

PRELIMINARY HYDROLOGY STUDY

Ottawa Logistics Center

North of Ottawa Road and East of Hesperia Rd.

Prepared for:

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Introduction and Background

Ottawa Logistics Center is a proposed commercial warehouse development on a 51.92-acre site that is proposed to be developed into a warehouse. The Project site is bounded on the south by Ottawa Road, and east of Hesperia Road located in the City of Victorville, California

The existing site slopes north and north east in 4 distinct drainage areas and slopes vary from 1% to 5%. There are two large regional off-site flows running onto the site. These are identified in the City of Hesperia's Master Plan of Drainage (MPD) as Lines J-01-01 and Line J-03. A third MPD Line J-01 also runs along and outside the east boundary of the Project site.

MPD Line designation	Q100 (cfs)	Comments
Line J-03	990	Existing 96" RCP outlets onto the Project site midway at its south boundary and outlets at the north east boundary.
Line J-01-01	922	Flows enter site at its south west boundary and flow northerly.
Line J-01	1,100	Existing channel outside and abutting the east boundary.

See the City of Hesperia's MPD excerpts in Appendix G and On-site Existing Condition Hydrology Map in Appendix A

Study Criteria

Bonadiman Civil Design Software, Version 7.0 & 7.1 was used for the 10-year & 100-year Hydrological Analysis.

- 10-year AMC II Unit hydrograph Method (developed and undeveloped)
- 100-year AMC II Unit Hydrograph Method (developed and undeveloped)
- Soil Type A and C
- Mannings Values Used
- Existing Surface n=0.035
- Proposed Surface n=0.013
- Unit Hydrograph n=0.020
- Project is in the City of Victorville, CA

Drainage boundaries were derived using field topography, USGS Map for Victorville as shown on the existing hydrology map, provided in Appendix A of this report. See Reference Documents in Appendix G for San Bernardino County Hydrology Manual and City of Victorville technical references.

Off-Site Hydrology:

As mentioned in the Introduction and Background, there are two off-site run-ons onto the Project site that are identified in the City of Hesperia's MPD as Lines J-01-01 and Line J-03. A third flow, Line J-01, runs along the east side of the Project site but does not run-on to the Project site. Line J-03 outlets onto the south side of the Project site from a RCB culvert approximately middle of the site and traverses to the north east corner of the Project site and confluences with Line J-01 nearby. The design Q for line J-03 is 990 cfs.

Line J-01-01 enters the Project site on its west side near the south boundary then turns north and flows through the Project site exiting into an existing drainage course where it continues to flow north, then north east approximately 0.5 mile where it then confluences with Line J-01. Line J-01-01's run-on $Q_{100} = 920$ cfs. Both off-site run-ons will be picked up in Concrete pipes and conveyed through the Project. See the Developed Condition Hydrology Map in Appendix A.

Most of the storm run-off generated by the Project will be accepted into storm drain and conveyed to Stormtech underground detention basins. See the Developed Condition Hydrology Map located in Appendix A.

On-Site Hydrology:

The Project site is broken down into the component sub-drainage areas to allow for the computation of storm run-off with Bonadiman Civil Design Software. The Project site will incorporate a Storm Tech underground retention system in compliance with the requirements of the State Storm Water permit requirements. .

The results of computer analysis provide 10 and 100-year run-off quantities for sizing and design of proposed catch basins, detention systems, and storm drain system. See Appendix C and D for the Hydrology calculations, Appendix F for the Hydraulic calculations, and Appendix G for the Basin routing. As previously mentioned most of storm run-off generated by the Project will be accepted into proposed catch basins and conveyed to an on-site detention system. Overflows from Basin no. 1 will drain into the MPD Line J-03. The developed site will not contribute to Line J-01-01 except for a small area of slopes and natural ground on the north side of the site.

Subarea ID	Area (Acres)	Q10 (cfs)	Q100 (cfs)	Comments
E	20.9	33.2	59.5	Area flows are picked up in Catch basin No 1 and piped to Detention basin No.1. (Q100=59.5 cfs)
F	21.2	69.8	124	Subareas F1 thru F6 flows into Bioswale No. 1 then picked up in a grated inlet and piped to Detention Basin No. 2. (Q100=24 cfs). Subareas F7 and F8 flows are picked up in Catch basin No. 3 and conveyed to Detention basin No. 2. (Q100=99.5 cfs).
G	3.92	10.1	18.4	Subareas G1 and G2 flows into Bioswale No. 2, then picked up in a grated inlet and piped to Detention basin No. 2 (Q100= 12.0 cfs). Subarea G3 flows to Catch Basin No. 2 (Q100=6.4cfs).

