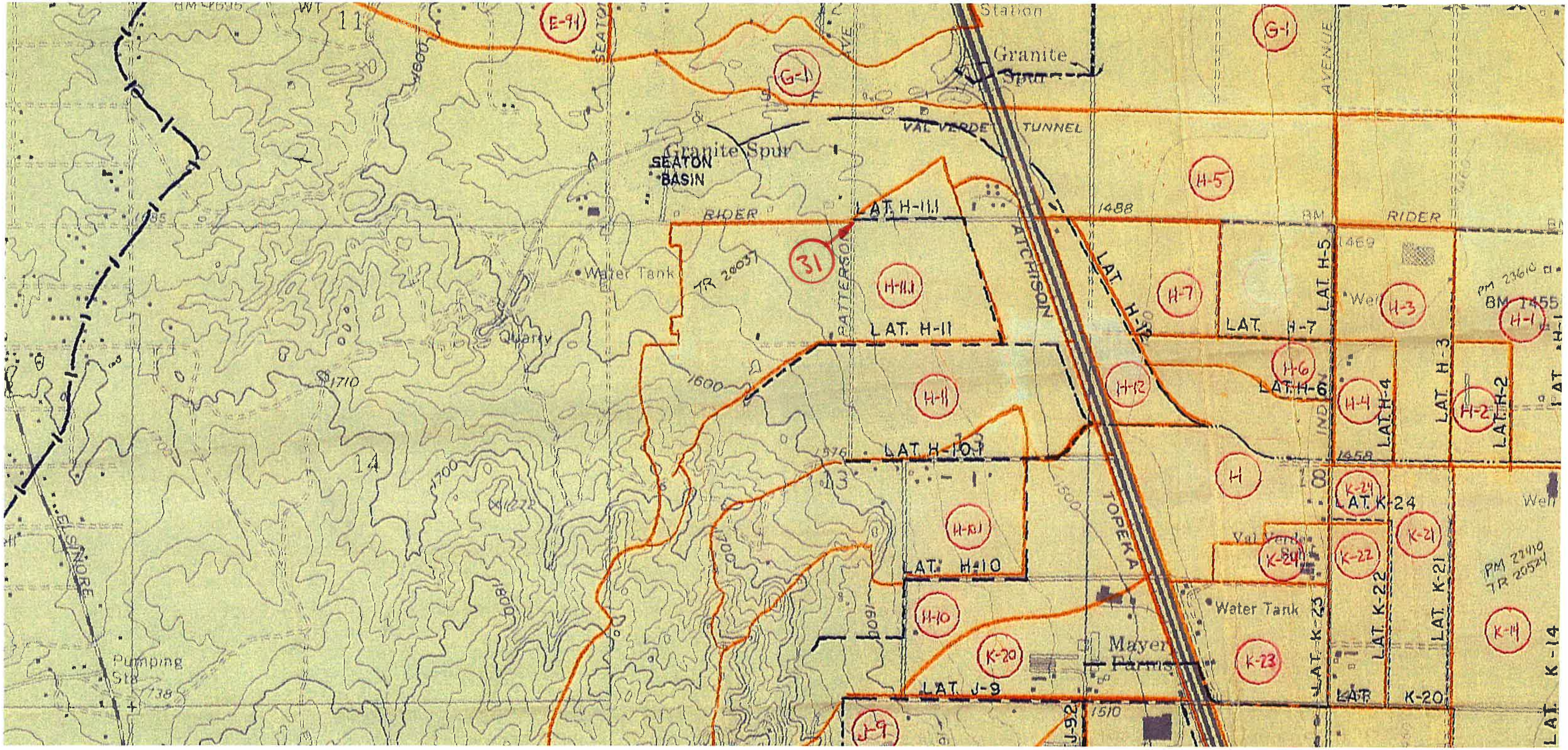
PERMANENT BENCH MARK
3½" ALUMINUM DISC ON TOP OF CURB 1300' WEST OF ATSF RAILROAD TRACK. NORTH CURB OF RIDER STREET, STAMPED METROPOLITAN WATER DISCTRICT, BM 435
ELEVATION = 1512.59' (NGVD 29)

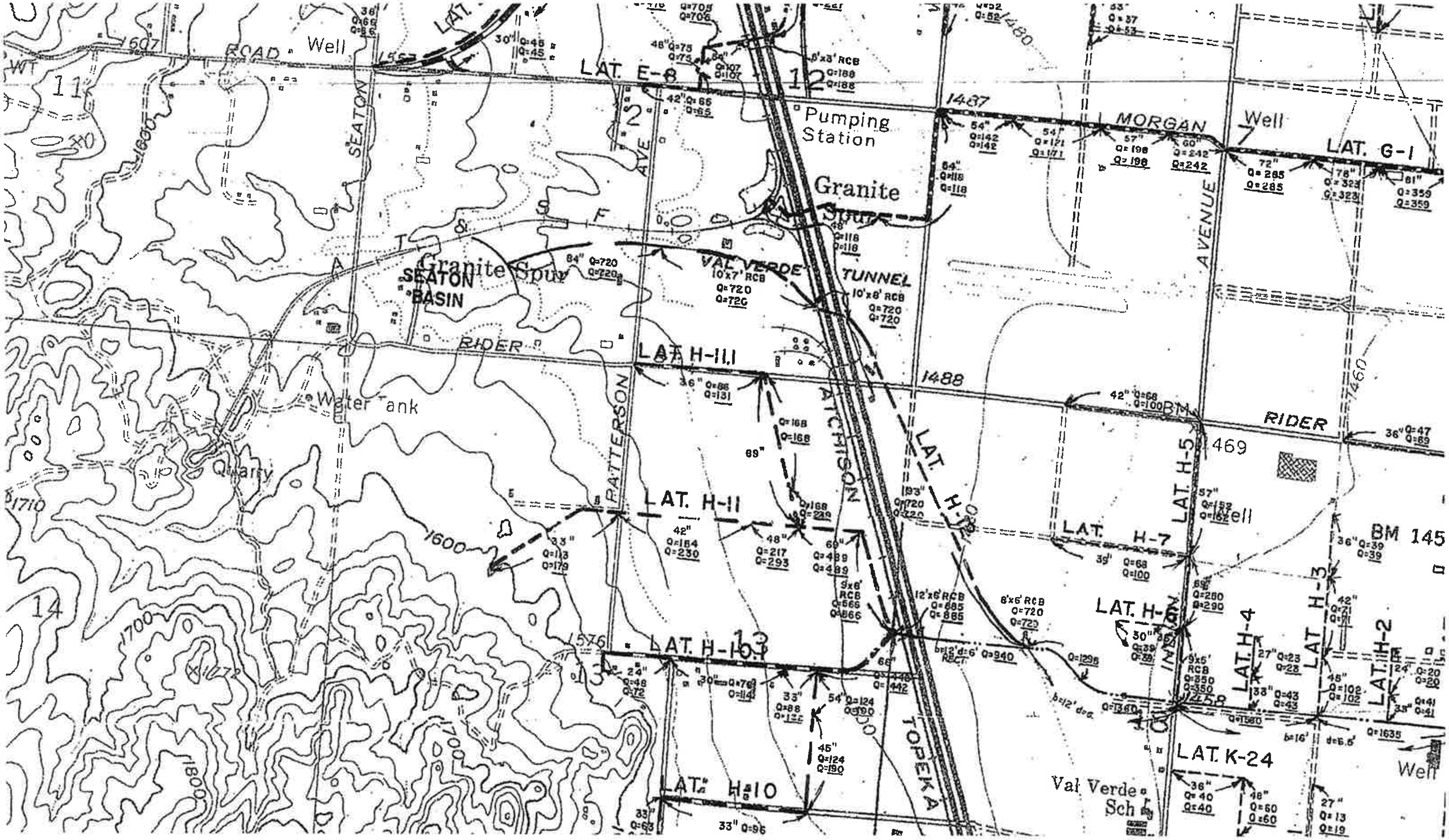
REF.	DESCRIPTION	APPR.	DATE
	REVISIONS		

PERRIS VALLEY MDP
LATERAL H-11.1, STAGE NO.2
RIDER STREET
STA. 25+29.30 TO 27+28.65

PROJECT NO. 4-0-00501
DRAWING NO. 4-1147
SHEET NO. 7 OF 8

968-N


E-9.1
SEATON
G-1
G-1
Station
Granite
Spur
VAL VERDE
TUNNEL
AVENUE
Granite Spur
SEATON
BASIN
H-5
RIDER
LAT. H-11.1
1488
RIDER
1469
31
H-11.1
PATTERSON
ATCHISON
LAT. H-12
H-7
LAT. H-5
H-3
BM 1455
H-1
Water Tank
TR 20037
Quarry
LAT. H-11
LAT. H-7
H-6
H-11
H-12
LAT. H-6
H-4
LAT. H-4
LAT. H-3
H-2
LAT. H-2
1710
1600
14
LAT. H-10.1
H
1458
18
K-24
LAT. K-24
13
TOPEKA
H-10.1
K-24
K-22
K-21
LAT. H-10
Water Tank
H-10
K-20
Mayer
Farms
K-23
LAT. K-23
LAT. K-22
LAT. K-21
K-14
LAT. K-14
Pumping
Sta
LAT. J-9
LAT.
K-20
J-9
J-92
1510



LAT. E-8
LAT. G-1
MORGAN
AVENUE
Pumping Station
Granite Spur
VAL VERDE TUNNEL
SEATON BASIN
RIDER
LAT. H-11.1
LAT. H-11
LAT. H-7
LAT. H-5
LAT. H-4
LAT. H-3
LAT. H-2
LAT. H-10
LAT. K-24
ATCHISON
TOPEKA
PATTERSON
SEATON
ROAD
Water Tank
Quarry
Val Verde Sch
Well
BM 145

PERRIS VALLEY LAT H-11 100-YR

AND LAT. H-11.1

OFFICIAL USE ONLY - Riverside County Offices - S/N 433

Project: timpv1.rrv Page 1 Calculated By:

Study Date: 12/12/90 Moisture Condition(AMC): 2 Checked By:

100.0 Year Storm 1 hour rainfall = 1.12 (In.) Intensity Slope = 0.490

********** R A T I O N A L H Y D R O L O G Y - R I V E R S I D E C O **********

Station/ Point No.	Soil Type A,B,C,D	Devel. Type	Area (Acres)	I in/h	C	L Elev	Q (sub)	Q Total	Slope v/hz	Section	V Fps	L ft.	T min.	Tc min.	Hydraulics or notes
19.00	C-100%	SF 1ac	5.3	2.43	0.7575	1884.0	9.7							12.4	
	Natural Channel travel time + subarea flow addition							9.75	0.073	Nat Ch	4.7	2240	7.9		qavg= 31.64
20.00	C-100%	SF 1ac	23.8	1.91	0.7279	1720.0	33.0							20.3	
20.00			29.1	1.91			42.8							20.3	Stream Summary
22.00	C-100%	SF 1ac	7.3	2.38	0.7551	1888.0	13.1							12.9	
	Natural Channel travel time + subarea flow addition							13.11	0.049	Nat Ch	4.2	1400	5.6		qavg= 39.78
23.00	C-100%	SF 1/2	29.7	2.00	0.7753	1819.0	46.0							18.5	
	Natural Channel travel time + subarea flow addition							59.06	0.060	Nat Ch	5.9	1640	4.6		qavg= 83.73
20.00	C-100%	SF 1ac	30.9	1.79	0.7194	1720.0	39.8							23.1	
Confluence Analysis			TC#1= 20.3	TC#2= 23.1	TC#3= 0.0	TC#4= 0.0	TC#5= 0.0								Largest Confluence Q=138.98
			I#1= 1.91	I#2= 1.79	I#3= 0.00	I#4= 0.00	I#5= 0.00	Area = 97.00							
20.00			AR1= 29.1	AR2= 67.9	AR3= 0.0	AR4= 0.0	AR5= 0.0								
			Q1 = 0.0	Q2 = 139.0	Q3 = 0.0	Q4 = 0.0	Q5 = 0.0								
	Natural Channel travel time + subarea flow addition							138.98	0.050	Nat Ch	6.8	2320	5.7		qavg=163.84
24.00	C-100%	SF 1ac	34.7	1.61	0.7043	1604.0	39.2							28.8	
No. Pipes = 1 Pipe flow travel time --- 'N' = 0.013								178.2	0.040	d= 39	22.1	1440	1.1	29.9	hgl= 3.0(Ft.)
26.00	A O B50 C50 D O	SF 1/4	43.3	1.58	0.7485	1546.0	51.1							29.9	
No. Pipes = 1 Pipe flow travel time --- 'N' = 0.013								229.3	0.027	d= 48	21.4	1600	1.2	31.1	hgl= 3.2(Ft.)
27.00	C-100%	Comm	46.7	1.54	0.8749	1505.0	63.1							31.1	

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PERRIS VALLEY LAT H-11 10-YR

AND LAT. H-11.1

OFFICIAL USE ONLY - Riverside County Offices - S/N 433

Project: timpv2.rrv Page 2 Calculated By:

Study Date: 12/12/90 Moisture Condition(AMC): 2 Checked By:

10.0 Year Storm 1 hour rainfall = 0.78 (In.) Intensity Slope = 0.490

********** R A T I O N A L H Y D R O L O G Y - R I V E R S I D E C O **********

Station/ Point No.	Soil Type A,B,C,D	Devel. Type	Area (Acres)	I in/h	C	L Elev	Q (sub)	Q Total	Slope v/hz	Section	V Fps	L ft.	T min.	Tc min.	Hydraulics or notes
********** CONFLUENCE OF MAIN STREAMS **********															
27.00			221.7	1.03			186.1							33.9	Stream Summary
33.00	B-100%	SF 1/4	5.5	1.86	0.7377	1572.0	7.5							10.2	
Natural Channel travel time + subarea flow addition								7.53	0.024	Nat Ch	4.9	1793	6.1		qavg= 24.52
31.00	B-100%	SF 1/4	24.8	1.48	0.7132	1529.0	26.1							16.3	
31.00			30.3	1.48			33.6							16.3	Stream Summary
101.00	C-100%	SF 1ac	8.2	1.58	0.7021	1652.0	9.1							14.2	
Natural Channel travel time + subarea flow addition								9.10	0.056	Nat Ch	7.3	1314	3.0		qavg= 22.24
102.00	C-100%	SF 1/4	23.7	1.44	0.7677	1578.0	26.2							17.2	
Natural Channel travel time + subarea flow addition								35.27	0.021	Nat Ch	5.6	2382	7.2		qavg= 49.98
31.00	B-100%	SF 1/4	26.6	1.21	0.6915	1529.0	22.3							24.4	
Confluence Analysis			TC#1= 16.3 TC#2= 24.4 TC#3= 0.0 TC#4= 0.0 TC#5= 0.0 Q#1= 33.65 Q#2= 57.59 Q#3= 0.00 Q#4= 0.00 Q#5= 0.00 I#1= 1.48 I#2= 1.21 I#3= 0.00 I#4= 0.00 I#5= 0.00 AR1= 30.3 AR2= 58.5 AR3= 0.0 AR4= 0.0 AR5= 0.0 Q1 = 0.0 Q2 = 85.2 Q3 = 0.0 Q4 = 0.0 Q5 = 0.0									Area =	88.80		Largest Confluence Q= 85.24
31.00															
No. Pipes = 1 Pipe flow travel time --- 'N' = 0.013 ------								85.2	0.019	d= 36	14.8	1100	1.2	25.6	hgl= 2.3(Ft.)
35.00	B-100%	Comm	24.5	1.18	0.8578	1508.0	24.9							25.6	
No. Pipes = 1 Pipe flow travel time --- 'N' = 0.013 ------								110.1	0.002	d= 57	6.7	1400	3.5	29.1	hgl= 4.1(Ft.)
27.00	B-100%	Comm	28.5	1.11	0.8564	1505.0	27.2							29.1	

Version 2.5

PERRIS VALLEY LAT H-11 10-YR
AND LAT H-11.1

OFFICIAL USE ONLY - Riverside County Offices - S/N 433

Project: timpv2.rrv Page 3 Calculated By:
Study Date: 12/12/90 Moisture Condition(AMC): 2 Checked By:
10.0 Year Storm 1 hour rainfall = 0.78 (In.) Intensity Slope = 0.490

********** R A T I O N A L H Y D R O L O G Y - R I V E R S I D E C O **********

Station/ Point No.	Soil Type A,B,C,D	Devel. Type	Area (Acres)	I in/h	C	L Elev	Q (sub)	Q Total	Slope v/hz	Section	V Fps	L ft.	T min.	Tc min.	Hydraulics or notes
********** CONFLUENCE OF MAIN STREAMS **********															
Confluence Analysis			TC#1= 33.9 Q#1=186.08 I#1= 1.03 AR1= 221.7 Q1 = 313.4	TC#2= 29.1 Q#2=137.28 I#2= 1.11 AR2= 141.8 Q2 = 0.0	TC#3= 0.0 Q#3=137.28 I#3= 0.00 AR3= 0.0 Q3 = 0.0	TC#4= 0.0 Q#4= 0.00 I#4= 0.00 AR4= 0.0 Q4 = 0.0	TC#5= 0.0 Q#5= 0.00 I#5= 0.00 AR5= 0.0 Q5 = 0.0	Area = 363.50						Largest Confluence Q=313.38
27.00															
No. Pipes = 1 Pipe flow travel time --- 'N' = 0.013								313.4	0.016	d= 60	19.2	800	0.7	34.6	hgl= 3.9(Ft.)
28.00	B-100%	Comm	34.5	1.02	0.8544	1492.0	30.1							34.6	
Improved channel travel time								343.49	0.003	b= 4.0	9.5	1150	2.0	36.6	n= 0.02 dn= 3.8 LZ= 1.5 RZ= 1.5
37.00	B-100%	Comm	25.1	0.99	0.8538	1488.0	21.3							36.6	

Total study area = 423.10 (Ac.) Peak flow rate = 364.781 (CFS)

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PERRIS VALLEY LAT H-11 100-YR

AND LAT. H-11.1

OFFICIAL USE ONLY - Riverside County Offices - S/N 433

Project: timpv1.rrv Page 2 Calculated By:

Study Date: 12/12/90 Moisture Condition(AMC): 2 Checked By:

100.0 Year Storm 1 hour rainfall = 1.12 (In.) Intensity Slope = 0.490

********** R A T I O N A L H Y D R O L O G Y - R I V E R S I D E C O **********

Station/ Point No.	Soil Type A,B,C,D	Devel. Type	Area (Acres)	I in/h	C	L Elev	Q (sub)	Q Total	Slope v/hz	Section	V Fps	L ft.	T min.	Tc min.	Hydraulics or notes
	********** CONFLUENCE OF MAIN STREAMS **********														
27.00			221.7	1.54			292.4							31.1	Stream Summary
33.00	B-100%	SF 1/4	5.5	2.67	0.7731	1572.0	11.3							10.2	
	Natural Channel travel time + subarea flow addition							11.34	0.024	Nat Ch	5.5	1793	5.4		qavg= 36.89
31.00	B-100%	SF 1/4	24.8	2.16	0.7532	1529.0	40.4							15.7	
31.00			30.3	2.16			51.7							15.7	Stream Summary
101.00	C-100%	SF 1ac	8.2	2.27	0.7496	1652.0	13.9							14.2	
	Natural Channel travel time + subarea flow addition							13.94	0.056	Nat Ch	8.2	1314	2.7		qavg= 34.10
102.00	C-100%	SF 1/4	23.7	2.09	0.7996	1578.0	39.5							16.9	
	Natural Channel travel time + subarea flow addition							53.47	0.021	Nat Ch	6.3	2382	6.3		qavg= 75.76
31.00	B-100%	SF 1/4	26.6	1.78	0.7335	1529.0	34.8							23.2	
Confluence Analysis 31.00	TC#1= 15.7 TC#2= 23.2 TC#3= 0.0 TC#4= 0.0 TC#5= 0.0 Q#1= 51.74 Q#2= 88.28 Q#3= 0.00 Q#4= 0.00 Q#5= 0.00 I#1= 2.16 I#2= 1.78 I#3= 0.00 I#4= 0.00 I#5= 0.00 AR1= 30.3 AR2= 58.5 AR3= 0.0 AR4= 0.0 AR5= 0.0 Q1 = 0.0 Q2 = 131.0 Q3 = 0.0 Q4 = 0.0 Q5 = 0.0										Area =	88.80			Largest Confluence Q=130.95
No. Pipes = 1 Pipe flow travel time --- 'N' = 0.013								131.0	0.019	d= 42	16.4	1100	1.1	24.3	hgl= 2.7(Ft.)
35.00	B-100%	Comm	24.5	1.74	0.8662	1508.0	37.0							24.3	
No. Pipes = 1 Pipe flow travel time --- 'N' = 0.013								168.0	0.002	d= 69	7.7	1400	3.0	27.4	hgl= 4.5(Ft.)
27.00	B-100%	Comm	28.5	1.65	0.8650	1505.0	40.6							27.4	

Version 2.5

PERRIS VALLEY LAT H-11 100-YR
AND LAT. H-11.1

OFFICIAL USE ONLY - Riverside County Offices - S/N 433

Project: timpv1.rrv Page 3 Calculated By:
Study Date: 12/12/90 Moisture Condition(AMC): 2 Checked By:
100.0 Year Storm 1 hour rainfall = 1.12 (In.) Intensity Slope = 0.490

********** R A T I O N A L H Y D R O L O G Y - R I V E R S I D E C O **********

Station/ Point No.	Soil Type A,B,C,D	Devel. Type	Area (Acres)	I in/h	C	L Elev	Q (sub)	Q Total	Slope v/hz	Section	V Fps	L ft.	T min.	Tc min.	Hydraulics or notes
********** CONFLUENCE OF MAIN STREAMS **********															
Confluence Analysis			TC#1= 31.1 Q#1=292.40 I#1= 1.54 AR1= 221.7 Q1 = 488.1	TC#2= 27.4 Q#2=208.52 I#2= 1.65 AR2= 141.8 Q2 = 0.0	TC#3= 0.0 Q#3=208.52 I#3= 0.00 AR3= 0.0 Q3 = 0.0	TC#4= 0.0 Q#4= 0.00 I#4= 0.00 AR4= 0.0 Q4 = 0.0	TC#5= 0.0 Q#5= 0.00 I#5= 0.00 AR5= 0.0 Q5 = 0.0	Area = 363.50						Largest Confluence Q=488.15
27.00															
No. Pipes = 1 Pipe flow travel time --- 'N' = 0.013								488.1	0.016	d= 69	21.1	800	0.6	31.8	hgl= 4.8(Ft.)
28.00	B-100%	Comm	34.5	1.53	0.8634	1492.0	45.6							31.8	
Improved channel travel time								533.71	0.003	b= 4.0	10.6	1150	1.8	33.6	n= 0.02 dn= 4.6 LZ= 1.5 RZ= 1.5
37.00	B-100%	Comm	25.1	1.49	0.8628	1488.0	32.2							33.6	

Total study area = 423.10 (Ac.) Peak flow rate = 565.956 (CFS)

Version 2.5

PERRIS VALLEY LAT H-11 10-YR

AND LAT. H-11.1

OFFICIAL USE ONLY - Riverside County Offices - S/N 433

Project: timpv2.rrv Page 1 Calculated By:

Study Date: 12/12/90 Moisture Condition(AMC): 2 Checked By:

10.0 Year Storm 1 hour rainfall = 0.78 (In.) Intensity Slope = 0.490

********** R A T I O N A L H Y D R O L O G Y - R I V E R S I D E C O **********

Station/ Point No.	Soil Type A,B,C,D	Devel. Type	Area (Acres)	I in/h	C	L Elev	Q (sub)	Q Total	Slope v/hz	Section	V Fps	L ft.	T min.	Tc min.	Hydraulics or notes
19.00	C-100%	SF 1ac	5.3	1.69	0.7117	1884.0	6.4							12.4	
	Natural Channel travel time + subarea flow addition							6.38	0.073	Nat Ch	4.1	2240	9.1		qavg= 20.70
20.00	C-100%	SF 1ac	23.8	1.29	0.6719	1720.0	20.7							21.4	
20.00			29.1	1.29			27.0							21.4	Stream Summary
22.00	C-100%	SF 1ac	7.3	1.66	0.7088	1888.0	8.6							12.9	
	Natural Channel travel time + subarea flow addition							8.57	0.049	Nat Ch	3.7	1400	6.4		qavg= 26.00
23.00	C-100%	SF 1/2	29.7	1.36	0.7349	1819.0	29.7							19.3	
	Natural Channel travel time + subarea flow addition							38.25	0.060	Nat Ch	5.1	1640	5.3		qavg= 54.22
20.00	C-100%	SF 1ac	30.9	1.21	0.6612	1720.0	24.7							24.6	
Confluence Analysis	TC#1= 21.4 TC#2= 24.6 TC#3= 0.0 TC#4= 0.0 TC#5= 0.0 Q#1= 27.03 Q#2= 62.91 Q#3= 0.00 Q#4= 0.00 Q#5= 0.00 I#1= 1.29 I#2= 1.21 I#3= 0.00 I#4= 0.00 I#5= 0.00 AR1= 29.1 AR2= 67.9 AR3= 0.0 AR4= 0.0 AR5= 0.0 Q1 = 0.0 Q2 = 88.2 Q3 = 0.0 Q4 = 0.0 Q5 = 0.0										Area = 97.00				Largest Confluence Q= 88.18
20.00															
	Natural Channel travel time + subarea flow addition							88.18	0.050	Nat Ch	5.8	2320	6.7		qavg=103.95
24.00	C-100%	SF 1ac	34.7	1.07	0.6421	1604.0	23.9							31.3	
No. Pipes = 1 Pipe flow travel time --- 'N' = 0.013								112.1	0.040	d= 33	20.2	1440	1.2	32.5	hgl= 2.4(Ft.)
26.00	A 0 B50 C50 D 0	SF 1/4	43.3	1.05	0.7058	1546.0	32.2							32.5	
No. Pipes = 1 Pipe flow travel time --- 'N' = 0.013								144.3	0.027	d= 39	18.4	1600	1.5	33.9	hgl= 2.9(Ft.)
27.00	C-100%	Comm	46.7	1.03	0.8669	1505.0	41.8							33.9	

Version 2.5

APPENDIX B

HYDROLOGY CALCULATIONS

EXISTING CONDITION

```
**************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1435

                        Analysis prepared by:



 ************************* DESCRIPTION OF STUDY *************************
* RIDER AND PATTERSON - RIVERSIDE COUNTY                                 *
* EXISTING CONDITION                                                     *
* HYDROLOGIC ANALYSIS - 100-YEAR                                         *
 **************************************************************************

  FILE NAME: 3958E100.DAT
  TIME/DATE OF STUDY: 16:00 05/14/2021
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.490
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.280
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.280
  SLOPE OF INTENSITY DURATION CURVE = 0.5000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *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.*

**************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =   1761.00
  DOWNSTREAM ELEVATION(FEET) =   1676.00
  ELEVATION DIFFERENCE(FEET) =     85.00
  TC = 0.533*[( 1000.00**3)/(    85.00)]**.2 =   13.820
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.667
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6462
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      6.55
  TOTAL AREA(ACRES) =      3.80   TOTAL RUNOFF(CFS) =      6.55

**************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  52
--------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1676.00  DOWNSTREAM(FEET) =   1656.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   329.00   CHANNEL SLOPE =  0.0608
  CHANNEL FLOW THRU SUBAREA(CFS) =       6.55
  FLOW VELOCITY(FEET/SEC) =   5.55 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
```

```
 TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =   14.81
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    1329.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.576
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6398
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    3.30   SUBAREA RUNOFF(CFS) =    5.44
 TOTAL AREA(ACRES) =       7.1   TOTAL RUNOFF(CFS) =     11.99
 TC(MIN.) =   14.81

****************************************************************************
 FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1656.00  DOWNSTREAM(FEET) =   1608.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   778.00   CHANNEL SLOPE =  0.0617
 CHANNEL FLOW THRU SUBAREA(CFS) =      11.99
 FLOW VELOCITY(FEET/SEC) =   6.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.99   Tc(MIN.) =   16.80
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =    2107.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.419
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6280
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    5.40   SUBAREA RUNOFF(CFS) =    8.20
 TOTAL AREA(ACRES) =       12.5   TOTAL RUNOFF(CFS) =     20.19
 TC(MIN.) =   16.80

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    114.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1608.00  DOWNSTREAM(FEET) =   1580.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   598.00   CHANNEL SLOPE =  0.0460
 CHANNEL FLOW THRU SUBAREA(CFS) =      20.19
 FLOW VELOCITY(FEET/SEC) =   6.44 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.55   Tc(MIN.) =   18.35
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    114.00 =    2705.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    114.00 TO NODE    114.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.315
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6196
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.90   SUBAREA RUNOFF(CFS) =    1.29
 TOTAL AREA(ACRES) =       13.4   TOTAL RUNOFF(CFS) =     21.48
 TC(MIN.) =   18.35

****************************************************************************
 FLOW PROCESS FROM NODE    114.00 TO NODE    114.00 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.) =   18.35
 RAINFALL INTENSITY(INCH/HR) =   2.31
 TOTAL STREAM AREA(ACRES) =    13.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.48

****************************************************************************
 FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
==============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =   1674.50
  DOWNSTREAM ELEVATION(FEET) =   1592.00
  ELEVATION DIFFERENCE(FEET) =     82.50
  TC = 0.533*[( 1000.00**3)/(    82.50)]**.2 =   13.903
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.659
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6456
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      6.18
  TOTAL AREA(ACRES) =      3.60   TOTAL RUNOFF(CFS) =      6.18

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    112.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1592.00  DOWNSTREAM(FEET) =   1588.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   160.00   CHANNEL SLOPE =  0.0250
  CHANNEL FLOW THRU SUBAREA(CFS) =       6.18
  FLOW VELOCITY(FEET/SEC) =   3.51 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.76   Tc(MIN.) =   14.66
  LONGEST FLOWPATH FROM NODE    110.00 TO NODE    112.00 =    1160.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.589
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6407
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    2.60   SUBAREA RUNOFF(CFS) =    4.31
  TOTAL AREA(ACRES) =       6.2   TOTAL RUNOFF(CFS) =     10.49
  TC(MIN.) =   14.66

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    113.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1588.00  DOWNSTREAM(FEET) =   1584.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   140.00   CHANNEL SLOPE =  0.0286
  CHANNEL FLOW THRU SUBAREA(CFS) =      10.49
  FLOW VELOCITY(FEET/SEC) =   4.28 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.55   Tc(MIN.) =   15.21
  LONGEST FLOWPATH FROM NODE    110.00 TO NODE    113.00 =    1300.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    113.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.542
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6374
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    2.60   SUBAREA RUNOFF(CFS) =    4.21
  TOTAL AREA(ACRES) =       8.8   TOTAL RUNOFF(CFS) =     14.71
  TC(MIN.) =   15.21

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    114.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1584.00  DOWNSTREAM(FEET) =   1580.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   138.00   CHANNEL SLOPE =  0.0254
  CHANNEL FLOW THRU SUBAREA(CFS) =      14.71
  FLOW VELOCITY(FEET/SEC) =   4.40 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.52   Tc(MIN.) =   15.73
  LONGEST FLOWPATH FROM NODE    110.00 TO NODE    114.00 =    1438.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    114.00 TO NODE    114.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.500
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6342
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    4.60   SUBAREA RUNOFF(CFS) =    7.29
 TOTAL AREA(ACRES) =      13.4   TOTAL RUNOFF(CFS) =     22.00
 TC(MIN.) =   15.73

********************************************************************************
 FLOW PROCESS FROM NODE    114.00 TO NODE    114.00 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.) =   15.73
 RAINFALL INTENSITY(INCH/HR) =   2.50
 TOTAL STREAM AREA(ACRES) =    13.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.00

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       21.48    18.35        2.315         13.40
     2       22.00    15.73        2.500         13.40

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF       Tc      INTENSITY
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
     1       40.42    15.73       2.500
     2       41.85    18.35       2.315

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      41.85   Tc(MIN.) =   18.35
 TOTAL AREA(ACRES) =       26.8
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    114.00 =    2705.00 FEET.

********************************************************************************
 FLOW PROCESS FROM NODE    114.00 TO NODE    201.00 IS CODE =  52
--------------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1580.50  DOWNSTREAM(FEET) =   1580.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    18.00   CHANNEL SLOPE =  0.0278
 CHANNEL FLOW THRU SUBAREA(CFS) =      41.85
 FLOW VELOCITY(FEET/SEC) =   6.13 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.05   Tc(MIN.) =   18.40
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    201.00 =    2723.00 FEET.

********************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    201.00 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.) =   18.40
 RAINFALL INTENSITY(INCH/HR) =   2.31
 TOTAL STREAM AREA(ACRES) =    26.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.85

********************************************************************************
 FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
--------------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   631.00
 UPSTREAM ELEVATION(FEET) =   1587.70
 DOWNSTREAM ELEVATION(FEET) =   1580.00
 ELEVATION DIFFERENCE(FEET) =      7.70
 TC = 0.393*[(  631.00**3)/(     7.70)]**.2 =   12.493
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.805
```

```
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7776
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      4.80
 TOTAL AREA(ACRES) =      2.20   TOTAL RUNOFF(CFS) =      4.80

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    201.00 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.) =   12.49
 RAINFALL INTENSITY(INCH/HR) =   2.81
 TOTAL STREAM AREA(ACRES) =     2.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.80

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
    1       40.42    15.78        2.496         26.80
    1       41.85    18.40        2.311         26.80
    2        4.80    12.49        2.805          2.20

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       36.79    12.49       2.805
    2       44.69    15.78       2.496
    3       45.81    18.40       2.311

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      45.81   Tc(MIN.) =   18.40
 TOTAL AREA(ACRES) =       29.0
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    201.00 =    2723.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    201.00 TO NODE    401.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1559.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   519.00   CHANNEL SLOPE =  0.0395
 CHANNEL FLOW THRU SUBAREA(CFS) =      45.81
 FLOW VELOCITY(FEET/SEC) =   7.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =   19.55
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    401.00 =    3242.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    401.00 TO NODE    401.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.242
 SINGLE-FAMILY(1-ACRE LOT) RUNOFF COEFFICIENT = .6707
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    4.90   SUBAREA RUNOFF(CFS) =    7.37
 TOTAL AREA(ACRES) =       33.9   TOTAL RUNOFF(CFS) =      53.18
 TC(MIN.) =   19.55

****************************************************************************
 FLOW PROCESS FROM NODE    401.00 TO NODE    401.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.242
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6134
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    1.80   SUBAREA RUNOFF(CFS) =    2.48
 TOTAL AREA(ACRES) =       35.7   TOTAL RUNOFF(CFS) =      55.65
 TC(MIN.) =   19.55

****************************************************************************
 FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
```

```
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1559.50  DOWNSTREAM(FEET) =   1544.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   772.00   CHANNEL SLOPE =  0.0194
 CHANNEL FLOW THRU SUBAREA(CFS) =      55.65
 FLOW VELOCITY(FEET/SEC) =   5.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.31   Tc(MIN.) =   21.86
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    402.00 =    4014.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    402.00 TO NODE    402.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.120
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6024
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    4.30   SUBAREA RUNOFF(CFS) =    5.49
 TOTAL AREA(ACRES) =       40.0   TOTAL RUNOFF(CFS) =      61.14
 TC(MIN.) =   21.86
 ** PEAK FLOW RATE TABLE **
 STREAM   RUNOFF       Tc
 NUMBER    (CFS)     (MIN.)
    1       55.77      16.12
    2       61.43      19.26
    3       61.14      21.86
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =      61.43  Tc(MIN.) =   19.26

****************************************************************************
 FLOW PROCESS FROM NODE    402.00 TO NODE    434.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1544.50  DOWNSTREAM(FEET) =   1531.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   781.00   CHANNEL SLOPE =  0.0166
 CHANNEL FLOW THRU SUBAREA(CFS) =      61.43
 FLOW VELOCITY(FEET/SEC) =   5.30 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.46   Tc(MIN.) =   21.71
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    434.00 =    4795.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    434.00 TO NODE    434.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.128
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6031
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    4.30   SUBAREA RUNOFF(CFS) =    5.52
 TOTAL AREA(ACRES) =       44.3   TOTAL RUNOFF(CFS) =      66.94
 TC(MIN.) =   21.71

****************************************************************************
 FLOW PROCESS FROM NODE    434.00 TO NODE    434.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    210.00 TO NODE    211.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   486.00
 UPSTREAM ELEVATION(FEET) =   1581.00
 DOWNSTREAM ELEVATION(FEET) =   1573.70
 ELEVATION DIFFERENCE(FEET) =      7.30
 TC = 0.393*[(  486.00**3)/(     7.30)]**.2 =   10.796
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.018
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7840
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      3.79
 TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      3.79

****************************************************************************
 FLOW PROCESS FROM NODE    211.00 TO NODE    221.00 IS CODE =  52
```

```
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
 ELEVATION DATA: UPSTREAM(FEET) =   1573.70  DOWNSTREAM(FEET) =   1571.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   130.00   CHANNEL SLOPE =  0.0169
 CHANNEL FLOW THRU SUBAREA(CFS) =       3.79
 FLOW VELOCITY(FEET/SEC) =   2.57 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.84   Tc(MIN.) =   11.64
 LONGEST FLOWPATH FROM NODE    210.00 TO NODE    221.00 =     616.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    221.00 TO NODE    221.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.906
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6615
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.40   SUBAREA RUNOFF(CFS) =    0.77
 TOTAL AREA(ACRES) =       2.0   TOTAL RUNOFF(CFS) =       4.55
 TC(MIN.) =   11.64

****************************************************************************
 FLOW PROCESS FROM NODE    221.00 TO NODE    221.00 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.) =   11.64
 RAINFALL INTENSITY(INCH/HR) =   2.91
 TOTAL STREAM AREA(ACRES) =     2.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.55

****************************************************************************
 FLOW PROCESS FROM NODE    220.00 TO NODE    221.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
       ASSUMED INITIAL SUBAREA UNIFORM
       DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   424.00
 UPSTREAM ELEVATION(FEET) =   1579.10
 DOWNSTREAM ELEVATION(FEET) =   1571.50
 ELEVATION DIFFERENCE(FEET) =      7.60
 TC = 0.393*[(  424.00**3)/(     7.60)]**.2 =    9.868
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.156
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7879
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      2.74
 TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      2.74

****************************************************************************
 FLOW PROCESS FROM NODE    221.00 TO NODE    221.00 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.) =    9.87
 RAINFALL INTENSITY(INCH/HR) =   3.16
 TOTAL STREAM AREA(ACRES) =     1.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.74

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        4.55    11.64        2.906          2.00
     2        2.74     9.87        3.156          1.10

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF       Tc      INTENSITY
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
     1        6.60     9.87        3.156
     2        7.07    11.64        2.906
```

```
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       7.07   Tc(MIN.) =   11.64
 TOTAL AREA(ACRES) =        3.1
 LONGEST FLOWPATH FROM NODE    210.00 TO NODE    221.00 =     616.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    221.00 TO NODE    411.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1571.50  DOWNSTREAM(FEET) =   1555.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   587.00   CHANNEL SLOPE =  0.0273
 CHANNEL FLOW THRU SUBAREA(CFS) =       7.07
 FLOW VELOCITY(FEET/SEC) =   3.79 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.58   Tc(MIN.) =   14.22
 LONGEST FLOWPATH FROM NODE    210.00 TO NODE    411.00 =    1203.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    411.00 TO NODE    411.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.629
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6436
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    1.40   SUBAREA RUNOFF(CFS) =    2.37
 TOTAL AREA(ACRES) =        4.5   TOTAL RUNOFF(CFS) =       9.44
 TC(MIN.) =   14.22

****************************************************************************
 FLOW PROCESS FROM NODE    411.00 TO NODE    433.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1555.50  DOWNSTREAM(FEET) =   1543.90
 CHANNEL LENGTH THRU SUBAREA(FEET) =   475.00   CHANNEL SLOPE =  0.0244
 CHANNEL FLOW THRU SUBAREA(CFS) =       9.44
 FLOW VELOCITY(FEET/SEC) =   3.85 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =   16.28
 LONGEST FLOWPATH FROM NODE    210.00 TO NODE    433.00 =    1678.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    433.00 TO NODE    433.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.457
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6310
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.90   SUBAREA RUNOFF(CFS) =    1.40
 TOTAL AREA(ACRES) =        5.4   TOTAL RUNOFF(CFS) =      10.84
 TC(MIN.) =   16.28

****************************************************************************
 FLOW PROCESS FROM NODE    433.00 TO NODE    433.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    230.00 TO NODE    231.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
       ASSUMED INITIAL SUBAREA UNIFORM
       DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   607.00
 UPSTREAM ELEVATION(FEET) =   1579.10
 DOWNSTREAM ELEVATION(FEET) =   1565.00
 ELEVATION DIFFERENCE(FEET) =     14.10
 TC = 0.393*[(  607.00**3)/(    14.10)]**.2 =   10.815
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.015
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7840
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      3.07
 TOTAL AREA(ACRES) =      1.30   TOTAL RUNOFF(CFS) =      3.07
```

```
**************************************************************************
 FLOW PROCESS FROM NODE    231.00 TO NODE    421.00 IS CODE =  52
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1565.00  DOWNSTREAM(FEET) =   1564.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    77.00   CHANNEL SLOPE =  0.0130
 CHANNEL FLOW THRU SUBAREA(CFS) =       3.07
 FLOW VELOCITY(FEET/SEC) =   2.15 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.60   Tc(MIN.) =   11.41
 LONGEST FLOWPATH FROM NODE    230.00 TO NODE    421.00 =     684.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    421.00 TO NODE    421.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.935
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6633
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.10   SUBAREA RUNOFF(CFS) =    0.19
 TOTAL AREA(ACRES) =        1.4   TOTAL RUNOFF(CFS) =       3.27
 TC(MIN.) =   11.41

**************************************************************************
 FLOW PROCESS FROM NODE    421.00 TO NODE    421.00 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.) =   11.41
 RAINFALL INTENSITY(INCH/HR) =   2.94
 TOTAL STREAM AREA(ACRES) =     1.40
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.27

**************************************************************************
 FLOW PROCESS FROM NODE    240.00 TO NODE    241.00 IS CODE =  21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   408.00
 UPSTREAM ELEVATION(FEET) =   1568.70
 DOWNSTREAM ELEVATION(FEET) =   1565.00
 ELEVATION DIFFERENCE(FEET) =      3.70
 TC = 0.393*[(  408.00**3)/(     3.70)]**.2 =   11.135
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.971
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7827
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      2.56
 TOTAL AREA(ACRES) =      1.10   TOTAL RUNOFF(CFS) =      2.56

**************************************************************************
 FLOW PROCESS FROM NODE    241.00 TO NODE    421.00 IS CODE =  52
--------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1565.00  DOWNSTREAM(FEET) =   1564.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    53.00   CHANNEL SLOPE =  0.0189
 CHANNEL FLOW THRU SUBAREA(CFS) =       2.56
 FLOW VELOCITY(FEET/SEC) =   2.49 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.35   Tc(MIN.) =   11.49
 LONGEST FLOWPATH FROM NODE    240.00 TO NODE    421.00 =     461.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    421.00 TO NODE    421.00 IS CODE =  81
--------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.925
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6627
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.10   SUBAREA RUNOFF(CFS) =    0.19
 TOTAL AREA(ACRES) =        1.2   TOTAL RUNOFF(CFS) =       2.75
 TC(MIN.) =   11.49
```

```
****************************************************************************
 FLOW PROCESS FROM NODE    421.00 TO NODE    421.00 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.) =   11.49
 RAINFALL INTENSITY(INCH/HR) =   2.92
 TOTAL STREAM AREA(ACRES) =     1.20
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.75

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.27    11.41        2.935          1.40
     2        2.75    11.49        2.925          1.20

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF       Tc      INTENSITY
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
     1        6.00    11.41        2.935
     2        6.01    11.49        2.925

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       6.01   Tc(MIN.) =   11.49
 TOTAL AREA(ACRES) =        2.6
 LONGEST FLOWPATH FROM NODE    230.00 TO NODE    421.00 =     684.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    421.00 TO NODE    422.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1564.00  DOWNSTREAM(FEET) =   1557.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   328.00   CHANNEL SLOPE =  0.0213
 CHANNEL FLOW THRU SUBAREA(CFS) =       6.01
 FLOW VELOCITY(FEET/SEC) =   3.22 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =   13.19
 LONGEST FLOWPATH FROM NODE    230.00 TO NODE    422.00 =    1012.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    422.00 TO NODE    422.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.730
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6504
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.60   SUBAREA RUNOFF(CFS) =    1.07
 TOTAL AREA(ACRES) =        3.2   TOTAL RUNOFF(CFS) =       7.07
 TC(MIN.) =   13.19

****************************************************************************
 FLOW PROCESS FROM NODE    422.00 TO NODE    432.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1557.00  DOWNSTREAM(FEET) =   1551.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   308.00   CHANNEL SLOPE =  0.0195
 CHANNEL FLOW THRU SUBAREA(CFS) =       7.07
 FLOW VELOCITY(FEET/SEC) =   3.20 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =   14.79
 LONGEST FLOWPATH FROM NODE    230.00 TO NODE    432.00 =    1320.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    432.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.578
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6399
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.80   SUBAREA RUNOFF(CFS) =    1.32
 TOTAL AREA(ACRES) =        4.0   TOTAL RUNOFF(CFS) =       8.39
```

```
 TC(MIN.) =   14.79

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    432.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    250.00 TO NODE    251.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
       ASSUMED INITIAL SUBAREA UNIFORM
       DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   992.00
 UPSTREAM ELEVATION(FEET) =   1581.00
 DOWNSTREAM ELEVATION(FEET) =   1552.80
 ELEVATION DIFFERENCE(FEET) =     28.20
 TC = 0.393*[(  992.00**3)/(    28.20)]**.2 =   12.642
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.789
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7771
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      5.85
 TOTAL AREA(ACRES) =      2.70   TOTAL RUNOFF(CFS) =      5.85

****************************************************************************
 FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  91
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   1552.80
 DOWNSTREAM NODE ELEVATION(FEET) =   1552.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =    36.00
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.600
 PAVEMENT LIP(FEET) =  0.060   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
 MAXIMUM DEPTH(FEET) =   0.67
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.778
 SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7768
 SOIL CLASSIFICATION IS "B"
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.25
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.51
 AVERAGE FLOW DEPTH(FEET) =   0.67   FLOOD WIDTH(FEET) =    4.00
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.09   Tc(MIN.) =   12.73
 SUBAREA AREA(ACRES) =    1.30       SUBAREA RUNOFF(CFS) =    2.81
 TOTAL AREA(ACRES) =        4.0          PEAK FLOW RATE(CFS) =       8.66

       ==>>ERROR:FLOW EXCEEDS CAPACITY OF CHANNEL WITH
           NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM ALLOWABLE DEPTH.
           AS AN APPROXIMATION, TRAVEL TIME CALCULATIONS ARE BASED
           ON FLOW DEPTH EQUAL TO THE SPECIFIED MAXIMUM ALLOWABLE DEPTH.


 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.67   FLOOD WIDTH(FEET) =    4.00
 FLOW VELOCITY(FEET/SEC.) =   7.76   DEPTH*VELOCITY(FT*FT/SEC) =   5.20
 LONGEST FLOWPATH FROM NODE    250.00 TO NODE    252.00 =    1028.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    252.00 TO NODE    253.00 IS CODE =  61
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1552.50  DOWNSTREAM ELEVATION(FEET) = 1551.90
 STREET LENGTH(FEET) =   369.00   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   9.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.95
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
        NOTE: STREET FLOW EXCEEDS TOP OF CURB.
```

```
        THE FOLLOWING STREET FLOW RESULTS ARE BASED ON THE ASSUMPTION
        THAT NEGLIBLE FLOW OCCURS OUTSIDE OF THE STREET CHANNEL.
        THAT IS, ALL FLOW ALONG THE PARKWAY, ETC., IS NEGLECTED.
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.73
  STREET FLOW TRAVEL TIME(MIN.) =   4.35   Tc(MIN.) =   17.09
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.399
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7632
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    4.58
  TOTAL AREA(ACRES) =        6.5        PEAK FLOW RATE(CFS) =      13.23

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  1.52   DEPTH*VELOCITY(FT*FT/SEC.) =   0.82
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    253.00 =    1397.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    253.00 TO NODE    431.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1551.90  DOWNSTREAM(FEET) =   1551.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =    41.00   CHANNEL SLOPE =  0.0171
  CHANNEL FLOW THRU SUBAREA(CFS) =      13.23
  FLOW VELOCITY(FEET/SEC) =   3.51 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.19   Tc(MIN.) =   17.28
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    431.00 =    1438.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    431.00 TO NODE    431.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.385
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6253
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.70   SUBAREA RUNOFF(CFS) =    1.04
  TOTAL AREA(ACRES) =        7.2   TOTAL RUNOFF(CFS) =      14.28
  TC(MIN.) =   17.28

****************************************************************************
  FLOW PROCESS FROM NODE    431.00 TO NODE    431.00 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.) =   17.28
  RAINFALL INTENSITY(INCH/HR) =   2.39
  TOTAL STREAM AREA(ACRES) =     7.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     14.28

****************************************************************************
  FLOW PROCESS FROM NODE    260.00 TO NODE    261.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   546.00
  UPSTREAM ELEVATION(FEET) =   1553.70
  DOWNSTREAM ELEVATION(FEET) =   1551.50
  ELEVATION DIFFERENCE(FEET) =      2.20
  TC = 0.393*[(  546.00**3)/(     2.20)]**.2 =   14.716
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.585
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7702
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      3.19
  TOTAL AREA(ACRES) =      1.60   TOTAL RUNOFF(CFS) =      3.19

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    431.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```