Note: The table above uses the rational method calculations to size catch basins and storm drain lines. They are not the same as the unit hydrograph calculations and areas not contributing to on-site flows such as slopes are not included.

Hydraulics

Appendix F of this report includes various hydraulic calculations to size the catch basin inlets for the storm drain systems. The following is the run-off that will be picked up by the various catch basins.

- Catch basin 1- Q100=59.5 cfs and conveyed to Basin no. 1
- Catch basin 2- Q100=6.4 cfs and conveyed to Basin no. 2
- Catch Basin 3- Q100=99.5 cfs and conveyed to Basin no. 2
- Storm Drain in Bioswale 1 Q100=24.5 cfs
- Storm Drain in Bioswale 2 Q100=12 cfs

It should be noted, the catch basins are sized using 100-year storm events. The detention facilities were sized to capture the difference of the existing condition verses developed condition 10-year, 24-hour storm event in compliance with NPDES MS4 permit.

Appendix G includes the basin routing calculations. The following is a table of the results.

Basin Routing

Area ID	Basin ID/Acreage	10-year out (cfs)	100-year out (cfs)	Comments
E	1/20.9	14.7	26.5	South side of project. Overflows into Line J-03 which outlets at northeast area of the Project site and will confluence with off-site Line J-01.
F	2/31.02	20.5	37.5	North side of project
Total		35.2	64	Exist Q10 and Q100 is 61 cfs and 117 cfs HCOC met.

Calculations are based on the Unit hydrograph.

Conclusion

Based on the hydrology evaluations and calculations of the off-site and on-site run-off for the Project as stated within this report, once the Project is completed, and the proposed grading and storm drain facilities are properly constructed, the Project will be protected from flood hazard, as well as mitigate the increases in volume, time of concentration and Q peaks caused by development. Reference is made to the Projects WQMP report.