```
 ELEVATION DATA: UPSTREAM(FEET) =   1551.50  DOWNSTREAM(FEET) =   1551.20
 CHANNEL LENGTH THRU SUBAREA(FEET) =    60.00   CHANNEL SLOPE =  0.0050
 CHANNEL FLOW THRU SUBAREA(CFS) =       3.19
 FLOW VELOCITY(FEET/SEC) =   1.35 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.74   Tc(MIN.) =   15.46
 LONGEST FLOWPATH FROM NODE    260.00 TO NODE    431.00 =     606.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    431.00 TO NODE    431.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.522
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6358
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.10   SUBAREA RUNOFF(CFS) =    0.16
 TOTAL AREA(ACRES) =        1.7   TOTAL RUNOFF(CFS) =       3.35
 TC(MIN.) =   15.46

****************************************************************************
 FLOW PROCESS FROM NODE    431.00 TO NODE    431.00 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.) =   15.46
 RAINFALL INTENSITY(INCH/HR) =   2.52
 TOTAL STREAM AREA(ACRES) =     1.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.35

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       14.28    17.28        2.385          7.20
     2        3.35    15.46        2.522          1.70

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       16.12    15.46       2.522
     2       17.44    17.28       2.385

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      17.44   Tc(MIN.) =   17.28
 TOTAL AREA(ACRES) =        8.9
 LONGEST FLOWPATH FROM NODE    250.00 TO NODE    431.00 =    1438.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    431.00 TO NODE    432.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1551.20  DOWNSTREAM(FEET) =   1550.80
 CHANNEL LENGTH THRU SUBAREA(FEET) =   170.00   CHANNEL SLOPE =  0.0024
 CHANNEL FLOW THRU SUBAREA(CFS) =      17.44
 FLOW VELOCITY(FEET/SEC) =   1.40 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.02   Tc(MIN.) =   19.30
 LONGEST FLOWPATH FROM NODE    250.00 TO NODE    432.00 =    1608.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    432.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.257
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6147
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.30   SUBAREA RUNOFF(CFS) =    0.42
 TOTAL AREA(ACRES) =        9.2   TOTAL RUNOFF(CFS) =      17.86
 TC(MIN.) =   19.30

****************************************************************************
 FLOW PROCESS FROM NODE    432.00 TO NODE    432.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
```

```
** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF       Tc       INTENSITY     AREA
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
    1       16.56     17.52       2.368        9.30
    2       17.86     19.30       2.257        9.30
LONGEST FLOWPATH FROM NODE    250.00 TO NODE    432.00 =    1608.00 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
STREAM     RUNOFF       Tc       INTENSITY     AREA
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
    1        8.39     14.71       2.585        4.00
    2        8.39     14.79       2.578        4.00
LONGEST FLOWPATH FROM NODE    230.00 TO NODE    432.00 =    1320.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc       INTENSITY
NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
    1      22.30      14.71        2.585
    2      22.37      14.79        2.578
    3      24.27      17.52        2.368
    4      25.20      19.30        2.257

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      25.20   Tc(MIN.) =   19.30
TOTAL AREA(ACRES) =       13.2

****************************************************************************
FLOW PROCESS FROM NODE    432.00 TO NODE    432.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE    432.00 TO NODE    433.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1550.80  DOWNSTREAM(FEET) =   1543.90
CHANNEL LENGTH THRU SUBAREA(FEET) =   512.00   CHANNEL SLOPE =  0.0135
CHANNEL FLOW THRU SUBAREA(CFS) =      25.20
FLOW VELOCITY(FEET/SEC) =   3.70 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.30   Tc(MIN.) =   21.61
LONGEST FLOWPATH FROM NODE    250.00 TO NODE    433.00 =    2120.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    433.00 TO NODE    433.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.133
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6036
SOIL CLASSIFICATION IS "B"
SUBAREA AREA(ACRES) =    3.30   SUBAREA RUNOFF(CFS) =    4.25
TOTAL AREA(ACRES) =      16.5   TOTAL RUNOFF(CFS) =     29.45
TC(MIN.) =   21.61

****************************************************************************
FLOW PROCESS FROM NODE    433.00 TO NODE    433.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF       Tc       INTENSITY     AREA
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
    1       27.26     17.10       2.398       16.80
    2       27.31     17.17       2.393       16.80
    3       28.77     19.85       2.225       16.80
    4       29.45     21.61       2.133       16.80
LONGEST FLOWPATH FROM NODE    250.00 TO NODE    433.00 =    2120.00 FEET.

** MEMORY BANK #  2 CONFLUENCE DATA **
STREAM     RUNOFF       Tc       INTENSITY     AREA
NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
    1       10.67     14.57       2.598        5.40
    2       10.84     16.28       2.457        5.40
LONGEST FLOWPATH FROM NODE    210.00 TO NODE    433.00 =    1678.00 FEET.
```

```
 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      33.89      14.57        2.598
     2      36.79      16.28        2.457
     3      37.83      17.10        2.398
     4      37.87      17.17        2.393
     5      38.58      19.85        2.225
     6      38.86      21.61        2.133

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      38.86   Tc(MIN.) =   21.61
 TOTAL AREA(ACRES) =       21.9

****************************************************************************
 FLOW PROCESS FROM NODE    433.00 TO NODE    433.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    433.00 TO NODE    434.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1543.90  DOWNSTREAM(FEET) =   1531.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   678.00   CHANNEL SLOPE =  0.0183
 CHANNEL FLOW THRU SUBAREA(CFS) =      38.86
 FLOW VELOCITY(FEET/SEC) =   4.87 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.32   Tc(MIN.) =   23.93
 LONGEST FLOWPATH FROM NODE    250.00 TO NODE    434.00 =    2798.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    434.00 TO NODE    434.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.027
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5933
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    7.40   SUBAREA RUNOFF(CFS) =    8.90
 TOTAL AREA(ACRES) =       29.3   TOTAL RUNOFF(CFS) =      47.76
 TC(MIN.) =   23.93
 ** PEAK FLOW RATE TABLE **
 STREAM   RUNOFF       Tc
 NUMBER    (CFS)     (MIN.)
    1       45.06      16.98
    2       47.30      18.64
    3       48.05      19.43
    4       48.06      19.51
    5       47.94      22.18
    6       47.76      23.93
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =      48.06  Tc(MIN.) =   19.51

****************************************************************************
 FLOW PROCESS FROM NODE    434.00 TO NODE    434.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY     AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
     1       45.06     16.98        2.406       32.60
     2       47.30     18.64        2.297       32.60
     3       48.05     19.43        2.249       32.60
     4       48.06     19.51        2.245       32.60
     5       47.94     22.18        2.105       32.60
     6       47.76     23.93        2.027       32.60
 LONGEST FLOWPATH FROM NODE    250.00 TO NODE    434.00 =    2798.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY     AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
     1       61.87     18.64        2.296       44.30
     2       66.94     21.71        2.128       44.30
     3       66.26     24.32        2.010       44.30
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    434.00 =    4795.00 FEET.
```

```
 ** PEAK FLOW RATE TABLE **
 STREAM    RUNOFF       Tc      INTENSITY
 NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1     101.41      16.98        2.406
     2     109.14      18.64        2.297
     3     109.16      18.64        2.296
     4     108.65      19.43        2.249
     5     108.54      19.51        2.245
     6     113.88      21.71        2.128
     7     114.18      22.18        2.105
     8     112.94      23.93        2.027
     9     113.63      24.32        2.010

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     114.18   Tc(MIN.) =   22.18
 TOTAL AREA(ACRES) =       73.6

****************************************************************************
 FLOW PROCESS FROM NODE    434.00 TO NODE    434.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    434.00 TO NODE    442.00 IS CODE =  52
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1531.50  DOWNSTREAM(FEET) =   1531.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   116.00   CHANNEL SLOPE =  0.0043
 CHANNEL FLOW THRU SUBAREA(CFS) =     114.18
 FLOW VELOCITY(FEET/SEC) =   3.24 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   0.60   Tc(MIN.) =   22.77
 LONGEST FLOWPATH FROM NODE    100.00 TO NODE    442.00 =    4911.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    442.00 TO NODE    442.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.078
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5983
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    1.90   SUBAREA RUNOFF(CFS) =    2.36
 TOTAL AREA(ACRES) =       75.5   TOTAL RUNOFF(CFS) =     116.55
 TC(MIN.) =   22.77

****************************************************************************
 FLOW PROCESS FROM NODE    442.00 TO NODE    442.00 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.) =   22.77
 RAINFALL INTENSITY(INCH/HR) =   2.08
 TOTAL STREAM AREA(ACRES) =    75.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =    116.55

****************************************************************************
 FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
       ASSUMED INITIAL SUBAREA UNIFORM
       DEVELOPMENT IS SINGLE FAMILY(1-ACRE LOTS)
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
 UPSTREAM ELEVATION(FEET) =   1573.00
 DOWNSTREAM ELEVATION(FEET) =   1546.60
 ELEVATION DIFFERENCE(FEET) =     26.40
 TC = 0.469*[( 1000.00**3)/(    26.40)]**.2 =   15.386
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.528
 SINGLE-FAMILY(1-ACRE LOT) RUNOFF COEFFICIENT = .6890
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      9.58
 TOTAL AREA(ACRES) =      5.50   TOTAL RUNOFF(CFS) =      9.58

****************************************************************************
 FLOW PROCESS FROM NODE    301.00 TO NODE    441.00 IS CODE =  52
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1546.60  DOWNSTREAM(FEET) =   1537.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   489.00   CHANNEL SLOPE =  0.0196
  CHANNEL FLOW THRU SUBAREA(CFS) =       9.58
  FLOW VELOCITY(FEET/SEC) =   3.46 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.35   Tc(MIN.) =   17.74
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    441.00 =    1489.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    441.00 TO NODE    441.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.354
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6228
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    5.30   SUBAREA RUNOFF(CFS) =    7.77
  TOTAL AREA(ACRES) =       10.8   TOTAL RUNOFF(CFS) =      17.35
  TC(MIN.) =   17.74

****************************************************************************
  FLOW PROCESS FROM NODE    441.00 TO NODE    442.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1537.00  DOWNSTREAM(FEET) =   1531.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   487.00   CHANNEL SLOPE =  0.0123
  CHANNEL FLOW THRU SUBAREA(CFS) =      17.35
  FLOW VELOCITY(FEET/SEC) =   3.20 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.54   Tc(MIN.) =   20.27
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    442.00 =    1976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    442.00 TO NODE    442.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.202
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6099
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.80   SUBAREA RUNOFF(CFS) =    1.07
  TOTAL AREA(ACRES) =       11.6   TOTAL RUNOFF(CFS) =      18.42
  TC(MIN.) =   20.27

****************************************************************************
  FLOW PROCESS FROM NODE    442.00 TO NODE    442.00 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.) =   20.27
  RAINFALL INTENSITY(INCH/HR) =   2.20
  TOTAL STREAM AREA(ACRES) =    11.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.42

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1      104.21    17.60        2.364         75.50
      1      111.78    19.24        2.260         75.50
      1      111.80    19.25        2.260         75.50
      1      111.22    20.04        2.215         75.50
      1      111.11    20.11        2.211         75.50
      1      116.28    22.31        2.099         75.50
      1      116.55    22.77        2.078         75.50
      1      115.19    24.53        2.002         75.50
      1      115.85    24.92        1.986         75.50
      2       18.42    20.27        2.202         11.60

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
```

1	120.20	17.60	2.364
2	129.27	19.24	2.260
3	129.29	19.25	2.260
4	129.43	20.04	2.215
5	129.39	20.11	2.211
6	129.09	20.27	2.202
7	133.84	22.31	2.099
8	133.93	22.77	2.078
9	131.94	24.53	2.002
10	132.47	24.92	1.986

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 133.93 Tc(MIN.) = 22.77
TOTAL AREA(ACRES) = 87.1
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 442.00 = 4911.00 FEET.

****
FLOW PROCESS FROM NODE 442.00 TO NODE 443.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 1531.00 DOWNSTREAM(FEET) = 1529.90
CHANNEL LENGTH THRU SUBAREA(FEET) = 60.00 CHANNEL SLOPE = 0.0183
CHANNEL FLOW THRU SUBAREA(CFS) = 133.93
FLOW VELOCITY(FEET/SEC) = 7.02 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.14 Tc(MIN.) = 22.92
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 443.00 = 4971.00 FEET.

****
FLOW PROCESS FROM NODE 443.00 TO NODE 443.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.071
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5977
SOIL CLASSIFICATION IS "B"
SUBAREA AREA(ACRES) = 0.10 SUBAREA RUNOFF(CFS) = 0.12
TOTAL AREA(ACRES) = 87.2 TOTAL RUNOFF(CFS) = 134.05
TC(MIN.) = 22.92
==========
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 87.2 TC(MIN.) = 22.92
PEAK FLOW RATE(CFS) = 134.05
*** PEAK FLOW RATE TABLE ***

	Q(CFS)	Tc(MIN.)
1	120.35	17.74
2	129.40	19.38
3	129.43	19.39
4	129.57	20.18
5	129.52	20.26
6	129.23	20.42
7	133.97	22.45
8	134.05	22.92
9	132.06	24.67
10	132.59	25.06

==========
==========
END OF RATIONAL METHOD ANALYSIS

PROPOSED CONDITION
ONSITE

```
**************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1435

                          Analysis prepared by:

                        THIENES ENGINEERING, INC.
                           14349 FIRESTONE BLVD
                           LA MIRADA, CA 90638
                               714-521-4811

 ************************* DESCRIPTION OF STUDY *************************
* JOB #3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.    *
* PROPOSED CONDITION 100-YEAR                                              *
* SITE AREAS TRIBUTARY TO WATER QUALITY BASIN (NODES 100-173)              *
 ************************************************************************

  FILE NAME: W:\3958\P100A.DAT
  TIME/DATE OF STUDY: 14:31 10/25/2022
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.490
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.280
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.280
  SLOPE OF INTENSITY DURATION CURVE = 0.5000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *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.*

**************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   610.00
  UPSTREAM ELEVATION(FEET) =   1555.56
  DOWNSTREAM ELEVATION(FEET) =   1550.56
  ELEVATION DIFFERENCE(FEET) =      5.00
  TC = 0.303*[(  610.00**3)/(     5.00)]**.2 =   10.304
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.089
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8772
  SOIL CLASSIFICATION IS "B"
```

```
  SUBAREA RUNOFF(CFS) =     10.13
  TOTAL AREA(ACRES) =      3.74   TOTAL RUNOFF(CFS) =     10.13

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.089
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6721
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    1.51   SUBAREA RUNOFF(CFS) =    3.13
  TOTAL AREA(ACRES) =        5.2   TOTAL RUNOFF(CFS) =      13.27
  TC(MIN.) =   10.30

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1546.56  DOWNSTREAM(FEET) =  1545.81
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.96
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.27
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   10.72
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =     760.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.028
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8769
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    2.08   SUBAREA RUNOFF(CFS) =    5.52
  TOTAL AREA(ACRES) =        7.3   TOTAL RUNOFF(CFS) =      18.79
  TC(MIN.) =   10.72

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1545.71  DOWNSTREAM(FEET) =  1544.93
  FLOW LENGTH(FEET) =   155.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.50
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.79
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   11.12
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =     915.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.973
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8766
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    2.08   SUBAREA RUNOFF(CFS) =    5.42
  TOTAL AREA(ACRES) =        9.4   TOTAL RUNOFF(CFS) =      24.21
  TC(MIN.) =   11.12
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    111.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1544.83  DOWNSTREAM(FEET) =  1544.08
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.92
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      24.21
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   11.48
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    111.00 =    1065.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 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.) =   11.48
  RAINFALL INTENSITY(INCH/HR) =   2.93
  TOTAL STREAM AREA(ACRES) =     9.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.21

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   245.00
  UPSTREAM ELEVATION(FEET) =   1543.56
  DOWNSTREAM ELEVATION(FEET) =   1541.00
  ELEVATION DIFFERENCE(FEET) =      2.56
  TC = 0.303*[(  245.00**3)/(     2.56)]**.2 =    6.815
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.798
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8805
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =     12.37
  TOTAL AREA(ACRES) =      3.70   TOTAL RUNOFF(CFS) =     12.37

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 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.) =    6.81
  RAINFALL INTENSITY(INCH/HR) =   3.80
  TOTAL STREAM AREA(ACRES) =     3.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.37

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       24.21    11.48        2.926          9.41
      2       12.37     6.81        3.798          3.70

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

```
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       26.74     6.81       3.798
      2       33.74    11.48       2.926

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      33.74   Tc(MIN.) =   11.48
  TOTAL AREA(ACRES) =       13.1
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    111.00 =    1065.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    111.00 TO NODE    112.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1543.56  DOWNSTREAM(FEET) =  1541.00
  FLOW LENGTH(FEET) =    24.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.30
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      33.74
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   11.50
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    112.00 =    1089.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    134.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1533.50  DOWNSTREAM(FEET) =  1531.59
  FLOW LENGTH(FEET) =   632.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.17
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      33.74
  PIPE TRAVEL TIME(MIN.) =   1.71    Tc(MIN.) =   13.21
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    134.00 =    1721.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    134.00 TO NODE    134.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    121.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   450.00
  UPSTREAM ELEVATION(FEET) =   1551.68
  DOWNSTREAM ELEVATION(FEET) =   1543.34
  ELEVATION DIFFERENCE(FEET) =      8.34
  TC = 0.303*[(  450.00**3)/(     8.34)]**.2 =    7.750
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.562
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8795
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      3.85
  TOTAL AREA(ACRES) =      1.23   TOTAL RUNOFF(CFS) =      3.85

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

```
 FLOW PROCESS FROM NODE    121.00 TO NODE    131.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1537.84  DOWNSTREAM(FEET) =  1537.43
 FLOW LENGTH(FEET) =    63.00   MANNING'S N =  0.012
 DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.85
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.85
 PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =    7.97
 LONGEST FLOWPATH FROM NODE    120.00 TO NODE    131.00 =     513.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    131.00 TO NODE    131.00 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.) =    7.97
 RAINFALL INTENSITY(INCH/HR) =   3.51
 TOTAL STREAM AREA(ACRES) =     1.23
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.85

****************************************************************************
 FLOW PROCESS FROM NODE    130.00 TO NODE    131.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
 TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   730.00
 UPSTREAM ELEVATION(FEET) =   1556.68
 DOWNSTREAM ELEVATION(FEET) =   1544.61
 ELEVATION DIFFERENCE(FEET) =     12.07
 TC = 0.303*[(  730.00**3)/(    12.07)]**.2 =    9.621
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.196
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8778
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) =      6.76
 TOTAL AREA(ACRES) =      2.41   TOTAL RUNOFF(CFS) =      6.76

****************************************************************************
 FLOW PROCESS FROM NODE    131.00 TO NODE    131.00 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.) =    9.62
 RAINFALL INTENSITY(INCH/HR) =   3.20
 TOTAL STREAM AREA(ACRES) =     2.41
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.76

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1        3.85     7.97        3.513          1.23
     2        6.76     9.62        3.196          2.41

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

 ** PEAK FLOW RATE TABLE **
```

```
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
      1        9.45      7.97        3.513
      2       10.27      9.62        3.196

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.27   Tc(MIN.) =    9.62
  TOTAL AREA(ACRES) =        3.6
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE    131.00 =     730.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    131.00 TO NODE    132.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1537.18  DOWNSTREAM(FEET) =  1537.10
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.24
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.27
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    9.65
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE    132.00 =     742.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    134.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1531.75  DOWNSTREAM(FEET) =  1531.59
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.73
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.27
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =    9.83
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE    134.00 =     792.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    134.00 TO NODE    134.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)   (ACRE)
      1        9.45      8.18        3.466        3.64
      2       10.27      9.83        3.162        3.64
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE    134.00 =     792.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)   (ACRE)
      1       26.74      8.64        3.373       13.11
      2       33.74     13.21        2.728       13.11
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    134.00 =    1721.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
      1      34.78       8.18        3.466
      2      35.94       8.64        3.373
      3      35.39       9.83        3.162
      4      42.60      13.21        2.728
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      42.60   Tc(MIN.) =   13.21
  TOTAL AREA(ACRES) =       16.8

****************************************************************************
  FLOW PROCESS FROM NODE    134.00 TO NODE    134.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    134.00 TO NODE    135.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1531.57  DOWNSTREAM(FEET) =  1531.30
  FLOW LENGTH(FEET) =    89.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.54
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.60
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =   13.43
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    135.00 =    1810.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    135.00 TO NODE    135.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.705
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8749
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.27   SUBAREA RUNOFF(CFS) =    0.64
  TOTAL AREA(ACRES) =       17.0   TOTAL RUNOFF(CFS) =      43.24
  TC(MIN.) =   13.43

****************************************************************************
  FLOW PROCESS FROM NODE    135.00 TO NODE    154.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1531.30  DOWNSTREAM(FEET) =  1526.58
  FLOW LENGTH(FEET) =   641.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.14
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      43.24
  PIPE TRAVEL TIME(MIN.) =   1.17    Tc(MIN.) =   14.60
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    154.00 =    2451.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    154.00 TO NODE    154.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    141.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   675.00
  UPSTREAM ELEVATION(FEET) =   1555.56
```

```
  DOWNSTREAM ELEVATION(FEET) =   1548.97
  ELEVATION DIFFERENCE(FEET) =      6.59
  TC = 0.303*[(  675.00**3)/(     6.59)]**.2 =   10.361
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.080
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8772
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =     15.91
  TOTAL AREA(ACRES) =      5.89   TOTAL RUNOFF(CFS) =     15.91

****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    141.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.080
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6716
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    1.23   SUBAREA RUNOFF(CFS) =    2.54
  TOTAL AREA(ACRES) =        7.1   TOTAL RUNOFF(CFS) =      18.46
  TC(MIN.) =   10.36

****************************************************************************
  FLOW PROCESS FROM NODE    141.00 TO NODE    142.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1541.97  DOWNSTREAM(FEET) =  1541.50
  FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.64
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      18.46
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =   10.38
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    142.00 =     690.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    142.00 TO NODE    153.00 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.) =   10.38
  RAINFALL INTENSITY(INCH/HR) =   3.08
  TOTAL STREAM AREA(ACRES) =     7.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.46

****************************************************************************
  FLOW PROCESS FROM NODE    150.00 TO NODE    151.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   360.00
  UPSTREAM ELEVATION(FEET) =   1551.54
  DOWNSTREAM ELEVATION(FEET) =   1548.97
  ELEVATION DIFFERENCE(FEET) =      2.57
  TC = 0.303*[(  360.00**3)/(     2.57)]**.2 =    8.578
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.385
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8787
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =     17.31
  TOTAL AREA(ACRES) =      5.82   TOTAL RUNOFF(CFS) =     17.31

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

```
 FLOW PROCESS FROM NODE    151.00 TO NODE    152.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1541.97  DOWNSTREAM(FEET) =  1541.50
 FLOW LENGTH(FEET) =    15.00   MANNING'S N =  0.012
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.54
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      17.31
 PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    8.60
 LONGEST FLOWPATH FROM NODE    150.00 TO NODE    152.00 =     375.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    152.00 TO NODE    153.00 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.) =    8.60
 RAINFALL INTENSITY(INCH/HR) =   3.38
 TOTAL STREAM AREA(ACRES) =     5.82
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.31

 ** CONFLUENCE DATA **
 STREAM     RUNOFF       Tc      INTENSITY      AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
     1       18.46    10.38        3.077          7.12
     2       17.31     8.60        3.381          5.82

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

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc      INTENSITY
 NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       32.60     8.60       3.381
     2       34.22    10.38       3.077

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      34.22   Tc(MIN.) =   10.38
 TOTAL AREA(ACRES) =       12.9
 LONGEST FLOWPATH FROM NODE    140.00 TO NODE    153.00 =     690.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    153.00 TO NODE    154.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  1532.50  DOWNSTREAM(FEET) =  1526.58
 FLOW LENGTH(FEET) =   176.00   MANNING'S N =  0.012
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  15.43
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      34.22
 PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   10.57
 LONGEST FLOWPATH FROM NODE    140.00 TO NODE    154.00 =     866.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    154.00 TO NODE    154.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================
```

```
  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       32.60     8.79       3.344       12.94
      2       34.22    10.57       3.050       12.94
  LONGEST FLOWPATH FROM NODE    140.00 TO NODE    154.00 =     866.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       35.59     9.66       3.190       17.02
      2       36.73    10.12       3.117       17.02
      3       36.13    11.31       2.949       17.02
      4       43.24    14.60       2.595       17.02
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    154.00 =    2451.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      64.98       8.79        3.344
      2      66.87       9.66        3.190
      3      69.47      10.12        3.117
      4      70.15      10.57        3.050
      5      69.21      11.31        2.949
      6      72.35      14.60        2.595

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      72.35   Tc(MIN.) =   14.60
  TOTAL AREA(ACRES) =       30.0

****************************************************************************
  FLOW PROCESS FROM NODE    154.00 TO NODE    154.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    154.00 TO NODE    173.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1526.48  DOWNSTREAM(FEET) =  1521.10
  FLOW LENGTH(FEET) =   134.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  20.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.79
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      72.35
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =   14.71
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    173.00 =    2585.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    173.00 TO NODE    173.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    160.00 TO NODE    161.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
          ASSUMED INITIAL SUBAREA UNIFORM
          DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   470.00
  UPSTREAM ELEVATION(FEET) =   1553.45
  DOWNSTREAM ELEVATION(FEET) =   1541.98
```

```
  ELEVATION DIFFERENCE(FEET) =     11.47
  TC = 0.303*[(  470.00**3)/(    11.47)]**.2 =    7.463
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.629
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8798
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      2.39
  TOTAL AREA(ACRES) =      0.75   TOTAL RUNOFF(CFS) =      2.39

****************************************************************************
  FLOW PROCESS FROM NODE    161.00 TO NODE    172.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1538.48  DOWNSTREAM(FEET) =  1538.32
  FLOW LENGTH(FEET) =    33.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.79
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.39
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =    7.61
  LONGEST FLOWPATH FROM NODE    160.00 TO NODE    172.00 =     503.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    172.00 TO NODE    172.00 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.) =    7.61
  RAINFALL INTENSITY(INCH/HR) =   3.59
  TOTAL STREAM AREA(ACRES) =     0.75
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.39

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    171.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   445.00
  UPSTREAM ELEVATION(FEET) =   1552.95
  DOWNSTREAM ELEVATION(FEET) =   1544.06
  ELEVATION DIFFERENCE(FEET) =      8.89
  TC = 0.533*[(  445.00**3)/(     8.89)]**.2 =   13.355
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.713
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6493
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      0.81
  TOTAL AREA(ACRES) =      0.46   TOTAL RUNOFF(CFS) =      0.81

****************************************************************************
  FLOW PROCESS FROM NODE    170.00 TO NODE    171.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.713
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6493
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.09   SUBAREA RUNOFF(CFS) =    0.16
  TOTAL AREA(ACRES) =        0.6   TOTAL RUNOFF(CFS) =       0.97
  TC(MIN.) =   13.35

****************************************************************************
  FLOW PROCESS FROM NODE    171.00 TO NODE    172.00 IS CODE =  31
```

```
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1540.06  DOWNSTREAM(FEET) =  1538.32
  FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.012
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.74
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.97
  PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =   13.74
  LONGEST FLOWPATH FROM NODE    170.00 TO NODE    172.00 =     555.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    172.00 TO NODE    172.00 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.) =   13.74
  RAINFALL INTENSITY(INCH/HR) =   2.67
  TOTAL STREAM AREA(ACRES) =     0.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.97

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        2.39     7.61        3.594          0.75
      2        0.97    13.74        2.675          0.55

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1        2.93     7.61       3.594
      2        2.75    13.74       2.675

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       2.93   Tc(MIN.) =    7.61
  TOTAL AREA(ACRES) =        1.3
  LONGEST FLOWPATH FROM NODE    170.00 TO NODE    172.00 =     555.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    172.00 TO NODE    173.00 IS CODE =  31
--------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1538.22  DOWNSTREAM(FEET) =  1521.10
  FLOW LENGTH(FEET) =   283.00   MANNING'S N =  0.012
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   4.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.45
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.93
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =    8.06
  LONGEST FLOWPATH FROM NODE    170.00 TO NODE    173.00 =     838.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    173.00 TO NODE    173.00 IS CODE =  11
--------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========================================================================
```

```
  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1        2.93      8.06       3.492        1.30
      2        2.75     14.20       2.631        1.30
  LONGEST FLOWPATH FROM NODE    170.00 TO NODE    173.00 =     838.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF       Tc       INTENSITY     AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)   (ACRE)
      1       64.98      8.91       3.322       29.96
      2       66.87      9.78       3.171       29.96
      3       69.47     10.23       3.100       29.96
      4       70.15     10.68       3.033       29.96
      5       69.21     11.42       2.934       29.96
      6       72.35     14.71       2.585       29.96
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    173.00 =    2585.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1      61.72       8.06        3.492
      2      67.77       8.91        3.322
      3      69.53       9.78        3.171
      4      72.08      10.23        3.100
      5      72.69      10.68        3.033
      6      71.67      11.42        2.934
      7      72.58      14.20        2.631
      8      75.06      14.71        2.585

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      75.06   Tc(MIN.) =   14.71
  TOTAL AREA(ACRES) =       31.3

****************************************************************************
  FLOW PROCESS FROM NODE    173.00 TO NODE    173.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    173.00 TO NODE    173.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.585
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6404
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    2.29   SUBAREA RUNOFF(CFS) =    3.79
  TOTAL AREA(ACRES) =       33.5   TOTAL RUNOFF(CFS) =      78.85
  TC(MIN.) =   14.71
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       33.5  TC(MIN.) =     14.71
  PEAK FLOW RATE(CFS)   =      78.85
  *** PEAK FLOW RATE TABLE ***
         Q(CFS)   Tc(MIN.)
  1       67.26       8.06
  2       72.98       8.91
  3       74.44       9.78
  4       76.85      10.23
  5       77.34      10.68
  6       76.13      11.42
  7       76.46      14.20
  8       78.85      14.71
============================================================================
============================================================================
```