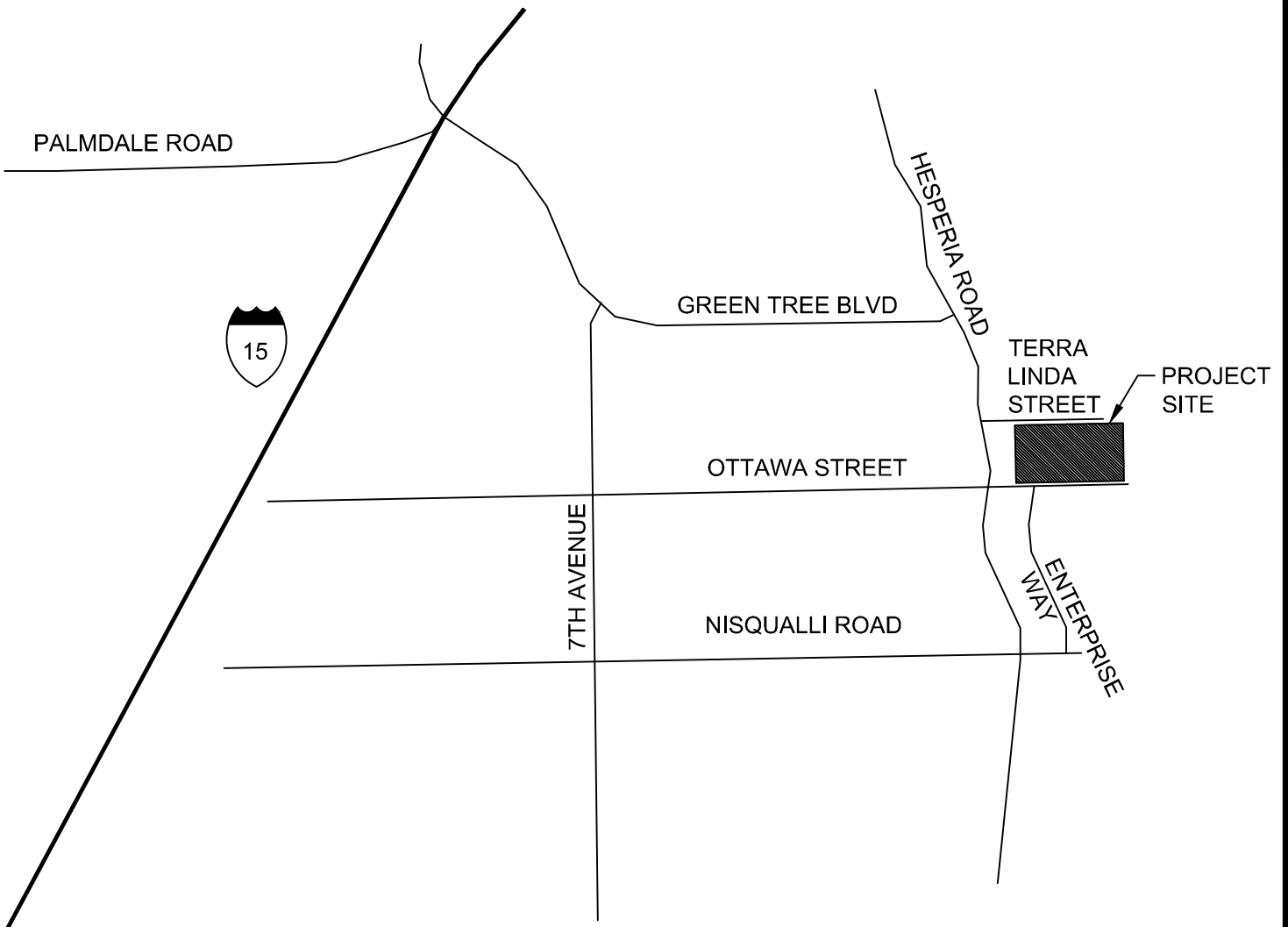
While the Project will change the hydrologic characteristics of the site dramatically due to the nature of the development, the use of retention systems, bioswales, and longer times of concentration, flows will be reduced to existing or less. The offsite run-on will be conveyed through the site in a culvert for both lines J-03 and J-01-01 and will not be treated or attenuated and will eventually become a Public storm drain.

As a result of the development, the existing area Line J-01-01, within the Project, will not receive any on-site flows reducing the existing outlet Q by approximately 37 cfs. The flows in that area will instead flow to the north east corner of the Project in the developed state and confluence with offsite Line J-01. This is beneficial to the downstream area as there is no road or storm drain infrastructure, although the overall decrease is 4%, and the downstream areas may not achieve any benefit from a 4% decrease when the flows are 938 cfs. The increase to the area to the north east mitigates the diversion through a retention system, bioswale and longer times of concentration.

APPENDIX 'A'

Figures

- Figure 1- Vicinity Map
- Figure 2 – Off-site Hydrology Map
- Figure 3 – Existing Condition Hydrology Map
- Figure 4 – Developed Condition Hydrology Map



VICINITY MAP

N.T.S.




 <p>DAVID EVANS AND ASSOCIATES INC. 14297 Cajon Avenue Suite 101 Victorville California 92392-2335 Phone: 760.524.9100</p>	VICINITY MAP
	CITY OF VICTORVILLE

FIGURE 1

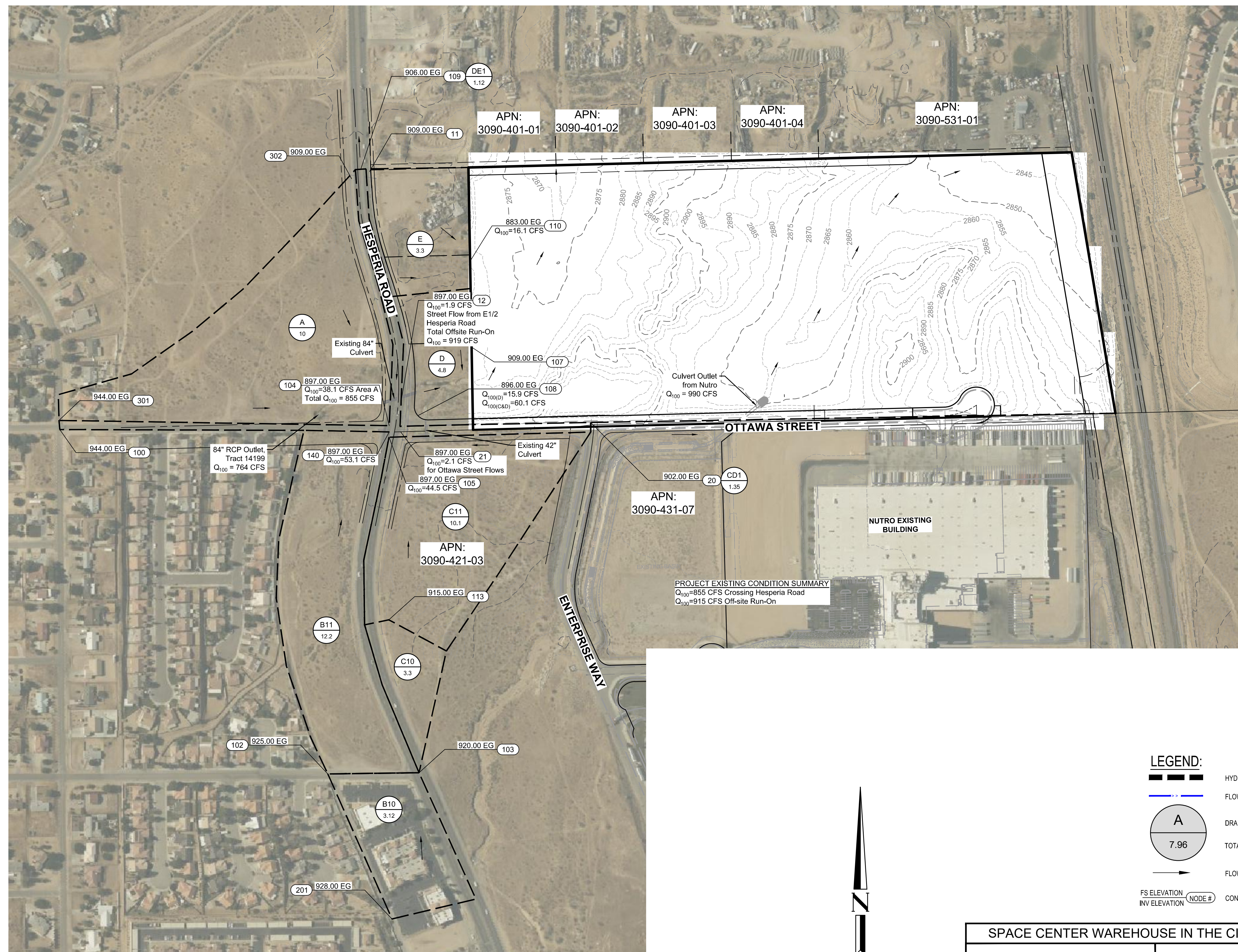
Offsite Areas

Area	Area (Acres)	L (feet)	Up	Down	H (Feet)	HSG	TC (min.)	C100 (cfs)	Impervious
A	10	1000	944	892	52	C	8.5	38.1	0.78
B10	3.12	461	928	925	2	C	9.6	10.8	0.9
B11	12.2	1375	925	897	28	C	9	42.3	0.9
Note: Areas A and B have a total Q100=91.2 cfs at node 104									
C10	3.3	404	920	915	5	C	10	10.9	0.9
C11	10.1	625	915	897	18	C	8.1	33.6	0.8
D	4.8	415	903	883	20	C	6.1	15.9	0.9
Note: Areas C and D have a total Q100=60.5 at node 108 (For study purposes)									
Tract 14199 outlets Q100=764 cfs near the NW corner of Ottawa and Hesperia Rd. and adds to the offsite Qs presented hereon. Total of Areas A-D and Tract 14199 plus contributing street areas Q100=916.7 cfs									
E	3.3	408	906	883	23	C	5.8	16.1	0.9
Note: Area E stands alone and drains east to the project site. See node 110									

Street Areas

Area	Area (Acres)	L (Feet)	Width of Road (Feet)	Up-down	TC	Q100	Comments
DE1 Hesperia Rd. E1/2 CD1	1.12	790	62	909-897+12	9.7	1.9	At node 12
Ottawa East of Hesperia Rd. (Wide Street)	1.35	705	84	902-897+5	11	2.1	At node 21