PROPOSED CONDITION
OFFSITE STORM DRAIN

```
************************************************************************
           RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1435

                        Analysis prepared by:

                      THIENES ENGINEERING, INC.
                         14349 FIRESTONE BLVD
                         LA MIRIADA, CA 90638
                             714-521-4811

 ************************* DESCRIPTION OF STUDY *************************
* JOB #39588 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.   *
* PROPOSED CONDITION 100-YEAR                                              *
* OFFSITE PLUS ONSITE FLOWS TRIBUTARY TO PROPOSED RIDER ST. STORM DRAIN    *
 ************************************************************************

  FILE NAME: W:\3958\P100S.DAT
  TIME/DATE OF STUDY: 08:10 10/26/2022
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.490
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.280
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.280
  SLOPE OF INTENSITY DURATION CURVE = 0.5000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *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.*

************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    201.00 IS CODE =   7
------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
========================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  18.35   RAIN INTENSITY(INCH/HOUR) =  2.31
  TOTAL AREA(ACRES) =    26.80   TOTAL RUNOFF(CFS) =     41.85

************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    201.00 IS CODE =  81
------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
========================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.315
  SINGLE-FAMILY(1-ACRE LOT) RUNOFF COEFFICIENT = .6757
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    4.90   SUBAREA RUNOFF(CFS) =    7.66
  TOTAL AREA(ACRES) =       31.7   TOTAL RUNOFF(CFS) =      49.51
  TC(MIN.) =   18.35

************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    212.00 IS CODE =  31
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1575.61  DOWNSTREAM(FEET) =  1565.20
  FLOW LENGTH(FEET) =   332.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.26
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      49.51
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   18.71
  LONGEST FLOWPATH FROM NODE      0.00 TO NODE    212.00 =     332.00 FEET.

************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    212.00 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.) =   18.71
  RAINFALL INTENSITY(INCH/HR) =   2.29
  TOTAL STREAM AREA(ACRES) =    31.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.51

****************************************************************************
  FLOW PROCESS FROM NODE    210.00 TO NODE    211.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   655.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1570.88
  ELEVATION DIFFERENCE(FEET) =     10.12
  TC = 0.393*[(  655.00**3)/(    10.12)]**.2 =   12.096
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.851
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7791
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      8.11
  TOTAL AREA(ACRES) =      3.65   TOTAL RUNOFF(CFS) =      8.11

****************************************************************************
  FLOW PROCESS FROM NODE    211.00 TO NODE    212.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1565.55  DOWNSTREAM(FEET) =  1565.45
  FLOW LENGTH(FEET) =    20.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.97
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.11
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   12.16
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    212.00 =     675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    212.00 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.) =   12.16
  RAINFALL INTENSITY(INCH/HR) =   2.84
  TOTAL STREAM AREA(ACRES) =     3.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.11

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       49.51    18.71        2.292         31.70
      2        8.11    12.16        2.843          3.65

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       40.29    12.16       2.843
      2       56.05    18.71       2.292

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      56.05   Tc(MIN.) =   18.71
  TOTAL AREA(ACRES) =       35.3
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    212.00 =     675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    212.00 TO NODE    222.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1564.70  DOWNSTREAM(FEET) =  1557.98
  FLOW LENGTH(FEET) =   274.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.42
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      56.05
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   19.03
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    222.00 =     949.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    222.00 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.) =   19.03
  RAINFALL INTENSITY(INCH/HR) =   2.27
  TOTAL STREAM AREA(ACRES) =    35.35
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     56.05

****************************************************************************
  FLOW PROCESS FROM NODE    220.00 TO NODE    221.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   745.00
  UPSTREAM ELEVATION(FEET) =   1579.10
  DOWNSTREAM ELEVATION(FEET) =   1564.23
  ELEVATION DIFFERENCE(FEET) =     14.87
  TC = 0.393*[(  745.00**3)/(    14.87)]**.2 =   12.100
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.850
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7791
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      7.19
  TOTAL AREA(ACRES) =      3.24   TOTAL RUNOFF(CFS) =      7.19

****************************************************************************
  FLOW PROCESS FROM NODE    221.00 TO NODE    222.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1558.90  DOWNSTREAM(FEET) =  1558.78
  FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  17.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.45
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.19
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   12.36
  LONGEST FLOWPATH FROM NODE    220.00 TO NODE    222.00 =     799.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    222.00 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.) =   12.36
  RAINFALL INTENSITY(INCH/HR) =   2.82
  TOTAL STREAM AREA(ACRES) =     3.24
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      7.19

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       40.29    12.51        2.804         35.35
      1       56.05    19.03        2.273         35.35
      2        7.19    12.36        2.820          3.24

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       47.02    12.36       2.820
      2       47.44    12.51       2.804
      3       61.85    19.03       2.273

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      61.85   Tc(MIN.) =   19.03
  TOTAL AREA(ACRES) =       38.6
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    222.00 =     949.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    222.00 TO NODE    234.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1557.88  DOWNSTREAM(FEET) =  1545.40
  FLOW LENGTH(FEET) =   508.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.55
```

```
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      61.85
  PIPE TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =   19.61
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    234.00 =    1457.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    234.00 TO NODE    234.00 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.) =   19.61
  RAINFALL INTENSITY(INCH/HR) =   2.24
  TOTAL STREAM AREA(ACRES) =    38.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     61.85

****************************************************************************
  FLOW PROCESS FROM NODE    230.00 TO NODE    231.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   992.00
  UPSTREAM ELEVATION(FEET) =   1581.00
  DOWNSTREAM ELEVATION(FEET) =   1552.80
  ELEVATION DIFFERENCE(FEET) =     28.20
  TC = 0.393*[(  992.00**3)/(    28.20)]**.2 =   12.642
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.789
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7771
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      5.85
  TOTAL AREA(ACRES) =      2.70   TOTAL RUNOFF(CFS) =      5.85

****************************************************************************
  FLOW PROCESS FROM NODE    231.00 TO NODE    232.00 IS CODE =  91
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1552.80
  DOWNSTREAM NODE ELEVATION(FEET) =   1552.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =    36.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.170
  PAVEMENT LIP(FEET) =  0.031   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.02000
  MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.764
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7763
  SOIL CLASSIFICATION IS "B"
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      7.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.62
  AVERAGE FLOW DEPTH(FEET) =   0.39   FLOOD WIDTH(FEET) =   22.11
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.23   Tc(MIN.) =   12.87
  SUBAREA AREA(ACRES) =    1.26       SUBAREA RUNOFF(CFS) =    2.70
  TOTAL AREA(ACRES) =        4.0         PEAK FLOW RATE(CFS) =       8.55

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.41   FLOOD WIDTH(FEET) =   23.98
  FLOW VELOCITY(FEET/SEC.) =   2.69   DEPTH*VELOCITY(FT*FT/SEC) =   1.11
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE    232.00 =    1028.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    232.00 TO NODE    233.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1552.50  DOWNSTREAM ELEVATION(FEET) = 1551.38
  STREET LENGTH(FEET) =   340.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.94
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   25.59
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.14
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.33
  STREET FLOW TRAVEL TIME(MIN.) =   2.65   Tc(MIN.) =   15.52
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.517
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .7677
```

```
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    4.53      SUBAREA RUNOFF(CFS) =    8.75
  TOTAL AREA(ACRES) =        8.5        PEAK FLOW RATE(CFS) =      17.31

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  29.14
  FLOW VELOCITY(FEET/SEC.) =  2.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.55
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE    233.00 =    1368.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    233.00 TO NODE    234.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1546.05  DOWNSTREAM(FEET) =  1545.65
  FLOW LENGTH(FEET) =    80.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  18.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.98
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      17.31
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   15.74
  LONGEST FLOWPATH FROM NODE    230.00 TO NODE    234.00 =    1448.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    234.00 TO NODE    234.00 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.) =   15.74
  RAINFALL INTENSITY(INCH/HR) =   2.50
  TOTAL STREAM AREA(ACRES) =     8.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.31

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       47.02    12.98        2.751         38.59
      1       47.44    13.11        2.738         38.59
      1       61.85    19.61        2.239         38.59
      2       17.31    15.74        2.499          8.49

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       61.30    12.98       2.751
      2       61.86    13.11       2.738
      3       66.95    15.74       2.499
      4       77.35    19.61       2.239

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      77.35   Tc(MIN.) =   19.61
  TOTAL AREA(ACRES) =       47.1
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    234.00 =    1457.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    234.00 TO NODE    234.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.239
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6131
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    1.16   SUBAREA RUNOFF(CFS) =    1.59
  TOTAL AREA(ACRES) =       48.2   TOTAL RUNOFF(CFS) =      78.95
  TC(MIN.) =   19.61

****************************************************************************
  FLOW PROCESS FROM NODE    234.00 TO NODE    242.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1544.90  DOWNSTREAM(FEET) =  1536.65
  FLOW LENGTH(FEET) =   488.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.59
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      78.95
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =   20.21
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    242.00 =    1945.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    242.00 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.) =   20.21
  RAINFALL INTENSITY(INCH/HR) =   2.21
  TOTAL STREAM AREA(ACRES) =    48.24
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     78.95

****************************************************************************
  FLOW PROCESS FROM NODE    240.00 TO NODE    241.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   460.00
  UPSTREAM ELEVATION(FEET) =   1555.77
  DOWNSTREAM ELEVATION(FEET) =   1548.15
  ELEVATION DIFFERENCE(FEET) =      7.62
  TC = 0.303*[(  460.00**3)/(     7.62)]**.2 =    7.996
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.506
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8793
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.79
  TOTAL AREA(ACRES) =      0.58   TOTAL RUNOFF(CFS) =      1.79

****************************************************************************
  FLOW PROCESS FROM NODE    241.00 TO NODE    242.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1542.82  DOWNSTREAM(FEET) =  1538.57
  FLOW LENGTH(FEET) =    12.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   2.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.13
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       1.79
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.01
  LONGEST FLOWPATH FROM NODE    240.00 TO NODE    242.00 =     472.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    242.00 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.) =    8.01
  RAINFALL INTENSITY(INCH/HR) =   3.50
  TOTAL STREAM AREA(ACRES) =     0.58
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.79

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       63.38    13.62        2.687         48.24
      1       63.93    13.74        2.675         48.24
      1       68.78    16.35        2.452         48.24
      1       78.95    20.21        2.206         48.24
      2        1.79     8.01        3.504          0.58

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       39.06     8.01       3.504
      2       64.75    13.62       2.687
      3       65.29    13.74       2.675
      4       70.04    16.35       2.452
      5       80.07    20.21       2.206

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      80.07   Tc(MIN.) =   20.21
  TOTAL AREA(ACRES) =       48.8
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    242.00 =    1945.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    242.00 TO NODE    243.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1536.57  DOWNSTREAM(FEET) =  1520.56
  FLOW LENGTH(FEET) =   594.00   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.21
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      80.07
  PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =   20.82
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    243.00 =    2539.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    243.00 IS CODE =  16
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED CONSTANT SOURCE FLOW AT NODE<<<<<
============================================================================
  USER-SPECIFIED CONSTANT SOURCE FLOW =    41.30(CFS)
  USER-SPECIFIED AREA ASSOCIATED TO SOURCE FLOW =    33.55(ACRES)
  * CUMULATIVE SOURCE FLOW DATA: FLOW(CFS) =    41.30  AREA(AC.) =    33.55
  * SUMMED DATA: FLOW(CFS) =   121.37    TOTAL AREA(ACRES) =    82.37

****************************************************************************
  FLOW PROCESS FROM NODE    243.00 TO NODE    254.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1518.00  DOWNSTREAM(FEET) =  1517.32
  FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.02
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     121.37
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   20.92
  * TOTAL SOURCE FLOW(CFS) =      41.30
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    254.00 =    2614.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    254.00 TO NODE    254.00 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.) =   20.92
  RAINFALL INTENSITY(INCH/HR) =   2.17
  TOTAL STREAM AREA(ACRES) =    48.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     80.07

  * SOURCE FLOW DATA: FLOW(CFS) =      41.30     AREA(ACRES) =       33.5
  * SUMMED DATA: FLOW(CFS) =     121.37    TOTAL AREA(ACRES) =       82.4

****************************************************************************
  FLOW PROCESS FROM NODE    250.00 TO NODE    251.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   910.00
  UPSTREAM ELEVATION(FEET) =   1582.10
  DOWNSTREAM ELEVATION(FEET) =   1561.07
  ELEVATION DIFFERENCE(FEET) =     21.03
  TC = 0.303*[(  910.00**3)/(    21.03)]**.2 =    9.827
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.163
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8776
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.69
  TOTAL AREA(ACRES) =      0.61   TOTAL RUNOFF(CFS) =      1.69

****************************************************************************
  FLOW PROCESS FROM NODE    250.00 TO NODE    251.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.163
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6761
  SOIL CLASSIFICATION IS "B"
  SUBAREA AREA(ACRES) =    0.41   SUBAREA RUNOFF(CFS) =    0.88
  TOTAL AREA(ACRES) =        1.0   TOTAL RUNOFF(CFS) =       2.57
  TC(MIN.) =    9.83

****************************************************************************
  FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1561.07  DOWNSTREAM ELEVATION(FEET) = 1538.60
  STREET LENGTH(FEET) =   870.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
```

```
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.84
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.34
   HALFSTREET FLOOD WIDTH(FEET) =    9.97
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.55
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.21
 STREET FLOW TRAVEL TIME(MIN.) =   4.09   Tc(MIN.) =   13.91
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.658
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8746
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    1.09      SUBAREA RUNOFF(CFS) =    2.53
 TOTAL AREA(ACRES) =        2.1        PEAK FLOW RATE(CFS) =       5.10

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  11.45
 FLOW VELOCITY(FEET/SEC.) =  3.74   DEPTH*VELOCITY(FT*FT/SEC.) =   1.37
 LONGEST FLOWPATH FROM NODE    250.00 TO NODE    252.00 =    1780.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    251.00 TO NODE    252.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.658
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6456
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.09   SUBAREA RUNOFF(CFS) =    0.15
 TOTAL AREA(ACRES) =        2.2   TOTAL RUNOFF(CFS) =       5.26
 TC(MIN.) =   13.91

****************************************************************************
 FLOW PROCESS FROM NODE    252.00 TO NODE    253.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1538.60  DOWNSTREAM ELEVATION(FEET) = 1529.51
 STREET LENGTH(FEET) =   660.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 30.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.018
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.69
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.44
   HALFSTREET FLOOD WIDTH(FEET) =   15.59
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.26
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.44
 STREET FLOW TRAVEL TIME(MIN.) =   3.38   Tc(MIN.) =   17.29
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.384
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8725
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    2.34      SUBAREA RUNOFF(CFS) =    4.87
 TOTAL AREA(ACRES) =        4.5        PEAK FLOW RATE(CFS) =      10.13

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  17.46
 FLOW VELOCITY(FEET/SEC.) =  3.47   DEPTH*VELOCITY(FT*FT/SEC.) =   1.65
 LONGEST FLOWPATH FROM NODE    250.00 TO NODE    253.00 =    2440.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    252.00 TO NODE    253.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.384
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6253
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.30   SUBAREA RUNOFF(CFS) =    0.45
 TOTAL AREA(ACRES) =        4.8   TOTAL RUNOFF(CFS) =      10.57
 TC(MIN.) =   17.29

****************************************************************************
 FLOW PROCESS FROM NODE    253.00 TO NODE    254.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1524.18  DOWNSTREAM(FEET) =  1522.21
  FLOW LENGTH(FEET) =    57.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.80
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.57
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   17.38
  LONGEST FLOWPATH FROM NODE    250.00 TO NODE    254.00 =    2497.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    254.00 TO NODE    254.00 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.) =   17.38
  RAINFALL INTENSITY(INCH/HR) =   2.38
  TOTAL STREAM AREA(ACRES) =     4.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.57

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA   SOURCE
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)   FLOW
      1       39.06     8.84        3.335         48.82     41.30
      1       64.75    14.38        2.615         48.82     41.30
      1       65.29    14.50        2.604         48.82     41.30
      1       70.04    17.08        2.399         48.82     41.30
      1       80.07    20.92        2.168         48.82     41.30
      2       10.57    17.38        2.378          4.84

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       44.43     8.84       3.335
      2       73.50    14.38       2.615
      3       74.11    14.50       2.604
      4       80.43    17.08       2.399
      5       80.00    17.38       2.378
      6       89.71    20.92       2.168

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      89.71   Tc(MIN.) =   20.92
  TOTAL AREA(ACRES) =       53.7
  * CUMULATIVE SOURCE FLOW DATA: FLOW(CFS) =      41.30  AREA(AC.) =       33.5
  * SUMMED DATA: FLOW(CFS) =     131.01    TOTAL AREA(ACRES) =       87.2
  LONGEST FLOWPATH FROM NODE    210.00 TO NODE    254.00 =    2614.00 FEET.
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =       53.7  TC(MIN.) =     20.92
  PEAK FLOW RATE(CFS)   =      89.71
  * CUMULATIVE SOURCE FLOW DATA: FLOW(CFS) =      41.30  AREA(AC.) =       33.5
  * SUMMED DATA: FLOW(CFS) =     131.01    TOTAL AREA(ACRES) =       87.2
  *** PEAK FLOW RATE TABLE ***
         Q(CFS)   Tc(MIN.)
  1       44.43       8.84
  2       73.50      14.38
  3       74.11      14.50
  4       80.43      17.08
  5       80.00      17.38
  6       89.71      20.92
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1435

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* JOB #3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.  *
* PROPOSED CONDITION 100-YEAR                                            *
* SOUTH HALF OF WALNUT STREET SITE FRONTAGE (NODES 260-262)              *
 ************************************************************************

  FILE NAME: W:\3958\P100S2.DAT
  TIME/DATE OF STUDY: 11:48 06/23/2022
------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  12.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.490
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.280
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.280
  SLOPE OF INTENSITY DURATION CURVE = 0.5000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *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.*

****************************************************************************
  FLOW PROCESS FROM NODE    260.00 TO NODE    261.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   910.00
  UPSTREAM ELEVATION(FEET) =   1582.10
  DOWNSTREAM ELEVATION(FEET) =   1561.20
  ELEVATION DIFFERENCE(FEET) =     20.90
  TC = 0.303*[(  910.00**3)/(    20.90)]**.2 =    9.840
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.161
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8776
  SOIL CLASSIFICATION IS "B"
  SUBAREA RUNOFF(CFS) =      1.14
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      1.14

****************************************************************************
  FLOW PROCESS FROM NODE    261.00 TO NODE    262.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1561.20  DOWNSTREAM ELEVATION(FEET) = 1552.50
  STREET LENGTH(FEET) =   280.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
```

```
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.37
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.25
   HALFSTREET FLOOD WIDTH(FEET) =    5.09
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.22
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.82
 STREET FLOW TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =   11.29
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.951
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8764
 SOIL CLASSIFICATION IS "B"
 SUBAREA AREA(ACRES) =    0.18      SUBAREA RUNOFF(CFS) =    0.47
 TOTAL AREA(ACRES) =        0.6        PEAK FLOW RATE(CFS) =       1.60

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.27   HALFSTREET FLOOD WIDTH(FEET) =   5.78
 FLOW VELOCITY(FEET/SEC.) =  3.26   DEPTH*VELOCITY(FT*FT/SEC.) =   0.87
 LONGEST FLOWPATH FROM NODE    260.00 TO NODE    262.00 =    1190.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =        0.6  TC(MIN.) =     11.29
 PEAK FLOW RATE(CFS)   =       1.60
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

APPENDIX C

DETENTION CALCULATIONS

EXISTING CONDITION

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

Study date 07/18/22 File: 3958X1001100.out

++

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
EXISTING CONDITION 100-YEAR HYDROGRAPH

1-HOUR

Drainage Area = 29.96(Ac.) = 0.047 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 29.96(Ac.) = 0.047 Sq. Mi.
Length along longest watercourse = 2246.00(Ft.)
Length along longest watercourse measured to centroid = 1020.00(Ft.)
Length along longest watercourse = 0.425 Mi.
Length along longest watercourse measured to centroid = 0.193 Mi.
Difference in elevation = 50.10(Ft.)
Slope along watercourse = 117.7774 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.094 Hr.
Lag time = 5.63 Min.
25% of lag time = 1.41 Min.
40% of lag time = 2.25 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.96	0.49	14.68

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.96	1.28	38.35

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.490(In)
Area Averaged 100-Year Rainfall = 1.280(In)

Point rain (area averaged) = 1.280(In)
Areal adjustment factor = 99.97 %
Adjusted average point rain = 1.280(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
29.960	66.00	0.000

Total Area Entered = 29.96(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
66.0	66.0	0.405	0.000	0.405	1.000	0.405
					Sum (F) =	0.405

Area averaged mean soil loss (F) (In/Hr) = 0.405
Minimum soil loss rate ((In/Hr)) = 0.203
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	88.832	15.833	4.781
2	0.167	177.663	46.852	14.147
3	0.250	266.495	17.674	5.336
4	0.333	355.326	7.711	2.328
5	0.417	444.158	4.487	1.355
6	0.500	532.989	2.851	0.861

7	0.583	621.821	1.968	0.594
8	0.667	710.652	1.268	0.383
9	0.750	799.484	0.906	0.274
10	0.833	888.316	0.449	0.136
		Sum = 100.000	Sum=	30.194

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.20	0.645	0.405	(0.580)	0.240
2	0.17	4.30	0.660	0.405	(0.594)	0.255
3	0.25	5.00	0.768	0.405	(0.691)	0.363
4	0.33	5.00	0.768	0.405	(0.691)	0.363
5	0.42	5.80	0.891	0.405	(0.802)	0.485
6	0.50	6.50	0.998	0.405	(0.898)	0.593
7	0.58	7.40	1.136	0.405	(1.023)	0.731
8	0.67	8.60	1.321	0.405	(1.189)	0.915
9	0.75	12.30	1.889	0.405	(1.700)	1.484
10	0.83	29.10	4.469	0.405	(4.022)	4.063
11	0.92	6.80	1.044	0.405	(0.940)	0.639
12	1.00	5.00	0.768	0.405	(0.691)	0.363

(Loss Rate Not Used)

Sum = 100.0 Sum = 10.5

Flood volume = Effective rainfall 0.87(In)
times area 30.0(Ac.)/[(In)/(Ft.)] = 2.2(Ac.Ft)
Total soil loss = 0.41(In)
Total soil loss = 1.012(Ac.Ft)
Total rainfall = 1.28(In)
Flood volume = 95100.9 Cubic Feet
Total soil loss = 44067.4 Cubic Feet

Peak flow rate of this hydrograph = 72.685(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	20.0	40.0	60.0	80.0
0+ 5	0.0079	1.15	Q				
0+10	0.0397	4.61	V Q				
0+15	0.0853	6.62	V Q				
0+20	0.1458	8.79	V Q				
0+25	0.2168	10.31	V Q				
0+30	0.3066	13.04	VQ				
0+35	0.4180	16.18	VQ				
0+40	0.5563	20.07	Q				
0+45	0.7401	26.69	Q				
0+50	1.0755	48.70	V	Q			
0+55	1.5761	72.68	V	Q			
1+ 0	1.8411	38.49	Q	V			
1+ 5	1.9903	21.65	Q	V			
1+10	2.0678	11.26	Q	V			
1+15	2.1141	6.72	Q	V			
1+20	2.1443	4.38	Q	V			
1+25	2.1634	2.78	Q	V			
1+30	2.1756	1.77	Q	V			
1+35	2.1816	0.87	Q	V			
1+40	2.1829	0.19	Q	V			
1+45	2.1832	0.05	Q	V			

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

Study date 07/18/22 File: 3958X1003100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
EXISTING CONDITION 100-YEAR HYDROGRAPH

3-Hour

Drainage Area = 29.96(Ac.) = 0.047 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 29.96(Ac.) = 0.047 Sq. Mi.
Length along longest watercourse = 2246.00(Ft.)
Length along longest watercourse measured to centroid = 1020.00(Ft.)
Length along longest watercourse = 0.425 Mi.
Length along longest watercourse measured to centroid = 0.193 Mi.
Difference in elevation = 50.10(Ft.)
Slope along watercourse = 117.7774 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.094 Hr.
Lag time = 5.63 Min.
25% of lag time = 1.41 Min.
40% of lag time = 2.25 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.96	0.81	24.27

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.96	1.98	59.32

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.810(In)
Area Averaged 100-Year Rainfall = 1.980(In)

Point rain (area averaged) = 1.980(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.980(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
29.960	66.00	0.000

Total Area Entered = 29.96(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
66.0	66.0	0.405	0.000	0.405	1.000	0.405
					Sum (F) =	0.405

Area averaged mean soil loss (F) (In/Hr) = 0.405
Minimum soil loss rate ((In/Hr)) = 0.203
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	88.832	15.833	4.781
2	0.167	177.663	46.852	14.147
3	0.250	266.495	17.674	5.336
4	0.333	355.326	7.711	2.328
5	0.417	444.158	4.487	1.355
6	0.500	532.989	2.851	0.861
7	0.583	621.821	1.968	0.594
8	0.667	710.652	1.268	0.383

9	0.750	799.484	0.906	0.274
10	0.833	888.316	0.449	0.136
		Sum = 100.000	Sum=	30.194

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.309	(0.405)	0.278	0.031
2	0.17	1.30	0.309	(0.405)	0.278	0.031
3	0.25	1.10	0.261	(0.405)	0.235	0.026
4	0.33	1.50	0.356	(0.405)	0.321	0.036
5	0.42	1.50	0.356	(0.405)	0.321	0.036
6	0.50	1.80	0.428	(0.405)	0.385	0.043
7	0.58	1.50	0.356	(0.405)	0.321	0.036
8	0.67	1.80	0.428	(0.405)	0.385	0.043
9	0.75	1.80	0.428	(0.405)	0.385	0.043
10	0.83	1.50	0.356	(0.405)	0.321	0.036
11	0.92	1.60	0.380	(0.405)	0.342	0.038
12	1.00	1.80	0.428	(0.405)	0.385	0.043
13	1.08	2.20	0.523	0.405	(0.470)	0.117
14	1.17	2.20	0.523	0.405	(0.470)	0.117
15	1.25	2.20	0.523	0.405	(0.470)	0.117
16	1.33	2.00	0.475	0.405	(0.428)	0.070
17	1.42	2.60	0.618	0.405	(0.556)	0.212
18	1.50	2.70	0.641	0.405	(0.577)	0.236
19	1.58	2.40	0.570	0.405	(0.513)	0.165
20	1.67	2.70	0.641	0.405	(0.577)	0.236
21	1.75	3.30	0.784	0.405	(0.706)	0.379
22	1.83	3.10	0.736	0.405	(0.663)	0.331
23	1.92	2.90	0.689	0.405	(0.620)	0.284
24	2.00	3.00	0.713	0.405	(0.641)	0.308
25	2.08	3.10	0.736	0.405	(0.663)	0.331
26	2.17	4.20	0.998	0.405	(0.898)	0.593
27	2.25	5.00	1.188	0.405	(1.069)	0.783
28	2.33	3.50	0.831	0.405	(0.748)	0.426
29	2.42	6.80	1.615	0.405	(1.454)	1.210
30	2.50	7.30	1.734	0.405	(1.561)	1.329
31	2.58	8.20	1.948	0.405	(1.753)	1.543
32	2.67	5.90	1.402	0.405	(1.261)	0.996
33	2.75	2.00	0.475	0.405	(0.428)	0.070
34	2.83	1.80	0.428	(0.405)	0.385	0.043
35	2.92	1.80	0.428	(0.405)	0.385	0.043
36	3.00	0.60	0.143	(0.405)	0.128	0.014
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	10.4

Flood volume = Effective rainfall 0.87(In)
times area 30.0(Ac.)/[(In)/(Ft.)] = 2.2(Ac.Ft)
Total soil loss = 1.11(In)
Total soil loss = 2.780(Ac.Ft)
Total rainfall = 1.98(In)
Flood volume = 94201.2 Cubic Feet
Total soil loss = 121105.1 Cubic Feet

Peak flow rate of this hydrograph = 38.373(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0010	0.15	Q				
0+10	0.0050	0.58	Q				
0+15	0.0101	0.73	Q				
0+20	0.0154	0.78	Q				
0+25	0.0218	0.93	Q				
0+30	0.0289	1.03	VQ				
0+35	0.0367	1.13	VQ				
0+40	0.0444	1.12	VQ				
0+45	0.0527	1.21	VQ				
0+50	0.0611	1.22	Q				
0+55	0.0690	1.15	Q				
1+ 0	0.0771	1.17	Q				
1+ 5	0.0881	1.60	Q				
1+10	0.1066	2.68	VQ				
1+15	0.1279	3.09	VQ				
1+20	0.1488	3.04	VQ				
1+25	0.1706	3.16	Q				
1+30	0.2057	5.10	V Q				
1+35	0.2456	5.79	VQ				
1+40	0.2838	5.55	Q				
1+45	0.3326	7.09	VQ				
1+50	0.3962	9.23	V Q				
1+55	0.4599	9.25	VQ				
2+ 0	0.5209	8.86	QV				
2+ 5	0.5842	9.20	QV				
2+10	0.6593	10.90	Q V				
2+15	0.7672	15.68	VQ				
2+20	0.8922	18.14	V Q				
2+25	1.0198	18.53	Q				
2+30	1.2203	29.11	V	Q			
2+35	1.4658	35.65	V	Q			

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  2+40      1.7301     38.37  |         |         |         |  V     Q |
  2+45      1.9271     28.60  |         |         |        Q|     V    |
  2+50      2.0215     13.71  |         | Q       |         |       V  |
  2+55      2.0761      7.92  |       Q |         |         |        V |
  3+ 0      2.1120      5.22  |     Q   |         |         |         V|
  3+ 5      2.1347      3.30  |   Q     |         |         |         V|
  3+10      2.1486      2.01  | Q       |         |         |         V|
  3+15      2.1565      1.15  |Q        |         |         |         V|
  3+20      2.1606      0.59  Q         |         |         |         V|
  3+25      2.1620      0.21  Q         |         |         |         V|
  3+30      2.1623      0.05  Q         |         |         |         V|
  3+35      2.1625      0.02  Q         |         |         |         V|
  3+40      2.1625      0.01  Q         |         |         |         V|
  3+45      2.1626      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 07/18/22 File: 3958X1006100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
EXISTING CONDITION 100-YEAR HYDROGRAPH

6-HOUR

Drainage Area = 29.96(Ac.) = 0.047 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 29.96(Ac.) = 0.047 Sq. Mi.
Length along longest watercourse = 2246.00(Ft.)
Length along longest watercourse measured to centroid = 1020.00(Ft.)
Length along longest watercourse = 0.425 Mi.
Length along longest watercourse measured to centroid = 0.193 Mi.
Difference in elevation = 50.10(Ft.)
Slope along watercourse = 117.7774 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.094 Hr.
Lag time = 5.63 Min.
25% of lag time = 1.41 Min.
40% of lag time = 2.25 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.96	1.16	34.75

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.96	2.75	82.39

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.160(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 2.750(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 2.750(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
29.960	66.00	0.000

Total Area Entered = 29.96(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
66.0	66.0	0.405	0.000	0.405	1.000	0.405
					Sum (F) =	0.405

Area averaged mean soil loss (F) (In/Hr) = 0.405
Minimum soil loss rate ((In/Hr)) = 0.203
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	88.832	15.833	4.781
2	0.167	177.663	46.852	14.147
3	0.250	266.495	17.674	5.336
4	0.333	355.326	7.711	2.328
5	0.417	444.158	4.487	1.355
6	0.500	532.989	2.851	0.861
7	0.583	621.821	1.968	0.594
8	0.667	710.652	1.268	0.383

9	0.750	799.484	0.906	0.274
10	0.833	888.316	0.449	0.136
			Sum = 100.000	Sum= 30.194

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.165	(0.405)	0.148	0.016
2	0.17	0.60	0.198	(0.405)	0.178	0.020
3	0.25	0.60	0.198	(0.405)	0.178	0.020
4	0.33	0.60	0.198	(0.405)	0.178	0.020
5	0.42	0.60	0.198	(0.405)	0.178	0.020
6	0.50	0.70	0.231	(0.405)	0.208	0.023
7	0.58	0.70	0.231	(0.405)	0.208	0.023
8	0.67	0.70	0.231	(0.405)	0.208	0.023
9	0.75	0.70	0.231	(0.405)	0.208	0.023
10	0.83	0.70	0.231	(0.405)	0.208	0.023
11	0.92	0.70	0.231	(0.405)	0.208	0.023
12	1.00	0.80	0.264	(0.405)	0.238	0.026
13	1.08	0.80	0.264	(0.405)	0.238	0.026
14	1.17	0.80	0.264	(0.405)	0.238	0.026
15	1.25	0.80	0.264	(0.405)	0.238	0.026
16	1.33	0.80	0.264	(0.405)	0.238	0.026
17	1.42	0.80	0.264	(0.405)	0.238	0.026
18	1.50	0.80	0.264	(0.405)	0.238	0.026
19	1.58	0.80	0.264	(0.405)	0.238	0.026
20	1.67	0.80	0.264	(0.405)	0.238	0.026
21	1.75	0.80	0.264	(0.405)	0.238	0.026
22	1.83	0.80	0.264	(0.405)	0.238	0.026
23	1.92	0.80	0.264	(0.405)	0.238	0.026
24	2.00	0.90	0.297	(0.405)	0.267	0.030
25	2.08	0.80	0.264	(0.405)	0.238	0.026
26	2.17	0.90	0.297	(0.405)	0.267	0.030
27	2.25	0.90	0.297	(0.405)	0.267	0.030
28	2.33	0.90	0.297	(0.405)	0.267	0.030
29	2.42	0.90	0.297	(0.405)	0.267	0.030
30	2.50	0.90	0.297	(0.405)	0.267	0.030
31	2.58	0.90	0.297	(0.405)	0.267	0.030
32	2.67	0.90	0.297	(0.405)	0.267	0.030
33	2.75	1.00	0.330	(0.405)	0.297	0.033
34	2.83	1.00	0.330	(0.405)	0.297	0.033
35	2.92	1.00	0.330	(0.405)	0.297	0.033
36	3.00	1.00	0.330	(0.405)	0.297	0.033
37	3.08	1.00	0.330	(0.405)	0.297	0.033
38	3.17	1.10	0.363	(0.405)	0.327	0.036
39	3.25	1.10	0.363	(0.405)	0.327	0.036
40	3.33	1.10	0.363	(0.405)	0.327	0.036
41	3.42	1.20	0.396	(0.405)	0.356	0.040
42	3.50	1.30	0.429	(0.405)	0.386	0.043
43	3.58	1.40	0.462	0.405	(0.416)	0.057
44	3.67	1.40	0.462	0.405	(0.416)	0.057
45	3.75	1.50	0.495	0.405	(0.445)	0.090
46	3.83	1.50	0.495	0.405	(0.445)	0.090
47	3.92	1.60	0.528	0.405	(0.475)	0.123
48	4.00	1.60	0.528	0.405	(0.475)	0.123
49	4.08	1.70	0.561	0.405	(0.505)	0.156
50	4.17	1.80	0.594	0.405	(0.535)	0.189
51	4.25	1.90	0.627	0.405	(0.564)	0.222
52	4.33	2.00	0.660	0.405	(0.594)	0.255
53	4.42	2.10	0.693	0.405	(0.624)	0.288
54	4.50	2.10	0.693	0.405	(0.624)	0.288
55	4.58	2.20	0.726	0.405	(0.653)	0.321
56	4.67	2.30	0.759	0.405	(0.683)	0.354
57	4.75	2.40	0.792	0.405	(0.713)	0.387
58	4.83	2.40	0.792	0.405	(0.713)	0.387
59	4.92	2.50	0.825	0.405	(0.742)	0.420
60	5.00	2.60	0.858	0.405	(0.772)	0.453
61	5.08	3.10	1.023	0.405	(0.921)	0.618
62	5.17	3.60	1.188	0.405	(1.069)	0.783
63	5.25	3.90	1.287	0.405	(1.158)	0.882
64	5.33	4.20	1.386	0.405	(1.247)	0.981
65	5.42	4.70	1.551	0.405	(1.396)	1.146
66	5.50	5.60	1.848	0.405	(1.663)	1.443
67	5.58	1.90	0.627	0.405	(0.564)	0.222
68	5.67	0.90	0.297	(0.405)	0.267	0.030
69	5.75	0.60	0.198	(0.405)	0.178	0.020
70	5.83	0.50	0.165	(0.405)	0.148	0.016
71	5.92	0.30	0.099	(0.405)	0.089	0.010
72	6.00	0.20	0.066	(0.405)	0.059	0.007

(Loss Rate Not Used)

Sum = 100.0 Sum = 11.6

Flood volume = Effective rainfall 0.97(In)
times area 30.0(Ac.)/[(In)/(Ft.)] = 2.4(Ac.Ft)
Total soil loss = 1.78(In)
Total soil loss = 4.455(Ac.Ft)
Total rainfall = 2.75(In)
Flood volume = 104964.4 Cubic Feet
Total soil loss = 194080.5 Cubic Feet

Peak flow rate of this hydrograph = 32.586(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 10.0 20.0 30.0 40.0
0+ 5	0.0005	0.08	Q
0+10	0.0028	0.33	Q
0+15	0.0060	0.46	Q
0+20	0.0096	0.52	Q
0+25	0.0133	0.55	Q
0+30	0.0174	0.58	Q
0+35	0.0218	0.64	Q
0+40	0.0264	0.67	Q
0+45	0.0311	0.68	Q
0+50	0.0359	0.69	Q
0+55	0.0406	0.69	Q
1+ 0	0.0455	0.71	Q
1+ 5	0.0507	0.76	Q
1+10	0.0561	0.78	Q
1+15	0.0615	0.79	QV
1+20	0.0670	0.79	QV
1+25	0.0724	0.79	QV
1+30	0.0779	0.79	QV
1+35	0.0834	0.80	QV
1+40	0.0889	0.80	QV
1+45	0.0944	0.80	QV
1+50	0.0998	0.80	QV
1+55	0.1053	0.80	QV
2+ 0	0.1109	0.81	QV
2+ 5	0.1168	0.84	QV
2+10	0.1225	0.83	Q V
2+15	0.1284	0.87	Q V
2+20	0.1345	0.88	Q V
2+25	0.1406	0.89	Q V
2+30	0.1468	0.89	Q V
2+35	0.1529	0.89	Q V
2+40	0.1591	0.90	Q V
2+45	0.1654	0.91	Q V
2+50	0.1720	0.96	Q V
2+55	0.1787	0.98	Q V
3+ 0	0.1855	0.98	Q V
3+ 5	0.1923	0.99	Q V
3+10	0.1993	1.01	Q V
3+15	0.2065	1.06	Q V
3+20	0.2139	1.08	Q V
3+25	0.2215	1.10	Q V
3+30	0.2296	1.17	Q V
3+35	0.2385	1.30	Q V
3+40	0.2490	1.52	Q V
3+45	0.2612	1.77	Q V
3+50	0.2769	2.28	Q V
3+55	0.2950	2.63	Q V
4+ 0	0.3170	3.19	Q V
4+ 5	0.3417	3.58	Q V
4+10	0.3715	4.32	Q V
4+15	0.4072	5.19	QV
4+20	0.4493	6.11	QV
4+25	0.4979	7.06	QV
4+30	0.5521	7.87	Q V
4+35	0.6099	8.38	Q V
4+40	0.6732	9.20	Q V
4+45	0.7429	10.11	Q V
4+50	0.8180	10.91	Q V
4+55	0.8965	11.41	Q V
5+ 0	0.9806	12.21	Q V
5+ 5	1.0753	13.75	Q V
5+10	1.1937	17.19	Q V
5+15	1.3386	21.04	QV
5+20	1.5058	24.28	Q
5+25	1.6964	27.67	QV
5+30	1.9208	32.59	VQ
5+35	2.1443	32.46	Q V
5+40	2.2588	16.62	Q V
5+45	2.3174	8.51	Q V
5+50	2.3532	5.20	Q V
5+55	2.3767	3.40	Q V
6+ 0	2.3920	2.22	Q V
6+ 5	2.4014	1.37	Q V
6+10	2.4066	0.75	Q V
6+15	2.4088	0.32	Q V
6+20	2.4093	0.07	Q V
6+25	2.4095	0.03	Q V
6+30	2.4096	0.01	Q V
6+35	2.4096	0.01	Q V
6+40	2.4096	0.00	Q V
6+45	2.4097	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 07/18/22 File: 3958X10024100.out

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

Program License Serial Number 6400

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

English Units used in output format

24-HOUR

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
EXISTING CONDITION 100-YEAR HYDROGRAPH

Drainage Area = 29.96(Ac.) = 0.047 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 29.96(Ac.) = 0.047 Sq. Mi.
Length along longest watercourse = 2246.00(Ft.)
Length along longest watercourse measured to centroid = 1020.00(Ft.)
Length along longest watercourse = 0.425 Mi.
Length along longest watercourse measured to centroid = 0.193 Mi.
Difference in elevation = 50.10(Ft.)
Slope along watercourse = 117.7774 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.094 Hr.
Lag time = 5.63 Min.
25% of lag time = 1.41 Min.
40% of lag time = 2.25 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.96	1.96	58.72

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
29.96	5.20	155.79

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.960(In)
Area Averaged 100-Year Rainfall = 5.200(In)

Point rain (area averaged) = 5.200(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 5.200(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
29.960	66.00	0.000

Total Area Entered = 29.96(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
66.0	66.0	0.405	0.000	0.405	1.000	0.405
					Sum (F) =	0.405

Area averaged mean soil loss (F) (In/Hr) = 0.405
Minimum soil loss rate ((In/Hr)) = 0.203
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	88.832	15.833	4.781
2	0.167	177.663	46.852	14.147
3	0.250	266.495	17.674	5.336
4	0.333	355.326	7.711	2.328
5	0.417	444.158	4.487	1.355
6	0.500	532.989	2.851	0.861
7	0.583	621.821	1.968	0.594
8	0.667	710.652	1.268	0.383

9	0.750	799.484	0.906		0.274
10	0.833	888.316	0.449		0.136
			Sum = 100.000	Sum=	30.194

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.042	(0.718)	0.037	0.004
2	0.17	0.07	0.042	(0.716)	0.037	0.004
3	0.25	0.07	0.042	(0.713)	0.037	0.004
4	0.33	0.10	0.062	(0.710)	0.056	0.006
5	0.42	0.10	0.062	(0.707)	0.056	0.006
6	0.50	0.10	0.062	(0.704)	0.056	0.006
7	0.58	0.10	0.062	(0.702)	0.056	0.006
8	0.67	0.10	0.062	(0.699)	0.056	0.006
9	0.75	0.10	0.062	(0.696)	0.056	0.006
10	0.83	0.13	0.083	(0.694)	0.075	0.008
11	0.92	0.13	0.083	(0.691)	0.075	0.008
12	1.00	0.13	0.083	(0.688)	0.075	0.008
13	1.08	0.10	0.062	(0.685)	0.056	0.006
14	1.17	0.10	0.062	(0.683)	0.056	0.006
15	1.25	0.10	0.062	(0.680)	0.056	0.006
16	1.33	0.10	0.062	(0.677)	0.056	0.006
17	1.42	0.10	0.062	(0.675)	0.056	0.006
18	1.50	0.10	0.062	(0.672)	0.056	0.006
19	1.58	0.10	0.062	(0.669)	0.056	0.006
20	1.67	0.10	0.062	(0.666)	0.056	0.006
21	1.75	0.10	0.062	(0.664)	0.056	0.006
22	1.83	0.13	0.083	(0.661)	0.075	0.008
23	1.92	0.13	0.083	(0.658)	0.075	0.008
24	2.00	0.13	0.083	(0.656)	0.075	0.008
25	2.08	0.13	0.083	(0.653)	0.075	0.008
26	2.17	0.13	0.083	(0.650)	0.075	0.008
27	2.25	0.13	0.083	(0.648)	0.075	0.008
28	2.33	0.13	0.083	(0.645)	0.075	0.008
29	2.42	0.13	0.083	(0.643)	0.075	0.008
30	2.50	0.13	0.083	(0.640)	0.075	0.008
31	2.58	0.17	0.104	(0.637)	0.094	0.010
32	2.67	0.17	0.104	(0.635)	0.094	0.010
33	2.75	0.17	0.104	(0.632)	0.094	0.010
34	2.83	0.17	0.104	(0.630)	0.094	0.010
35	2.92	0.17	0.104	(0.627)	0.094	0.010
36	3.00	0.17	0.104	(0.624)	0.094	0.010
37	3.08	0.17	0.104	(0.622)	0.094	0.010
38	3.17	0.17	0.104	(0.619)	0.094	0.010
39	3.25	0.17	0.104	(0.617)	0.094	0.010
40	3.33	0.17	0.104	(0.614)	0.094	0.010
41	3.42	0.17	0.104	(0.611)	0.094	0.010
42	3.50	0.17	0.104	(0.609)	0.094	0.010
43	3.58	0.17	0.104	(0.606)	0.094	0.010
44	3.67	0.17	0.104	(0.604)	0.094	0.010
45	3.75	0.17	0.104	(0.601)	0.094	0.010
46	3.83	0.20	0.125	(0.599)	0.112	0.012
47	3.92	0.20	0.125	(0.596)	0.112	0.012
48	4.00	0.20	0.125	(0.594)	0.112	0.012
49	4.08	0.20	0.125	(0.591)	0.112	0.012
50	4.17	0.20	0.125	(0.589)	0.112	0.012
51	4.25	0.20	0.125	(0.586)	0.112	0.012
52	4.33	0.23	0.146	(0.584)	0.131	0.015
53	4.42	0.23	0.146	(0.581)	0.131	0.015
54	4.50	0.23	0.146	(0.579)	0.131	0.015
55	4.58	0.23	0.146	(0.576)	0.131	0.015
56	4.67	0.23	0.146	(0.574)	0.131	0.015
57	4.75	0.23	0.146	(0.571)	0.131	0.015
58	4.83	0.27	0.166	(0.569)	0.150	0.017
59	4.92	0.27	0.166	(0.566)	0.150	0.017
60	5.00	0.27	0.166	(0.564)	0.150	0.017
61	5.08	0.20	0.125	(0.561)	0.112	0.012
62	5.17	0.20	0.125	(0.559)	0.112	0.012
63	5.25	0.20	0.125	(0.557)	0.112	0.012
64	5.33	0.23	0.146	(0.554)	0.131	0.015
65	5.42	0.23	0.146	(0.552)	0.131	0.015
66	5.50	0.23	0.146	(0.549)	0.131	0.015
67	5.58	0.27	0.166	(0.547)	0.150	0.017
68	5.67	0.27	0.166	(0.544)	0.150	0.017
69	5.75	0.27	0.166	(0.542)	0.150	0.017
70	5.83	0.27	0.166	(0.540)	0.150	0.017
71	5.92	0.27	0.166	(0.537)	0.150	0.017
72	6.00	0.27	0.166	(0.535)	0.150	0.017
73	6.08	0.30	0.187	(0.532)	0.168	0.019
74	6.17	0.30	0.187	(0.530)	0.168	0.019
75	6.25	0.30	0.187	(0.528)	0.168	0.019
76	6.33	0.30	0.187	(0.525)	0.168	0.019
77	6.42	0.30	0.187	(0.523)	0.168	0.019
78	6.50	0.30	0.187	(0.521)	0.168	0.019
79	6.58	0.33	0.208	(0.518)	0.187	0.021
80	6.67	0.33	0.208	(0.516)	0.187	0.021
81	6.75	0.33	0.208	(0.514)	0.187	0.021
82	6.83	0.33	0.208	(0.511)	0.187	0.021
83	6.92	0.33	0.208	(0.509)	0.187	0.021
84	7.00	0.33	0.208	(0.507)	0.187	0.021
85	7.08	0.33	0.208	(0.504)	0.187	0.021
86	7.17	0.33	0.208	(0.502)	0.187	0.021
87	7.25	0.33	0.208	(0.500)	0.187	0.021
88	7.33	0.37	0.229	(0.498)	0.206	0.023

89	7.42	0.37	0.229	(0.495)	0.206	0.023
90	7.50	0.37	0.229	(0.493)	0.206	0.023
91	7.58	0.40	0.250	(0.491)	0.225	0.025
92	7.67	0.40	0.250	(0.489)	0.225	0.025
93	7.75	0.40	0.250	(0.486)	0.225	0.025
94	7.83	0.43	0.270	(0.484)	0.243	0.027
95	7.92	0.43	0.270	(0.482)	0.243	0.027
96	8.00	0.43	0.270	(0.480)	0.243	0.027
97	8.08	0.50	0.312	(0.477)	0.281	0.031
98	8.17	0.50	0.312	(0.475)	0.281	0.031
99	8.25	0.50	0.312	(0.473)	0.281	0.031
100	8.33	0.50	0.312	(0.471)	0.281	0.031
101	8.42	0.50	0.312	(0.468)	0.281	0.031
102	8.50	0.50	0.312	(0.466)	0.281	0.031
103	8.58	0.53	0.333	(0.464)	0.300	0.033
104	8.67	0.53	0.333	(0.462)	0.300	0.033
105	8.75	0.53	0.333	(0.460)	0.300	0.033
106	8.83	0.57	0.354	(0.458)	0.318	0.035
107	8.92	0.57	0.354	(0.455)	0.318	0.035
108	9.00	0.57	0.354	(0.453)	0.318	0.035
109	9.08	0.63	0.395	(0.451)	0.356	0.040
110	9.17	0.63	0.395	(0.449)	0.356	0.040
111	9.25	0.63	0.395	(0.447)	0.356	0.040
112	9.33	0.67	0.416	(0.445)	0.374	0.042
113	9.42	0.67	0.416	(0.443)	0.374	0.042
114	9.50	0.67	0.416	(0.440)	0.374	0.042
115	9.58	0.70	0.437	(0.438)	0.393	0.044
116	9.67	0.70	0.437	(0.436)	0.393	0.044
117	9.75	0.70	0.437	(0.434)	0.393	0.044
118	9.83	0.73	0.458	(0.432)	0.412	0.046
119	9.92	0.73	0.458	(0.430)	0.412	0.046
120	10.00	0.73	0.458	(0.428)	0.412	0.046
121	10.08	0.50	0.312	(0.426)	0.281	0.031
122	10.17	0.50	0.312	(0.424)	0.281	0.031
123	10.25	0.50	0.312	(0.422)	0.281	0.031
124	10.33	0.50	0.312	(0.420)	0.281	0.031
125	10.42	0.50	0.312	(0.418)	0.281	0.031
126	10.50	0.50	0.312	(0.416)	0.281	0.031
127	10.58	0.67	0.416	(0.414)	0.374	0.042
128	10.67	0.67	0.416	(0.412)	0.374	0.042
129	10.75	0.67	0.416	(0.410)	0.374	0.042
130	10.83	0.67	0.416	(0.408)	0.374	0.042
131	10.92	0.67	0.416	(0.406)	0.374	0.042
132	11.00	0.67	0.416	(0.404)	0.374	0.042
133	11.08	0.63	0.395	(0.402)	0.356	0.040
134	11.17	0.63	0.395	(0.400)	0.356	0.040
135	11.25	0.63	0.395	(0.398)	0.356	0.040
136	11.33	0.63	0.395	(0.396)	0.356	0.040
137	11.42	0.63	0.395	(0.394)	0.356	0.040
138	11.50	0.63	0.395	(0.392)	0.356	0.040
139	11.58	0.57	0.354	(0.390)	0.318	0.035
140	11.67	0.57	0.354	(0.388)	0.318	0.035
141	11.75	0.57	0.354	(0.386)	0.318	0.035
142	11.83	0.60	0.374	(0.384)	0.337	0.037
143	11.92	0.60	0.374	(0.382)	0.337	0.037
144	12.00	0.60	0.374	(0.380)	0.337	0.037
145	12.08	0.83	0.520	0.378	(0.468)	0.142
146	12.17	0.83	0.520	0.376	(0.468)	0.144
147	12.25	0.83	0.520	0.374	(0.468)	0.146
148	12.33	0.87	0.541	0.373	(0.487)	0.168
149	12.42	0.87	0.541	0.371	(0.487)	0.170
150	12.50	0.87	0.541	0.369	(0.487)	0.172
151	12.58	0.93	0.582	0.367	(0.524)	0.215
152	12.67	0.93	0.582	0.365	(0.524)	0.217
153	12.75	0.93	0.582	0.363	(0.524)	0.219
154	12.83	0.97	0.603	0.361	(0.543)	0.242
155	12.92	0.97	0.603	0.360	(0.543)	0.244
156	13.00	0.97	0.603	0.358	(0.543)	0.245
157	13.08	1.13	0.707	0.356	(0.636)	0.351
158	13.17	1.13	0.707	0.354	(0.636)	0.353
159	13.25	1.13	0.707	0.352	(0.636)	0.355
160	13.33	1.13	0.707	0.351	(0.636)	0.357
161	13.42	1.13	0.707	0.349	(0.636)	0.358
162	13.50	1.13	0.707	0.347	(0.636)	0.360
163	13.58	0.77	0.478	0.345	(0.431)	0.133
164	13.67	0.77	0.478	0.344	(0.431)	0.135
165	13.75	0.77	0.478	0.342	(0.431)	0.137
166	13.83	0.77	0.478	0.340	(0.431)	0.138
167	13.92	0.77	0.478	0.338	(0.431)	0.140
168	14.00	0.77	0.478	0.337	(0.431)	0.142
169	14.08	0.90	0.562	0.335	(0.505)	0.227
170	14.17	0.90	0.562	0.333	(0.505)	0.228
171	14.25	0.90	0.562	0.331	(0.505)	0.230
172	14.33	0.87	0.541	0.330	(0.487)	0.211
173	14.42	0.87	0.541	0.328	(0.487)	0.213
174	14.50	0.87	0.541	0.326	(0.487)	0.214
175	14.58	0.87	0.541	0.325	(0.487)	0.216
176	14.67	0.87	0.541	0.323	(0.487)	0.218
177	14.75	0.87	0.541	0.321	(0.487)	0.219
178	14.83	0.83	0.520	0.320	(0.468)	0.200
179	14.92	0.83	0.520	0.318	(0.468)	0.202
180	15.00	0.83	0.520	0.316	(0.468)	0.203
181	15.08	0.80	0.499	0.315	(0.449)	0.184
182	15.17	0.80	0.499	0.313	(0.449)	0.186
183	15.25	0.80	0.499	0.312	(0.449)	0.188
184	15.33	0.77	0.478	0.310	(0.431)	0.168
185	15.42	0.77	0.478	0.308	(0.431)	0.170
186	15.50	0.77	0.478	0.307	(0.431)	0.172
187	15.58	0.63	0.395	0.305	(0.356)	0.090

188	15.67	0.63	0.395	0.304	(0.356)	0.091
189	15.75	0.63	0.395	0.302	(0.356)	0.093
190	15.83	0.63	0.395	0.301	(0.356)	0.095
191	15.92	0.63	0.395	0.299	(0.356)	0.096
192	16.00	0.63	0.395	0.298	(0.356)	0.098
193	16.08	0.13	0.083	(0.296)	0.075	0.008
194	16.17	0.13	0.083	(0.295)	0.075	0.008
195	16.25	0.13	0.083	(0.293)	0.075	0.008
196	16.33	0.13	0.083	(0.292)	0.075	0.008
197	16.42	0.13	0.083	(0.290)	0.075	0.008
198	16.50	0.13	0.083	(0.289)	0.075	0.008
199	16.58	0.10	0.062	(0.287)	0.056	0.006
200	16.67	0.10	0.062	(0.286)	0.056	0.006
201	16.75	0.10	0.062	(0.284)	0.056	0.006
202	16.83	0.10	0.062	(0.283)	0.056	0.006
203	16.92	0.10	0.062	(0.281)	0.056	0.006
204	17.00	0.10	0.062	(0.280)	0.056	0.006
205	17.08	0.17	0.104	(0.278)	0.094	0.010
206	17.17	0.17	0.104	(0.277)	0.094	0.010
207	17.25	0.17	0.104	(0.276)	0.094	0.010
208	17.33	0.17	0.104	(0.274)	0.094	0.010
209	17.42	0.17	0.104	(0.273)	0.094	0.010
210	17.50	0.17	0.104	(0.272)	0.094	0.010
211	17.58	0.17	0.104	(0.270)	0.094	0.010
212	17.67	0.17	0.104	(0.269)	0.094	0.010
213	17.75	0.17	0.104	(0.268)	0.094	0.010
214	17.83	0.13	0.083	(0.266)	0.075	0.008
215	17.92	0.13	0.083	(0.265)	0.075	0.008
216	18.00	0.13	0.083	(0.264)	0.075	0.008
217	18.08	0.13	0.083	(0.262)	0.075	0.008
218	18.17	0.13	0.083	(0.261)	0.075	0.008
219	18.25	0.13	0.083	(0.260)	0.075	0.008
220	18.33	0.13	0.083	(0.258)	0.075	0.008
221	18.42	0.13	0.083	(0.257)	0.075	0.008
222	18.50	0.13	0.083	(0.256)	0.075	0.008
223	18.58	0.10	0.062	(0.255)	0.056	0.006
224	18.67	0.10	0.062	(0.253)	0.056	0.006
225	18.75	0.10	0.062	(0.252)	0.056	0.006
226	18.83	0.07	0.042	(0.251)	0.037	0.004
227	18.92	0.07	0.042	(0.250)	0.037	0.004
228	19.00	0.07	0.042	(0.249)	0.037	0.004
229	19.08	0.10	0.062	(0.247)	0.056	0.006
230	19.17	0.10	0.062	(0.246)	0.056	0.006
231	19.25	0.10	0.062	(0.245)	0.056	0.006
232	19.33	0.13	0.083	(0.244)	0.075	0.008
233	19.42	0.13	0.083	(0.243)	0.075	0.008
234	19.50	0.13	0.083	(0.242)	0.075	0.008
235	19.58	0.10	0.062	(0.241)	0.056	0.006
236	19.67	0.10	0.062	(0.240)	0.056	0.006
237	19.75	0.10	0.062	(0.238)	0.056	0.006
238	19.83	0.07	0.042	(0.237)	0.037	0.004
239	19.92	0.07	0.042	(0.236)	0.037	0.004
240	20.00	0.07	0.042	(0.235)	0.037	0.004
241	20.08	0.10	0.062	(0.234)	0.056	0.006
242	20.17	0.10	0.062	(0.233)	0.056	0.006
243	20.25	0.10	0.062	(0.232)	0.056	0.006
244	20.33	0.10	0.062	(0.231)	0.056	0.006
245	20.42	0.10	0.062	(0.230)	0.056	0.006
246	20.50	0.10	0.062	(0.229)	0.056	0.006
247	20.58	0.10	0.062	(0.228)	0.056	0.006
248	20.67	0.10	0.062	(0.227)	0.056	0.006
249	20.75	0.10	0.062	(0.226)	0.056	0.006
250	20.83	0.07	0.042	(0.225)	0.037	0.004
251	20.92	0.07	0.042	(0.225)	0.037	0.004
252	21.00	0.07	0.042	(0.224)	0.037	0.004
253	21.08	0.10	0.062	(0.223)	0.056	0.006
254	21.17	0.10	0.062	(0.222)	0.056	0.006
255	21.25	0.10	0.062	(0.221)	0.056	0.006
256	21.33	0.07	0.042	(0.220)	0.037	0.004
257	21.42	0.07	0.042	(0.219)	0.037	0.004
258	21.50	0.07	0.042	(0.219)	0.037	0.004
259	21.58	0.10	0.062	(0.218)	0.056	0.006
260	21.67	0.10	0.062	(0.217)	0.056	0.006
261	21.75	0.10	0.062	(0.216)	0.056	0.006
262	21.83	0.07	0.042	(0.215)	0.037	0.004
263	21.92	0.07	0.042	(0.215)	0.037	0.004
264	22.00	0.07	0.042	(0.214)	0.037	0.004
265	22.08	0.10	0.062	(0.213)	0.056	0.006
266	22.17	0.10	0.062	(0.213)	0.056	0.006
267	22.25	0.10	0.062	(0.212)	0.056	0.006
268	22.33	0.07	0.042	(0.211)	0.037	0.004
269	22.42	0.07	0.042	(0.211)	0.037	0.004
270	22.50	0.07	0.042	(0.210)	0.037	0.004
271	22.58	0.07	0.042	(0.209)	0.037	0.004
272	22.67	0.07	0.042	(0.209)	0.037	0.004
273	22.75	0.07	0.042	(0.208)	0.037	0.004
274	22.83	0.07	0.042	(0.208)	0.037	0.004
275	22.92	0.07	0.042	(0.207)	0.037	0.004
276	23.00	0.07	0.042	(0.207)	0.037	0.004
277	23.08	0.07	0.042	(0.206)	0.037	0.004
278	23.17	0.07	0.042	(0.206)	0.037	0.004
279	23.25	0.07	0.042	(0.205)	0.037	0.004
280	23.33	0.07	0.042	(0.205)	0.037	0.004
281	23.42	0.07	0.042	(0.204)	0.037	0.004
282	23.50	0.07	0.042	(0.204)	0.037	0.004
283	23.58	0.07	0.042	(0.204)	0.037	0.004
284	23.67	0.07	0.042	(0.203)	0.037	0.004
285	23.75	0.07	0.042	(0.203)	0.037	0.004
286	23.83	0.07	0.042	(0.203)	0.037	0.004

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287  23.92     0.07      0.042       (  0.203)       0.037        0.004
288  24.00     0.07      0.042       (  0.203)       0.037        0.004
            (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    13.2
       Flood volume = Effective rainfall      1.10(In)
        times area      30.0(Ac.)/[(In)/(Ft.)] =       2.7(Ac.Ft)
       Total soil loss =      4.10(In)
       Total soil loss =    10.242(Ac.Ft)
       Total rainfall =      5.20(In)
       Flood volume =      119350.3 Cubic Feet
       Total soil loss =     446141.6 Cubic Feet
       --------------------------------------------------------------------
        Peak flow rate of this hydrograph =     10.640(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       0.0001      0.02  Q          |          |          |          |
  0+10       0.0007      0.08  Q          |          |          |          |
  0+15       0.0014      0.10  Q          |          |          |          |
  0+20       0.0022      0.12  Q          |          |          |          |
  0+25       0.0033      0.16  Q          |          |          |          |
  0+30       0.0045      0.17  Q          |          |          |          |
  0+35       0.0057      0.18  Q          |          |          |          |
  0+40       0.0069      0.18  Q          |          |          |          |
  0+45       0.0082      0.19  Q          |          |          |          |
  0+50       0.0096      0.20  Q          |          |          |          |
  0+55       0.0111      0.23  Q          |          |          |          |
  1+ 0       0.0128      0.24  Q          |          |          |          |
  1+ 5       0.0144      0.23  Q          |          |          |          |
  1+10       0.0158      0.21  Q          |          |          |          |
  1+15       0.0172      0.20  Q          |          |          |          |
  1+20       0.0185      0.19  Q          |          |          |          |
  1+25       0.0198      0.19  Q          |          |          |          |
  1+30       0.0211      0.19  Q          |          |          |          |
  1+35       0.0225      0.19  Q          |          |          |          |
  1+40       0.0238      0.19  Q          |          |          |          |
  1+45       0.0251      0.19  Q          |          |          |          |
  1+50       0.0264      0.20  Q          |          |          |          |
  1+55       0.0280      0.23  Q          |          |          |          |
  2+ 0       0.0296      0.24  Q          |          |          |          |
  2+ 5       0.0313      0.24  Q          |          |          |          |
  2+10       0.0330      0.25  Q          |          |          |          |
  2+15       0.0347      0.25  Q          |          |          |          |
  2+20       0.0365      0.25  Q          |          |          |          |
  2+25       0.0382      0.25  Q          |          |          |          |
  2+30       0.0399      0.25  Q          |          |          |          |
  2+35       0.0417      0.26  Q          |          |          |          |
  2+40       0.0437      0.29  Q          |          |          |          |
  2+45       0.0458      0.30  Q          |          |          |          |
  2+50       0.0479      0.31  Q          |          |          |          |
  2+55       0.0500      0.31  Q          |          |          |          |
  3+ 0       0.0522      0.31  Q          |          |          |          |
  3+ 5       0.0543      0.31  Q          |          |          |          |
  3+10       0.0565      0.31  Q          |          |          |          |
  3+15       0.0586      0.31  Q          |          |          |          |
  3+20       0.0608      0.31  Q          |          |          |          |
  3+25       0.0630      0.31  Q          |          |          |          |
  3+30       0.0651      0.31  Q          |          |          |          |
  3+35       0.0673      0.31  Q          |          |          |          |
  3+40       0.0695      0.31  QV         |          |          |          |
  3+45       0.0716      0.31  QV         |          |          |          |
  3+50       0.0739      0.32  QV         |          |          |          |
  3+55       0.0763      0.35  QV         |          |          |          |
  4+ 0       0.0788      0.36  QV         |          |          |          |
  4+ 5       0.0814      0.37  QV         |          |          |          |
  4+10       0.0839      0.37  QV         |          |          |          |
  4+15       0.0865      0.37  QV         |          |          |          |
  4+20       0.0891      0.39  QV         |          |          |          |
  4+25       0.0920      0.42  QV         |          |          |          |
  4+30       0.0949      0.43  QV         |          |          |          |
  4+35       0.0979      0.43  QV         |          |          |          |
  4+40       0.1009      0.44  QV         |          |          |          |
  4+45       0.1039      0.44  QV         |          |          |          |
  4+50       0.1070      0.45  QV         |          |          |          |
  4+55       0.1103      0.48  QV         |          |          |          |
  5+ 0       0.1137      0.49  QV         |          |          |          |
  5+ 5       0.1170      0.48  QV         |          |          |          |
  5+10       0.1198      0.42  QV         |          |          |          |
  5+15       0.1226      0.40  QV         |          |          |          |
  5+20       0.1254      0.40  QV         |          |          |          |
  5+25       0.1283      0.42  QV         |          |          |          |
  5+30       0.1313      0.43  QV         |          |          |          |
  5+35       0.1343      0.45  QV         |          |          |          |
  5+40       0.1376      0.48  Q V        |          |          |          |
  5+45       0.1410      0.49  Q V        |          |          |          |
  5+50       0.1444      0.49  Q V        |          |          |          |
  5+55       0.1478      0.50  Q V        |          |          |          |
  6+ 0       0.1512      0.50  Q V        |          |          |          |
  6+ 5       0.1548      0.51  |QV        |          |          |          |
  6+10       0.1585      0.54  |QV        |          |          |          |
  6+15       0.1623      0.55  |QV        |          |          |          |
  6+20       0.1661      0.56  |QV        |          |          |          |
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6+25	0.1700	0.56	QV
6+30	0.1739	0.56	QV
6+35	0.1778	0.57	QV
6+40	0.1820	0.60	QV
6+45	0.1862	0.62	QV
6+50	0.1905	0.62	QV
6+55	0.1948	0.62	QV
7+ 0	0.1991	0.63	QV
7+ 5	0.2034	0.63	QV
7+10	0.2077	0.63	Q V
7+15	0.2121	0.63	Q V
7+20	0.2165	0.64	Q V
7+25	0.2211	0.67	Q V
7+30	0.2257	0.68	Q V
7+35	0.2305	0.69	Q V
7+40	0.2355	0.73	Q V
7+45	0.2406	0.74	Q V
7+50	0.2458	0.75	Q V
7+55	0.2512	0.79	Q V
8+ 0	0.2567	0.80	Q V
8+ 5	0.2624	0.83	Q V
8+10	0.2686	0.89	Q V
8+15	0.2749	0.91	Q V
8+20	0.2812	0.93	Q V
8+25	0.2877	0.93	Q V
8+30	0.2941	0.94	Q V
8+35	0.3006	0.95	Q V
8+40	0.3074	0.98	Q V
8+45	0.3142	0.99	Q V
8+50	0.3212	1.01	Q V
8+55	0.3283	1.04	Q V
9+ 0	0.3356	1.05	Q V
9+ 5	0.3430	1.08	Q V
9+10	0.3509	1.14	Q V
9+15	0.3589	1.17	Q V
9+20	0.3671	1.19	Q V
9+25	0.3755	1.22	Q V
9+30	0.3840	1.24	Q V
9+35	0.3927	1.26	Q V
9+40	0.4016	1.29	Q V
9+45	0.4105	1.30	Q V
9+50	0.4196	1.32	Q V
9+55	0.4290	1.35	Q V
10+ 0	0.4384	1.37	Q V
10+ 5	0.4473	1.30	Q V
10+10	0.4549	1.10	Q V
10+15	0.4620	1.03	Q V
10+20	0.4688	0.99	Q V
10+25	0.4755	0.97	Q V
10+30	0.4822	0.96	Q V
10+35	0.4891	1.00	Q V
10+40	0.4970	1.15	Q V
10+45	0.5052	1.20	Q V
10+50	0.5136	1.22	Q V
10+55	0.5221	1.23	Q V
11+ 0	0.5307	1.24	Q V
11+ 5	0.5392	1.24	Q V
11+10	0.5475	1.21	Q V
11+15	0.5558	1.20	Q V
11+20	0.5641	1.20	Q V
11+25	0.5724	1.20	Q V
11+30	0.5806	1.20	Q V
11+35	0.5887	1.18	Q V
11+40	0.5964	1.12	Q V
11+45	0.6039	1.09	Q V
11+50	0.6115	1.09	Q V
11+55	0.6191	1.12	Q V
12+ 0	0.6269	1.12	Q V
12+ 5	0.6381	1.63	Q V
12+10	0.6595	3.11	Q V
12+15	0.6850	3.71	Q V
12+20	0.7132	4.09	Q V
12+25	0.7448	4.58	QV
12+30	0.7781	4.83	QV
12+35	0.8139	5.20	QV
12+40	0.8546	5.91	QV
12+45	0.8975	6.23	QV
12+50	0.9424	6.51	Q
12+55	0.9901	6.93	QV
13+ 0	1.0392	7.13	QV
13+ 5	1.0927	7.76	Q
13+10	1.1569	9.33	V Q
13+15	1.2256	9.97	V Q
13+20	1.2965	10.29	V Q
13+25	1.3687	10.49	VQ
13+30	1.4420	10.64	Q
13+35	1.5086	9.66	Q V
13+40	1.5535	6.52	Q V
13+45	1.5905	5.38	Q V
13+50	1.6243	4.91	Q V
13+55	1.6564	4.66	Q V
14+ 0	1.6875	4.51	Q V
14+ 5	1.7207	4.83	Q V
14+10	1.7618	5.97	Q V
14+15	1.8059	6.40	Q V
14+20	1.8508	6.52	Q V
14+25	1.8948	6.39	Q V
14+30	1.9388	6.40	Q V
14+35	1.9833	6.45	Q V

14+40	2.0281	6.50		Q		V
14+45	2.0732	6.56		Q		V
14+50	2.1181	6.51		Q		V
14+55	2.1611	6.26		Q		V
15+ 0	2.2038	6.19		Q		V
15+ 5	2.2457	6.09		Q		V
15+10	2.2858	5.82		Q		V
15+15	2.3253	5.74		Q		V
15+20	2.3640	5.62		Q		V
15+25	2.4008	5.34		Q		V
15+30	2.4370	5.25		Q		V
15+35	2.4703	4.84		Q		V
15+40	2.4956	3.68		Q		V
15+45	2.5180	3.25		Q		V
15+50	2.5393	3.09		Q		V
15+55	2.5601	3.02		Q		V
16+ 0	2.5807	2.99		Q		V
16+ 5	2.5983	2.55		Q		V
16+10	2.6070	1.27		Q		V
16+15	2.6124	0.78		Q		V
16+20	2.6163	0.57		Q		V
16+25	2.6193	0.45		Q		V
16+30	2.6219	0.37		Q		V
16+35	2.6241	0.31		Q		V
16+40	2.6258	0.25		Q		V
16+45	2.6272	0.21		Q		V
16+50	2.6286	0.20		Q		V
16+55	2.6299	0.19		Q		V
17+ 0	2.6312	0.19		Q		V
17+ 5	2.6327	0.21		Q		V
17+10	2.6345	0.27		Q		V
17+15	2.6365	0.29		Q		V
17+20	2.6386	0.30		Q		V
17+25	2.6407	0.30		Q		V
17+30	2.6428	0.31		Q		V
17+35	2.6449	0.31		Q		V
17+40	2.6471	0.31		Q		V
17+45	2.6493	0.31		Q		V
17+50	2.6514	0.30		Q		V
17+55	2.6532	0.27		Q		V
18+ 0	2.6551	0.26		Q		V
18+ 5	2.6568	0.26		Q		V
18+10	2.6586	0.26		Q		V
18+15	2.6604	0.25		Q		V
18+20	2.6621	0.25		Q		V
18+25	2.6638	0.25		Q		V
18+30	2.6656	0.25		Q		V
18+35	2.6672	0.24		Q		V
18+40	2.6687	0.21		Q		V
18+45	2.6701	0.20		Q		V
18+50	2.6714	0.19		Q		V
18+55	2.6724	0.15		Q		V
19+ 0	2.6734	0.14		Q		V
19+ 5	2.6744	0.14		Q		V
19+10	2.6756	0.17		Q		V
19+15	2.6768	0.18		Q		V
19+20	2.6781	0.19		Q		V
19+25	2.6797	0.22		Q		V
19+30	2.6813	0.24		Q		V
19+35	2.6829	0.23		Q		V
19+40	2.6843	0.21		Q		V
19+45	2.6857	0.20		Q		V
19+50	2.6869	0.18		Q		V
19+55	2.6880	0.15		Q		V
20+ 0	2.6890	0.14		Q		V
20+ 5	2.6900	0.14		Q		V
20+10	2.6911	0.17		Q		V
20+15	2.6924	0.18		Q		V
20+20	2.6936	0.18		Q		V
20+25	2.6949	0.18		Q		V
20+30	2.6962	0.19		Q		V
20+35	2.6975	0.19		Q		V
20+40	2.6988	0.19		Q		V
20+45	2.7001	0.19		Q		V
20+50	2.7013	0.18		Q		V
20+55	2.7023	0.15		Q		V
21+ 0	2.7033	0.14		Q		V
21+ 5	2.7042	0.14		Q		V
21+10	2.7054	0.17		Q		V
21+15	2.7067	0.18		Q		V
21+20	2.7078	0.17		Q		V
21+25	2.7088	0.15		Q		V
21+30	2.7098	0.14		Q		V
21+35	2.7107	0.14		Q		V
21+40	2.7119	0.17		Q		V
21+45	2.7131	0.18		Q		V
21+50	2.7143	0.17		Q		V
21+55	2.7153	0.15		Q		V
22+ 0	2.7163	0.14		Q		V
22+ 5	2.7172	0.14		Q		V
22+10	2.7184	0.17		Q		V
22+15	2.7196	0.18		Q		V
22+20	2.7208	0.17		Q		V
22+25	2.7218	0.15		Q		V
22+30	2.7228	0.14		Q		V
22+35	2.7237	0.13		Q		V
22+40	2.7246	0.13		Q		V
22+45	2.7254	0.13		Q		V
22+50	2.7263	0.13		Q		V

22+55	2.7272	0.13	Q	|	|	|	V|
23+ 0	2.7281	0.13	Q	|	|	|	V|
23+ 5	2.7289	0.13	Q	|	|	|	V|
23+10	2.7298	0.13	Q	|	|	|	V|
23+15	2.7306	0.13	Q	|	|	|	V|
23+20	2.7315	0.13	Q	|	|	|	V|
23+25	2.7324	0.13	Q	|	|	|	V|
23+30	2.7332	0.13	Q	|	|	|	V|
23+35	2.7341	0.13	Q	|	|	|	V|
23+40	2.7350	0.13	Q	|	|	|	V|
23+45	2.7358	0.13	Q	|	|	|	V|
23+50	2.7367	0.13	Q	|	|	|	V|
23+55	2.7376	0.13	Q	|	|	|	V|
24+ 0	2.7384	0.13	Q	|	|	|	V|
24+ 5	2.7392	0.11	Q	|	|	|	V|
24+10	2.7395	0.05	Q	|	|	|	V|
24+15	2.7397	0.02	Q	|	|	|	V|
24+20	2.7398	0.01	Q	|	|	|	V|
24+25	2.7398	0.01	Q	|	|	|	V|
24+30	2.7399	0.01	Q	|	|	|	V|
24+35	2.7399	0.00	Q	|	|	|	V|
24+40	2.7399	0.00	Q	|	|	|	V|
24+45	2.7399	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 06/23/22 File: 3958S1001100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERAON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR HYDROGRAPH
SOUTH TRUCK YARD
1-HOUR

Drainage Area = 13.11(Ac.) = 0.020 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 13.11(Ac.) = 0.020 Sq. Mi.
Length along longest watercourse = 1120.00(Ft.)
Length along longest watercourse measured to centroid = 635.00(Ft.)
Length along longest watercourse = 0.212 Mi.
Length along longest watercourse measured to centroid = 0.120 Mi.
Difference in elevation = 12.56(Ft.)
Slope along watercourse = 59.2114 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.041 Hr.
Lag time = 2.47 Min.
25% of lag time = 0.62 Min.
40% of lag time = 0.99 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
13.11	0.49	6.42

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
13.11	1.28	16.78

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.490(In)
Area Averaged 100-Year Rainfall = 1.280(In)

Point rain (area averaged) = 1.280(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.280(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
13.110	56.00	0.900

Total Area Entered = 13.11(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

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

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	202.637	43.854	5.794
2	0.167	405.274	43.184	5.706
3	0.250	607.910	8.687	1.148
4	0.333	810.547	4.276	0.565
		Sum = 100.000	Sum=	13.212

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.20	0.645	(0.097)	0.065	0.581
2	0.17	4.30	0.660	(0.097)	0.066	0.594
3	0.25	5.00	0.768	(0.097)	0.077	0.691
4	0.33	5.00	0.768	(0.097)	0.077	0.691
5	0.42	5.80	0.891	(0.097)	0.089	0.802
6	0.50	6.50	0.998	0.097	(0.100)	0.901
7	0.58	7.40	1.137	0.097	(0.114)	1.039
8	0.67	8.60	1.321	0.097	(0.132)	1.224
9	0.75	12.30	1.889	0.097	(0.189)	1.792
10	0.83	29.10	4.469	0.097	(0.447)	4.372
11	0.92	6.80	1.044	0.097	(0.104)	0.947
12	1.00	5.00	0.768	(0.097)	0.077	0.691
		(Loss Rate Not Used)				
Sum =		100.0			Sum =	14.3

Flood volume = Effective rainfall 1.19(In)
times area 13.1(Ac.)/[(In)/(Ft.)] = 1.3(Ac.Ft)
Total soil loss = 0.09(In)
Total soil loss = 0.094(Ac.Ft)
Total rainfall = 1.28(In)
Flood volume = 56813.2 Cubic Feet
Total soil loss = 4093.9 Cubic Feet

Peak flow rate of this hydrograph = 37.569(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0232	3.37	V Q				
0+10	0.0697	6.76	V Q				
0+15	0.1253	8.07	V Q				
0+20	0.1870	8.96	V Q				
0+25	0.2540	9.72	V Q				
0+30	0.3296	10.99	Q				
0+35	0.4156	12.48	Q				
0+40	0.5156	14.52	QV				
0+45	0.6469	19.08	Q				
0+50	0.9057	37.57	V			Q	
0+55	1.1343	33.20				QV	
1+ 0	1.2407	15.45	Q			V	
1+ 5	1.2924	7.50	Q			V	
1+10	1.3016	1.33	Q			V	
1+15	1.3043	0.39	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 06/23/22 File: 3958S1003100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERAON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR HYDROGRAPH
SOUTH TRUCK YARD
3-Hour

Drainage Area = 13.11(Ac.) = 0.020 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 13.11(Ac.) = 0.020 Sq. Mi.
Length along longest watercourse = 1120.00(Ft.)
Length along longest watercourse measured to centroid = 635.00(Ft.)
Length along longest watercourse = 0.212 Mi.
Length along longest watercourse measured to centroid = 0.120 Mi.
Difference in elevation = 12.56(Ft.)
Slope along watercourse = 59.2114 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.041 Hr.
Lag time = 2.47 Min.
25% of lag time = 0.62 Min.
40% of lag time = 0.99 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
13.11	0.81	10.62

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
13.11	1.98	25.96

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.810(In)
Area Averaged 100-Year Rainfall = 1.980(In)

Point rain (area averaged) = 1.980(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.980(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
13.110	56.00	0.900

Total Area Entered = 13.11(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

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

Unit Hydrograph Data

	Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	202.637	43.854	5.794
2	0.167	405.274	43.184	5.706
3	0.250	607.910	8.687	1.148
4	0.333	810.547	4.276	0.565
			Sum = 100.000	Sum= 13.212

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.309	(0.097)	0.031	0.278
2	0.17	1.30	0.309	(0.097)	0.031	0.278
3	0.25	1.10	0.261	(0.097)	0.026	0.235
4	0.33	1.50	0.356	(0.097)	0.036	0.321
5	0.42	1.50	0.356	(0.097)	0.036	0.321
6	0.50	1.80	0.428	(0.097)	0.043	0.385
7	0.58	1.50	0.356	(0.097)	0.036	0.321
8	0.67	1.80	0.428	(0.097)	0.043	0.385
9	0.75	1.80	0.428	(0.097)	0.043	0.385
10	0.83	1.50	0.356	(0.097)	0.036	0.321
11	0.92	1.60	0.380	(0.097)	0.038	0.342
12	1.00	1.80	0.428	(0.097)	0.043	0.385
13	1.08	2.20	0.523	(0.097)	0.052	0.470
14	1.17	2.20	0.523	(0.097)	0.052	0.470
15	1.25	2.20	0.523	(0.097)	0.052	0.470
16	1.33	2.00	0.475	(0.097)	0.048	0.428
17	1.42	2.60	0.618	(0.097)	0.062	0.556
18	1.50	2.70	0.641	(0.097)	0.064	0.577
19	1.58	2.40	0.570	(0.097)	0.057	0.513
20	1.67	2.70	0.641	(0.097)	0.064	0.577
21	1.75	3.30	0.784	(0.097)	0.078	0.706
22	1.83	3.10	0.737	(0.097)	0.074	0.663
23	1.92	2.90	0.689	(0.097)	0.069	0.620
24	2.00	3.00	0.713	(0.097)	0.071	0.641
25	2.08	3.10	0.737	(0.097)	0.074	0.663
26	2.17	4.20	0.998	0.097	(0.100)	0.901
27	2.25	5.00	1.188	0.097	(0.119)	1.091
28	2.33	3.50	0.832	(0.097)	0.083	0.748
29	2.42	6.80	1.616	0.097	(0.162)	1.519
30	2.50	7.30	1.734	0.097	(0.173)	1.637
31	2.58	8.20	1.948	0.097	(0.195)	1.851
32	2.67	5.90	1.402	0.097	(0.140)	1.305
33	2.75	2.00	0.475	(0.097)	0.048	0.428
34	2.83	1.80	0.428	(0.097)	0.043	0.385
35	2.92	1.80	0.428	(0.097)	0.043	0.385
36	3.00	0.60	0.143	(0.097)	0.014	0.128

(Loss Rate Not Used)

Sum = 100.0 Sum = 21.7

Flood volume = Effective rainfall 1.81(In)
times area 13.1(Ac.)/[(In)/(Ft.)] = 2.0(Ac.Ft)
Total soil loss = 0.17(In)
Total soil loss = 0.188(Ac.Ft)
Total rainfall = 1.98(In)
Flood volume = 86013.8 Cubic Feet
Total soil loss = 8207.6 Cubic Feet

Peak flow rate of this hydrograph = 22.245(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 7.5 15.0 22.5 30.0
0+ 5	0.0111	1.61	V Q
0+10	0.0331	3.20	V Q
0+15	0.0556	3.27	V Q
0+20	0.0810	3.68	V Q
0+25	0.1093	4.12	V Q
0+30	0.1408	4.56	V Q
0+35	0.1725	4.61	V Q
0+40	0.2048	4.69	V Q
0+45	0.2393	5.01	V Q
0+50	0.2715	4.68	VQ
0+55	0.3023	4.47	QV
1+ 0	0.3352	4.77	Q
1+ 5	0.3731	5.50	Q
1+10	0.4147	6.05	Q
1+15	0.4572	6.17	QV
1+20	0.4983	5.97	Q V
1+25	0.5429	6.47	Q V
1+30	0.5930	7.28	Q V
1+35	0.6422	7.15	Q V
1+40	0.6922	7.25	Q V
1+45	0.7494	8.30	Q V
1+50	0.8102	8.82	Q V
1+55	0.8688	8.52	Q V
2+ 0	0.9268	8.42	Q V
2+ 5	0.9859	8.59	Q V
2+10	1.0555	10.09	Q V
2+15	1.1422	12.59	Q V
2+20	1.2246	11.98	Q V
2+25	1.3268	14.84	Q V
2+30	1.4621	19.64	Q V
2+35	1.6153	22.24	Q V
2+40	1.7590	20.87	Q V
2+45	1.8484	12.98	Q V
2+50	1.8981	7.22	Q V
2+55	1.9370	5.66	Q V
3+ 0	1.9620	3.62	Q V
3+ 5	1.9716	1.39	Q V

3+10	1.9741	0.36	Q	|	|	|	V|
3+15	1.9746	0.07	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 06/23/22 File: 3958S1006100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERAON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR HYDROGRAPH
SOUTH TRUCK YARD
6-HOUR

Drainage Area = 13.11(Ac.) = 0.020 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 13.11(Ac.) = 0.020 Sq. Mi.
Length along longest watercourse = 1120.00(Ft.)
Length along longest watercourse measured to centroid = 635.00(Ft.)
Length along longest watercourse = 0.212 Mi.
Length along longest watercourse measured to centroid = 0.120 Mi.
Difference in elevation = 12.56(Ft.)
Slope along watercourse = 59.2114 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.041 Hr.
Lag time = 2.47 Min.
25% of lag time = 0.62 Min.
40% of lag time = 0.99 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
13.11	1.16	15.21

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
13.11	2.75	36.05

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.160(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 2.750(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.750(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
13.110	56.00	0.900

Total Area Entered = 13.11(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	202.637	43.854	5.794
2	0.167	405.274	43.184	5.706
3	0.250	607.910	8.687	1.148
4	0.333	810.547	4.276	0.565
		Sum = 100.000	Sum=	13.212

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.165	(0.097)	0.016	0.148
2	0.17	0.60	0.198	(0.097)	0.020	0.178
3	0.25	0.60	0.198	(0.097)	0.020	0.178
4	0.33	0.60	0.198	(0.097)	0.020	0.178
5	0.42	0.60	0.198	(0.097)	0.020	0.178
6	0.50	0.70	0.231	(0.097)	0.023	0.208
7	0.58	0.70	0.231	(0.097)	0.023	0.208
8	0.67	0.70	0.231	(0.097)	0.023	0.208
9	0.75	0.70	0.231	(0.097)	0.023	0.208
10	0.83	0.70	0.231	(0.097)	0.023	0.208
11	0.92	0.70	0.231	(0.097)	0.023	0.208
12	1.00	0.80	0.264	(0.097)	0.026	0.238
13	1.08	0.80	0.264	(0.097)	0.026	0.238
14	1.17	0.80	0.264	(0.097)	0.026	0.238
15	1.25	0.80	0.264	(0.097)	0.026	0.238
16	1.33	0.80	0.264	(0.097)	0.026	0.238
17	1.42	0.80	0.264	(0.097)	0.026	0.238
18	1.50	0.80	0.264	(0.097)	0.026	0.238
19	1.58	0.80	0.264	(0.097)	0.026	0.238
20	1.67	0.80	0.264	(0.097)	0.026	0.238
21	1.75	0.80	0.264	(0.097)	0.026	0.238
22	1.83	0.80	0.264	(0.097)	0.026	0.238
23	1.92	0.80	0.264	(0.097)	0.026	0.238
24	2.00	0.90	0.297	(0.097)	0.030	0.267
25	2.08	0.80	0.264	(0.097)	0.026	0.238
26	2.17	0.90	0.297	(0.097)	0.030	0.267
27	2.25	0.90	0.297	(0.097)	0.030	0.267
28	2.33	0.90	0.297	(0.097)	0.030	0.267
29	2.42	0.90	0.297	(0.097)	0.030	0.267
30	2.50	0.90	0.297	(0.097)	0.030	0.267
31	2.58	0.90	0.297	(0.097)	0.030	0.267
32	2.67	0.90	0.297	(0.097)	0.030	0.267
33	2.75	1.00	0.330	(0.097)	0.033	0.297
34	2.83	1.00	0.330	(0.097)	0.033	0.297
35	2.92	1.00	0.330	(0.097)	0.033	0.297
36	3.00	1.00	0.330	(0.097)	0.033	0.297
37	3.08	1.00	0.330	(0.097)	0.033	0.297
38	3.17	1.10	0.363	(0.097)	0.036	0.327
39	3.25	1.10	0.363	(0.097)	0.036	0.327
40	3.33	1.10	0.363	(0.097)	0.036	0.327
41	3.42	1.20	0.396	(0.097)	0.040	0.356
42	3.50	1.30	0.429	(0.097)	0.043	0.386
43	3.58	1.40	0.462	(0.097)	0.046	0.416
44	3.67	1.40	0.462	(0.097)	0.046	0.416
45	3.75	1.50	0.495	(0.097)	0.049	0.445
46	3.83	1.50	0.495	(0.097)	0.049	0.445
47	3.92	1.60	0.528	(0.097)	0.053	0.475
48	4.00	1.60	0.528	(0.097)	0.053	0.475
49	4.08	1.70	0.561	(0.097)	0.056	0.505
50	4.17	1.80	0.594	(0.097)	0.059	0.535
51	4.25	1.90	0.627	(0.097)	0.063	0.564
52	4.33	2.00	0.660	(0.097)	0.066	0.594
53	4.42	2.10	0.693	(0.097)	0.069	0.624
54	4.50	2.10	0.693	(0.097)	0.069	0.624
55	4.58	2.20	0.726	(0.097)	0.073	0.653
56	4.67	2.30	0.759	(0.097)	0.076	0.683
57	4.75	2.40	0.792	(0.097)	0.079	0.713
58	4.83	2.40	0.792	(0.097)	0.079	0.713
59	4.92	2.50	0.825	(0.097)	0.082	0.742
60	5.00	2.60	0.858	(0.097)	0.086	0.772
61	5.08	3.10	1.023	0.097	(0.102)	0.926
62	5.17	3.60	1.188	0.097	(0.119)	1.091
63	5.25	3.90	1.287	0.097	(0.129)	1.190
64	5.33	4.20	1.386	0.097	(0.139)	1.289
65	5.42	4.70	1.551	0.097	(0.155)	1.454
66	5.50	5.60	1.848	0.097	(0.185)	1.751
67	5.58	1.90	0.627	(0.097)	0.063	0.564
68	5.67	0.90	0.297	(0.097)	0.030	0.267
69	5.75	0.60	0.198	(0.097)	0.020	0.178
70	5.83	0.50	0.165	(0.097)	0.016	0.148
71	5.92	0.30	0.099	(0.097)	0.010	0.089
72	6.00	0.20	0.066	(0.097)	0.007	0.059

(Loss Rate Not Used)

Sum = 100.0 Sum = 29.9

Flood volume = Effective rainfall 2.50(In)
times area 13.1(Ac.)/[(In)/(Ft.)] = 2.7(Ac.Ft)
Total soil loss = 0.25(In)
Total soil loss = 0.278(Ac.Ft)
Total rainfall = 2.75(In)
Flood volume = 118753.6 Cubic Feet
Total soil loss = 12111.1 Cubic Feet

Peak flow rate of this hydrograph = 20.602(CFS)

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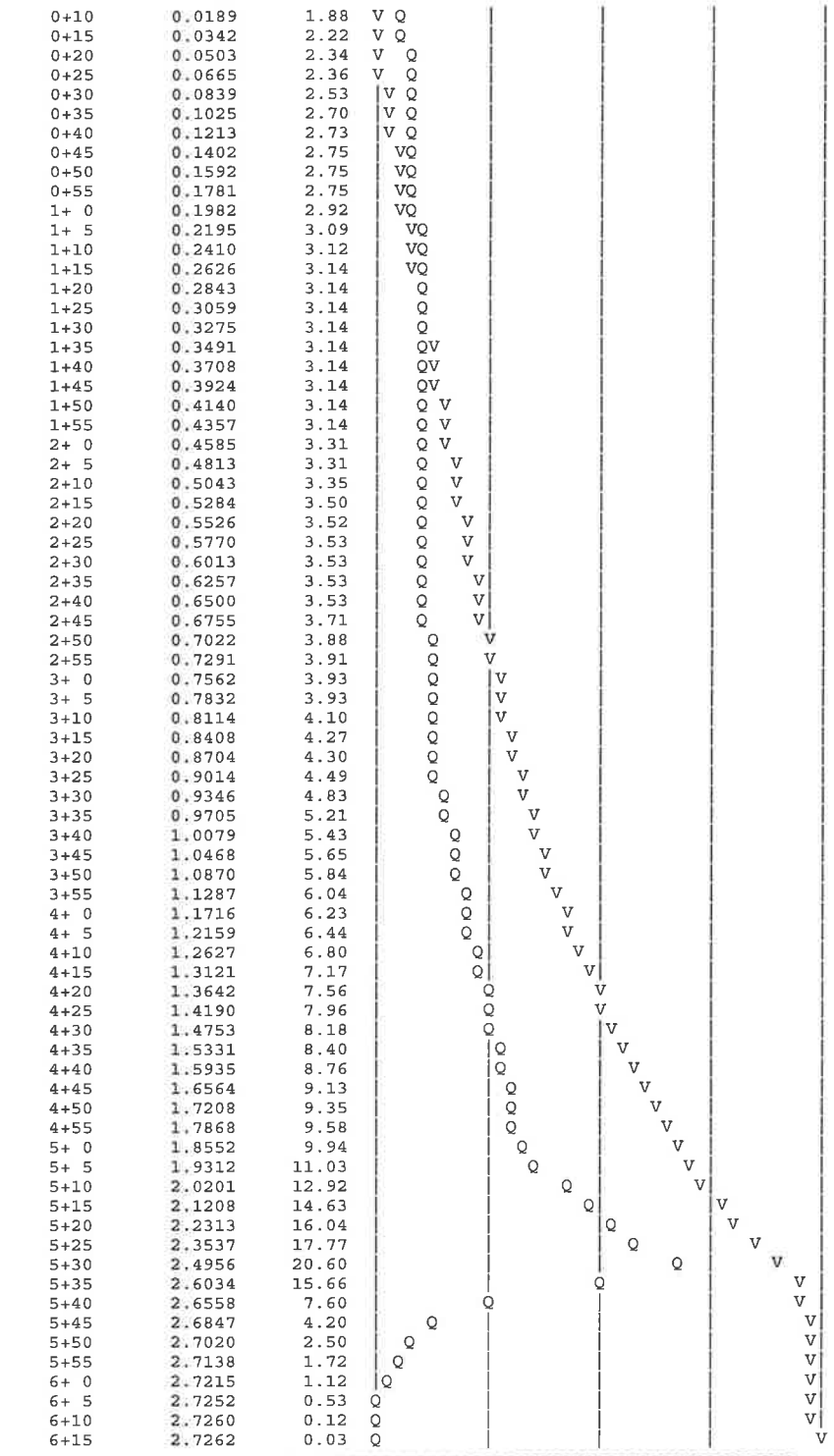
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0059	0.86	VQ	|	|	|	|



0+10	0.0189	1.88	V Q
0+15	0.0342	2.22	V Q
0+20	0.0503	2.34	V Q
0+25	0.0665	2.36	V Q
0+30	0.0839	2.53	V Q
0+35	0.1025	2.70	V Q
0+40	0.1213	2.73	V Q
0+45	0.1402	2.75	VQ
0+50	0.1592	2.75	VQ
0+55	0.1781	2.75	VQ
1+ 0	0.1982	2.92	VQ
1+ 5	0.2195	3.09	VQ
1+10	0.2410	3.12	VQ
1+15	0.2626	3.14	VQ
1+20	0.2843	3.14	Q
1+25	0.3059	3.14	Q
1+30	0.3275	3.14	Q
1+35	0.3491	3.14	QV
1+40	0.3708	3.14	QV
1+45	0.3924	3.14	QV
1+50	0.4140	3.14	Q V
1+55	0.4357	3.14	Q V
2+ 0	0.4585	3.31	Q V
2+ 5	0.4813	3.31	Q V
2+10	0.5043	3.35	Q V
2+15	0.5284	3.50	Q V
2+20	0.5526	3.52	Q V
2+25	0.5770	3.53	Q V
2+30	0.6013	3.53	Q V
2+35	0.6257	3.53	Q V
2+40	0.6500	3.53	Q V
2+45	0.6755	3.71	Q V
2+50	0.7022	3.88	Q V
2+55	0.7291	3.91	Q V
3+ 0	0.7562	3.93	Q V
3+ 5	0.7832	3.93	Q V
3+10	0.8114	4.10	Q V
3+15	0.8408	4.27	Q V
3+20	0.8704	4.30	Q V
3+25	0.9014	4.49	Q V
3+30	0.9346	4.83	Q V
3+35	0.9705	5.21	Q V
3+40	1.0079	5.43	Q V
3+45	1.0468	5.65	Q V
3+50	1.0870	5.84	Q V
3+55	1.1287	6.04	Q V
4+ 0	1.1716	6.23	Q V
4+ 5	1.2159	6.44	Q V
4+10	1.2627	6.80	Q V
4+15	1.3121	7.17	Q V
4+20	1.3642	7.56	Q V
4+25	1.4190	7.96	Q V
4+30	1.4753	8.18	Q V
4+35	1.5331	8.40	Q V
4+40	1.5935	8.76	Q V
4+45	1.6564	9.13	Q V
4+50	1.7208	9.35	Q V
4+55	1.7868	9.58	Q V
5+ 0	1.8552	9.94	Q V
5+ 5	1.9312	11.03	Q V
5+10	2.0201	12.92	Q V
5+15	2.1208	14.63	Q V
5+20	2.2313	16.04	Q V
5+25	2.3537	17.77	Q V
5+30	2.4956	20.60	Q V
5+35	2.6034	15.66	Q V
5+40	2.6558	7.60	Q V
5+45	2.6847	4.20	Q V
5+50	2.7020	2.50	Q V
5+55	2.7138	1.72	Q V
6+ 0	2.7215	1.12	Q V
6+ 5	2.7252	0.53	Q V
6+10	2.7260	0.12	Q V
6+15	2.7262	0.03	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 06/23/22 File: 3958S10024100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERAON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR HYDROGRAPH
SOUTH TRUCK YARD
24-HOUR

Drainage Area = 13.11(Ac.) = 0.020 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 13.11(Ac.) = 0.020 Sq. Mi.
Length along longest watercourse = 1120.00(Ft.)
Length along longest watercourse measured to centroid = 635.00(Ft.)
Length along longest watercourse = 0.212 Mi.
Length along longest watercourse measured to centroid = 0.120 Mi.
Difference in elevation = 12.56(Ft.)
Slope along watercourse = 59.2114 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.041 Hr.
Lag time = 2.47 Min.
25% of lag time = 0.62 Min.
40% of lag time = 0.99 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
13.11	1.96	25.70

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
13.11	5.20	68.17

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.960(In)
Area Averaged 100-Year Rainfall = 5.200(In)

Point rain (area averaged) = 5.200(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 5.200(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
13.110	56.00	0.900

Total Area Entered = 13.11(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	202.637	43.854	5.794
2	0.167	405.274	43.184	5.706
3	0.250	607.910	8.687	1.148
4	0.333	810.547	4.276	0.565
			Sum = 100.000	Sum= 13.212

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate (In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.042	(0.172)	0.004	0.037
2	0.17	0.07	0.042	(0.171)	0.004	0.037
3	0.25	0.07	0.042	(0.171)	0.004	0.037
4	0.33	0.10	0.062	(0.170)	0.006	0.056
5	0.42	0.10	0.062	(0.169)	0.006	0.056
6	0.50	0.10	0.062	(0.169)	0.006	0.056
7	0.58	0.10	0.062	(0.168)	0.006	0.056
8	0.67	0.10	0.062	(0.167)	0.006	0.056
9	0.75	0.10	0.062	(0.167)	0.006	0.056
10	0.83	0.13	0.083	(0.166)	0.008	0.075
11	0.92	0.13	0.083	(0.165)	0.008	0.075
12	1.00	0.13	0.083	(0.165)	0.008	0.075
13	1.08	0.10	0.062	(0.164)	0.006	0.056
14	1.17	0.10	0.062	(0.163)	0.006	0.056
15	1.25	0.10	0.062	(0.163)	0.006	0.056
16	1.33	0.10	0.062	(0.162)	0.006	0.056
17	1.42	0.10	0.062	(0.162)	0.006	0.056
18	1.50	0.10	0.062	(0.161)	0.006	0.056
19	1.58	0.10	0.062	(0.160)	0.006	0.056
20	1.67	0.10	0.062	(0.160)	0.006	0.056
21	1.75	0.10	0.062	(0.159)	0.006	0.056
22	1.83	0.13	0.083	(0.158)	0.008	0.075
23	1.92	0.13	0.083	(0.158)	0.008	0.075
24	2.00	0.13	0.083	(0.157)	0.008	0.075
25	2.08	0.13	0.083	(0.156)	0.008	0.075
26	2.17	0.13	0.083	(0.156)	0.008	0.075
27	2.25	0.13	0.083	(0.155)	0.008	0.075
28	2.33	0.13	0.083	(0.155)	0.008	0.075
29	2.42	0.13	0.083	(0.154)	0.008	0.075
30	2.50	0.13	0.083	(0.153)	0.008	0.075
31	2.58	0.17	0.104	(0.153)	0.010	0.094
32	2.67	0.17	0.104	(0.152)	0.010	0.094
33	2.75	0.17	0.104	(0.151)	0.010	0.094
34	2.83	0.17	0.104	(0.151)	0.010	0.094
35	2.92	0.17	0.104	(0.150)	0.010	0.094
36	3.00	0.17	0.104	(0.150)	0.010	0.094
37	3.08	0.17	0.104	(0.149)	0.010	0.094
38	3.17	0.17	0.104	(0.148)	0.010	0.094
39	3.25	0.17	0.104	(0.148)	0.010	0.094
40	3.33	0.17	0.104	(0.147)	0.010	0.094
41	3.42	0.17	0.104	(0.146)	0.010	0.094
42	3.50	0.17	0.104	(0.146)	0.010	0.094
43	3.58	0.17	0.104	(0.145)	0.010	0.094
44	3.67	0.17	0.104	(0.145)	0.010	0.094
45	3.75	0.17	0.104	(0.144)	0.010	0.094
46	3.83	0.20	0.125	(0.143)	0.012	0.112
47	3.92	0.20	0.125	(0.143)	0.012	0.112
48	4.00	0.20	0.125	(0.142)	0.012	0.112
49	4.08	0.20	0.125	(0.142)	0.012	0.112
50	4.17	0.20	0.125	(0.141)	0.012	0.112
51	4.25	0.20	0.125	(0.140)	0.012	0.112
52	4.33	0.23	0.146	(0.140)	0.015	0.131
53	4.42	0.23	0.146	(0.139)	0.015	0.131
54	4.50	0.23	0.146	(0.139)	0.015	0.131
55	4.58	0.23	0.146	(0.138)	0.015	0.131
56	4.67	0.23	0.146	(0.137)	0.015	0.131
57	4.75	0.23	0.146	(0.137)	0.015	0.131
58	4.83	0.27	0.166	(0.136)	0.017	0.150
59	4.92	0.27	0.166	(0.136)	0.017	0.150
60	5.00	0.27	0.166	(0.135)	0.017	0.150
61	5.08	0.20	0.125	(0.134)	0.012	0.112
62	5.17	0.20	0.125	(0.134)	0.012	0.112
63	5.25	0.20	0.125	(0.133)	0.012	0.112
64	5.33	0.23	0.146	(0.133)	0.015	0.131
65	5.42	0.23	0.146	(0.132)	0.015	0.131
66	5.50	0.23	0.146	(0.132)	0.015	0.131
67	5.58	0.27	0.166	(0.131)	0.017	0.150
68	5.67	0.27	0.166	(0.130)	0.017	0.150
69	5.75	0.27	0.166	(0.130)	0.017	0.150
70	5.83	0.27	0.166	(0.129)	0.017	0.150
71	5.92	0.27	0.166	(0.129)	0.017	0.150
72	6.00	0.27	0.166	(0.128)	0.017	0.150
73	6.08	0.30	0.187	(0.128)	0.019	0.168
74	6.17	0.30	0.187	(0.127)	0.019	0.168
75	6.25	0.30	0.187	(0.126)	0.019	0.168
76	6.33	0.30	0.187	(0.126)	0.019	0.168
77	6.42	0.30	0.187	(0.125)	0.019	0.168
78	6.50	0.30	0.187	(0.125)	0.019	0.168
79	6.58	0.33	0.208	(0.124)	0.021	0.187
80	6.67	0.33	0.208	(0.124)	0.021	0.187
81	6.75	0.33	0.208	(0.123)	0.021	0.187
82	6.83	0.33	0.208	(0.122)	0.021	0.187
83	6.92	0.33	0.208	(0.122)	0.021	0.187
84	7.00	0.33	0.208	(0.121)	0.021	0.187
85	7.08	0.33	0.208	(0.121)	0.021	0.187
86	7.17	0.33	0.208	(0.120)	0.021	0.187
87	7.25	0.33	0.208	(0.120)	0.021	0.187
88	7.33	0.37	0.229	(0.119)	0.023	0.206
89	7.42	0.37	0.229	(0.119)	0.023	0.206
90	7.50	0.37	0.229	(0.118)	0.023	0.206
91	7.58	0.40	0.250	(0.118)	0.025	0.225
92	7.67	0.40	0.250	(0.117)	0.025	0.225
93	7.75	0.40	0.250	(0.116)	0.025	0.225
94	7.83	0.43	0.270	(0.116)	0.027	0.243

95	7.92	0.43	0.270	(0.115)	0.027	0.243
96	8.00	0.43	0.270	(0.115)	0.027	0.243
97	8.08	0.50	0.312	(0.114)	0.031	0.281
98	8.17	0.50	0.312	(0.114)	0.031	0.281
99	8.25	0.50	0.312	(0.113)	0.031	0.281
100	8.33	0.50	0.312	(0.113)	0.031	0.281
101	8.42	0.50	0.312	(0.112)	0.031	0.281
102	8.50	0.50	0.312	(0.112)	0.031	0.281
103	8.58	0.53	0.333	(0.111)	0.033	0.300
104	8.67	0.53	0.333	(0.111)	0.033	0.300
105	8.75	0.53	0.333	(0.110)	0.033	0.300
106	8.83	0.57	0.354	(0.110)	0.035	0.318
107	8.92	0.57	0.354	(0.109)	0.035	0.318
108	9.00	0.57	0.354	(0.109)	0.035	0.318
109	9.08	0.63	0.395	(0.108)	0.040	0.356
110	9.17	0.63	0.395	(0.108)	0.040	0.356
111	9.25	0.63	0.395	(0.107)	0.040	0.356
112	9.33	0.67	0.416	(0.107)	0.042	0.374
113	9.42	0.67	0.416	(0.106)	0.042	0.374
114	9.50	0.67	0.416	(0.105)	0.042	0.374
115	9.58	0.70	0.437	(0.105)	0.044	0.393
116	9.67	0.70	0.437	(0.104)	0.044	0.393
117	9.75	0.70	0.437	(0.104)	0.044	0.393
118	9.83	0.73	0.458	(0.103)	0.046	0.412
119	9.92	0.73	0.458	(0.103)	0.046	0.412
120	10.00	0.73	0.458	(0.102)	0.046	0.412
121	10.08	0.50	0.312	(0.102)	0.031	0.281
122	10.17	0.50	0.312	(0.101)	0.031	0.281
123	10.25	0.50	0.312	(0.101)	0.031	0.281
124	10.33	0.50	0.312	(0.101)	0.031	0.281
125	10.42	0.50	0.312	(0.100)	0.031	0.281
126	10.50	0.50	0.312	(0.100)	0.031	0.281
127	10.58	0.67	0.416	(0.099)	0.042	0.374
128	10.67	0.67	0.416	(0.099)	0.042	0.374
129	10.75	0.67	0.416	(0.098)	0.042	0.374
130	10.83	0.67	0.416	(0.098)	0.042	0.374
131	10.92	0.67	0.416	(0.097)	0.042	0.374
132	11.00	0.67	0.416	(0.097)	0.042	0.374
133	11.08	0.63	0.395	(0.096)	0.040	0.356
134	11.17	0.63	0.395	(0.096)	0.040	0.356
135	11.25	0.63	0.395	(0.095)	0.040	0.356
136	11.33	0.63	0.395	(0.095)	0.040	0.356
137	11.42	0.63	0.395	(0.094)	0.040	0.356
138	11.50	0.63	0.395	(0.094)	0.040	0.356
139	11.58	0.57	0.354	(0.093)	0.035	0.318
140	11.67	0.57	0.354	(0.093)	0.035	0.318
141	11.75	0.57	0.354	(0.092)	0.035	0.318
142	11.83	0.60	0.374	(0.092)	0.037	0.337
143	11.92	0.60	0.374	(0.092)	0.037	0.337
144	12.00	0.60	0.374	(0.091)	0.037	0.337
145	12.08	0.83	0.520	(0.091)	0.052	0.468
146	12.17	0.83	0.520	(0.090)	0.052	0.468
147	12.25	0.83	0.520	(0.090)	0.052	0.468
148	12.33	0.87	0.541	(0.089)	0.054	0.487
149	12.42	0.87	0.541	(0.089)	0.054	0.487
150	12.50	0.87	0.541	(0.088)	0.054	0.487
151	12.58	0.93	0.582	(0.088)	0.058	0.524
152	12.67	0.93	0.582	(0.087)	0.058	0.524
153	12.75	0.93	0.582	(0.087)	0.058	0.524
154	12.83	0.97	0.603	(0.087)	0.060	0.543
155	12.92	0.97	0.603	(0.086)	0.060	0.543
156	13.00	0.97	0.603	(0.086)	0.060	0.543
157	13.08	1.13	0.707	(0.085)	0.071	0.636
158	13.17	1.13	0.707	(0.085)	0.071	0.636
159	13.25	1.13	0.707	(0.084)	0.071	0.636
160	13.33	1.13	0.707	(0.084)	0.071	0.636
161	13.42	1.13	0.707	(0.084)	0.071	0.636
162	13.50	1.13	0.707	(0.083)	0.071	0.636
163	13.58	0.77	0.478	(0.083)	0.048	0.431
164	13.67	0.77	0.478	(0.082)	0.048	0.431
165	13.75	0.77	0.478	(0.082)	0.048	0.431
166	13.83	0.77	0.478	(0.081)	0.048	0.431
167	13.92	0.77	0.478	(0.081)	0.048	0.431
168	14.00	0.77	0.478	(0.081)	0.048	0.431
169	14.08	0.90	0.562	(0.080)	0.056	0.505
170	14.17	0.90	0.562	(0.080)	0.056	0.505
171	14.25	0.90	0.562	(0.079)	0.056	0.505
172	14.33	0.87	0.541	(0.079)	0.054	0.487
173	14.42	0.87	0.541	(0.079)	0.054	0.487
174	14.50	0.87	0.541	(0.078)	0.054	0.487
175	14.58	0.87	0.541	(0.078)	0.054	0.487
176	14.67	0.87	0.541	(0.077)	0.054	0.487
177	14.75	0.87	0.541	(0.077)	0.054	0.487
178	14.83	0.83	0.520	(0.077)	0.052	0.468
179	14.92	0.83	0.520	(0.076)	0.052	0.468
180	15.00	0.83	0.520	(0.076)	0.052	0.468
181	15.08	0.80	0.499	(0.075)	0.050	0.449
182	15.17	0.80	0.499	(0.075)	0.050	0.449
183	15.25	0.80	0.499	(0.075)	0.050	0.449
184	15.33	0.77	0.478	(0.074)	0.048	0.431
185	15.42	0.77	0.478	(0.074)	0.048	0.431
186	15.50	0.77	0.478	(0.073)	0.048	0.431
187	15.58	0.63	0.395	(0.073)	0.040	0.356
188	15.67	0.63	0.395	(0.073)	0.040	0.356
189	15.75	0.63	0.395	(0.072)	0.040	0.356
190	15.83	0.63	0.395	(0.072)	0.040	0.356
191	15.92	0.63	0.395	(0.072)	0.040	0.356
192	16.00	0.63	0.395	(0.071)	0.040	0.356
193	16.08	0.13	0.083	(0.071)	0.008	0.075

194	16.17	0.13	0.083	(0.071)	0.008	0.075
195	16.25	0.13	0.083	(0.070)	0.008	0.075
196	16.33	0.13	0.083	(0.070)	0.008	0.075
197	16.42	0.13	0.083	(0.069)	0.008	0.075
198	16.50	0.13	0.083	(0.069)	0.008	0.075
199	16.58	0.10	0.062	(0.069)	0.006	0.056
200	16.67	0.10	0.062	(0.068)	0.006	0.056
201	16.75	0.10	0.062	(0.068)	0.006	0.056
202	16.83	0.10	0.062	(0.068)	0.006	0.056
203	16.92	0.10	0.062	(0.067)	0.006	0.056
204	17.00	0.10	0.062	(0.067)	0.006	0.056
205	17.08	0.17	0.104	(0.067)	0.010	0.094
206	17.17	0.17	0.104	(0.066)	0.010	0.094
207	17.25	0.17	0.104	(0.066)	0.010	0.094
208	17.33	0.17	0.104	(0.066)	0.010	0.094
209	17.42	0.17	0.104	(0.065)	0.010	0.094
210	17.50	0.17	0.104	(0.065)	0.010	0.094
211	17.58	0.17	0.104	(0.065)	0.010	0.094
212	17.67	0.17	0.104	(0.064)	0.010	0.094
213	17.75	0.17	0.104	(0.064)	0.010	0.094
214	17.83	0.13	0.083	(0.064)	0.008	0.075
215	17.92	0.13	0.083	(0.063)	0.008	0.075
216	18.00	0.13	0.083	(0.063)	0.008	0.075
217	18.08	0.13	0.083	(0.063)	0.008	0.075
218	18.17	0.13	0.083	(0.063)	0.008	0.075
219	18.25	0.13	0.083	(0.062)	0.008	0.075
220	18.33	0.13	0.083	(0.062)	0.008	0.075
221	18.42	0.13	0.083	(0.062)	0.008	0.075
222	18.50	0.13	0.083	(0.061)	0.008	0.075
223	18.58	0.10	0.062	(0.061)	0.006	0.056
224	18.67	0.10	0.062	(0.061)	0.006	0.056
225	18.75	0.10	0.062	(0.060)	0.006	0.056
226	18.83	0.07	0.042	(0.060)	0.004	0.037
227	18.92	0.07	0.042	(0.060)	0.004	0.037
228	19.00	0.07	0.042	(0.060)	0.004	0.037
229	19.08	0.10	0.062	(0.059)	0.006	0.056
230	19.17	0.10	0.062	(0.059)	0.006	0.056
231	19.25	0.10	0.062	(0.059)	0.006	0.056
232	19.33	0.13	0.083	(0.058)	0.008	0.075
233	19.42	0.13	0.083	(0.058)	0.008	0.075
234	19.50	0.13	0.083	(0.058)	0.008	0.075
235	19.58	0.10	0.062	(0.058)	0.006	0.056
236	19.67	0.10	0.062	(0.057)	0.006	0.056
237	19.75	0.10	0.062	(0.057)	0.006	0.056
238	19.83	0.07	0.042	(0.057)	0.004	0.037
239	19.92	0.07	0.042	(0.057)	0.004	0.037
240	20.00	0.07	0.042	(0.056)	0.004	0.037
241	20.08	0.10	0.062	(0.056)	0.006	0.056
242	20.17	0.10	0.062	(0.056)	0.006	0.056
243	20.25	0.10	0.062	(0.056)	0.006	0.056
244	20.33	0.10	0.062	(0.055)	0.006	0.056
245	20.42	0.10	0.062	(0.055)	0.006	0.056
246	20.50	0.10	0.062	(0.055)	0.006	0.056
247	20.58	0.10	0.062	(0.055)	0.006	0.056
248	20.67	0.10	0.062	(0.054)	0.006	0.056
249	20.75	0.10	0.062	(0.054)	0.006	0.056
250	20.83	0.07	0.042	(0.054)	0.004	0.037
251	20.92	0.07	0.042	(0.054)	0.004	0.037
252	21.00	0.07	0.042	(0.054)	0.004	0.037
253	21.08	0.10	0.062	(0.053)	0.006	0.056
254	21.17	0.10	0.062	(0.053)	0.006	0.056
255	21.25	0.10	0.062	(0.053)	0.006	0.056
256	21.33	0.07	0.042	(0.053)	0.004	0.037
257	21.42	0.07	0.042	(0.053)	0.004	0.037
258	21.50	0.07	0.042	(0.052)	0.004	0.037
259	21.58	0.10	0.062	(0.052)	0.006	0.056
260	21.67	0.10	0.062	(0.052)	0.006	0.056
261	21.75	0.10	0.062	(0.052)	0.006	0.056
262	21.83	0.07	0.042	(0.052)	0.004	0.037