Street areas were computed for the catch basin on the East corners of Hesperia Road at Ottawa. (Added to upstream Discharge. Area C for catch basin sizing purposes)



LEGEND:

- HYDROLOGY BOUNDARY
- FLOWLINE
- DRAINAGE AREA ID
TOTAL ACREAGE
- FLOW DIRECTION
- FS ELEVATION
INV ELEVATION
- CONCENTRATION/NODE ID

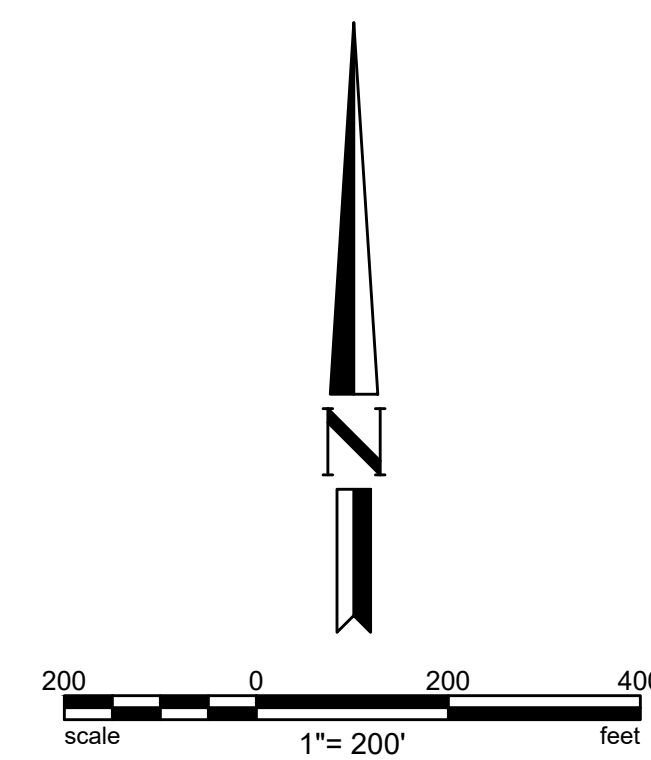
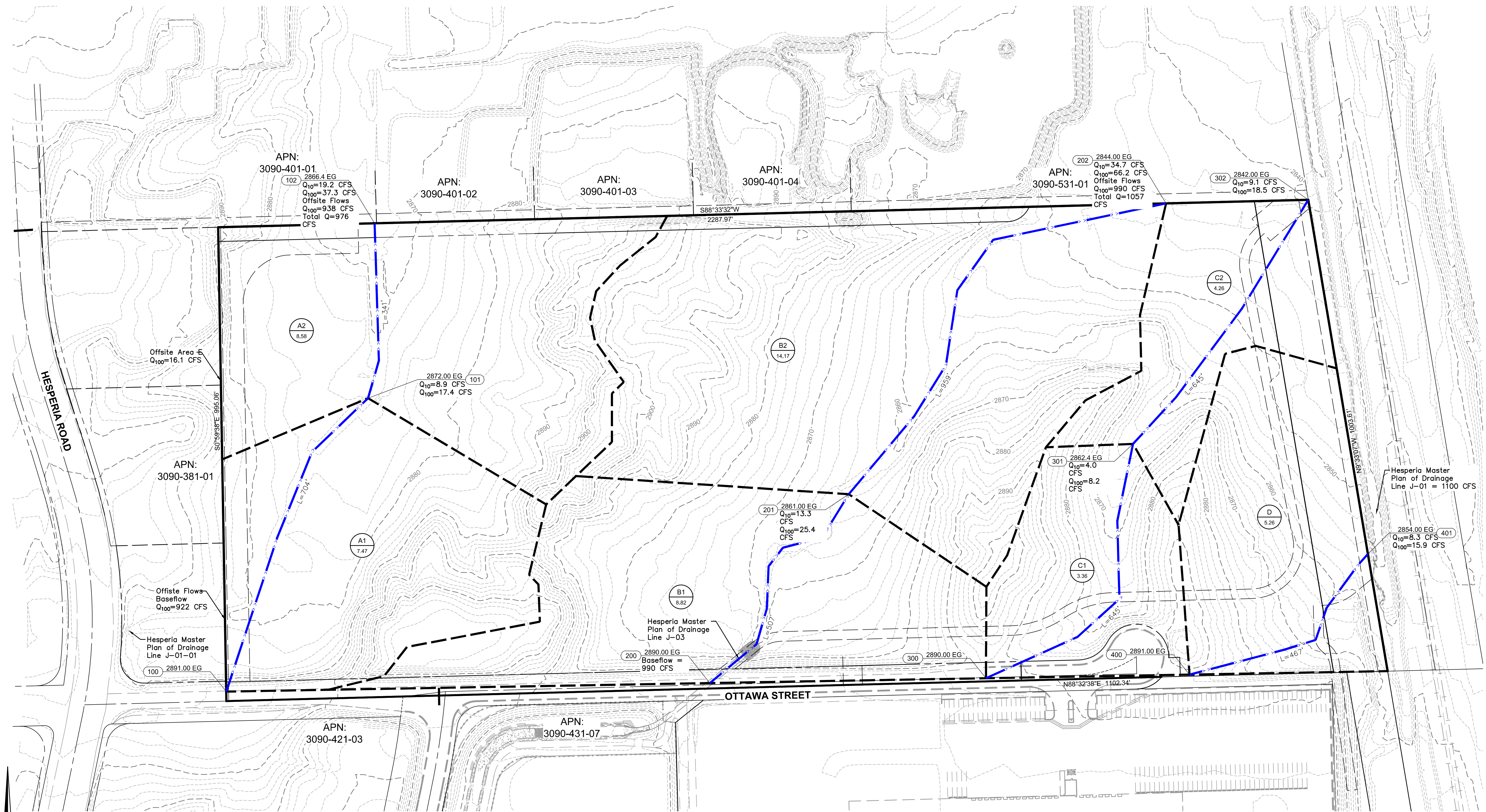