263	21.92	0.07	0.042	(0.051)	0.004	0.037
264	22.00	0.07	0.042	(0.051)	0.004	0.037
265	22.08	0.10	0.062	(0.051)	0.006	0.056
266	22.17	0.10	0.062	(0.051)	0.006	0.056
267	22.25	0.10	0.062	(0.051)	0.006	0.056
268	22.33	0.07	0.042	(0.051)	0.004	0.037
269	22.42	0.07	0.042	(0.050)	0.004	0.037
270	22.50	0.07	0.042	(0.050)	0.004	0.037
271	22.58	0.07	0.042	(0.050)	0.004	0.037
272	22.67	0.07	0.042	(0.050)	0.004	0.037
273	22.75	0.07	0.042	(0.050)	0.004	0.037
274	22.83	0.07	0.042	(0.050)	0.004	0.037
275	22.92	0.07	0.042	(0.050)	0.004	0.037
276	23.00	0.07	0.042	(0.049)	0.004	0.037
277	23.08	0.07	0.042	(0.049)	0.004	0.037
278	23.17	0.07	0.042	(0.049)	0.004	0.037
279	23.25	0.07	0.042	(0.049)	0.004	0.037
280	23.33	0.07	0.042	(0.049)	0.004	0.037
281	23.42	0.07	0.042	(0.049)	0.004	0.037
282	23.50	0.07	0.042	(0.049)	0.004	0.037
283	23.58	0.07	0.042	(0.049)	0.004	0.037
284	23.67	0.07	0.042	(0.049)	0.004	0.037
285	23.75	0.07	0.042	(0.049)	0.004	0.037
286	23.83	0.07	0.042	(0.049)	0.004	0.037
287	23.92	0.07	0.042	(0.049)	0.004	0.037
288	24.00	0.07	0.042	(0.049)	0.004	0.037

(Loss Rate Not Used)

Sum = 100.0 Sum = 56.2

Flood volume = Effective rainfall 4.68(In)
times area 13.1(Ac.)/[(In)/(Ft.)] = 5.1(Ac.Ft)

Total soil loss = 0.52(In)
Total soil loss = 0.568(Ac.Ft)
Total rainfall = 5.20(In)
Flood volume = 222712.2 Cubic Feet
Total soil loss = 24745.8 Cubic Feet

Peak flow rate of this hydrograph = 8.414(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0015	0.22	Q				
0+10	0.0045	0.43	VQ				
0+15	0.0077	0.47	VQ				
0+20	0.0119	0.60	V Q				
0+25	0.0168	0.71	V Q				
0+30	0.0218	0.73	V Q				
0+35	0.0269	0.74	V Q				
0+40	0.0320	0.74	V Q				
0+45	0.0372	0.74	V Q				
0+50	0.0430	0.85	V Q				
0+55	0.0496	0.96	V Q				
1+ 0	0.0564	0.98	V Q				
1+ 5	0.0624	0.88	V Q				
1+10	0.0678	0.77	V Q				
1+15	0.0729	0.75	V Q				
1+20	0.0781	0.74	V Q				
1+25	0.0832	0.74	V Q				
1+30	0.0883	0.74	V Q				
1+35	0.0934	0.74	V Q				
1+40	0.0985	0.74	V Q				
1+45	0.1036	0.74	V Q				
1+50	0.1095	0.85	V Q				
1+55	0.1161	0.96	V Q				
2+ 0	0.1228	0.98	V Q				
2+ 5	0.1296	0.99	V Q				
2+10	0.1365	0.99	V Q				
2+15	0.1433	0.99	V Q				
2+20	0.1501	0.99	V Q				
2+25	0.1569	0.99	V Q				
2+30	0.1637	0.99	V Q				
2+35	0.1713	1.10	V Q				
2+40	0.1796	1.21	V Q				
2+45	0.1880	1.23	V Q				
2+50	0.1966	1.24	V Q				
2+55	0.2051	1.24	V Q				
3+ 0	0.2136	1.24	V Q				
3+ 5	0.2221	1.24	V Q				
3+10	0.2306	1.24	V Q				
3+15	0.2392	1.24	V Q				
3+20	0.2477	1.24	V Q				
3+25	0.2562	1.24	V Q				
3+30	0.2647	1.24	V Q				
3+35	0.2732	1.24	V Q				
3+40	0.2818	1.24	V Q				
3+45	0.2903	1.24	V Q				
3+50	0.2996	1.35	V Q				
3+55	0.3096	1.45	V Q				
4+ 0	0.3197	1.47	V Q				
4+ 5	0.3299	1.48	V Q				
4+10	0.3402	1.48	V Q				
4+15	0.3504	1.48	V Q				
4+20	0.3614	1.59	V Q				
4+25	0.3731	1.70	V Q				
4+30	0.3849	1.72	V Q				
4+35	0.3969	1.73	V Q				
4+40	0.4088	1.73	V Q				
4+45	0.4207	1.73	V Q				
4+50	0.4334	1.84	V Q				
4+55	0.4468	1.95	V Q				
5+ 0	0.4604	1.97	V Q				
5+ 5	0.4725	1.76	V Q				
5+10	0.4832	1.55	V Q				
5+15	0.4935	1.51	V Q				
5+20	0.5045	1.59	V Q				
5+25	0.5162	1.70	V Q				
5+30	0.5281	1.72	V Q				
5+35	0.5408	1.84	V Q				
5+40	0.5542	1.95	V Q				
5+45	0.5677	1.97	V Q				
5+50	0.5814	1.98	V Q				
5+55	0.5950	1.98	V Q				
6+ 0	0.6086	1.98	V Q				
6+ 5	0.6230	2.09	V Q				
6+10	0.6381	2.20	V Q				
6+15	0.6534	2.22	V Q				
6+20	0.6687	2.23	V Q				
6+25	0.6841	2.23	V Q				
6+30	0.6994	2.23	V Q				
6+35	0.7155	2.34	V Q				
6+40	0.7323	2.44	V Q				
6+45	0.7493	2.46	V Q				
6+50	0.7663	2.47	V Q				

6+55	0.7834	2.47	
7+ 0	0.8004	2.47	
7+ 5	0.8175	2.47	
7+10	0.8345	2.47	
7+15	0.8516	2.47	
7+20	0.8693	2.58	
7+25	0.8879	2.69	
7+30	0.9065	2.71	
7+35	0.9260	2.83	
7+40	0.9463	2.94	
7+45	0.9666	2.96	
7+50	0.9878	3.08	
7+55	1.0098	3.18	
8+ 0	1.0319	3.21	
8+ 5	1.0555	3.43	
8+10	1.0806	3.65	
8+15	1.1060	3.69	
8+20	1.1316	3.71	
8+25	1.1572	3.71	
8+30	1.1827	3.71	
8+35	1.2091	3.82	
8+40	1.2361	3.93	
8+45	1.2633	3.95	
8+50	1.2913	4.07	
8+55	1.3201	4.17	
9+ 0	1.3490	4.20	
9+ 5	1.3794	4.42	
9+10	1.4114	4.64	
9+15	1.4436	4.68	
9+20	1.4767	4.81	
9+25	1.5106	4.92	
9+30	1.5446	4.94	
9+35	1.5794	5.06	
9+40	1.6150	5.16	
9+45	1.6507	5.19	
9+50	1.6873	5.31	
9+55	1.7245	5.41	
10+ 0	1.7620	5.43	
10+ 5	1.7942	4.68	
10+10	1.8213	3.94	
10+15	1.8474	3.79	
10+20	1.8730	3.71	
10+25	1.8985	3.71	
10+30	1.9241	3.71	
10+35	1.9534	4.25	
10+40	1.9864	4.79	
10+45	2.0201	4.90	
10+50	2.0542	4.95	
10+55	2.0883	4.95	
11+ 0	2.1223	4.95	
11+ 5	2.1557	4.84	
11+10	2.1883	4.73	
11+15	2.2207	4.71	
11+20	2.2531	4.70	
11+25	2.2855	4.70	
11+30	2.3179	4.70	
11+35	2.3488	4.48	
11+40	2.3782	4.27	
11+45	2.4073	4.23	
11+50	2.4370	4.32	
11+55	2.4675	4.42	
12+ 0	2.4981	4.44	
12+ 5	2.5340	5.21	
12+10	2.5751	5.96	
12+15	2.6171	6.11	
12+20	2.6605	6.29	
12+25	2.7046	6.40	
12+30	2.7488	6.42	
12+35	2.7946	6.65	
12+40	2.8419	6.86	
12+45	2.8895	6.91	
12+50	2.9380	7.04	
12+55	2.9872	7.14	
13+ 0	3.0365	7.17	
13+ 5	3.0897	7.72	
13+10	3.1465	8.25	
13+15	3.2041	8.36	
13+20	3.2620	8.41	
13+25	3.3200	8.41	
13+30	3.3779	8.41	
13+35	3.4276	7.22	
13+40	3.4693	6.04	
13+45	3.5093	5.81	
13+50	3.5485	5.69	
13+55	3.5877	5.69	
14+ 0	3.6269	5.69	
14+ 5	3.6691	6.13	
14+10	3.7142	6.55	
14+15	3.7599	6.64	
14+20	3.8052	6.57	
14+25	3.8497	6.47	
14+30	3.8941	6.44	
14+35	3.9384	6.43	
14+40	3.9827	6.43	
14+45	4.0270	6.43	
14+50	4.0706	6.33	
14+55	4.1134	6.22	
15+ 0	4.1561	6.20	
15+ 5	4.1980	6.08	

15+10	4.2391	5.97
15+15	4.2800	5.95
15+20	4.3202	5.83
15+25	4.3596	5.72
15+30	4.3989	5.70
15+35	4.4351	5.26
15+40	4.4684	4.83
15+45	4.5010	4.74
15+50	4.5334	4.70
15+55	4.5658	4.70
16+ 0	4.5982	4.70
16+ 5	4.6194	3.07
16+10	4.6295	1.47
16+15	4.6374	1.15
16+20	4.6442	0.99
16+25	4.6510	0.99
16+30	4.6578	0.99
16+35	4.6639	0.88
16+40	4.6692	0.77
16+45	4.6744	0.75
16+50	4.6795	0.74
16+55	4.6847	0.74
17+ 0	4.6898	0.74
17+ 5	4.6964	0.96
17+10	4.7045	1.17
17+15	4.7128	1.22
17+20	4.7214	1.24
17+25	4.7299	1.24
17+30	4.7384	1.24
17+35	4.7469	1.24
17+40	4.7554	1.24
17+45	4.7640	1.24
17+50	4.7717	1.13
17+55	4.7788	1.02
18+ 0	4.7857	1.00
18+ 5	4.7925	0.99
18+10	4.7993	0.99
18+15	4.8061	0.99
18+20	4.8129	0.99
18+25	4.8197	0.99
18+30	4.8266	0.99
18+35	4.8326	0.88
18+40	4.8380	0.77
18+45	4.8432	0.75
18+50	4.8475	0.63
18+55	4.8511	0.53
19+ 0	4.8546	0.51
19+ 5	4.8588	0.60
19+10	4.8637	0.71
19+15	4.8687	0.73
19+20	4.8746	0.85
19+25	4.8812	0.96
19+30	4.8879	0.98
19+35	4.8940	0.88
19+40	4.8993	0.77
19+45	4.9045	0.75
19+50	4.9089	0.63
19+55	4.9125	0.53
20+ 0	4.9160	0.51
20+ 5	4.9201	0.60
20+10	4.9250	0.71
20+15	4.9301	0.73
20+20	4.9352	0.74
20+25	4.9403	0.74
20+30	4.9454	0.74
20+35	4.9505	0.74
20+40	4.9556	0.74
20+45	4.9607	0.74
20+50	4.9651	0.63
20+55	4.9687	0.53
21+ 0	4.9722	0.51
21+ 5	4.9764	0.60
21+10	4.9813	0.71
21+15	4.9863	0.73
21+20	4.9907	0.63
21+25	4.9943	0.53
21+30	4.9978	0.51
21+35	5.0019	0.60
21+40	5.0068	0.71
21+45	5.0119	0.73
21+50	5.0162	0.63
21+55	5.0199	0.53
22+ 0	5.0234	0.51
22+ 5	5.0275	0.60
22+10	5.0324	0.71
22+15	5.0374	0.73
22+20	5.0418	0.63
22+25	5.0454	0.53
22+30	5.0489	0.51
22+35	5.0523	0.49
22+40	5.0557	0.49
22+45	5.0591	0.49
22+50	5.0625	0.49
22+55	5.0660	0.49
23+ 0	5.0694	0.49
23+ 5	5.0728	0.49
23+10	5.0762	0.49
23+15	5.0796	0.49
23+20	5.0830	0.49

23+25	5.0864	0.49	|Q	|	|	|	V|
23+30	5.0898	0.49	|Q	|	|	|	V|
23+35	5.0932	0.49	|Q	|	|	|	V|
23+40	5.0966	0.49	|Q	|	|	|	V|
23+45	5.1000	0.49	|Q	|	|	|	V|
23+50	5.1035	0.49	|Q	|	|	|	V|
23+55	5.1069	0.49	|Q	|	|	|	V|
24+ 0	5.1103	0.49	|Q	|	|	|	V|
24+ 5	5.1122	0.28	|Q	|	|	|	V|
24+10	5.1126	0.06	Q	|	|	|	V|
24+15	5.1128	0.02	Q	|	|	|	V|

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

Study date 06/23/22 File: 3958E1001100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR
EAST PARKING LOT
1-HOUR

Drainage Area = 3.91(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 3.91(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 840.00(Ft.)
Length along longest watercourse measured to centroid = 475.00(Ft.)
Length along longest watercourse = 0.159 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 19.18(Ft.)
Slope along watercourse = 120.5600 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.029 Hr.
Lag time = 1.73 Min.
25% of lag time = 0.43 Min.
40% of lag time = 0.69 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
3.91	0.49	1.92

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
3.91	1.28	5.00

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.490(In)
Area Averaged 100-Year Rainfall = 1.280(In)

Point rain (area averaged) = 1.280(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.280(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
3.910	56.00	0.900

Total Area Entered = 3.91(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

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

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %		Unit Hydrograph (CFS)
1	0.083	288.920	55.513		2.188
2	0.167	577.839	37.747		1.487
3	0.250	866.759	6.740		0.266
			Sum = 100.000	Sum=	3.941

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.20	0.645	(0.097)	0.065	0.581
2	0.17	4.30	0.660	(0.097)	0.066	0.594
3	0.25	5.00	0.768	(0.097)	0.077	0.691
4	0.33	5.00	0.768	(0.097)	0.077	0.691
5	0.42	5.80	0.891	(0.097)	0.089	0.802
6	0.50	6.50	0.998	0.097	(0.100)	0.901
7	0.58	7.40	1.137	0.097	(0.114)	1.040
8	0.67	8.60	1.321	0.097	(0.132)	1.224
9	0.75	12.30	1.889	0.097	(0.189)	1.792
10	0.83	29.10	4.470	0.097	(0.447)	4.373
11	0.92	6.80	1.044	0.097	(0.104)	0.947
12	1.00	5.00	0.768	(0.097)	0.077	0.691

(Loss Rate Not Used)

Sum = 100.0 Sum = 14.3

Flood volume = Effective rainfall 1.19(In)
times area 3.9(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)
Total soil loss = 0.09(In)
Total soil loss = 0.028(Ac.Ft)
Total rainfall = 1.28(In)
Flood volume = 16945.7 Cubic Feet
Total soil loss = 1221.0 Cubic Feet

Peak flow rate of this hydrograph = 12.562(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 5.0 10.0 15.0 20.0
0+ 5	0.0088	1.27	V Q
0+10	0.0237	2.16	V Q
0+15	0.0412	2.55	VQ
0+20	0.0598	2.70	QV
0+25	0.0803	2.97	Q V
0+30	0.1033	3.35	Q V
0+35	0.1297	3.83	Q V
0+40	0.1605	4.47	Q V
0+45	0.2019	6.02	Q V
0+50	0.2884	12.56	Q V
0+55	0.3508	9.06	Q V
1+ 0	0.3789	4.08	Q V
1+ 5	0.3878	1.28	Q V
1+10	0.3890	0.18	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 06/23/22 File: 3958E1003100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR
EAST PARKING LOT
3-HOUR

Drainage Area = 3.91(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 3.91(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 840.00(Ft.)
Length along longest watercourse measured to centroid = 475.00(Ft.)
Length along longest watercourse = 0.159 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 19.18(Ft.)
Slope along watercourse = 120.5600 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.029 Hr.
Lag time = 1.73 Min.
25% of lag time = 0.43 Min.
40% of lag time = 0.69 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
3.91	0.81	3.17

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
3.91	1.98	7.74

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.810(In)
Area Averaged 100-Year Rainfall = 1.980(In)

Point rain (area averaged) = 1.980(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.980(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
3.910	56.00	0.900

Total Area Entered = 3.91(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	288.920	55.513	2.188
2	0.167	577.839	37.747	1.487
3	0.250	866.759	6.740	0.266
			Sum = 100.000	Sum= 3.941

The following loss rate calculations reflect use of the minimum calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.309	(0.097)	0.031	0.278
2	0.17	1.30	0.309	(0.097)	0.031	0.278
3	0.25	1.10	0.261	(0.097)	0.026	0.235
4	0.33	1.50	0.356	(0.097)	0.036	0.321
5	0.42	1.50	0.356	(0.097)	0.036	0.321
6	0.50	1.80	0.428	(0.097)	0.043	0.385
7	0.58	1.50	0.356	(0.097)	0.036	0.321
8	0.67	1.80	0.428	(0.097)	0.043	0.385
9	0.75	1.80	0.428	(0.097)	0.043	0.385
10	0.83	1.50	0.356	(0.097)	0.036	0.321
11	0.92	1.60	0.380	(0.097)	0.038	0.342
12	1.00	1.80	0.428	(0.097)	0.043	0.385
13	1.08	2.20	0.523	(0.097)	0.052	0.470
14	1.17	2.20	0.523	(0.097)	0.052	0.470
15	1.25	2.20	0.523	(0.097)	0.052	0.470
16	1.33	2.00	0.475	(0.097)	0.048	0.428
17	1.42	2.60	0.618	(0.097)	0.062	0.556
18	1.50	2.70	0.642	(0.097)	0.064	0.577
19	1.58	2.40	0.570	(0.097)	0.057	0.513
20	1.67	2.70	0.642	(0.097)	0.064	0.577
21	1.75	3.30	0.784	(0.097)	0.078	0.706
22	1.83	3.10	0.737	(0.097)	0.074	0.663
23	1.92	2.90	0.689	(0.097)	0.069	0.620
24	2.00	3.00	0.713	(0.097)	0.071	0.642
25	2.08	3.10	0.737	(0.097)	0.074	0.663
26	2.17	4.20	0.998	0.097	(0.100)	0.901
27	2.25	5.00	1.188	0.097	(0.119)	1.091
28	2.33	3.50	0.832	(0.097)	0.083	0.748
29	2.42	6.80	1.616	0.097	(0.162)	1.519
30	2.50	7.30	1.734	0.097	(0.173)	1.637
31	2.58	8.20	1.948	0.097	(0.195)	1.851
32	2.67	5.90	1.402	0.097	(0.140)	1.305
33	2.75	2.00	0.475	(0.097)	0.048	0.428
34	2.83	1.80	0.428	(0.097)	0.043	0.385
35	2.92	1.80	0.428	(0.097)	0.043	0.385
36	3.00	0.60	0.143	(0.097)	0.014	0.128

(Loss Rate Not Used)

Sum = 100.0 Sum = 21.7

Flood volume = Effective rainfall 1.81(In)
times area 3.9(Ac.)/[(In)/(Ft.)] = 0.6(Ac.Ft)
Total soil loss = 0.17(In)
Total soil loss = 0.056(Ac.Ft)
Total rainfall = 1.98(In)
Flood volume = 25654.3 Cubic Feet
Total soil loss = 2447.9 Cubic Feet

Peak flow rate of this hydrograph = 6.892(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 2.5 5.0 7.5 10.0
0+ 5	0.0042	0.61	V Q
0+10	0.0112	1.02	V Q
0+15	0.0181	1.00	V Q
0+20	0.0259	1.13	V Q
0+25	0.0344	1.24	V Q
0+30	0.0441	1.41	V Q
0+35	0.0535	1.36	V Q
0+40	0.0633	1.42	VQ
0+45	0.0736	1.50	V Q
0+50	0.0831	1.38	Q
0+55	0.0922	1.33	QV
1+ 0	0.1021	1.44	QV
1+ 5	0.1138	1.69	QV
1+10	0.1264	1.83	QV
1+15	0.1392	1.85	Q V
1+20	0.1513	1.76	Q V
1+25	0.1649	1.98	Q V
1+30	0.1801	2.20	Q V
1+35	0.1948	2.13	Q V
1+40	0.2098	2.18	Q V
1+45	0.2273	2.54	Q V
1+50	0.2456	2.65	Q V
1+55	0.2630	2.53	Q V
2+ 0	0.2803	2.50	Q V
2+ 5	0.2980	2.57	Q V
2+10	0.3195	3.13	Q V
2+15	0.3464	3.90	Q V
2+20	0.3705	3.50	Q V
2+25	0.4031	4.73	Q V
2+30	0.4447	6.04	Q V
2+35	0.4922	6.89	Q V
2+40	0.5338	6.05	Q V
2+45	0.5570	3.37	Q V
2+50	0.5696	1.83	Q V
2+55	0.5801	1.53	Q V
3+ 0	0.5867	0.96	Q V
3+ 5	0.5887	0.29	Q V
3+10	0.5889	0.03	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 06/23/22 File: 3958E1006100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR
EAST PARKING LOT
6-HOUR

Drainage Area = 3.91(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 3.91(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 840.00(Ft.)
Length along longest watercourse measured to centroid = 475.00(Ft.)
Length along longest watercourse = 0.159 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 19.18(Ft.)
Slope along watercourse = 120.5600 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.029 Hr.
Lag time = 1.73 Min.
25% of lag time = 0.43 Min.
40% of lag time = 0.69 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
3.91	1.16	4.54

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
3.91	2.75	10.75

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.160(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 2.750(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.750(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
3.910	56.00	0.900

Total Area Entered = 3.91(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	288.920	55.513	2.188
2	0.167	577.839	37.747	1.487
3	0.250	866.759	6.740	0.266
			Sum = 100.000	Sum= 3.941

The following loss rate calculations reflect use of the minimum calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.165	(0.097)	0.016	0.148
2	0.17	0.60	0.198	(0.097)	0.020	0.178
3	0.25	0.60	0.198	(0.097)	0.020	0.178
4	0.33	0.60	0.198	(0.097)	0.020	0.178
5	0.42	0.60	0.198	(0.097)	0.020	0.178
6	0.50	0.70	0.231	(0.097)	0.023	0.208
7	0.58	0.70	0.231	(0.097)	0.023	0.208
8	0.67	0.70	0.231	(0.097)	0.023	0.208
9	0.75	0.70	0.231	(0.097)	0.023	0.208
10	0.83	0.70	0.231	(0.097)	0.023	0.208
11	0.92	0.70	0.231	(0.097)	0.023	0.208
12	1.00	0.80	0.264	(0.097)	0.026	0.238
13	1.08	0.80	0.264	(0.097)	0.026	0.238
14	1.17	0.80	0.264	(0.097)	0.026	0.238
15	1.25	0.80	0.264	(0.097)	0.026	0.238
16	1.33	0.80	0.264	(0.097)	0.026	0.238
17	1.42	0.80	0.264	(0.097)	0.026	0.238
18	1.50	0.80	0.264	(0.097)	0.026	0.238
19	1.58	0.80	0.264	(0.097)	0.026	0.238
20	1.67	0.80	0.264	(0.097)	0.026	0.238
21	1.75	0.80	0.264	(0.097)	0.026	0.238
22	1.83	0.80	0.264	(0.097)	0.026	0.238
23	1.92	0.80	0.264	(0.097)	0.026	0.238
24	2.00	0.90	0.297	(0.097)	0.030	0.267
25	2.08	0.80	0.264	(0.097)	0.026	0.238
26	2.17	0.90	0.297	(0.097)	0.030	0.267
27	2.25	0.90	0.297	(0.097)	0.030	0.267
28	2.33	0.90	0.297	(0.097)	0.030	0.267
29	2.42	0.90	0.297	(0.097)	0.030	0.267
30	2.50	0.90	0.297	(0.097)	0.030	0.267
31	2.58	0.90	0.297	(0.097)	0.030	0.267
32	2.67	0.90	0.297	(0.097)	0.030	0.267
33	2.75	1.00	0.330	(0.097)	0.033	0.297
34	2.83	1.00	0.330	(0.097)	0.033	0.297
35	2.92	1.00	0.330	(0.097)	0.033	0.297
36	3.00	1.00	0.330	(0.097)	0.033	0.297
37	3.08	1.00	0.330	(0.097)	0.033	0.297
38	3.17	1.10	0.363	(0.097)	0.036	0.327
39	3.25	1.10	0.363	(0.097)	0.036	0.327
40	3.33	1.10	0.363	(0.097)	0.036	0.327
41	3.42	1.20	0.396	(0.097)	0.040	0.356
42	3.50	1.30	0.429	(0.097)	0.043	0.386
43	3.58	1.40	0.462	(0.097)	0.046	0.416
44	3.67	1.40	0.462	(0.097)	0.046	0.416
45	3.75	1.50	0.495	(0.097)	0.049	0.445
46	3.83	1.50	0.495	(0.097)	0.049	0.445
47	3.92	1.60	0.528	(0.097)	0.053	0.475
48	4.00	1.60	0.528	(0.097)	0.053	0.475
49	4.08	1.70	0.561	(0.097)	0.056	0.505
50	4.17	1.80	0.594	(0.097)	0.059	0.535
51	4.25	1.90	0.627	(0.097)	0.063	0.564
52	4.33	2.00	0.660	(0.097)	0.066	0.594
53	4.42	2.10	0.693	(0.097)	0.069	0.624
54	4.50	2.10	0.693	(0.097)	0.069	0.624
55	4.58	2.20	0.726	(0.097)	0.073	0.653
56	4.67	2.30	0.759	(0.097)	0.076	0.683
57	4.75	2.40	0.792	(0.097)	0.079	0.713
58	4.83	2.40	0.792	(0.097)	0.079	0.713
59	4.92	2.50	0.825	(0.097)	0.082	0.742
60	5.00	2.60	0.858	(0.097)	0.086	0.772
61	5.08	3.10	1.023	0.097	(0.102)	0.926
62	5.17	3.60	1.188	0.097	(0.119)	1.091
63	5.25	3.90	1.287	0.097	(0.129)	1.190
64	5.33	4.20	1.386	0.097	(0.139)	1.289
65	5.42	4.70	1.551	0.097	(0.155)	1.454
66	5.50	5.60	1.848	0.097	(0.185)	1.751
67	5.58	1.90	0.627	(0.097)	0.063	0.564
68	5.67	0.90	0.297	(0.097)	0.030	0.267
69	5.75	0.60	0.198	(0.097)	0.020	0.178
70	5.83	0.50	0.165	(0.097)	0.016	0.148
71	5.92	0.30	0.099	(0.097)	0.010	0.089
72	6.00	0.20	0.066	(0.097)	0.007	0.059

(Loss Rate Not Used)

Sum = 100.0 Sum = 29.9

Flood volume = Effective rainfall 2.50(In)
times area 3.9(Ac.)/[(In)/(Ft.)] = 0.8(Ac.Ft)
Total soil loss = 0.25(In)
Total soil loss = 0.083(Ac.Ft)
Total rainfall = 2.75(In)
Flood volume = 35418.9 Cubic Feet
Total soil loss = 3612.2 Cubic Feet

Peak flow rate of this hydrograph = 6.338(CFS)

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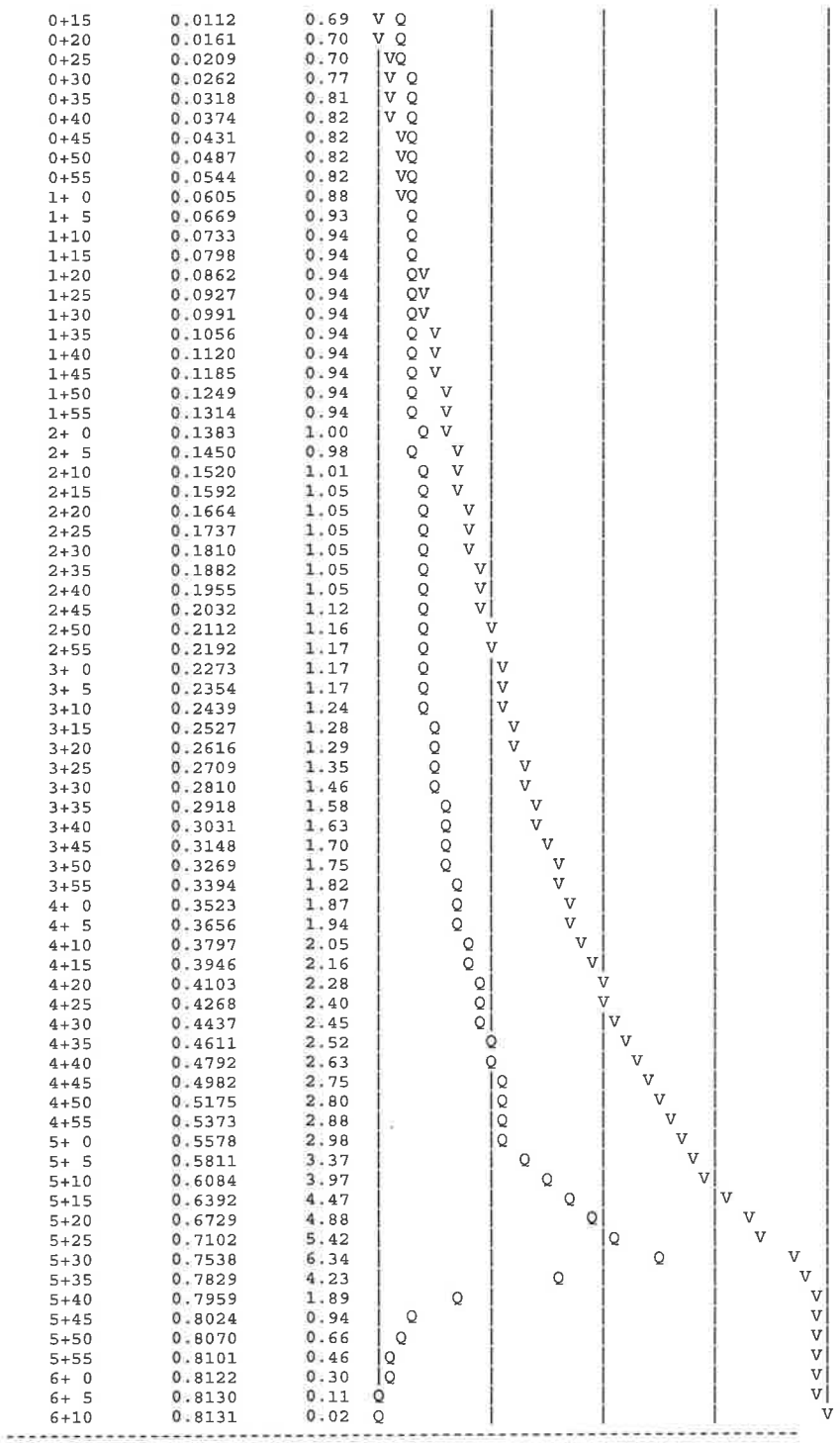
6 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0022	0.33	VQ				
0+10	0.0064	0.61	V Q				



0+15	0.0112	0.69	V Q
0+20	0.0161	0.70	V Q
0+25	0.0209	0.70	VQ
0+30	0.0262	0.77	V Q
0+35	0.0318	0.81	V Q
0+40	0.0374	0.82	V Q
0+45	0.0431	0.82	VQ
0+50	0.0487	0.82	VQ
0+55	0.0544	0.82	VQ
1+ 0	0.0605	0.88	VQ
1+ 5	0.0669	0.93	Q
1+10	0.0733	0.94	Q
1+15	0.0798	0.94	Q
1+20	0.0862	0.94	QV
1+25	0.0927	0.94	QV
1+30	0.0991	0.94	QV
1+35	0.1056	0.94	Q V
1+40	0.1120	0.94	Q V
1+45	0.1185	0.94	Q V
1+50	0.1249	0.94	Q V
1+55	0.1314	0.94	Q V
2+ 0	0.1383	1.00	Q V
2+ 5	0.1450	0.98	Q V
2+10	0.1520	1.01	Q V
2+15	0.1592	1.05	Q V
2+20	0.1664	1.05	Q V
2+25	0.1737	1.05	Q V
2+30	0.1810	1.05	Q V
2+35	0.1882	1.05	Q V
2+40	0.1955	1.05	Q V
2+45	0.2032	1.12	Q V
2+50	0.2112	1.16	Q V
2+55	0.2192	1.17	Q V
3+ 0	0.2273	1.17	Q V
3+ 5	0.2354	1.17	Q V
3+10	0.2439	1.24	Q V
3+15	0.2527	1.28	Q V
3+20	0.2616	1.29	Q V
3+25	0.2709	1.35	Q V
3+30	0.2810	1.46	Q V
3+35	0.2918	1.58	Q V
3+40	0.3031	1.63	Q V
3+45	0.3148	1.70	Q V
3+50	0.3269	1.75	Q V
3+55	0.3394	1.82	Q V
4+ 0	0.3523	1.87	Q V
4+ 5	0.3656	1.94	Q V
4+10	0.3797	2.05	Q V
4+15	0.3946	2.16	Q V
4+20	0.4103	2.28	Q V
4+25	0.4268	2.40	Q V
4+30	0.4437	2.45	Q V
4+35	0.4611	2.52	Q V
4+40	0.4792	2.63	Q V
4+45	0.4982	2.75	Q V
4+50	0.5175	2.80	Q V
4+55	0.5373	2.88	Q V
5+ 0	0.5578	2.98	Q V
5+ 5	0.5811	3.37	Q V
5+10	0.6084	3.97	Q V
5+15	0.6392	4.47	Q V
5+20	0.6729	4.88	Q V
5+25	0.7102	5.42	Q V
5+30	0.7538	6.34	Q V
5+35	0.7829	4.23	Q V
5+40	0.7959	1.89	Q V
5+45	0.8024	0.94	Q V
5+50	0.8070	0.66	Q V
5+55	0.8101	0.46	Q V
6+ 0	0.8122	0.30	Q V
6+ 5	0.8130	0.11	Q V
6+10	0.8131	0.02	Q V

Unit Hydrograph Analysis

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Study date 06/23/22 File: 3958E10024100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR
EAST PARKING LOT
24-HOUR

Drainage Area = 3.91(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 3.91(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 840.00(Ft.)
Length along longest watercourse measured to centroid = 475.00(Ft.)
Length along longest watercourse = 0.159 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 19.18(Ft.)
Slope along watercourse = 120.5600 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.029 Hr.
Lag time = 1.73 Min.
25% of lag time = 0.43 Min.
40% of lag time = 0.69 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
3.91	1.96	7.66

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
3.91	5.20	20.33

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.960(In)
Area Averaged 100-Year Rainfall = 5.200(In)

Point rain (area averaged) = 5.200(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 5.200(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
3.910	56.00	0.900

Total Area Entered = 3.91(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	288.920	55.513	2.188
2	0.167	577.839	37.747	1.487
3	0.250	866.759	6.740	0.266
			Sum = 100.000	Sum= 3.941

The following loss rate calculations reflect use of the minimum calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.042	(0.172)	0.004	0.037
2	0.17	0.07	0.042	(0.171)	0.004	0.037
3	0.25	0.07	0.042	(0.171)	0.004	0.037
4	0.33	0.10	0.062	(0.170)	0.006	0.056
5	0.42	0.10	0.062	(0.169)	0.006	0.056
6	0.50	0.10	0.062	(0.169)	0.006	0.056
7	0.58	0.10	0.062	(0.168)	0.006	0.056
8	0.67	0.10	0.062	(0.167)	0.006	0.056
9	0.75	0.10	0.062	(0.167)	0.006	0.056
10	0.83	0.13	0.083	(0.166)	0.008	0.075
11	0.92	0.13	0.083	(0.165)	0.008	0.075
12	1.00	0.13	0.083	(0.165)	0.008	0.075
13	1.08	0.10	0.062	(0.164)	0.006	0.056
14	1.17	0.10	0.062	(0.163)	0.006	0.056
15	1.25	0.10	0.062	(0.163)	0.006	0.056
16	1.33	0.10	0.062	(0.162)	0.006	0.056
17	1.42	0.10	0.062	(0.162)	0.006	0.056
18	1.50	0.10	0.062	(0.161)	0.006	0.056
19	1.58	0.10	0.062	(0.160)	0.006	0.056
20	1.67	0.10	0.062	(0.160)	0.006	0.056
21	1.75	0.10	0.062	(0.159)	0.006	0.056
22	1.83	0.13	0.083	(0.158)	0.008	0.075
23	1.92	0.13	0.083	(0.158)	0.008	0.075
24	2.00	0.13	0.083	(0.157)	0.008	0.075
25	2.08	0.13	0.083	(0.156)	0.008	0.075
26	2.17	0.13	0.083	(0.156)	0.008	0.075
27	2.25	0.13	0.083	(0.155)	0.008	0.075
28	2.33	0.13	0.083	(0.155)	0.008	0.075
29	2.42	0.13	0.083	(0.154)	0.008	0.075
30	2.50	0.13	0.083	(0.153)	0.008	0.075
31	2.58	0.17	0.104	(0.153)	0.010	0.094
32	2.67	0.17	0.104	(0.152)	0.010	0.094
33	2.75	0.17	0.104	(0.151)	0.010	0.094
34	2.83	0.17	0.104	(0.151)	0.010	0.094
35	2.92	0.17	0.104	(0.150)	0.010	0.094
36	3.00	0.17	0.104	(0.150)	0.010	0.094
37	3.08	0.17	0.104	(0.149)	0.010	0.094
38	3.17	0.17	0.104	(0.148)	0.010	0.094
39	3.25	0.17	0.104	(0.148)	0.010	0.094
40	3.33	0.17	0.104	(0.147)	0.010	0.094
41	3.42	0.17	0.104	(0.146)	0.010	0.094
42	3.50	0.17	0.104	(0.146)	0.010	0.094
43	3.58	0.17	0.104	(0.145)	0.010	0.094
44	3.67	0.17	0.104	(0.145)	0.010	0.094
45	3.75	0.17	0.104	(0.144)	0.010	0.094
46	3.83	0.20	0.125	(0.143)	0.012	0.112
47	3.92	0.20	0.125	(0.143)	0.012	0.112
48	4.00	0.20	0.125	(0.142)	0.012	0.112
49	4.08	0.20	0.125	(0.142)	0.012	0.112
50	4.17	0.20	0.125	(0.141)	0.012	0.112
51	4.25	0.20	0.125	(0.140)	0.012	0.112
52	4.33	0.23	0.146	(0.140)	0.015	0.131
53	4.42	0.23	0.146	(0.139)	0.015	0.131
54	4.50	0.23	0.146	(0.139)	0.015	0.131
55	4.58	0.23	0.146	(0.138)	0.015	0.131
56	4.67	0.23	0.146	(0.137)	0.015	0.131
57	4.75	0.23	0.146	(0.137)	0.015	0.131
58	4.83	0.27	0.166	(0.136)	0.017	0.150
59	4.92	0.27	0.166	(0.136)	0.017	0.150
60	5.00	0.27	0.166	(0.135)	0.017	0.150
61	5.08	0.20	0.125	(0.134)	0.012	0.112
62	5.17	0.20	0.125	(0.134)	0.012	0.112
63	5.25	0.20	0.125	(0.133)	0.012	0.112
64	5.33	0.23	0.146	(0.133)	0.015	0.131
65	5.42	0.23	0.146	(0.132)	0.015	0.131
66	5.50	0.23	0.146	(0.132)	0.015	0.131
67	5.58	0.27	0.166	(0.131)	0.017	0.150
68	5.67	0.27	0.166	(0.130)	0.017	0.150
69	5.75	0.27	0.166	(0.130)	0.017	0.150
70	5.83	0.27	0.166	(0.129)	0.017	0.150
71	5.92	0.27	0.166	(0.129)	0.017	0.150
72	6.00	0.27	0.166	(0.128)	0.017	0.150
73	6.08	0.30	0.187	(0.128)	0.019	0.168
74	6.17	0.30	0.187	(0.127)	0.019	0.168
75	6.25	0.30	0.187	(0.126)	0.019	0.168
76	6.33	0.30	0.187	(0.126)	0.019	0.168
77	6.42	0.30	0.187	(0.125)	0.019	0.168
78	6.50	0.30	0.187	(0.125)	0.019	0.168
79	6.58	0.33	0.208	(0.124)	0.021	0.187
80	6.67	0.33	0.208	(0.124)	0.021	0.187
81	6.75	0.33	0.208	(0.123)	0.021	0.187
82	6.83	0.33	0.208	(0.122)	0.021	0.187
83	6.92	0.33	0.208	(0.122)	0.021	0.187
84	7.00	0.33	0.208	(0.121)	0.021	0.187
85	7.08	0.33	0.208	(0.121)	0.021	0.187
86	7.17	0.33	0.208	(0.120)	0.021	0.187
87	7.25	0.33	0.208	(0.120)	0.021	0.187
88	7.33	0.37	0.229	(0.119)	0.023	0.206
89	7.42	0.37	0.229	(0.119)	0.023	0.206
90	7.50	0.37	0.229	(0.118)	0.023	0.206
91	7.58	0.40	0.250	(0.118)	0.025	0.225
92	7.67	0.40	0.250	(0.117)	0.025	0.225
93	7.75	0.40	0.250	(0.116)	0.025	0.225
94	7.83	0.43	0.270	(0.116)	0.027	0.243
95	7.92	0.43	0.270	(0.115)	0.027	0.243

96	8.00	0.43	0.270	(0.115)	0.027	0.243
97	8.08	0.50	0.312	(0.114)	0.031	0.281
98	8.17	0.50	0.312	(0.114)	0.031	0.281
99	8.25	0.50	0.312	(0.113)	0.031	0.281
100	8.33	0.50	0.312	(0.113)	0.031	0.281
101	8.42	0.50	0.312	(0.112)	0.031	0.281
102	8.50	0.50	0.312	(0.112)	0.031	0.281
103	8.58	0.53	0.333	(0.111)	0.033	0.300
104	8.67	0.53	0.333	(0.111)	0.033	0.300
105	8.75	0.53	0.333	(0.110)	0.033	0.300
106	8.83	0.57	0.354	(0.110)	0.035	0.318
107	8.92	0.57	0.354	(0.109)	0.035	0.318
108	9.00	0.57	0.354	(0.109)	0.035	0.318
109	9.08	0.63	0.395	(0.108)	0.040	0.356
110	9.17	0.63	0.395	(0.108)	0.040	0.356
111	9.25	0.63	0.395	(0.107)	0.040	0.356
112	9.33	0.67	0.416	(0.107)	0.042	0.374
113	9.42	0.67	0.416	(0.106)	0.042	0.374
114	9.50	0.67	0.416	(0.105)	0.042	0.374
115	9.58	0.70	0.437	(0.105)	0.044	0.393
116	9.67	0.70	0.437	(0.104)	0.044	0.393
117	9.75	0.70	0.437	(0.104)	0.044	0.393
118	9.83	0.73	0.458	(0.103)	0.046	0.412
119	9.92	0.73	0.458	(0.103)	0.046	0.412
120	10.00	0.73	0.458	(0.102)	0.046	0.412
121	10.08	0.50	0.312	(0.102)	0.031	0.281
122	10.17	0.50	0.312	(0.101)	0.031	0.281
123	10.25	0.50	0.312	(0.101)	0.031	0.281
124	10.33	0.50	0.312	(0.101)	0.031	0.281
125	10.42	0.50	0.312	(0.100)	0.031	0.281
126	10.50	0.50	0.312	(0.100)	0.031	0.281
127	10.58	0.67	0.416	(0.099)	0.042	0.374
128	10.67	0.67	0.416	(0.099)	0.042	0.374
129	10.75	0.67	0.416	(0.098)	0.042	0.374
130	10.83	0.67	0.416	(0.098)	0.042	0.374
131	10.92	0.67	0.416	(0.097)	0.042	0.374
132	11.00	0.67	0.416	(0.097)	0.042	0.374
133	11.08	0.63	0.395	(0.096)	0.040	0.356
134	11.17	0.63	0.395	(0.096)	0.040	0.356
135	11.25	0.63	0.395	(0.095)	0.040	0.356
136	11.33	0.63	0.395	(0.095)	0.040	0.356
137	11.42	0.63	0.395	(0.094)	0.040	0.356
138	11.50	0.63	0.395	(0.094)	0.040	0.356
139	11.58	0.57	0.354	(0.093)	0.035	0.318
140	11.67	0.57	0.354	(0.093)	0.035	0.318
141	11.75	0.57	0.354	(0.092)	0.035	0.318
142	11.83	0.60	0.374	(0.092)	0.037	0.337
143	11.92	0.60	0.374	(0.092)	0.037	0.337
144	12.00	0.60	0.374	(0.091)	0.037	0.337
145	12.08	0.83	0.520	(0.091)	0.052	0.468
146	12.17	0.83	0.520	(0.090)	0.052	0.468
147	12.25	0.83	0.520	(0.090)	0.052	0.468
148	12.33	0.87	0.541	(0.089)	0.054	0.487
149	12.42	0.87	0.541	(0.089)	0.054	0.487
150	12.50	0.87	0.541	(0.088)	0.054	0.487
151	12.58	0.93	0.582	(0.088)	0.058	0.524
152	12.67	0.93	0.582	(0.087)	0.058	0.524
153	12.75	0.93	0.582	(0.087)	0.058	0.524
154	12.83	0.97	0.603	(0.087)	0.060	0.543
155	12.92	0.97	0.603	(0.086)	0.060	0.543
156	13.00	0.97	0.603	(0.086)	0.060	0.543
157	13.08	1.13	0.707	(0.085)	0.071	0.636
158	13.17	1.13	0.707	(0.085)	0.071	0.636
159	13.25	1.13	0.707	(0.084)	0.071	0.636
160	13.33	1.13	0.707	(0.084)	0.071	0.636
161	13.42	1.13	0.707	(0.084)	0.071	0.636
162	13.50	1.13	0.707	(0.083)	0.071	0.636
163	13.58	0.77	0.478	(0.083)	0.048	0.431
164	13.67	0.77	0.478	(0.082)	0.048	0.431
165	13.75	0.77	0.478	(0.082)	0.048	0.431
166	13.83	0.77	0.478	(0.081)	0.048	0.431
167	13.92	0.77	0.478	(0.081)	0.048	0.431
168	14.00	0.77	0.478	(0.081)	0.048	0.431
169	14.08	0.90	0.562	(0.080)	0.056	0.505
170	14.17	0.90	0.562	(0.080)	0.056	0.505
171	14.25	0.90	0.562	(0.079)	0.056	0.505
172	14.33	0.87	0.541	(0.079)	0.054	0.487
173	14.42	0.87	0.541	(0.079)	0.054	0.487
174	14.50	0.87	0.541	(0.078)	0.054	0.487
175	14.58	0.87	0.541	(0.078)	0.054	0.487
176	14.67	0.87	0.541	(0.077)	0.054	0.487
177	14.75	0.87	0.541	(0.077)	0.054	0.487
178	14.83	0.83	0.520	(0.077)	0.052	0.468
179	14.92	0.83	0.520	(0.076)	0.052	0.468
180	15.00	0.83	0.520	(0.076)	0.052	0.468
181	15.08	0.80	0.499	(0.075)	0.050	0.449
182	15.17	0.80	0.499	(0.075)	0.050	0.449
183	15.25	0.80	0.499	(0.075)	0.050	0.449
184	15.33	0.77	0.478	(0.074)	0.048	0.431
185	15.42	0.77	0.478	(0.074)	0.048	0.431
186	15.50	0.77	0.478	(0.073)	0.048	0.431
187	15.58	0.63	0.395	(0.073)	0.040	0.356
188	15.67	0.63	0.395	(0.073)	0.040	0.356
189	15.75	0.63	0.395	(0.072)	0.040	0.356
190	15.83	0.63	0.395	(0.072)	0.040	0.356
191	15.92	0.63	0.395	(0.072)	0.040	0.356
192	16.00	0.63	0.395	(0.071)	0.040	0.356
193	16.08	0.13	0.083	(0.071)	0.008	0.075
194	16.17	0.13	0.083	(0.071)	0.008	0.075

195	16.25	0.13	0.083	(0.070)	0.008	0.075
196	16.33	0.13	0.083	(0.070)	0.008	0.075
197	16.42	0.13	0.083	(0.069)	0.008	0.075
198	16.50	0.13	0.083	(0.069)	0.008	0.075
199	16.58	0.10	0.062	(0.069)	0.006	0.056
200	16.67	0.10	0.062	(0.068)	0.006	0.056
201	16.75	0.10	0.062	(0.068)	0.006	0.056
202	16.83	0.10	0.062	(0.068)	0.006	0.056
203	16.92	0.10	0.062	(0.067)	0.006	0.056
204	17.00	0.10	0.062	(0.067)	0.006	0.056
205	17.08	0.17	0.104	(0.067)	0.010	0.094
206	17.17	0.17	0.104	(0.066)	0.010	0.094
207	17.25	0.17	0.104	(0.066)	0.010	0.094
208	17.33	0.17	0.104	(0.066)	0.010	0.094
209	17.42	0.17	0.104	(0.065)	0.010	0.094
210	17.50	0.17	0.104	(0.065)	0.010	0.094
211	17.58	0.17	0.104	(0.065)	0.010	0.094
212	17.67	0.17	0.104	(0.064)	0.010	0.094
213	17.75	0.17	0.104	(0.064)	0.010	0.094
214	17.83	0.13	0.083	(0.064)	0.008	0.075
215	17.92	0.13	0.083	(0.063)	0.008	0.075
216	18.00	0.13	0.083	(0.063)	0.008	0.075
217	18.08	0.13	0.083	(0.063)	0.008	0.075
218	18.17	0.13	0.083	(0.063)	0.008	0.075
219	18.25	0.13	0.083	(0.062)	0.008	0.075
220	18.33	0.13	0.083	(0.062)	0.008	0.075
221	18.42	0.13	0.083	(0.062)	0.008	0.075
222	18.50	0.13	0.083	(0.061)	0.008	0.075
223	18.58	0.10	0.062	(0.061)	0.006	0.056
224	18.67	0.10	0.062	(0.061)	0.006	0.056
225	18.75	0.10	0.062	(0.060)	0.006	0.056
226	18.83	0.07	0.042	(0.060)	0.004	0.037
227	18.92	0.07	0.042	(0.060)	0.004	0.037
228	19.00	0.07	0.042	(0.060)	0.004	0.037
229	19.08	0.10	0.062	(0.059)	0.006	0.056
230	19.17	0.10	0.062	(0.059)	0.006	0.056
231	19.25	0.10	0.062	(0.059)	0.006	0.056
232	19.33	0.13	0.083	(0.058)	0.008	0.075
233	19.42	0.13	0.083	(0.058)	0.008	0.075
234	19.50	0.13	0.083	(0.058)	0.008	0.075
235	19.58	0.10	0.062	(0.058)	0.006	0.056
236	19.67	0.10	0.062	(0.057)	0.006	0.056
237	19.75	0.10	0.062	(0.057)	0.006	0.056
238	19.83	0.07	0.042	(0.057)	0.004	0.037
239	19.92	0.07	0.042	(0.057)	0.004	0.037
240	20.00	0.07	0.042	(0.056)	0.004	0.037
241	20.08	0.10	0.062	(0.056)	0.006	0.056
242	20.17	0.10	0.062	(0.056)	0.006	0.056
243	20.25	0.10	0.062	(0.056)	0.006	0.056
244	20.33	0.10	0.062	(0.055)	0.006	0.056
245	20.42	0.10	0.062	(0.055)	0.006	0.056
246	20.50	0.10	0.062	(0.055)	0.006	0.056
247	20.58	0.10	0.062	(0.055)	0.006	0.056
248	20.67	0.10	0.062	(0.054)	0.006	0.056
249	20.75	0.10	0.062	(0.054)	0.006	0.056
250	20.83	0.07	0.042	(0.054)	0.004	0.037
251	20.92	0.07	0.042	(0.054)	0.004	0.037
252	21.00	0.07	0.042	(0.054)	0.004	0.037
253	21.08	0.10	0.062	(0.053)	0.006	0.056
254	21.17	0.10	0.062	(0.053)	0.006	0.056
255	21.25	0.10	0.062	(0.053)	0.006	0.056
256	21.33	0.07	0.042	(0.053)	0.004	0.037
257	21.42	0.07	0.042	(0.053)	0.004	0.037
258	21.50	0.07	0.042	(0.052)	0.004	0.037
259	21.58	0.10	0.062	(0.052)	0.006	0.056
260	21.67	0.10	0.062	(0.052)	0.006	0.056
261	21.75	0.10	0.062	(0.052)	0.006	0.056
262	21.83	0.07	0.042	(0.052)	0.004	0.037
263	21.92	0.07	0.042	(0.051)	0.004	0.037
264	22.00	0.07	0.042	(0.051)	0.004	0.037
265	22.08	0.10	0.062	(0.051)	0.006	0.056
266	22.17	0.10	0.062	(0.051)	0.006	0.056
267	22.25	0.10	0.062	(0.051)	0.006	0.056
268	22.33	0.07	0.042	(0.051)	0.004	0.037
269	22.42	0.07	0.042	(0.050)	0.004	0.037
270	22.50	0.07	0.042	(0.050)	0.004	0.037
271	22.58	0.07	0.042	(0.050)	0.004	0.037
272	22.67	0.07	0.042	(0.050)	0.004	0.037
273	22.75	0.07	0.042	(0.050)	0.004	0.037
274	22.83	0.07	0.042	(0.050)	0.004	0.037
275	22.92	0.07	0.042	(0.050)	0.004	0.037
276	23.00	0.07	0.042	(0.049)	0.004	0.037
277	23.08	0.07	0.042	(0.049)	0.004	0.037
278	23.17	0.07	0.042	(0.049)	0.004	0.037
279	23.25	0.07	0.042	(0.049)	0.004	0.037
280	23.33	0.07	0.042	(0.049)	0.004	0.037
281	23.42	0.07	0.042	(0.049)	0.004	0.037
282	23.50	0.07	0.042	(0.049)	0.004	0.037
283	23.58	0.07	0.042	(0.049)	0.004	0.037
284	23.67	0.07	0.042	(0.049)	0.004	0.037
285	23.75	0.07	0.042	(0.049)	0.004	0.037
286	23.83	0.07	0.042	(0.049)	0.004	0.037
287	23.92	0.07	0.042	(0.049)	0.004	0.037
288	24.00	0.07	0.042	(0.049)	0.004	0.037

(Loss Rate Not Used)

Sum = 100.0 Sum = 56.2

Flood volume = Effective rainfall 4.68(In)
times area 3.9(Ac.)/[(In)/(Ft.)] = 1.5(Ac.Ft)
Total soil loss = 0.52(In)

Total soil loss = 0.169(Ac.Ft)
Total rainfall = 5.20(In)
Flood volume = 66424.1 Cubic Feet
Total soil loss = 7380.5 Cubic Feet

Peak flow rate of this hydrograph = 2.509(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0006	0.08	Q				
0+10	0.0015	0.14	Q				
0+15	0.0025	0.15	Q				
0+20	0.0038	0.19	Q				
0+25	0.0053	0.22	Q				
0+30	0.0068	0.22	Q				
0+35	0.0084	0.22	Q				
0+40	0.0099	0.22	Q				
0+45	0.0114	0.22	Q				
0+50	0.0132	0.26	VQ				
0+55	0.0152	0.29	VQ				
1+ 0	0.0173	0.30	VQ				
1+ 5	0.0190	0.25	VQ				
1+10	0.0206	0.23	Q				
1+15	0.0221	0.22	Q				
1+20	0.0236	0.22	Q				
1+25	0.0251	0.22	Q				
1+30	0.0267	0.22	Q				
1+35	0.0282	0.22	Q				
1+40	0.0297	0.22	Q				
1+45	0.0312	0.22	Q				
1+50	0.0330	0.26	VQ				
1+55	0.0350	0.29	VQ				
2+ 0	0.0371	0.30	VQ				
2+ 5	0.0391	0.30	|Q				
2+10	0.0411	0.30	|Q				
2+15	0.0432	0.30	|Q				
2+20	0.0452	0.30	|Q				
2+25	0.0472	0.30	|Q				
2+30	0.0493	0.30	|Q				
2+35	0.0516	0.34	|Q				
2+40	0.0541	0.36	|Q				
2+45	0.0566	0.37	|Q				
2+50	0.0592	0.37	|Q				
2+55	0.0617	0.37	|Q				
3+ 0	0.0643	0.37	|Q				
3+ 5	0.0668	0.37	|Q				
3+10	0.0694	0.37	|Q				
3+15	0.0719	0.37	|Q				
3+20	0.0744	0.37	|Q				
3+25	0.0770	0.37	|QV				
3+30	0.0795	0.37	|QV				
3+35	0.0821	0.37	|QV				
3+40	0.0846	0.37	|QV				
3+45	0.0871	0.37	|QV				
3+50	0.0900	0.41	|QV				
3+55	0.0930	0.44	|QV				
4+ 0	0.0960	0.44	|QV				
4+ 5	0.0991	0.44	|QV				
4+10	0.1021	0.44	|QV				
4+15	0.1052	0.44	|QV				
4+20	0.1085	0.48	|QV				
4+25	0.1120	0.51	| Q				
4+30	0.1156	0.52	| QV				
4+35	0.1192	0.52	| QV				
4+40	0.1227	0.52	| QV				
4+45	0.1263	0.52	| QV				
4+50	0.1301	0.56	| QV				
4+55	0.1341	0.59	| QV				
5+ 0	0.1382	0.59	| QV				
5+ 5	0.1417	0.51	| QV				
5+10	0.1448	0.45	|Q V				
5+15	0.1479	0.44	|Q V				
5+20	0.1512	0.48	|Q V				
5+25	0.1547	0.51	| Q V				
5+30	0.1583	0.52	| Q V				
5+35	0.1621	0.56	| Q V				
5+40	0.1662	0.59	| Q V				
5+45	0.1702	0.59	| Q V				
5+50	0.1743	0.59	| Q V				
5+55	0.1784	0.59	| Q V				
6+ 0	0.1824	0.59	| Q V				
6+ 5	0.1868	0.63	| Q V				
6+10	0.1913	0.66	| Q V				
6+15	0.1959	0.66	| Q V				
6+20	0.2005	0.66	| Q V				
6+25	0.2050	0.66	| Q V				
6+30	0.2096	0.66	| Q V				
6+35	0.2145	0.71	| Q V				
6+40	0.2195	0.73	| Q V				
6+45	0.2246	0.74	| Q V				
6+50	0.2297	0.74	| Q V				
6+55	0.2348	0.74	| Q V				

7+ 0	0.2399	0.74	Q V				
7+ 5	0.2449	0.74	Q V				
7+10	0.2500	0.74	Q V				
7+15	0.2551	0.74	Q V				
7+20	0.2605	0.78	Q V				
7+25	0.2660	0.81	Q V				
7+30	0.2716	0.81	Q V				
7+35	0.2775	0.85	Q V				
7+40	0.2836	0.88	Q V				
7+45	0.2897	0.89	Q V				
7+50	0.2960	0.93	Q V				
7+55	0.3026	0.95	Q V				
8+ 0	0.3092	0.96	Q V				
8+ 5	0.3164	1.04	Q V				
8+10	0.3239	1.10	Q V				
8+15	0.3316	1.11	Q V				
8+20	0.3392	1.11	Q V				
8+25	0.3468	1.11	Q V				
8+30	0.3544	1.11	Q V				
8+35	0.3623	1.15	Q V				
8+40	0.3704	1.18	Q V				
8+45	0.3786	1.18	Q V				
8+50	0.3870	1.22	Q V				
8+55	0.3956	1.25	Q V				
9+ 0	0.4042	1.25	Q V				
9+ 5	0.4134	1.34	Q V				
9+10	0.4230	1.39	Q V				
9+15	0.4327	1.40	Q V				
9+20	0.4426	1.44	Q V				
9+25	0.4528	1.47	Q V				
9+30	0.4629	1.48	Q V				
9+35	0.4734	1.52	Q V				
9+40	0.4840	1.54	Q V				
9+45	0.4947	1.55	Q V				
9+50	0.5057	1.59	Q V				
9+55	0.5168	1.62	Q V				
10+ 0	0.5280	1.62	Q V				
10+ 5	0.5372	1.34	Q V				
10+10	0.5451	1.14	Q V				
10+15	0.5527	1.11	Q V				
10+20	0.5603	1.11	Q V				
10+25	0.5679	1.11	Q V				
10+30	0.5756	1.11	Q V				
10+35	0.5846	1.31	Q V				
10+40	0.5946	1.45	Q V				
10+45	0.6047	1.48	Q V				
10+50	0.6149	1.48	Q V				
10+55	0.6251	1.48	Q V				
11+ 0	0.6352	1.48	Q V				
11+ 5	0.6451	1.44	Q V				
11+10	0.6548	1.41	Q V				
11+15	0.6645	1.40	Q V				
11+20	0.6741	1.40	Q V				
11+25	0.6838	1.40	Q V				
11+30	0.6935	1.40	Q V				
11+35	0.7025	1.32	Q V				
11+40	0.7113	1.26	Q V				
11+45	0.7199	1.25	Q V				
11+50	0.7288	1.30	Q V				
11+55	0.7379	1.32	Q V				
12+ 0	0.7471	1.33	Q V				
12+ 5	0.7582	1.62	Q V				
12+10	0.7707	1.81	Q V				
12+15	0.7834	1.85	Q V				
12+20	0.7964	1.89	Q V				
12+25	0.8096	1.91	Q V				
12+30	0.8228	1.92	Q V				
12+35	0.8365	2.00	Q V				
12+40	0.8507	2.06	Q V				
12+45	0.8649	2.07	Q V				
12+50	0.8795	2.11	Q V				
12+55	0.8942	2.14	Q V				
13+ 0	0.9089	2.14	Q V				
13+ 5	0.9251	2.35	Q V				
13+10	0.9422	2.48	Q V				
13+15	0.9595	2.51	Q V				
13+20	0.9767	2.51	Q V				
13+25	0.9940	2.51	Q V				
13+30	1.0113	2.51	Q V				
13+35	1.0255	2.06	Q V				
13+40	1.0375	1.75	Q V				
13+45	1.0492	1.70	Q V				
13+50	1.0609	1.70	Q V				
13+55	1.0726	1.70	Q V				
14+ 0	1.0843	1.70	Q V				
14+ 5	1.0971	1.86	Q V				
14+10	1.1107	1.97	Q V				
14+15	1.1244	1.99	Q V				
14+20	1.1379	1.95	Q V				
14+25	1.1511	1.92	Q V				
14+30	1.1643	1.92	Q V				
14+35	1.1776	1.92	Q V				
14+40	1.1908	1.92	Q V				
14+45	1.2040	1.92	Q V				
14+50	1.2169	1.88	Q V				
14+55	1.2297	1.85	Q V				
15+ 0	1.2424	1.85	Q V				
15+ 5	1.2548	1.80	Q V				
15+10	1.2670	1.78	Q V				

15+15	1.2792	1.77		Q		V
15+20	1.2911	1.73		Q		V
15+25	1.3029	1.70		Q		V
15+30	1.3146	1.70		Q		V
15+35	1.3251	1.53		Q		V
15+40	1.3349	1.42		Q		V
15+45	1.3446	1.40		Q		V
15+50	1.3542	1.40		Q		V
15+55	1.3639	1.40		Q		V
16+ 0	1.3736	1.40		Q		V
16+ 5	1.3790	0.79		Q		V
16+10	1.3815	0.37	Q			V
16+15	1.3836	0.30	Q			V
16+20	1.3856	0.30	Q			V
16+25	1.3876	0.30	Q			V
16+30	1.3897	0.30	Q			V
16+35	1.3914	0.25	Q			V
16+40	1.3930	0.23	Q			V
16+45	1.3945	0.22	Q			V
16+50	1.3960	0.22	Q			V
16+55	1.3975	0.22	Q			V
17+ 0	1.3991	0.22	Q			V
17+ 5	1.4012	0.30	Q			V
17+10	1.4036	0.36	Q			V
17+15	1.4062	0.37	Q			V
17+20	1.4087	0.37	Q			V
17+25	1.4113	0.37	Q			V
17+30	1.4138	0.37	Q			V
17+35	1.4163	0.37	Q			V
17+40	1.4189	0.37	Q			V
17+45	1.4214	0.37	Q			V
17+50	1.4237	0.33	Q			V
17+55	1.4257	0.30	Q			V
18+ 0	1.4278	0.30	Q			V
18+ 5	1.4298	0.30	Q			V
18+10	1.4318	0.30	Q			V
18+15	1.4339	0.30	Q			V
18+20	1.4359	0.30	Q			V
18+25	1.4379	0.30	Q			V
18+30	1.4400	0.30	Q			V
18+35	1.4417	0.25	Q			V
18+40	1.4433	0.23	Q			V
18+45	1.4448	0.22	Q			V
18+50	1.4461	0.18	Q			V
18+55	1.4471	0.15	Q			V
19+ 0	1.4481	0.15	Q			V
19+ 5	1.4494	0.19	Q			V
19+10	1.4509	0.22	Q			V
19+15	1.4524	0.22	Q			V
19+20	1.4542	0.26	Q			V
19+25	1.4562	0.29	Q			V
19+30	1.4583	0.30	Q			V
19+35	1.4600	0.25	Q			V
19+40	1.4616	0.23	Q			V
19+45	1.4631	0.22	Q			V
19+50	1.4644	0.18	Q			V
19+55	1.4654	0.15	Q			V
20+ 0	1.4664	0.15	Q			V
20+ 5	1.4677	0.19	Q			V
20+10	1.4692	0.22	Q			V
20+15	1.4707	0.22	Q			V
20+20	1.4723	0.22	Q			V
20+25	1.4738	0.22	Q			V
20+30	1.4753	0.22	Q			V
20+35	1.4768	0.22	Q			V
20+40	1.4784	0.22	Q			V
20+45	1.4799	0.22	Q			V
20+50	1.4811	0.18	Q			V
20+55	1.4822	0.15	Q			V
21+ 0	1.4832	0.15	Q			V
21+ 5	1.4845	0.19	Q			V
21+10	1.4860	0.22	Q			V
21+15	1.4875	0.22	Q			V
21+20	1.4888	0.18	Q			V
21+25	1.4898	0.15	Q			V
21+30	1.4908	0.15	Q			V
21+35	1.4921	0.19	Q			V
21+40	1.4936	0.22	Q			V
21+45	1.4951	0.22	Q			V
21+50	1.4964	0.18	Q			V
21+55	1.4974	0.15	Q			V
22+ 0	1.4984	0.15	Q			V
22+ 5	1.4997	0.19	Q			V
22+10	1.5012	0.22	Q			V
22+15	1.5028	0.22	Q			V
22+20	1.5040	0.18	Q			V
22+25	1.5051	0.15	Q			V
22+30	1.5061	0.15	Q			V
22+35	1.5071	0.15	Q			V
22+40	1.5081	0.15	Q			V
22+45	1.5091	0.15	Q			V
22+50	1.5101	0.15	Q			V
22+55	1.5112	0.15	Q			V
23+ 0	1.5122	0.15	Q			V
23+ 5	1.5132	0.15	Q			V
23+10	1.5142	0.15	Q			V
23+15	1.5152	0.15	Q			V
23+20	1.5162	0.15	Q			V
23+25	1.5173	0.15	Q			V

23+30	1.5183	0.15	Q	|	|	|	V|
23+35	1.5193	0.15	Q	|	|	|	V|
23+40	1.5203	0.15	Q	|	|	|	V|
23+45	1.5213	0.15	Q	|	|	|	V|
23+50	1.5223	0.15	Q	|	|	|	V|
23+55	1.5234	0.15	Q	|	|	|	V|
24+ 0	1.5244	0.15	Q	|	|	|	V|
24+ 5	1.5248	0.07	Q	|	|	|	V|
24+10	1.5249	0.01	Q	|	|	|	V

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

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Study date 07/18/22 File: 3958N1001100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR HYDROGRAPH
NORTH TRUCK YARD
1-HOUR

Drainage Area = 12.94(Ac.) = 0.020 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 12.94(Ac.) = 0.020 Sq. Mi.
Length along longest watercourse = 690.00(Ft.)
Length along longest watercourse measured to centroid = 320.00(Ft.)
Length along longest watercourse = 0.131 Mi.
Length along longest watercourse measured to centroid = 0.061 Mi.
Difference in elevation = 14.56(Ft.)
Slope along watercourse = 111.4157 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.023 Hr.
Lag time = 1.40 Min.
25% of lag time = 0.35 Min.
40% of lag time = 0.56 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
12.94	0.49	6.34

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
12.94	1.28	16.56

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.490(In)
Area Averaged 100-Year Rainfall = 1.280(In)

Point rain (area averaged) = 1.280(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.280(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
12.940	56.00	0.900

Total Area Entered = 12.94(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

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

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	356.384	61.823	8.062
2	0.167	712.768	34.208	4.461
3	0.250	1069.152	3.970	0.518
			Sum = 100.000	Sum= 13.041

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate (In./Hr) Max	Low	Effective (In/Hr)
1	0.08	4.20	0.645	(0.097)	0.065	0.581
2	0.17	4.30	0.660	(0.097)	0.066	0.594
3	0.25	5.00	0.768	(0.097)	0.077	0.691
4	0.33	5.00	0.768	(0.097)	0.077	0.691
5	0.42	5.80	0.891	(0.097)	0.089	0.802
6	0.50	6.50	0.998	0.097	(0.100)	0.901
7	0.58	7.40	1.137	0.097	(0.114)	1.039
8	0.67	8.60	1.321	0.097	(0.132)	1.224
9	0.75	12.30	1.889	0.097	(0.189)	1.792
10	0.83	29.10	4.469	0.097	(0.447)	4.372
11	0.92	6.80	1.044	0.097	(0.104)	0.947
12	1.00	5.00	0.768	(0.097)	0.077	0.691

(Loss Rate Not Used)

Sum = 100.0 Sum = 14.3

Flood volume = Effective rainfall 1.19(In)
times area 12.9(Ac.)/[(In)/(Ft.)] = 1.3(Ac.Ft)

Total soil loss = 0.09(In)
Total soil loss = 0.093(Ac.Ft)
Total rainfall = 1.28(In)
Flood volume = 56076.6 Cubic Feet
Total soil loss = 4040.8 Cubic Feet

Peak flow rate of this hydrograph = 43.901(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0323	4.68	V Q				
0+10	0.0831	7.39	V Q				
0+15	0.1419	8.53	V Q				
0+20	0.2036	8.97	VQ				
0+25	0.2719	9.91	QV				
0+30	0.3490	11.21	Q V				
0+35	0.4373	12.82	Q V				
0+40	0.5405	14.98	Q V				
0+45	0.6814	20.46	Q	V			
0+50	0.9837	43.90			V Q		
0+55	1.1771	28.08			Q V		
1+ 0	1.2603	12.07	Q			V	
1+ 5	1.2849	3.58	Q			V	
1+10	1.2873	0.36	Q			V	

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

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                Study date  07/18/22 File: 3958N1003100.out

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


Program License Serial Number 6400

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

 English Units used in output format



------------------------------------------------------------------------
JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR HYDROGRAPH
NORTH TRUCK YARD
 3-HOUR
------------------------------------------------------------------------
Drainage Area =      12.94(Ac.)  =      0.020 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =      12.94(Ac.)  =      0.020 Sq. Mi.
Length along longest watercourse =     690.00(Ft.)
Length along longest watercourse measured to centroid =     320.00(Ft.)
Length along longest watercourse =      0.131 Mi.
Length along longest watercourse measured to centroid =      0.061 Mi.
Difference in elevation =      14.56(Ft.)
Slope along watercourse =    111.4157 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time =     0.023 Hr.
Lag time =     1.40 Min.
25% of lag time =     0.35 Min.
40% of lag time =     0.56 Min.
Unit time =     5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
      12.94             0.81                 10.48

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
      12.94             1.98                 25.62

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    0.810(In)
Area Averaged 100-Year Rainfall =    1.980(In)

Point rain (area averaged) =    1.980(In)
Areal adjustment factor =   99.99 %
Adjusted average point rain =    1.980(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
    12.940           56.00          0.900
 Total Area Entered =     12.94(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-2     (In/Hr)     (Dec.%)     (In/Hr)       (Dec.)    (In/Hr)
56.0  56.0      0.511     0.900        0.097        1.000      0.097
                                                  Sum (F) =    0.097
Area averaged mean soil loss (F) (In/Hr) =  0.097
Minimum soil loss rate ((In/Hr)) =  0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.100
------------------------------------------------------------------------

                U n i t   H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------------
                Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        356.384         61.823              8.062
    2   0.167        712.768         34.208              4.461
    3   0.250       1069.152          3.970              0.518
                             Sum = 100.000    Sum=      13.041
------------------------------------------------------------------------

The following loss rate calculations reflect use of the minimum calculated loss
```

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.309	(0.097)	0.031	0.278
2	0.17	1.30	0.309	(0.097)	0.031	0.278
3	0.25	1.10	0.261	(0.097)	0.026	0.235
4	0.33	1.50	0.356	(0.097)	0.036	0.321
5	0.42	1.50	0.356	(0.097)	0.036	0.321
6	0.50	1.80	0.428	(0.097)	0.043	0.385
7	0.58	1.50	0.356	(0.097)	0.036	0.321
8	0.67	1.80	0.428	(0.097)	0.043	0.385
9	0.75	1.80	0.428	(0.097)	0.043	0.385
10	0.83	1.50	0.356	(0.097)	0.036	0.321
11	0.92	1.60	0.380	(0.097)	0.038	0.342
12	1.00	1.80	0.428	(0.097)	0.043	0.385
13	1.08	2.20	0.523	(0.097)	0.052	0.470
14	1.17	2.20	0.523	(0.097)	0.052	0.470
15	1.25	2.20	0.523	(0.097)	0.052	0.470
16	1.33	2.00	0.475	(0.097)	0.048	0.428
17	1.42	2.60	0.618	(0.097)	0.062	0.556
18	1.50	2.70	0.641	(0.097)	0.064	0.577
19	1.58	2.40	0.570	(0.097)	0.057	0.513
20	1.67	2.70	0.641	(0.097)	0.064	0.577
21	1.75	3.30	0.784	(0.097)	0.078	0.706
22	1.83	3.10	0.737	(0.097)	0.074	0.663
23	1.92	2.90	0.689	(0.097)	0.069	0.620
24	2.00	3.00	0.713	(0.097)	0.071	0.641
25	2.08	3.10	0.737	(0.097)	0.074	0.663
26	2.17	4.20	0.998	0.097	(0.100)	0.901
27	2.25	5.00	1.188	0.097	(0.119)	1.091
28	2.33	3.50	0.832	(0.097)	0.083	0.748
29	2.42	6.80	1.616	0.097	(0.162)	1.519
30	2.50	7.30	1.734	0.097	(0.173)	1.637
31	2.58	8.20	1.948	0.097	(0.195)	1.851
32	2.67	5.90	1.402	0.097	(0.140)	1.305
33	2.75	2.00	0.475	(0.097)	0.048	0.428
34	2.83	1.80	0.428	(0.097)	0.043	0.385
35	2.92	1.80	0.428	(0.097)	0.043	0.385
36	3.00	0.60	0.143	(0.097)	0.014	0.128

(Loss Rate Not Used)

Sum = 100.0 Sum = 21.7

Flood volume = Effective rainfall 1.81(In)
times area 12.9(Ac.)/[(In)/(Ft.)] = 1.9(Ac.Ft)
Total soil loss = 0.17(In)
Total soil loss = 0.186(Ac.Ft)
Total rainfall = 1.98(In)
Flood volume = 84898.5 Cubic Feet
Total soil loss = 8101.2 Cubic Feet

Peak flow rate of this hydrograph = 23.027(CFS)

++

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0154	2.24	V Q				
0+10	0.0394	3.48	V Q				
0+15	0.0620	3.28	V Q				
0+20	0.0881	3.78	V Q				
0+25	0.1166	4.14	V Q				
0+30	0.1490	4.70	V Q				
0+35	0.1798	4.47	V Q				
0+40	0.2124	4.74	V Q				
0+45	0.2467	4.99	VQ				
0+50	0.2778	4.50	VQ				
0+55	0.3080	4.39	QV				
1+ 0	0.3410	4.80	Q				
1+ 5	0.3802	5.69	Q				
1+10	0.4222	6.09	Q				
1+15	0.4645	6.14	QV				
1+20	0.5044	5.79	Q V				
1+25	0.5501	6.64	Q V				
1+30	0.6008	7.36	Q V				
1+35	0.6490	7.00	Q V				
1+40	0.6989	7.25	Q V				
1+45	0.7577	8.53	Q V				
1+50	0.8183	8.80	Q V				
1+55	0.8756	8.33	Q V				
2+ 0	0.9327	8.29	Q V				
2+ 5	0.9914	8.53	Q V				
2+10	1.0641	10.56	Q V				
2+15	1.1548	13.16	Q V				
2+20	1.2331	11.37	Q V				
2+25	1.3444	16.15	Q V				
2+30	1.4847	20.37	Q V				
2+35	1.6433	23.03	Q V				
2+40	1.7785	19.63	Q V				
2+45	1.8490	10.23	Q V				
2+50	1.8882	5.69	Q V				
2+55	1.9229	5.04	Q V				
3+ 0	1.9432	2.95	Q V				
3+ 5	1.9485	0.77	Q V				
3+10	1.9490	0.07	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 07/18/22 File: 3958N1006100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR HYDROGRAPH
NORTH TRUCK YARD
6-HOUR

Drainage Area = 12.94(Ac.) = 0.020 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 12.94(Ac.) = 0.020 Sq. Mi.
Length along longest watercourse = 690.00(Ft.)
Length along longest watercourse measured to centroid = 320.00(Ft.)
Length along longest watercourse = 0.131 Mi.
Length along longest watercourse measured to centroid = 0.061 Mi.
Difference in elevation = 14.56(Ft.)
Slope along watercourse = 111.4157 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.023 Hr.
Lag time = 1.40 Min.
25% of lag time = 0.35 Min.
40% of lag time = 0.56 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
12.94	1.16	15.01

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
12.94	2.75	35.59

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.160(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 2.750(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.750(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
12.940	56.00	0.900

Total Area Entered = 12.94(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	356.384	61.823	8.062
2	0.167	712.768	34.208	4.461
3	0.250	1069.152	3.970	0.518
			Sum = 100.000	Sum= 13.041

The following loss rate calculations reflect use of the minimum calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.165	(0.097)	0.016	0.148
2	0.17	0.60	0.198	(0.097)	0.020	0.178
3	0.25	0.60	0.198	(0.097)	0.020	0.178
4	0.33	0.60	0.198	(0.097)	0.020	0.178
5	0.42	0.60	0.198	(0.097)	0.020	0.178
6	0.50	0.70	0.231	(0.097)	0.023	0.208
7	0.58	0.70	0.231	(0.097)	0.023	0.208
8	0.67	0.70	0.231	(0.097)	0.023	0.208
9	0.75	0.70	0.231	(0.097)	0.023	0.208
10	0.83	0.70	0.231	(0.097)	0.023	0.208
11	0.92	0.70	0.231	(0.097)	0.023	0.208
12	1.00	0.80	0.264	(0.097)	0.026	0.238
13	1.08	0.80	0.264	(0.097)	0.026	0.238
14	1.17	0.80	0.264	(0.097)	0.026	0.238
15	1.25	0.80	0.264	(0.097)	0.026	0.238
16	1.33	0.80	0.264	(0.097)	0.026	0.238
17	1.42	0.80	0.264	(0.097)	0.026	0.238
18	1.50	0.80	0.264	(0.097)	0.026	0.238
19	1.58	0.80	0.264	(0.097)	0.026	0.238
20	1.67	0.80	0.264	(0.097)	0.026	0.238
21	1.75	0.80	0.264	(0.097)	0.026	0.238
22	1.83	0.80	0.264	(0.097)	0.026	0.238
23	1.92	0.80	0.264	(0.097)	0.026	0.238
24	2.00	0.90	0.297	(0.097)	0.030	0.267
25	2.08	0.80	0.264	(0.097)	0.026	0.238
26	2.17	0.90	0.297	(0.097)	0.030	0.267
27	2.25	0.90	0.297	(0.097)	0.030	0.267
28	2.33	0.90	0.297	(0.097)	0.030	0.267
29	2.42	0.90	0.297	(0.097)	0.030	0.267
30	2.50	0.90	0.297	(0.097)	0.030	0.267
31	2.58	0.90	0.297	(0.097)	0.030	0.267
32	2.67	0.90	0.297	(0.097)	0.030	0.267
33	2.75	1.00	0.330	(0.097)	0.033	0.297
34	2.83	1.00	0.330	(0.097)	0.033	0.297
35	2.92	1.00	0.330	(0.097)	0.033	0.297
36	3.00	1.00	0.330	(0.097)	0.033	0.297
37	3.08	1.00	0.330	(0.097)	0.033	0.297
38	3.17	1.10	0.363	(0.097)	0.036	0.327
39	3.25	1.10	0.363	(0.097)	0.036	0.327
40	3.33	1.10	0.363	(0.097)	0.036	0.327
41	3.42	1.20	0.396	(0.097)	0.040	0.356
42	3.50	1.30	0.429	(0.097)	0.043	0.386
43	3.58	1.40	0.462	(0.097)	0.046	0.416
44	3.67	1.40	0.462	(0.097)	0.046	0.416
45	3.75	1.50	0.495	(0.097)	0.049	0.445
46	3.83	1.50	0.495	(0.097)	0.049	0.445
47	3.92	1.60	0.528	(0.097)	0.053	0.475
48	4.00	1.60	0.528	(0.097)	0.053	0.475
49	4.08	1.70	0.561	(0.097)	0.056	0.505
50	4.17	1.80	0.594	(0.097)	0.059	0.535
51	4.25	1.90	0.627	(0.097)	0.063	0.564
52	4.33	2.00	0.660	(0.097)	0.066	0.594
53	4.42	2.10	0.693	(0.097)	0.069	0.624
54	4.50	2.10	0.693	(0.097)	0.069	0.624
55	4.58	2.20	0.726	(0.097)	0.073	0.653
56	4.67	2.30	0.759	(0.097)	0.076	0.683
57	4.75	2.40	0.792	(0.097)	0.079	0.713
58	4.83	2.40	0.792	(0.097)	0.079	0.713
59	4.92	2.50	0.825	(0.097)	0.082	0.742
60	5.00	2.60	0.858	(0.097)	0.086	0.772
61	5.08	3.10	1.023	0.097	(0.102)	0.926
62	5.17	3.60	1.188	0.097	(0.119)	1.091
63	5.25	3.90	1.287	0.097	(0.129)	1.190
64	5.33	4.20	1.386	0.097	(0.139)	1.289
65	5.42	4.70	1.551	0.097	(0.155)	1.454
66	5.50	5.60	1.848	0.097	(0.185)	1.751
67	5.58	1.90	0.627	(0.097)	0.063	0.564
68	5.67	0.90	0.297	(0.097)	0.030	0.267
69	5.75	0.60	0.198	(0.097)	0.020	0.178
70	5.83	0.50	0.165	(0.097)	0.016	0.148
71	5.92	0.30	0.099	(0.097)	0.010	0.089
72	6.00	0.20	0.066	(0.097)	0.007	0.059

(Loss Rate Not Used)

Sum = 100.0 Sum = 29.9

Flood volume = Effective rainfall 2.50(In)
times area 12.9(Ac.)/[(In)/(Ft.)] = 2.7(Ac.Ft)
Total soil loss = 0.25(In)
Total soil loss = 0.274(Ac.Ft)
Total rainfall = 2.75(In)
Flood volume = 117213.8 Cubic Feet
Total soil loss = 11954.0 Cubic Feet

Peak flow rate of this hydrograph = 21.280(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0082	1.20	VQ				
0+10	0.0227	2.10	V Q				

0+15	0.0386	2.31	V Q
0+20	0.0546	2.33	V Q
0+25	0.0706	2.33	V Q
0+30	0.0883	2.56	V Q
0+35	0.1069	2.70	V Q
0+40	0.1256	2.71	V Q
0+45	0.1442	2.71	VQ
0+50	0.1629	2.71	VQ
0+55	0.1816	2.71	VQ
1+ 0	0.2019	2.95	Q
1+ 5	0.2232	3.08	VQ
1+10	0.2445	3.10	VQ
1+15	0.2659	3.10	VQ
1+20	0.2872	3.10	Q
1+25	0.3086	3.10	Q
1+30	0.3299	3.10	Q
1+35	0.3513	3.10	QV
1+40	0.3726	3.10	QV
1+45	0.3940	3.10	QV
1+50	0.4153	3.10	Q V
1+55	0.4367	3.10	Q V
2+ 0	0.4597	3.34	Q V
2+ 5	0.4819	3.23	Q V
2+10	0.5051	3.35	Q V
2+15	0.5290	3.47	Q V
2+20	0.5530	3.49	Q V
2+25	0.5770	3.49	Q V
2+30	0.6010	3.49	Q V
2+35	0.6250	3.49	Q V
2+40	0.6491	3.49	Q V
2+45	0.6747	3.73	Q V
2+50	0.7013	3.86	Q V
2+55	0.7280	3.88	Q V
3+ 0	0.7547	3.88	Q V
3+ 5	0.7814	3.88	Q V
3+10	0.8097	4.11	Q V
3+15	0.8390	4.25	Q V
3+20	0.8683	4.26	Q V
3+25	0.8993	4.50	Q V
3+30	0.9329	4.87	Q V
3+35	0.9691	5.26	Q V
3+40	1.0064	5.41	Q V
3+45	1.0454	5.66	Q V
3+50	1.0853	5.80	Q V
3+55	1.1270	6.05	Q V
4+ 0	1.1696	6.18	Q V
4+ 5	1.2139	6.44	Q V
4+10	1.2609	6.81	Q V
4+15	1.3104	7.20	Q V
4+20	1.3627	7.59	Q V
4+25	1.4176	7.97	Q V
4+30	1.4736	8.12	Q V
4+35	1.5312	8.38	Q V
4+40	1.5915	8.75	Q V
4+45	1.6544	9.14	Q V
4+50	1.7184	9.28	Q V
4+55	1.7841	9.54	Q V
5+ 0	1.8523	9.91	Q V
5+ 5	1.9302	11.30	Q V
5+10	2.0220	13.33	Q V
5+15	2.1249	14.95	Q V
5+20	2.2370	16.27	Q V
5+25	2.3616	18.10	Q V
5+30	2.5082	21.28	Q V
5+35	2.5985	13.12	Q V
5+40	2.6370	5.58	Q V
5+45	2.6571	2.92	Q V
5+50	2.6718	2.13	Q V
5+55	2.6819	1.47	Q V
6+ 0	2.6885	0.95	Q V
6+ 5	2.6906	0.31	Q V
6+10	2.6909	0.03	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 07/18/22 File: 3958N10024100.out

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

Program License Serial Number 6400

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

English Units used in output format

JOB 3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
PROPOSED CONDITION 100-YEAR HYDROGRAPH
NORTH TRUCK YARD
24-HOUR

Drainage Area = 12.94(Ac.) = 0.020 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 12.94(Ac.) = 0.020 Sq. Mi.
Length along longest watercourse = 690.00(Ft.)
Length along longest watercourse measured to centroid = 320.00(Ft.)
Length along longest watercourse = 0.131 Mi.
Length along longest watercourse measured to centroid = 0.061 Mi.
Difference in elevation = 14.56(Ft.)
Slope along watercourse = 111.4157 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.023 Hr.
Lag time = 1.40 Min.
25% of lag time = 0.35 Min.
40% of lag time = 0.56 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
12.94	1.96	25.36

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
12.94	5.20	67.29

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.960(In)
Area Averaged 100-Year Rainfall = 5.200(In)

Point rain (area averaged) = 5.200(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 5.200(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
12.940	56.00	0.900

Total Area Entered = 12.94(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.900	0.097	1.000	0.097
					Sum (F) =	0.097

Area averaged mean soil loss (F) (In/Hr) = 0.097
Minimum soil loss rate ((In/Hr)) = 0.049
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.100

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

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	356.384	61.823	8.062
2	0.167	712.768	34.208	4.461
3	0.250	1069.152	3.970	0.518
			Sum = 100.000	Sum= 13.041

The following loss rate calculations reflect use of the minimum calculated loss

rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.042	(0.172)	0.004	0.037
2	0.17	0.07	0.042	(0.171)	0.004	0.037
3	0.25	0.07	0.042	(0.171)	0.004	0.037
4	0.33	0.10	0.062	(0.170)	0.006	0.056
5	0.42	0.10	0.062	(0.169)	0.006	0.056
6	0.50	0.10	0.062	(0.169)	0.006	0.056
7	0.58	0.10	0.062	(0.168)	0.006	0.056
8	0.67	0.10	0.062	(0.167)	0.006	0.056
9	0.75	0.10	0.062	(0.167)	0.006	0.056
10	0.83	0.13	0.083	(0.166)	0.008	0.075
11	0.92	0.13	0.083	(0.165)	0.008	0.075
12	1.00	0.13	0.083	(0.165)	0.008	0.075
13	1.08	0.10	0.062	(0.164)	0.006	0.056
14	1.17	0.10	0.062	(0.163)	0.006	0.056
15	1.25	0.10	0.062	(0.163)	0.006	0.056
16	1.33	0.10	0.062	(0.162)	0.006	0.056
17	1.42	0.10	0.062	(0.162)	0.006	0.056
18	1.50	0.10	0.062	(0.161)	0.006	0.056
19	1.58	0.10	0.062	(0.160)	0.006	0.056
20	1.67	0.10	0.062	(0.160)	0.006	0.056
21	1.75	0.10	0.062	(0.159)	0.006	0.056
22	1.83	0.13	0.083	(0.158)	0.008	0.075
23	1.92	0.13	0.083	(0.158)	0.008	0.075
24	2.00	0.13	0.083	(0.157)	0.008	0.075
25	2.08	0.13	0.083	(0.156)	0.008	0.075
26	2.17	0.13	0.083	(0.156)	0.008	0.075
27	2.25	0.13	0.083	(0.155)	0.008	0.075
28	2.33	0.13	0.083	(0.155)	0.008	0.075
29	2.42	0.13	0.083	(0.154)	0.008	0.075
30	2.50	0.13	0.083	(0.153)	0.008	0.075
31	2.58	0.17	0.104	(0.153)	0.010	0.094
32	2.67	0.17	0.104	(0.152)	0.010	0.094
33	2.75	0.17	0.104	(0.151)	0.010	0.094
34	2.83	0.17	0.104	(0.151)	0.010	0.094
35	2.92	0.17	0.104	(0.150)	0.010	0.094
36	3.00	0.17	0.104	(0.150)	0.010	0.094
37	3.08	0.17	0.104	(0.149)	0.010	0.094
38	3.17	0.17	0.104	(0.148)	0.010	0.094
39	3.25	0.17	0.104	(0.148)	0.010	0.094
40	3.33	0.17	0.104	(0.147)	0.010	0.094
41	3.42	0.17	0.104	(0.146)	0.010	0.094
42	3.50	0.17	0.104	(0.146)	0.010	0.094
43	3.58	0.17	0.104	(0.145)	0.010	0.094
44	3.67	0.17	0.104	(0.145)	0.010	0.094
45	3.75	0.17	0.104	(0.144)	0.010	0.094
46	3.83	0.20	0.125	(0.143)	0.012	0.112
47	3.92	0.20	0.125	(0.143)	0.012	0.112
48	4.00	0.20	0.125	(0.142)	0.012	0.112
49	4.08	0.20	0.125	(0.142)	0.012	0.112
50	4.17	0.20	0.125	(0.141)	0.012	0.112
51	4.25	0.20	0.125	(0.140)	0.012	0.112
52	4.33	0.23	0.146	(0.140)	0.015	0.131
53	4.42	0.23	0.146	(0.139)	0.015	0.131
54	4.50	0.23	0.146	(0.139)	0.015	0.131
55	4.58	0.23	0.146	(0.138)	0.015	0.131
56	4.67	0.23	0.146	(0.137)	0.015	0.131
57	4.75	0.23	0.146	(0.137)	0.015	0.131
58	4.83	0.27	0.166	(0.136)	0.017	0.150
59	4.92	0.27	0.166	(0.136)	0.017	0.150
60	5.00	0.27	0.166	(0.135)	0.017	0.150
61	5.08	0.20	0.125	(0.134)	0.012	0.112
62	5.17	0.20	0.125	(0.134)	0.012	0.112
63	5.25	0.20	0.125	(0.133)	0.012	0.112
64	5.33	0.23	0.146	(0.133)	0.015	0.131
65	5.42	0.23	0.146	(0.132)	0.015	0.131
66	5.50	0.23	0.146	(0.132)	0.015	0.131
67	5.58	0.27	0.166	(0.131)	0.017	0.150
68	5.67	0.27	0.166	(0.130)	0.017	0.150
69	5.75	0.27	0.166	(0.130)	0.017	0.150
70	5.83	0.27	0.166	(0.129)	0.017	0.150
71	5.92	0.27	0.166	(0.129)	0.017	0.150
72	6.00	0.27	0.166	(0.128)	0.017	0.150
73	6.08	0.30	0.187	(0.128)	0.019	0.168
74	6.17	0.30	0.187	(0.127)	0.019	0.168
75	6.25	0.30	0.187	(0.126)	0.019	0.168
76	6.33	0.30	0.187	(0.126)	0.019	0.168
77	6.42	0.30	0.187	(0.125)	0.019	0.168
78	6.50	0.30	0.187	(0.125)	0.019	0.168
79	6.58	0.33	0.208	(0.124)	0.021	0.187
80	6.67	0.33	0.208	(0.124)	0.021	0.187
81	6.75	0.33	0.208	(0.123)	0.021	0.187
82	6.83	0.33	0.208	(0.122)	0.021	0.187
83	6.92	0.33	0.208	(0.122)	0.021	0.187
84	7.00	0.33	0.208	(0.121)	0.021	0.187
85	7.08	0.33	0.208	(0.121)	0.021	0.187
86	7.17	0.33	0.208	(0.120)	0.021	0.187
87	7.25	0.33	0.208	(0.120)	0.021	0.187
88	7.33	0.37	0.229	(0.119)	0.023	0.206
89	7.42	0.37	0.229	(0.119)	0.023	0.206
90	7.50	0.37	0.229	(0.118)	0.023	0.206
91	7.58	0.40	0.250	(0.118)	0.025	0.225
92	7.67	0.40	0.250	(0.117)	0.025	0.225
93	7.75	0.40	0.250	(0.116)	0.025	0.225
94	7.83	0.43	0.270	(0.116)	0.027	0.243
95	7.92	0.43	0.270	(0.115)	0.027	0.243

96	8.00	0.43	0.270	(0.115)	0.027	0.243
97	8.08	0.50	0.312	(0.114)	0.031	0.281
98	8.17	0.50	0.312	(0.114)	0.031	0.281
99	8.25	0.50	0.312	(0.113)	0.031	0.281
100	8.33	0.50	0.312	(0.113)	0.031	0.281
101	8.42	0.50	0.312	(0.112)	0.031	0.281
102	8.50	0.50	0.312	(0.112)	0.031	0.281
103	8.58	0.53	0.333	(0.111)	0.033	0.300
104	8.67	0.53	0.333	(0.111)	0.033	0.300
105	8.75	0.53	0.333	(0.110)	0.033	0.300
106	8.83	0.57	0.354	(0.110)	0.035	0.318
107	8.92	0.57	0.354	(0.109)	0.035	0.318
108	9.00	0.57	0.354	(0.109)	0.035	0.318
109	9.08	0.63	0.395	(0.108)	0.040	0.356
110	9.17	0.63	0.395	(0.108)	0.040	0.356
111	9.25	0.63	0.395	(0.107)	0.040	0.356
112	9.33	0.67	0.416	(0.107)	0.042	0.374
113	9.42	0.67	0.416	(0.106)	0.042	0.374
114	9.50	0.67	0.416	(0.105)	0.042	0.374
115	9.58	0.70	0.437	(0.105)	0.044	0.393
116	9.67	0.70	0.437	(0.104)	0.044	0.393
117	9.75	0.70	0.437	(0.104)	0.044	0.393
118	9.83	0.73	0.458	(0.103)	0.046	0.412
119	9.92	0.73	0.458	(0.103)	0.046	0.412
120	10.00	0.73	0.458	(0.102)	0.046	0.412
121	10.08	0.50	0.312	(0.102)	0.031	0.281
122	10.17	0.50	0.312	(0.101)	0.031	0.281
123	10.25	0.50	0.312	(0.101)	0.031	0.281
124	10.33	0.50	0.312	(0.101)	0.031	0.281
125	10.42	0.50	0.312	(0.100)	0.031	0.281
126	10.50	0.50	0.312	(0.100)	0.031	0.281
127	10.58	0.67	0.416	(0.099)	0.042	0.374
128	10.67	0.67	0.416	(0.099)	0.042	0.374
129	10.75	0.67	0.416	(0.098)	0.042	0.374
130	10.83	0.67	0.416	(0.098)	0.042	0.374
131	10.92	0.67	0.416	(0.097)	0.042	0.374
132	11.00	0.67	0.416	(0.097)	0.042	0.374
133	11.08	0.63	0.395	(0.096)	0.040	0.356
134	11.17	0.63	0.395	(0.096)	0.040	0.356
135	11.25	0.63	0.395	(0.095)	0.040	0.356
136	11.33	0.63	0.395	(0.095)	0.040	0.356
137	11.42	0.63	0.395	(0.094)	0.040	0.356
138	11.50	0.63	0.395	(0.094)	0.040	0.356
139	11.58	0.57	0.354	(0.093)	0.035	0.318
140	11.67	0.57	0.354	(0.093)	0.035	0.318
141	11.75	0.57	0.354	(0.092)	0.035	0.318
142	11.83	0.60	0.374	(0.092)	0.037	0.337
143	11.92	0.60	0.374	(0.092)	0.037	0.337
144	12.00	0.60	0.374	(0.091)	0.037	0.337
145	12.08	0.83	0.520	(0.091)	0.052	0.468
146	12.17	0.83	0.520	(0.090)	0.052	0.468
147	12.25	0.83	0.520	(0.090)	0.052	0.468
148	12.33	0.87	0.541	(0.089)	0.054	0.487
149	12.42	0.87	0.541	(0.089)	0.054	0.487
150	12.50	0.87	0.541	(0.088)	0.054	0.487
151	12.58	0.93	0.582	(0.088)	0.058	0.524
152	12.67	0.93	0.582	(0.087)	0.058	0.524
153	12.75	0.93	0.582	(0.087)	0.058	0.524
154	12.83	0.97	0.603	(0.087)	0.060	0.543
155	12.92	0.97	0.603	(0.086)	0.060	0.543
156	13.00	0.97	0.603	(0.086)	0.060	0.543
157	13.08	1.13	0.707	(0.085)	0.071	0.636
158	13.17	1.13	0.707	(0.085)	0.071	0.636
159	13.25	1.13	0.707	(0.084)	0.071	0.636
160	13.33	1.13	0.707	(0.084)	0.071	0.636
161	13.42	1.13	0.707	(0.084)	0.071	0.636
162	13.50	1.13	0.707	(0.083)	0.071	0.636
163	13.58	0.77	0.478	(0.083)	0.048	0.431
164	13.67	0.77	0.478	(0.082)	0.048	0.431
165	13.75	0.77	0.478	(0.082)	0.048	0.431
166	13.83	0.77	0.478	(0.081)	0.048	0.431
167	13.92	0.77	0.478	(0.081)	0.048	0.431
168	14.00	0.77	0.478	(0.081)	0.048	0.431
169	14.08	0.90	0.562	(0.080)	0.056	0.505
170	14.17	0.90	0.562	(0.080)	0.056	0.505
171	14.25	0.90	0.562	(0.079)	0.056	0.505
172	14.33	0.87	0.541	(0.079)	0.054	0.487
173	14.42	0.87	0.541	(0.079)	0.054	0.487
174	14.50	0.87	0.541	(0.078)	0.054	0.487
175	14.58	0.87	0.541	(0.078)	0.054	0.487
176	14.67	0.87	0.541	(0.077)	0.054	0.487
177	14.75	0.87	0.541	(0.077)	0.054	0.487
178	14.83	0.83	0.520	(0.077)	0.052	0.468
179	14.92	0.83	0.520	(0.076)	0.052	0.468
180	15.00	0.83	0.520	(0.076)	0.052	0.468
181	15.08	0.80	0.499	(0.075)	0.050	0.449
182	15.17	0.80	0.499	(0.075)	0.050	0.449
183	15.25	0.80	0.499	(0.075)	0.050	0.449
184	15.33	0.77	0.478	(0.074)	0.048	0.431
185	15.42	0.77	0.478	(0.074)	0.048	0.431
186	15.50	0.77	0.478	(0.073)	0.048	0.431
187	15.58	0.63	0.395	(0.073)	0.040	0.356
188	15.67	0.63	0.395	(0.073)	0.040	0.356
189	15.75	0.63	0.395	(0.072)	0.040	0.356
190	15.83	0.63	0.395	(0.072)	0.040	0.356
191	15.92	0.63	0.395	(0.072)	0.040	0.356
192	16.00	0.63	0.395	(0.071)	0.040	0.356
193	16.08	0.13	0.083	(0.071)	0.008	0.075
194	16.17	0.13	0.083	(0.071)	0.008	0.075

195	16.25	0.13	0.083	(0.070)	0.008	0.075
196	16.33	0.13	0.083	(0.070)	0.008	0.075
197	16.42	0.13	0.083	(0.069)	0.008	0.075
198	16.50	0.13	0.083	(0.069)	0.008	0.075
199	16.58	0.10	0.062	(0.069)	0.006	0.056
200	16.67	0.10	0.062	(0.068)	0.006	0.056
201	16.75	0.10	0.062	(0.068)	0.006	0.056
202	16.83	0.10	0.062	(0.068)	0.006	0.056
203	16.92	0.10	0.062	(0.067)	0.006	0.056
204	17.00	0.10	0.062	(0.067)	0.006	0.056
205	17.08	0.17	0.104	(0.067)	0.010	0.094
206	17.17	0.17	0.104	(0.066)	0.010	0.094
207	17.25	0.17	0.104	(0.066)	0.010	0.094
208	17.33	0.17	0.104	(0.066)	0.010	0.094
209	17.42	0.17	0.104	(0.065)	0.010	0.094
210	17.50	0.17	0.104	(0.065)	0.010	0.094
211	17.58	0.17	0.104	(0.065)	0.010	0.094
212	17.67	0.17	0.104	(0.064)	0.010	0.094
213	17.75	0.17	0.104	(0.064)	0.010	0.094
214	17.83	0.13	0.083	(0.064)	0.008	0.075
215	17.92	0.13	0.083	(0.063)	0.008	0.075
216	18.00	0.13	0.083	(0.063)	0.008	0.075
217	18.08	0.13	0.083	(0.063)	0.008	0.075
218	18.17	0.13	0.083	(0.063)	0.008	0.075
219	18.25	0.13	0.083	(0.062)	0.008	0.075
220	18.33	0.13	0.083	(0.062)	0.008	0.075
221	18.42	0.13	0.083	(0.062)	0.008	0.075
222	18.50	0.13	0.083	(0.061)	0.008	0.075
223	18.58	0.10	0.062	(0.061)	0.006	0.056
224	18.67	0.10	0.062	(0.061)	0.006	0.056
225	18.75	0.10	0.062	(0.060)	0.006	0.056
226	18.83	0.07	0.042	(0.060)	0.004	0.037
227	18.92	0.07	0.042	(0.060)	0.004	0.037
228	19.00	0.07	0.042	(0.060)	0.004	0.037
229	19.08	0.10	0.062	(0.059)	0.006	0.056
230	19.17	0.10	0.062	(0.059)	0.006	0.056
231	19.25	0.10	0.062	(0.059)	0.006	0.056
232	19.33	0.13	0.083	(0.058)	0.008	0.075
233	19.42	0.13	0.083	(0.058)	0.008	0.075
234	19.50	0.13	0.083	(0.058)	0.008	0.075
235	19.58	0.10	0.062	(0.058)	0.006	0.056
236	19.67	0.10	0.062	(0.057)	0.006	0.056
237	19.75	0.10	0.062	(0.057)	0.006	0.056
238	19.83	0.07	0.042	(0.057)	0.004	0.037
239	19.92	0.07	0.042	(0.057)	0.004	0.037
240	20.00	0.07	0.042	(0.056)	0.004	0.037
241	20.08	0.10	0.062	(0.056)	0.006	0.056
242	20.17	0.10	0.062	(0.056)	0.006	0.056
243	20.25	0.10	0.062	(0.056)	0.006	0.056
244	20.33	0.10	0.062	(0.055)	0.006	0.056
245	20.42	0.10	0.062	(0.055)	0.006	0.056
246	20.50	0.10	0.062	(0.055)	0.006	0.056
247	20.58	0.10	0.062	(0.055)	0.006	0.056
248	20.67	0.10	0.062	(0.054)	0.006	0.056
249	20.75	0.10	0.062	(0.054)	0.006	0.056
250	20.83	0.07	0.042	(0.054)	0.004	0.037
251	20.92	0.07	0.042	(0.054)	0.004	0.037
252	21.00	0.07	0.042	(0.054)	0.004	0.037
253	21.08	0.10	0.062	(0.053)	0.006	0.056
254	21.17	0.10	0.062	(0.053)	0.006	0.056
255	21.25	0.10	0.062	(0.053)	0.006	0.056
256	21.33	0.07	0.042	(0.053)	0.004	0.037
257	21.42	0.07	0.042	(0.053)	0.004	0.037
258	21.50	0.07	0.042	(0.052)	0.004	0.037
259	21.58	0.10	0.062	(0.052)	0.006	0.056
260	21.67	0.10	0.062	(0.052)	0.006	0.056
261	21.75	0.10	0.062	(0.052)	0.006	0.056
262	21.83	0.07	0.042	(0.052)	0.004	0.037
263	21.92	0.07	0.042	(0.051)	0.004	0.037
264	22.00	0.07	0.042	(0.051)	0.004	0.037
265	22.08	0.10	0.062	(0.051)	0.006	0.056
266	22.17	0.10	0.062	(0.051)	0.006	0.056
267	22.25	0.10	0.062	(0.051)	0.006	0.056
268	22.33	0.07	0.042	(0.051)	0.004	0.037
269	22.42	0.07	0.042	(0.050)	0.004	0.037
270	22.50	0.07	0.042	(0.050)	0.004	0.037
271	22.58	0.07	0.042	(0.050)	0.004	0.037
272	22.67	0.07	0.042	(0.050)	0.004	0.037
273	22.75	0.07	0.042	(0.050)	0.004	0.037
274	22.83	0.07	0.042	(0.050)	0.004	0.037
275	22.92	0.07	0.042	(0.050)	0.004	0.037
276	23.00	0.07	0.042	(0.049)	0.004	0.037
277	23.08	0.07	0.042	(0.049)	0.004	0.037
278	23.17	0.07	0.042	(0.049)	0.004	0.037
279	23.25	0.07	0.042	(0.049)	0.004	0.037
280	23.33	0.07	0.042	(0.049)	0.004	0.037
281	23.42	0.07	0.042	(0.049)	0.004	0.037
282	23.50	0.07	0.042	(0.049)	0.004	0.037
283	23.58	0.07	0.042	(0.049)	0.004	0.037
284	23.67	0.07	0.042	(0.049)	0.004	0.037
285	23.75	0.07	0.042	(0.049)	0.004	0.037
286	23.83	0.07	0.042	(0.049)	0.004	0.037
287	23.92	0.07	0.042	(0.049)	0.004	0.037
288	24.00	0.07	0.042	(0.049)	0.004	0.037

(Loss Rate Not Used)

Sum = 100.0 Sum = 56.2

Flood volume = Effective rainfall 4.68(In)
times area 12.9(Ac.)/[(In)/(Ft.)] = 5.0(Ac.Ft)
Total soil loss = 0.52(In)

Total soil loss = 0.561(Ac.Ft)
Total rainfall = 5.20(In)
Flood volume = 219824.3 Cubic Feet
Total soil loss = 24424.9 Cubic Feet

Peak flow rate of this hydrograph = 8.304(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0021	0.30	VQ				
0+10	0.0053	0.47	VQ				
0+15	0.0087	0.49	VQ				
0+20	0.0131	0.64	V Q				
0+25	0.0181	0.72	V Q				
0+30	0.0231	0.73	V Q				
0+35	0.0282	0.73	V Q				
0+40	0.0332	0.73	V Q				
0+45	0.0382	0.73	V Q				
0+50	0.0443	0.88	V Q				
0+55	0.0510	0.97	V Q				
1+ 0	0.0577	0.98	V Q				
1+ 5	0.0634	0.83	V Q				
1+10	0.0685	0.74	V Q				
1+15	0.0736	0.73	V Q				
1+20	0.0786	0.73	V Q				
1+25	0.0837	0.73	V Q				
1+30	0.0887	0.73	V Q				
1+35	0.0938	0.73	V Q				
1+40	0.0988	0.73	V Q				
1+45	0.1038	0.73	V Q				
1+50	0.1099	0.88	V Q				
1+55	0.1166	0.97	V Q				
2+ 0	0.1233	0.98	V Q				
2+ 5	0.1301	0.98	V Q				
2+10	0.1368	0.98	V Q				
2+15	0.1435	0.98	V Q				
2+20	0.1502	0.98	V Q				
2+25	0.1570	0.98	V Q				
2+30	0.1637	0.98	V Q				
2+35	0.1715	1.13	V Q				
2+40	0.1798	1.21	V Q				
2+45	0.1882	1.22	V Q				
2+50	0.1966	1.22	V Q				
2+55	0.2050	1.22	V Q				
3+ 0	0.2135	1.22	V Q				
3+ 5	0.2219	1.22	V Q				
3+10	0.2303	1.22	V Q				
3+15	0.2387	1.22	V Q				
3+20	0.2471	1.22	V Q				
3+25	0.2555	1.22	V Q				
3+30	0.2639	1.22	V Q				
3+35	0.2723	1.22	V Q				
3+40	0.2807	1.22	V Q				
3+45	0.2892	1.22	V Q				
3+50	0.2986	1.37	V Q				
3+55	0.3086	1.46	V Q				
4+ 0	0.3187	1.47	V Q				
4+ 5	0.3288	1.47	V Q				
4+10	0.3389	1.47	V Q				
4+15	0.3490	1.47	V Q				
4+20	0.3601	1.62	V Q				
4+25	0.3718	1.70	V Q				
4+30	0.3836	1.71	V Q				
4+35	0.3954	1.71	V Q				
4+40	0.4072	1.71	V Q				
4+45	0.4189	1.71	V Q				
4+50	0.4318	1.86	V Q				
4+55	0.4451	1.94	V Q				
5+ 0	0.4586	1.95	V Q				
5+ 5	0.4700	1.65	V Q				
5+10	0.4802	1.48	V Q				
5+15	0.4903	1.47	V Q				
5+20	0.5014	1.62	V Q				
5+25	0.5131	1.70	V Q				
5+30	0.5249	1.71	V Q				
5+35	0.5377	1.86	V Q				
5+40	0.5511	1.94	V Q				
5+45	0.5646	1.95	V Q				
5+50	0.5780	1.95	V Q				
5+55	0.5915	1.95	V Q				
6+ 0	0.6050	1.95	V Q				
6+ 5	0.6194	2.10	V Q				
6+10	0.6345	2.19	V Q				
6+15	0.6497	2.20	V Q				
6+20	0.6648	2.20	V Q				
6+25	0.6799	2.20	V Q				
6+30	0.6951	2.20	V Q				
6+35	0.7113	2.35	V Q				
6+40	0.7280	2.43	V Q				
6+45	0.7448	2.44	V Q				
6+50	0.7617	2.44	V Q				
6+55	0.7785	2.44	V Q				

7+ 0	0.7953	2.44	V Q
7+ 5	0.8121	2.44	V Q
7+10	0.8289	2.44	V Q
7+15	0.8458	2.44	V Q
7+20	0.8636	2.59	V Q
7+25	0.8821	2.68	V Q
7+30	0.9006	2.69	V Q
7+35	0.9201	2.84	V Q
7+40	0.9402	2.92	V Q
7+45	0.9604	2.93	V Q
7+50	0.9816	3.08	V Q
7+55	1.0034	3.17	V Q
8+ 0	1.0253	3.18	V Q
8+ 5	1.0493	3.48	V Q
8+10	1.0744	3.64	V Q
8+15	1.0996	3.66	V Q
8+20	1.1248	3.66	V Q
8+25	1.1501	3.66	V Q
8+30	1.1753	3.66	V Q
8+35	1.2016	3.81	V Q
8+40	1.2284	3.90	V Q
8+45	1.2553	3.91	V Q
8+50	1.2833	4.06	V Q
8+55	1.3118	4.14	V Q
9+ 0	1.3404	4.15	V Q
9+ 5	1.3711	4.45	V Q
9+10	1.4029	4.62	V Q
9+15	1.4349	4.64	V Q
9+20	1.4679	4.79	V Q
9+25	1.5014	4.88	V Q
9+30	1.5351	4.88	V Q
9+35	1.5698	5.04	V Q
9+40	1.6050	5.12	V Q
9+45	1.6404	5.13	V Q
9+50	1.6767	5.28	V Q
9+55	1.7137	5.36	V Q
10+ 0	1.7507	5.37	V Q
10+ 5	1.7804	4.32	V Q
10+10	1.8061	3.73	Q
10+15	1.8313	3.66	Q
10+20	1.8566	3.66	Q
10+25	1.8818	3.66	Q
10+30	1.9070	3.66	QV
10+35	1.9375	4.42	V Q
10+40	1.9708	4.84	V Q
10+45	2.0044	4.88	V Q
10+50	2.0381	4.88	V Q
10+55	2.0717	4.88	V Q
11+ 0	2.1053	4.88	V Q
11+ 5	2.1379	4.73	V Q
11+10	2.1700	4.65	VQ
11+15	2.2019	4.64	VQ
11+20	2.2339	4.64	VQ
11+25	2.2659	4.64	VQ
11+30	2.2978	4.64	Q
11+35	2.3277	4.34	QV
11+40	2.3564	4.17	Q V
11+45	2.3850	4.15	Q V
11+50	2.4147	4.30	Q V
11+55	2.4449	4.39	Q V
12+ 0	2.4751	4.40	Q V
12+ 5	2.5127	5.45	V Q
12+10	2.5543	6.04	V Q
12+15	2.5963	6.11	V Q
12+20	2.6394	6.26	V Q
12+25	2.6831	6.34	V Q
12+30	2.7268	6.35	V Q
12+35	2.7727	6.65	V Q
12+40	2.8196	6.82	V Q
12+45	2.8667	6.84	V Q
12+50	2.9149	6.99	V Q
12+55	2.9636	7.07	V Q
13+ 0	3.0124	7.08	V Q
13+ 5	3.0664	7.84	V Q
13+10	3.1232	8.26	V Q
13+15	3.1804	8.30	V Q
13+20	3.2376	8.30	V Q
13+25	3.2948	8.30	V Q
13+30	3.3520	8.30	V Q
13+35	3.3977	6.64	Q
13+40	3.4372	5.72	Q V
13+45	3.4759	5.62	Q V
13+50	3.5145	5.62	Q V
13+55	3.5532	5.62	Q V
14+ 0	3.5919	5.62	Q V
14+ 5	3.6348	6.22	Q V
14+10	3.6799	6.56	Q V
14+15	3.7253	6.59	Q V
14+20	3.7697	6.44	Q V
14+25	3.8135	6.36	Q V
14+30	3.8573	6.35	Q V
14+35	3.9010	6.35	Q V
14+40	3.9447	6.35	Q V
14+45	3.9885	6.35	Q V
14+50	4.0312	6.20	Q V
14+55	4.0733	6.12	Q V
15+ 0	4.1153	6.11	Q V
15+ 5	4.1564	5.96	Q V
15+10	4.1968	5.87	Q V

15+15	4.2372	5.86
15+20	4.2765	5.71
15+25	4.3152	5.63
15+30	4.3539	5.62
15+35	4.3885	5.01
15+40	4.4207	4.68
15+45	4.4527	4.64
15+50	4.4846	4.64
15+55	4.5166	4.64
16+ 0	4.5485	4.64
16+ 5	4.5649	2.38
16+10	4.5726	1.12
16+15	4.5794	0.98
16+20	4.5861	0.98
16+25	4.5928	0.98
16+30	4.5995	0.98
16+35	4.6052	0.83
16+40	4.6103	0.74
16+45	4.6154	0.73
16+50	4.6204	0.73
16+55	4.6255	0.73
17+ 0	4.6305	0.73
17+ 5	4.6377	1.03
17+10	4.6459	1.20
17+15	4.6543	1.22
17+20	4.6628	1.22
17+25	4.6712	1.22
17+30	4.6796	1.22
17+35	4.6880	1.22
17+40	4.6964	1.22
17+45	4.7048	1.22
17+50	4.7122	1.07
17+55	4.7190	0.99
18+ 0	4.7257	0.98
18+ 5	4.7324	0.98
18+10	4.7392	0.98
18+15	4.7459	0.98
18+20	4.7526	0.98
18+25	4.7594	0.98
18+30	4.7661	0.98
18+35	4.7718	0.83
18+40	4.7769	0.74
18+45	4.7819	0.73
18+50	4.7859	0.58
18+55	4.7894	0.50
19+ 0	4.7927	0.49
19+ 5	4.7971	0.64
19+10	4.8021	0.72
19+15	4.8072	0.73
19+20	4.8132	0.88
19+25	4.8199	0.97
19+30	4.8266	0.98
19+35	4.8323	0.83
19+40	4.8374	0.74
19+45	4.8425	0.73
19+50	4.8465	0.58
19+55	4.8499	0.50
20+ 0	4.8533	0.49
20+ 5	4.8577	0.64
20+10	4.8627	0.72
20+15	4.8677	0.73
20+20	4.8728	0.73
20+25	4.8778	0.73
20+30	4.8829	0.73
20+35	4.8879	0.73
20+40	4.8930	0.73
20+45	4.8980	0.73
20+50	4.9020	0.58
20+55	4.9054	0.50
21+ 0	4.9088	0.49
21+ 5	4.9132	0.64
21+10	4.9182	0.72
21+15	4.9232	0.73
21+20	4.9272	0.58
21+25	4.9307	0.50
21+30	4.9340	0.49
21+35	4.9384	0.64
21+40	4.9434	0.72
21+45	4.9485	0.73
21+50	4.9525	0.58
21+55	4.9559	0.50
22+ 0	4.9593	0.49
22+ 5	4.9637	0.64
22+10	4.9686	0.72
22+15	4.9737	0.73
22+20	4.9777	0.58
22+25	4.9811	0.50
22+30	4.9845	0.49
22+35	4.9879	0.49
22+40	4.9912	0.49
22+45	4.9946	0.49
22+50	4.9980	0.49
22+55	5.0013	0.49
23+ 0	5.0047	0.49
23+ 5	5.0080	0.49
23+10	5.0114	0.49
23+15	5.0148	0.49
23+20	5.0181	0.49
23+25	5.0215	0.49

23+30	5.0249	0.49	|Q	|	|	|	V|
23+35	5.0282	0.49	|Q	|	|	|	V|
23+40	5.0316	0.49	|Q	|	|	|	V|
23+45	5.0350	0.49	|Q	|	|	|	V|
23+50	5.0383	0.49	|Q	|	|	|	V|
23+55	5.0417	0.49	|Q	|	|	|	V|
24+ 0	5.0451	0.49	|Q	|	|	|	V|
24+ 5	5.0463	0.19	Q	|	|	|	V|
24+10	5.0465	0.02	Q	|	|	|	V

APPENDIX D

HYDRAULIC CALCULATIONS

DATE: 10/26/2022
TIME: 7:29

F0515P

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING PAGE 1

CARD CODE	SECT NO	CHN TYPE	NO OF PIERS	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	18	4			1.50														
CD	24	4			2.00														
CD	30	4			2.50														
CD	36	4			3.00														
CD	42	4			3.50														
CD	48	4			4.00														
CD	60	4			5.00														

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

JOB #3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.

HEADING LINE NO 2 IS -

S.D. LINE A IN RIDER ST

HEADING LINE NO 3 IS -

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	2524.64	1500.78	60	1508.00

ELEMENT NO 2 IS A TRANSITION * * *

U/S DATA	STATION	INVERT	SECT	N
	2529.30	1501.78	48	0.013

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2905.61	1508.17	48	0.013	0.00	0.00	0.00	0

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	2910.27	1508.24	48	0.013	0.00	0.00	0.00	1

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3254.92	1514.09	48	0.013	0.00	0.00	0.00	0

ELEMENT NO 6 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3259.58	1514.14	48	0.013	0.00	0.00	0.00	1

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3604.24	1517.24	48	0.013	0.00	0.00	0.00	0

ELEMENT NO 8 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	3608.90	1517.32	48	24	0	0.013	9.6	0.0	1518.24	0.00	83.00	0.00

ELEMENT NO 9 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	3966.41	1520.28	48	0.013	0.00	0.00	0.00	0

ELEMENT NO 10 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	3973.98	1520.56	42	36	0	0.013	41.3	0.0	1518.50	0.00	45.00	0.00

ELEMENT NO 11 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H

4268.76 1531.42 42 0.013 0.00 0.00 0.00 0

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 12 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4273.42	1531.59	42	0.013	0.00	0.00	0.00	1

ELEMENT NO 13 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4568.21	1536.57	42	0.013	0.00	0.00	0.00	0

ELEMENT NO 14 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	4572.87	1536.65	42	18	0	0.013	1.2	0.0	1538.57	0.00	90.00	0.00

ELEMENT NO 15 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4867.75	1541.81	42	0.013	0.00	0.00	0.00	0

ELEMENT NO 16 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4872.41	1541.89	42	0.013	0.00	0.00	0.00	1

ELEMENT NO 17 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	4907.13	1542.48	42	0.013	22.50	88.00	0.00	0

ELEMENT NO 18 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5050.40	1544.90	42	0.013	0.00	0.00	0.00	0

ELEMENT NO 19 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	5055.06	1545.40	36	24	0	0.013	17.1	0.0	1545.65	0.00	90.00	0.00

ELEMENT NO 20 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5306.71	1551.59	36	0.013	0.00	0.00	0.00	0

ELEMENT NO 21 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5311.37	1551.69	36	0.013	0.00	0.00	0.00	1

ELEMENT NO 22 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5563.02	1557.88	36	0.013	0.00	0.00	0.00	0

ELEMENT NO 23 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	5567.68	1557.98	36	18	0	0.013	5.8	0.0	1558.63	0.00	80.00	0.00

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 24 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	5841.29	1564.70	36	0.013	0.00	0.00	0.00	0

ELEMENT NO 25 IS A JUNCTION * * * * * * *

U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
	5845.95	1565.20	30	18	0	0.013	6.5	0.0	1565.45	0.00	80.00	0.00

ELEMENT NO 26 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6124.48	1573.94	30	0.013	0.00	0.00	0.00	0

ELEMENT NO 27 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6141.55	1574.48	30	0.013	22.50	45.00	0.00	0

ELEMENT NO 28 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	6177.73	1575.55	30	0.013	0.00	0.00	0.00	0

ELEMENT NO 29 IS A SYSTEM HEADWORKS * *

U/S DATA STATION INVERT SECT W S ELEV
6180.70 1575.55 30 0.00

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING
** WARNING NO. 2 ** - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC

WATER SURFACE PROFILE LISTING

JOB #3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
S.D. LINE A IN RIDER ST

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF		NORM DEPTH			ZR		
2524.64	1500.78	7.220	1508.000	131.0	6.67	0.691	1508.691	0.00	3.276	5.00	0.00	0.00	0	0.00
TRANS STR	0.21459					.005423	0.03					0.00		
2529.30	1501.78	5.448	1507.228	131.0	10.42	1.688	1508.916	0.00	3.422	4.00	0.00	0.00	0	0.00
105.77	0.01698					.008317	0.88		2.465			0.00		
2635.07	1503.58	4.536	1508.112	131.0	10.42	1.688	1509.800	0.00	3.422	4.00	0.00	0.00	0	0.00
HYDRAULIC JUMP												0.00		
2635.07	1503.58	2.465	1506.041	131.0	16.12	4.036	1510.077	0.00	3.422	4.00	0.00	0.00	0	0.00
270.54	0.01698					.016705	4.52		2.465			0.00		
2905.61	1508.17	2.494	1510.664	131.0	15.90	3.927	1514.591	0.00	3.422	4.00	0.00	0.00	0	0.00
4.66	0.01502					.016448	0.08		2.570			0.00		
2910.27	1508.24	2.491	1510.731	131.0	15.93	3.939	1514.670	0.00	3.422	4.00	0.00	0.00	0	0.00
87.80	0.01697					.016250	1.43		2.465			0.00		
2998.07	1509.73	2.514	1512.244	131.0	15.75	3.851	1516.095	0.00	3.422	4.00	0.00	0.00	0	0.00
131.68	0.01697					.015120	1.99		2.465			0.00		
3129.75	1511.96	2.620	1514.585	131.0	15.02	3.501	1518.086	0.00	3.422	4.00	0.00	0.00	0	0.00
58.01	0.01697					.013435	0.78		2.465			0.00		
3187.76	1512.95	2.733	1515.683	131.0	14.32	3.184	1518.867	0.00	3.422	4.00	0.00	0.00	0	0.00
33.62	0.01697					.011965	0.40		2.465			0.00		
3221.38	1513.52	2.854	1516.375	131.0	13.65	2.894	1519.269	0.00	3.422	4.00	0.00	0.00	0	0.00
20.87	0.01697					.010691	0.22		2.465			0.00		
3242.25	1513.87	2.986	1516.861	131.0	13.02	2.631	1519.492	0.00	3.422	4.00	0.00	0.00	0	0.00
12.67	0.01697					.009598	0.12		2.465			0.00		

WATER SURFACE PROFILE LISTING

JOB #3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
S.D. LINE A IN RIDER ST

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF		NORM DEPTH			ZR		
3254.92	1514.09	3.132	1517.222	131.0	12.41	2.391	1519.613	0.00	3.422	4.00	0.00	0.00	0	0.00
4.66	0.01073					.009045	0.04		2.913			0.00		
3259.58	1514.14	3.148	1517.288	131.0	12.35	2.368	1519.656	0.00	3.422	4.00	0.00	0.00	0	0.00

175.87	0.00899					.008997	1.58		3.148			0.00			
3435.45	1515.72	3.148	1518.870	131.0	12.35	2.368	1521.238	0.00	3.422		4.00	0.00	0.00	0	0.00
140.51	0.00899					.008742	1.23		3.148			0.00			
3575.96	1516.99	3.242	1520.228	131.0	12.01	2.238	1522.466	0.00	3.422		4.00	0.00	0.00	0	0.00
28.28	0.00899					.008124	0.23		3.148			0.00			
3604.24	1517.24	3.422	1520.662	131.0	11.44	2.034	1522.696	0.00	3.422		4.00	0.00	0.00	0	0.00
JUNCT STR	0.01717					.007451	0.03						0.00		
3608.90	1517.32	4.212	1521.532	121.4	9.66	1.449	1522.981	0.00	3.315		4.00	0.00	0.00	0	0.00
186.34	0.00828					.007095	1.32		3.048			0.00			
3795.24	1518.86	4.000	1522.863	121.4	9.66	1.449	1524.312	0.00	3.315		4.00	0.00	0.00	0	0.00
137.96	0.00828					.006648	0.92		3.048			0.00			
3933.20	1520.01	3.629	1523.634	121.4	10.13	1.594	1525.228	0.00	3.315		4.00	0.00	0.00	0	0.00
31.22	0.00828					.006467	0.20		3.048			0.00			
3964.42	1520.26	3.413	1523.676	121.4	10.63	1.754	1525.430	0.00	3.315		4.00	0.00	0.00	0	0.00
1.99	0.00828					.006726	0.01		3.048			0.00			
3966.41	1520.28	3.387	1523.667	121.4	10.70	1.778	1525.445	0.00	3.315		4.00	0.00	0.00	0	0.00
JUNCT STR	0.03699												0.00		
3973.98	1520.56	1.583	1522.143	80.1	18.95	5.573	1527.716	0.00	2.796		3.50	0.00	0.00	0	0.00
118.44	0.03684					.034622	4.10		1.571			0.00			

WATER SURFACE PROFILE LISTING

JOB #3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
S.D. LINE A IN RIDER ST

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
4092.42	1524.92	1.616	1526.540	80.1	18.45	5.284	1531.824	0.00	2.796		3.50	0.00	0.00	0	0.00
76.68	0.03684					.031359	2.40		1.571			0.00			
4169.10	1527.75	1.676	1529.424	80.1	17.59	4.804	1534.228	0.00	2.796		3.50	0.00	0.00	0	0.00
40.29	0.03684					.027592	1.11		1.571			0.00			
4209.39	1529.23	1.740	1530.973	80.1	16.77	4.368	1535.341	0.00	2.796		3.50	0.00	0.00	0	0.00
26.39	0.03684					.024296	0.64		1.571			0.00			
4235.78	1530.20	1.806	1532.011	80.1	15.99	3.969	1535.980	0.00	2.796		3.50	0.00	0.00	0	0.00
18.85	0.03684					.021408	0.40		1.571			0.00			
4254.63	1530.90	1.876	1532.775	80.1	15.25	3.609	1536.384	0.00	2.796		3.50	0.00	0.00	0	0.00
14.13	0.03684					.018886	0.27		1.571			0.00			
4268.76	1531.42	1.950	1533.370	80.1	14.53	3.280	1536.650	0.00	2.796		3.50	0.00	0.00	0	0.00
4.66	0.03648					.017294	0.08		1.575			0.00			
4273.42	1531.59	1.980	1533.570	80.1	14.27	3.162	1536.732	0.00	2.796		3.50	0.00	0.00	0	0.00
90.67	0.01689					.016878	1.53		1.980			0.00			

4364.09	1533.12	1.980	1535.102	80.1	14.27	3.162	1538.264	0.00	2.796		3.50	0.00	0.00	0	0.00
204.12	0.01689					.016553	3.38			1.980			0.00		
4568.21	1536.57	2.005	1538.575	80.1	14.06	3.067	1541.642	0.00	2.796		3.50	0.00	0.00	0	0.00
JUNCT STR	0.01717					.016856	0.08						0.00		
4572.87	1536.65	1.940	1538.590	78.9	14.41	3.226	1541.816	0.00	2.777		3.50	0.00	0.00	0	0.00
86.53	0.01750					.017483	1.51			1.940			0.00		
4659.40	1538.16	1.940	1540.104	78.9	14.41	3.226	1543.330	0.00	2.777		3.50	0.00	0.00	0	0.00
208.35	0.01750					.016629	3.46			1.940			0.00		

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH		HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF			NORM DEPTH			ZR		
4867.75	1541.81	2.003	1543.813	78.9	13.85	2.980	1546.793	0.00	2.777		3.50	0.00	0.00	0	0.00
4.66	0.01717					.015748	0.07			1.950			0.00		
4872.41	1541.89	2.006	1543.896	78.9	13.84	2.973	1546.869	0.00	2.777		3.50	0.00	0.00	0	0.00
34.72	0.01699					.015480	0.54			1.957			0.00		
4907.13	1542.48	2.026	1544.506	78.9	13.67	2.902	1547.408	0.00	2.777		3.50	0.00	0.00	0	0.00
59.08	0.01689					.014581	0.86			1.960			0.00		
4966.21	1543.48	2.085	1545.563	78.9	13.20	2.706	1548.269	0.00	2.777		3.50	0.00	0.00	0	0.00
42.76	0.01689					.013125	0.56			1.960			0.00		
5008.97	1544.20	2.170	1546.370	78.9	12.59	2.460	1548.830	0.00	2.777		3.50	0.00	0.00	0	0.00
25.22	0.01689					.011631	0.29			1.960			0.00		
5034.19	1544.63	2.261	1546.887	78.9	12.00	2.237	1549.124	0.00	2.777		3.50	0.00	0.00	0	0.00
16.21	0.01689					.010329	0.17			1.960			0.00		
5050.40	1544.90	2.358	1547.258	78.9	11.44	2.033	1549.291	0.00	2.777		3.50	0.00	0.00	0	0.00
JUNCT STR	0.10730					.017131	0.08						0.00		
5055.06	1545.40	1.660	1547.060	61.8	15.40	3.683	1550.743	0.00	2.533		3.00	0.00	0.00	0	0.00
96.30	0.02460					.024541	2.36			1.660			0.00		
5151.36	1547.77	1.660	1549.429	61.8	15.40	3.683	1553.112	0.00	2.533		3.00	0.00	0.00	0	0.00
155.35	0.02460					.024267	3.77			1.660			0.00		
5306.71	1551.59	1.672	1553.262	61.8	15.27	3.619	1556.881	0.00	2.533		3.00	0.00	0.00	0	0.00
4.66	0.02146					.024064	0.11			1.730			0.00		
5311.37	1551.69	1.669	1553.359	61.8	15.30	3.635	1556.994	0.00	2.533		3.00	0.00	0.00	0	0.00
116.94	0.02460					.023371	2.73			1.660			0.00		

STATION	INVERT	DEPTH	W.S.	Q	VEL	VEL	ENERGY	SUPER	CRITICAL	HGT/	BASE/	ZL	NO	AVBPR

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF		NORM DEPTH			ZR		
5428.31	1554.57	1.703	1556.269	61.8	14.92	3.457	1559.726	0.00	2.533	3.00	0.00	0.00	0	0.00
74.55	0.02460					.021295	1.59		1.660			0.00		
5502.86	1556.40	1.771	1558.171	61.8	14.23	3.143	1561.314	0.00	2.533	3.00	0.00	0.00	0	0.00
37.08	0.02460					.018834	0.70		1.660			0.00		
5539.94	1557.31	1.843	1559.155	61.8	13.56	2.857	1562.012	0.00	2.533	3.00	0.00	0.00	0	0.00
23.08	0.02460					.016685	0.39		1.660			0.00		
5563.02	1557.88	1.920	1559.800	61.8	12.93	2.598	1562.398	0.00	2.533	3.00	0.00	0.00	0	0.00
JUNCT STR	0.02146					.020145	0.09					0.00		
5567.68	1557.98	1.562	1559.542	56.0	15.05	3.519	1563.061	0.00	2.427	3.00	0.00	0.00	0	0.00
82.32	0.02456					.024605	2.03		1.562			0.00		
5650.00	1560.00	1.562	1561.564	56.0	15.05	3.519	1565.083	0.00	2.427	3.00	0.00	0.00	0	0.00
191.29	0.02456					.023967	4.58		1.562			0.00		
5841.29	1564.70	1.587	1566.287	56.0	14.75	3.379	1569.666	0.00	2.427	3.00	0.00	0.00	0	0.00
JUNCT STR	0.10730					.027298	0.13					0.00		
5845.95	1565.20	1.516	1566.716	49.5	15.90	3.926	1570.642	0.00	2.293	2.50	0.00	0.00	0	0.00
56.66	0.03138					.031210	1.77		1.512			0.00		
5902.61	1566.98	1.517	1568.495	49.5	15.88	3.916	1572.411	0.00	2.293	2.50	0.00	0.00	0	0.00
146.69	0.03138					.029375	4.31		1.512			0.00		
6049.30	1571.58	1.579	1573.160	49.5	15.14	3.558	1576.718	0.00	2.293	2.50	0.00	0.00	0	0.00
48.15	0.03138					.026051	1.25		1.512			0.00		
6097.45	1573.09	1.646	1574.738	49.5	14.44	3.236	1577.974	0.00	2.293	2.50	0.00	0.00	0	0.00
27.03	0.03138					.023160	0.63		1.512			0.00		

STATION	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER	AVBPR
L/ELEM	SO					SF AVE	HF		NORM DEPTH			ZR		
6124.48	1573.94	1.718	1575.658	49.5	13.76	2.941	1578.599	0.00	2.293	2.50	0.00	0.00	0	0.00
17.07	0.03163					.020667	0.35		1.510			0.00		
6141.55	1574.48	1.793	1576.273	49.5	13.14	2.680	1578.953	0.00	2.293	2.50	0.00	0.00	0	0.00
10.63	0.02957					.018790	0.20		1.542			0.00		
6152.18	1574.79	1.850	1576.644	49.5	12.71	2.507	1579.151	0.00	2.293	2.50	0.00	0.00	0	0.00
11.18	0.02957					.017150	0.19		1.542			0.00		
6163.36	1575.12	1.939	1577.064	49.5	12.11	2.279	1579.343	0.00	2.293	2.50	0.00	0.00	0	0.00
7.67	0.02957					.015470	0.12		1.542			0.00		
6171.03	1575.35	2.038	1577.390	49.5	11.55	2.072	1579.462	0.00	2.293	2.50	0.00	0.00	0	0.00

```
   4.86  0.02957                                    .014082     0.07                    1.542                0.00

6175.89  1575.50    2.151  1577.647      49.5   11.01    1.884  1579.531   0.00    2.293           2.50    0.00  0.00   0   0.00

   1.84  0.02957                                    .013062     0.02                    1.542                0.00

6177.73  1575.55    2.293  1577.843      49.5   10.50    1.711  1579.554   0.00    2.293           2.50    0.00  0.00   0   0.00

6180.70  1575.55    2.293  1577.843      49.5   10.50    1.711  1579.554   0.00    2.293           2.50    0.00  0.00   0   0.00
```

JOB #3958 CAPSTONE LOGISTICS, RIDER ST & PATTERSON AVE, RIVERSIDE CO.
S.D. LINE A IN RIDER ST

```
          .       .       .       .       .       .       .       .       .       .       .
 2524.64  .I   C H  WE                                                                    .   TX
 2553.89  . I   CH W E                                                                    .   R
 2583.14  .                                                                              .
 2612.39  .                                                                              .
 2641.63  .   I   CHW E                                                                   .   R
 2670.88  .   I  WCH  E                                                                  .   R
 2700.13  .                                                                              .
 2729.38  .                                                                              .
 2758.63  .                                                                              .
 2787.88  .                                                                              .
 2817.12  .                                                                              .
 2846.37  .                                                                              .
 2875.62  .                                                                              .
 2904.87  .                                                                              .
 2934.12  .         I  WCH  E                                                            .   R
 2963.37  .         I  WCH  E                                                            .   R
 2992.62  .                                                                              .
 3021.86  .           I  WCH  E                                                          .   R
 3051.11  .                                                                              .
 3080.36  .                                                                              .
 3109.61  .                                                                              .
 3138.86  .              I  WCH E                                                        .   R
 3168.11  .                                                                              .
 3197.36  .               I  WCH E                                                       .   R
 3226.60  .                I  WCH E                                                      .   R
 3255.85  .                I   XH E                                                     .   R
 3285.10  .                I   WX E                                                     .   R
 3314.35  .                I   WCHE                                                     .   R
 3343.60  .                                                                              .
 3372.85  .                                                                              .
 3402.09  .                                                                              .
 3431.34  .                                                                              .
 3460.59  .                  I   WCHE                                                    .   R
 3489.84  .                                                                              .
 3519.09  .                                                                              .
 3548.34  .                                                                              .
 3577.59  .                    I   XH E                                                  .   R
 3606.83  .                    I    X E                                                 .   JX
 3636.08  .                    I    CX E                                                .   R
 3665.33  .                                                                              .
 3694.58  .                                                                              .
 3723.83  .                                                                              .
 3753.08  .                                                                              .
 3782.32  .                                                                              .
 3811.57  .                      I    CXE                                               .   R
 3840.82  .                                                                              .
 3870.07  .                                                                              .
 3899.32  .                                                                              .
 3928.57  .                                                                              .
 3957.82  .                        I   CX E                                             .   R
 3987.06  .                        I   CX E                                             .   R
 4016.31  .                        I   CX E                                             .   JX
 4045.56  .                         I WCH    E                                         .   R
 4074.81  .                                                                              .
 4104.06  .                              I W CH   E                                      .   R
 4133.31  .                                                                              .
 4162.55  .                                                                              .
 4191.80  .                                 I WCH   E                                    .   R
 4221.05  .                                   I WCH  E                                   .   R
 4250.30  .                                    I WCH  E                                  .   R
```

```
    4279.55    .                                      I WCH  E                                                       .    R
    4308.80    .                                      I  WCH E                                                       .    R
    4338.05    .                                       I WCH E                                                       .    R
    4367.29    .                                         I WCH E                                                     .    R
    4396.54    .                                                                                                     .
    4425.79    .                                                                                                     .
    4455.04    .                                                                                                     .
    4484.29    .                                                                                                     .
    4513.54    .                                                                                                     .
    4542.79    .                                                                                                     .
    4572.03    .                                             I WCH E                                                 .    JX
    4601.28    .                                             I W X  E                                                .    R
    4630.53    .                                                                                                     .
    4659.78    .                                               I WCH  E                                              .    R
    4689.03    .                                                                                                     .
    4718.28    .                                                                                                     .
    4747.52    .                                                                                                     .
    4776.77    .                                                                                                     .
    4806.02    .                                                                                                     .
    4835.27    .                                                                                                     .
    4864.52    .                                                                                                     .
    4893.77    .                                                    I WCH E                                          .    R
    4923.02    .                                                    I WCH E                                          .    R
    4952.26    .                                                    I  WCH E                                         .    R
    4981.51    .                                                      I WCH E                                        .    R
    5010.76    .                                                       I WCHE                                        .    R
    5040.01    .                                                       I  WCHE                                       .    R
    5069.26    .                                                        I  XHE                                       .    JX
    5098.51    .                                                        I WCH  E                                     .    R
    5127.75    .                                                                                                     .
    5157.00    .                                                           I WCH  E                                  .    R
    5186.25    .                                                                                                     .
    5215.50    .                                                                                                     .
    5244.75    .                                                                                                     .
    5274.00    .                                                                                                     .
    5303.25    .                                                                                                     .
    5332.49    .                                                                I WCH  E                             .    R
    5361.74    .                                                                I WCH  E                             .    R
    5390.99    .                                                                                                     .
    5420.24    .                                                                                                     .
    5449.49    .                                                                    I WCH E                          .    R
    5478.74    .                                                                                                     .
    5507.98    .                                                                      I WCH E                        .    R
    5537.23    .                                                                                                     .
    5566.48    .                                                                       I  XH E                       .    R
    5595.73    .                                                                        I WCH E                      .    JX
    5624.98    .                                                                        I WCH  E                     .    R
    5654.23    .                                                                           I WX  E                   .    R
    5683.48    .                                                                                                     .
    5712.72    .                                                                                                     .
    5741.97    .                                                                                                     .
    5771.22    .                                                                                                     .
    5800.47    .                                                                                                     .
    5829.72    .                                                                                                     .
    5858.97    .                                                                                 I WX  E             .    JX
    5888.22    .                                                                                 I WX   E            .    R
    5917.46    .                                                                                    IWCH  E          .    R
    5946.71    .                                                                                                     .
    5975.96    .                                                                                                     .
    6005.21    .                                                                                                     .
    6034.46    .                                                                                                     .
    6063.71    .                                                                                         I WCH  E    .    R
    6092.95    .                                                                                                     .
    6122.20    .                                                                                           I WX  E   .    R
    6151.45    .                                                                                            I  XH E  .    R
    6180.70    .                                                                                             I WX  E .    R
                .         .         .         .         .         .         .         .         .         .         .

              1500.78   1508.66   1516.53   1524.41   1532.29   1540.17   1548.04   1555.92   1563.80   1571.68   1579.55
```

N O T E S

1. GLOSSARY
   - I = INVERT ELEVATION
   - C = CRITICAL DEPTH
   - W = WATER SURFACE ELEVATION
   - H = HEIGHT OF CHANNEL

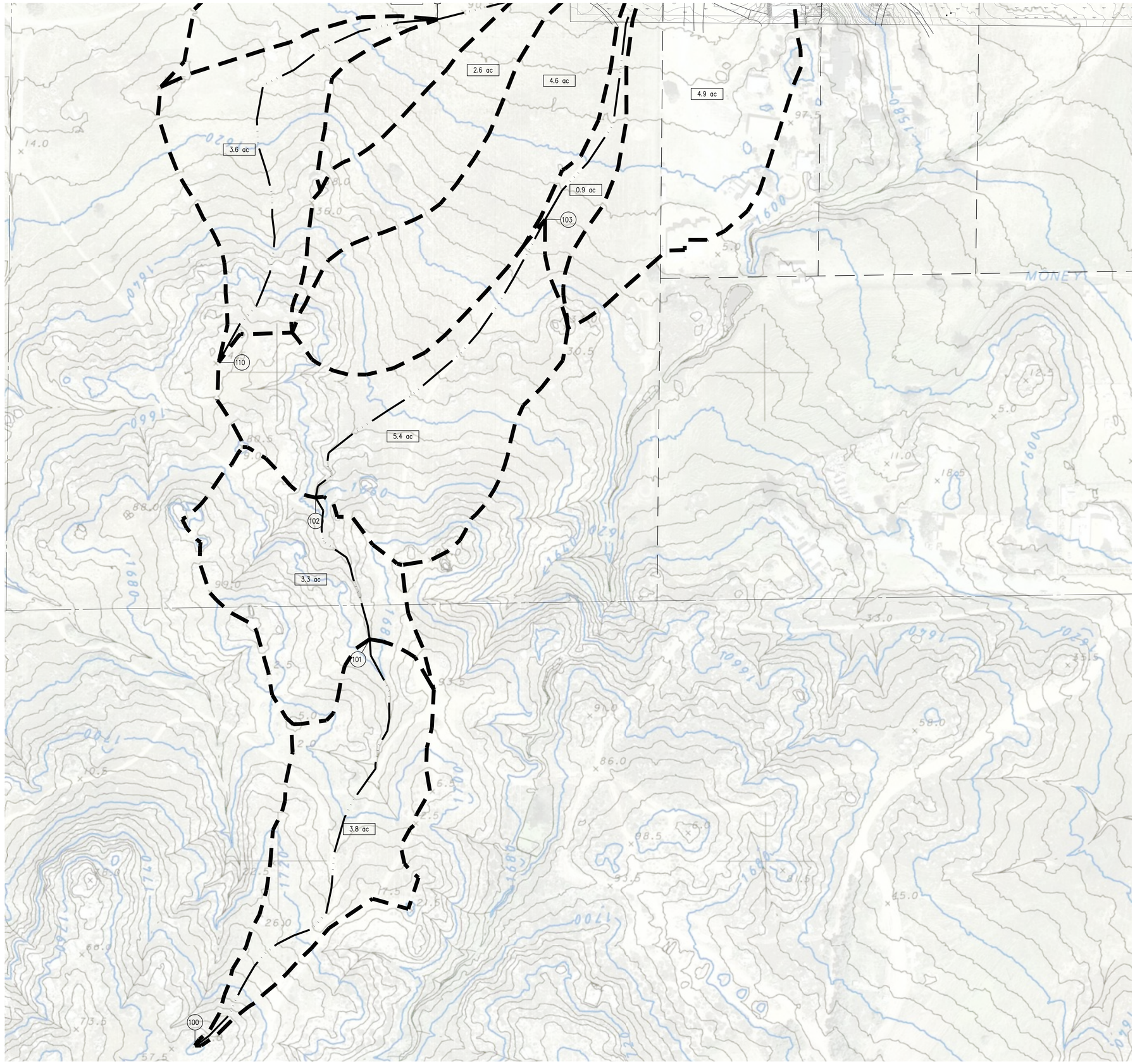
E = ENERGY GRADE LINE
X = CURVES CROSSING OVER
B = BRIDGE ENTRANCE OR EXIT
Y = WALL ENTRANCE OR EXIT

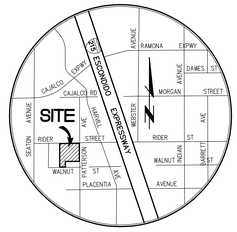
2. STATIONS FOR POINTS AT A JUMP MAY NOT BE PLOTTED EXACTLY♠

APPENDIX E

HYDROLOGY MAP

SEE SHEET 2 OF 2





VICINITY MAP
NOT TO SCALE

LEGEND

	PROJECT BOUNDARY
	SUBAREA BOUNDARY
	FLOW PATH
1.00 AC.	SUBAREA AREA
100	NODE NUMBER

0 40 80 120 160
SCALE: 1"=80'

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Last Update:12/7/21
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COUNTY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

EXISTING CONDITION HYDROLOGY MAP

FOR

RIDER AND PATTERSON BUSINESS CENTER
SWC OF RIDER ST AND PATTERSON AVE

Designed by _____ Date _____
Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____

Approved by _____ Date _____

Public Works Director _____ R.C.E. XXXXX

Sheet 1 of 2 Sheets

3958/ 1 OF 2 SHEET

RIDER STREET

VISTA DEL LAGO

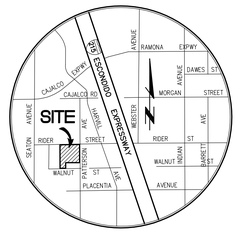
PATTERSON AVENUE

WALNUT STREET

Q100=134.10 CFS
Tc=22.8 MIN.

1.6 ac
2.5 ac
1.3 ac
2.7 ac
1.1 ac
1.3 ac
1.1 ac
1.6 ac
2.2 ac
2.6 ac
0.3 ac
0.8 ac
0.7 ac
0.6 ac
0.1 ac
0.4 ac
1.8 ac
1.9 ac
3.3 ac
0.9 ac
1.4 ac
4.3 ac
7.4 ac
4.3 ac
5.3 ac
5.5 ac
0.1 ac
0.8 ac

260 251 252 261 431 432 253 422 421 241 231 240 221 211 250 210 230 220 200 113 201 114 112 111 433 434 442 443 411 402 441 401 301 300



VICINITY MAP
NOT TO SCALE

SEE SHEET 1 OF 2

LEGEND

- PROJECT BOUNDARY
- SUBAREA BOUNDARY
- FLOW PATH
- 1.00 AC. — SUBAREA AREA
- 100 — NODE NUMBER

0 40 80 120 160
SCALE: 1"=80'

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COUNTY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

EXISTING CONDITION HYDROLOGY MAP

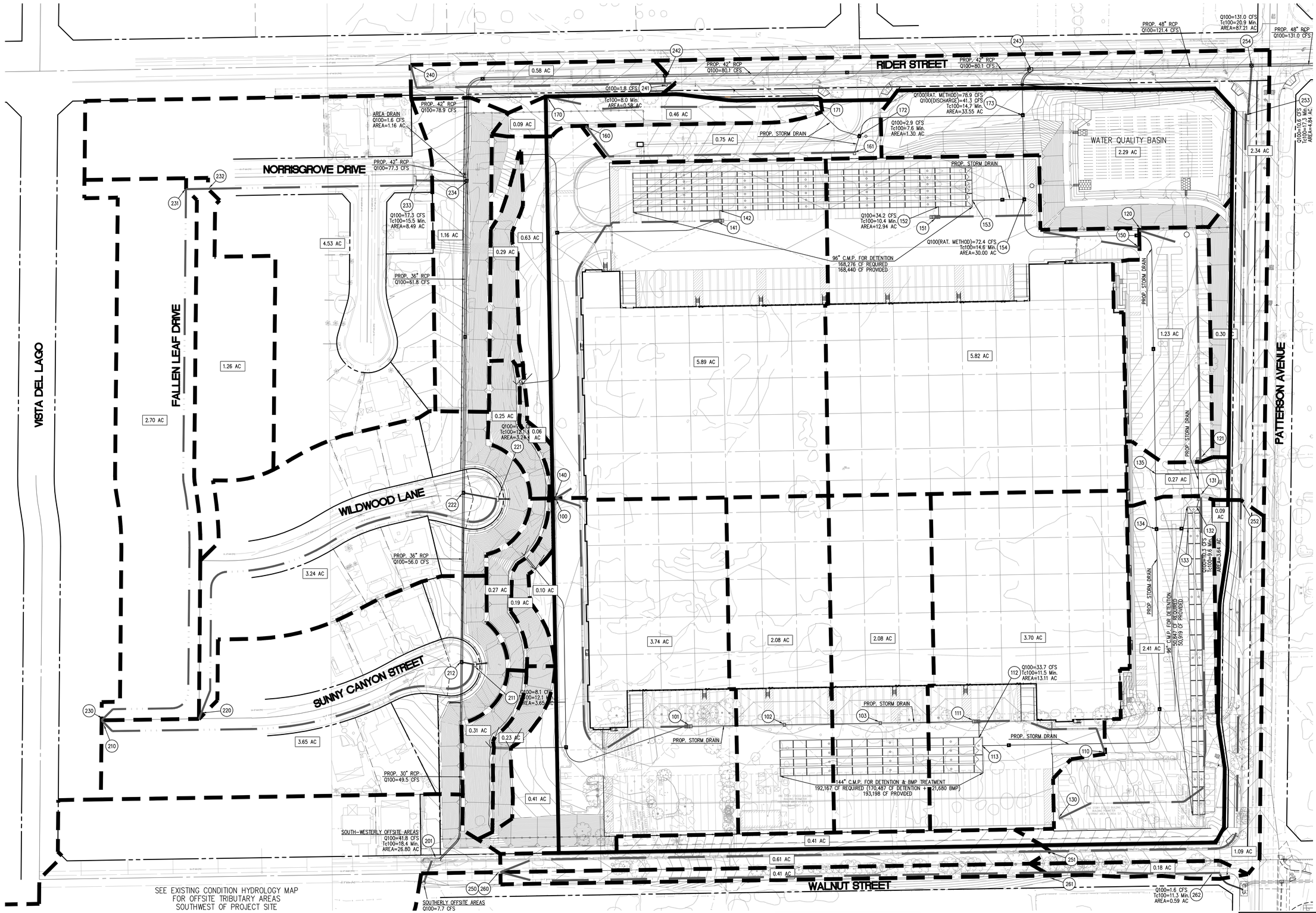
FOR

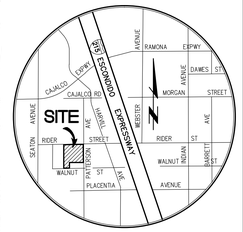
RIDER AND PATTERSON BUSINESS CENTER
SWC OF RIDER ST AND PATTERSON AVE

Designed by ____ Date ____
Checked by ____ Date ____
Designed by ____ Date ____
Checked by ____ Date ____
Approved by ____ Date ____
Public Works Director ____ R.C.E. XXXXX

Sheet 2 of 2 Sheets

3958 / 2 OF 2 SHEET





VICINITY MAP
NOT TO SCALE

LEGEND

- PROJECT BOUNDARY
- SUBAREA BOUNDARY
- FLOW PATH
- 1.00 AC. — SUBAREA AREA
- 100 — NODE NUMBER

0 30 60 120 180
SCALE: 1"=60'

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COUNTY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

PROPOSED CONDITION HYDROLOGY MAP

FOR

RIDER AND PATTERSON BUSINESS CENTER
SWC OF RIDER ST AND PATTERSON AVE

Designed by _____ Date _____
Checked by _____ Date _____
Approved by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____
Public Works Director _____ R.C.E. XXXXX

Sheet 1 of 1 Sheets

3958/1 OF 1 SHEET

RIDER STREET

NORRISGROVE DRIVE

WILDWOOD LANE

SUNNY CANYON STREET

WALNUT STREET

PATTERSON AVENUE

HARVILL AVENUE

SEE ABOVE RIGHT

SEE BELOW LEFT

BIORETENTION DETAIL
WITH CLEAN-WASHED ROCK AND SAND

TABLE 1: MINERAL COMPONENT RANGE REQUIREMENTS (BY VOLUME)

PERCENT RANGE	COMPONENT
70-80	SAND
15-20	SILT
5-10	CLAY

* THE ENGINEERED SOIL MEDIA SHALL BE COMPRISED OF 85 PERCENT MINERAL COMPONENT (PER TABLE 1) AND 15 PERCENT ORGANIC COMPONENT BY VOLUME. THE ORGANIC COMPONENT SHALL BE NITROGEN STABILIZED COMPOST.

SCALE: 1"=50'

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COUNTY OF RIVERSIDE
PUBLIC WORKS DEPARTMENT

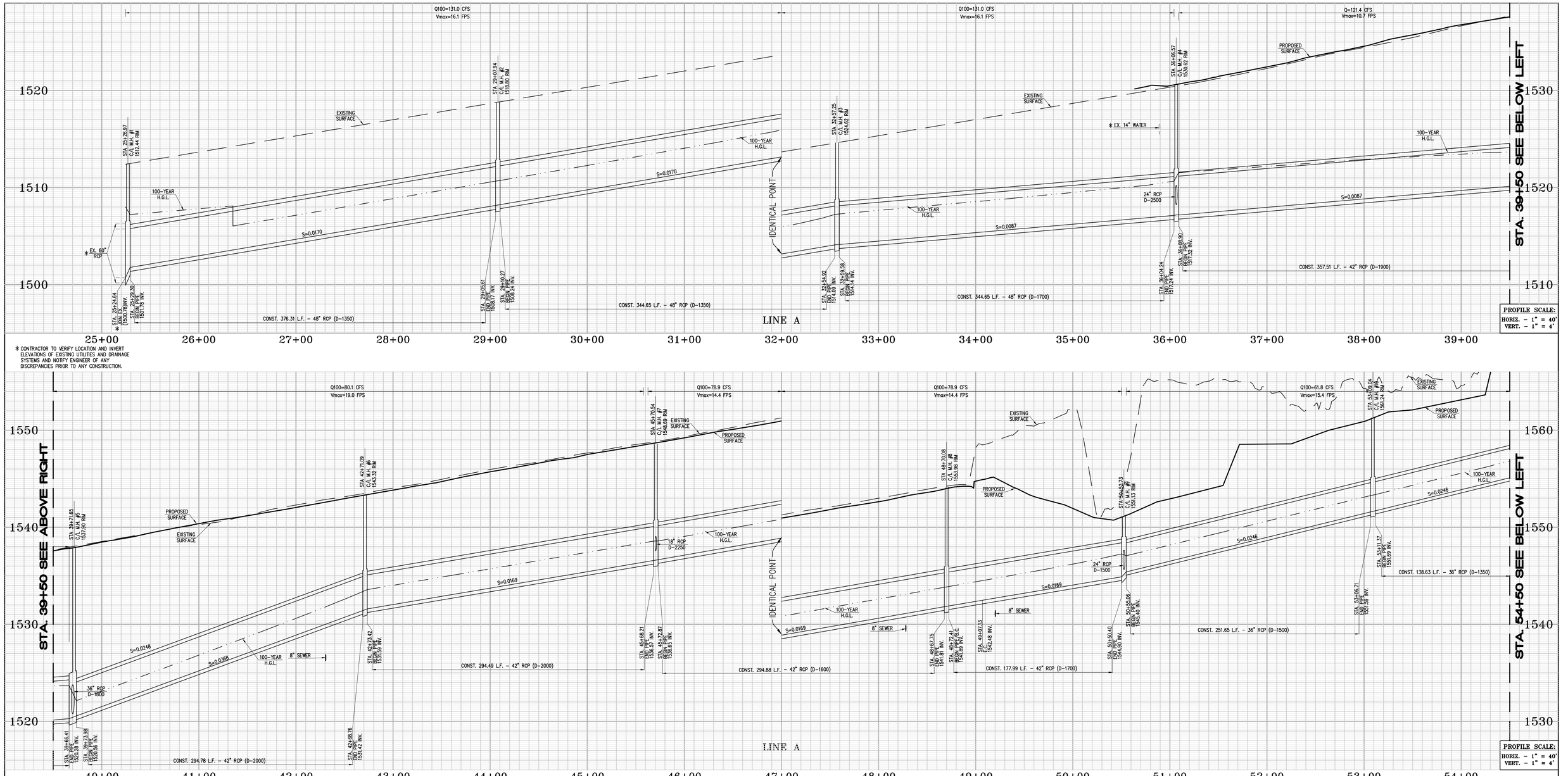
CONCEPTUAL STORM DRAIN PLAN

RIDER AND PATTERSON BUSINESS CENTER
SWC OF RIDER ST AND PATTERSON AVE

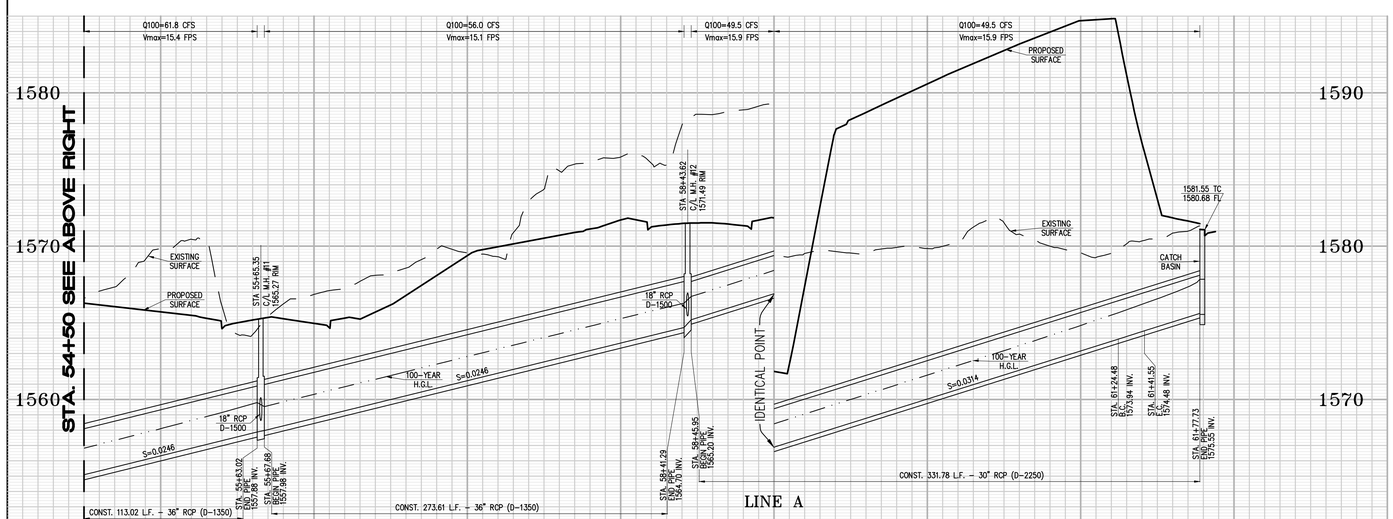
Designed by ____ Date ____
Checked by ____ Date ____
Approved by ____ Date ____
Designed by ____ Date ____
Checked by ____ Date ____
Public Works Director ____ R.C.E. XXXXX

Sheet 6 of 7 Sheets

3958/ 6 OF 7 SHEET



* CONTRACTOR TO VERIFY LOCATION AND INVERT ELEVATIONS OF EXISTING UTILITIES AND DRAINAGE SYSTEMS AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY CONSTRUCTION.



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COUNTY OF RIVESIDE
PUBLIC WORKS DEPARTMENT

CONCEPTUAL STORM DRAIN PROFILES

RIDER AND PATTERSON
BUSINESS CENTER
SWC OF RIDER ST AND PATTERSON AVE

Designed by _____ Date _____
Checked by _____ Date _____
Designed by _____ Date _____
Checked by _____ Date _____
Approved by _____ Date _____
Public Works Director _____ R.C.E. XXXXX

Sheet 7 of 7 Sheets

3958/ 7 OF 7 SHEET