FIGURE 2

SPACE CENTER WAREHOUSE IN THE CITY OF VICTORVILLE

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Victorville California 92392-2335
Phone: 760.524.9100

Offsite Existing Condition Hydrology Map

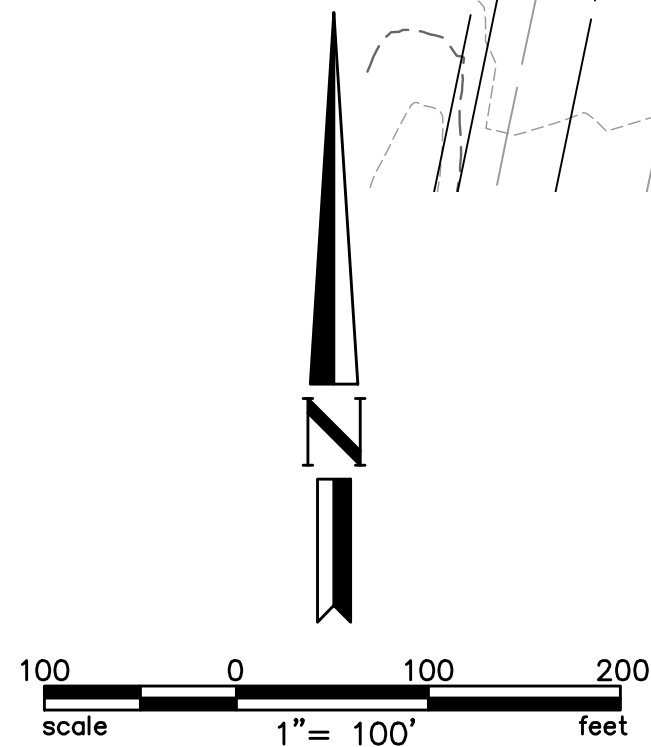


Notes:
Total Acreage = 51.92 Acres

LEGEND:

- HYDROLOGY BOUNDARY (thick dashed line)
- FLOWLINE (blue line with arrow)
- DRAINAGE AREA ID (circle with letter)
- TOTAL ACREAGE (circle with number)
- FLOW DIRECTION (arrow)
- CONCENTRATION/NODE ID (circle with number)

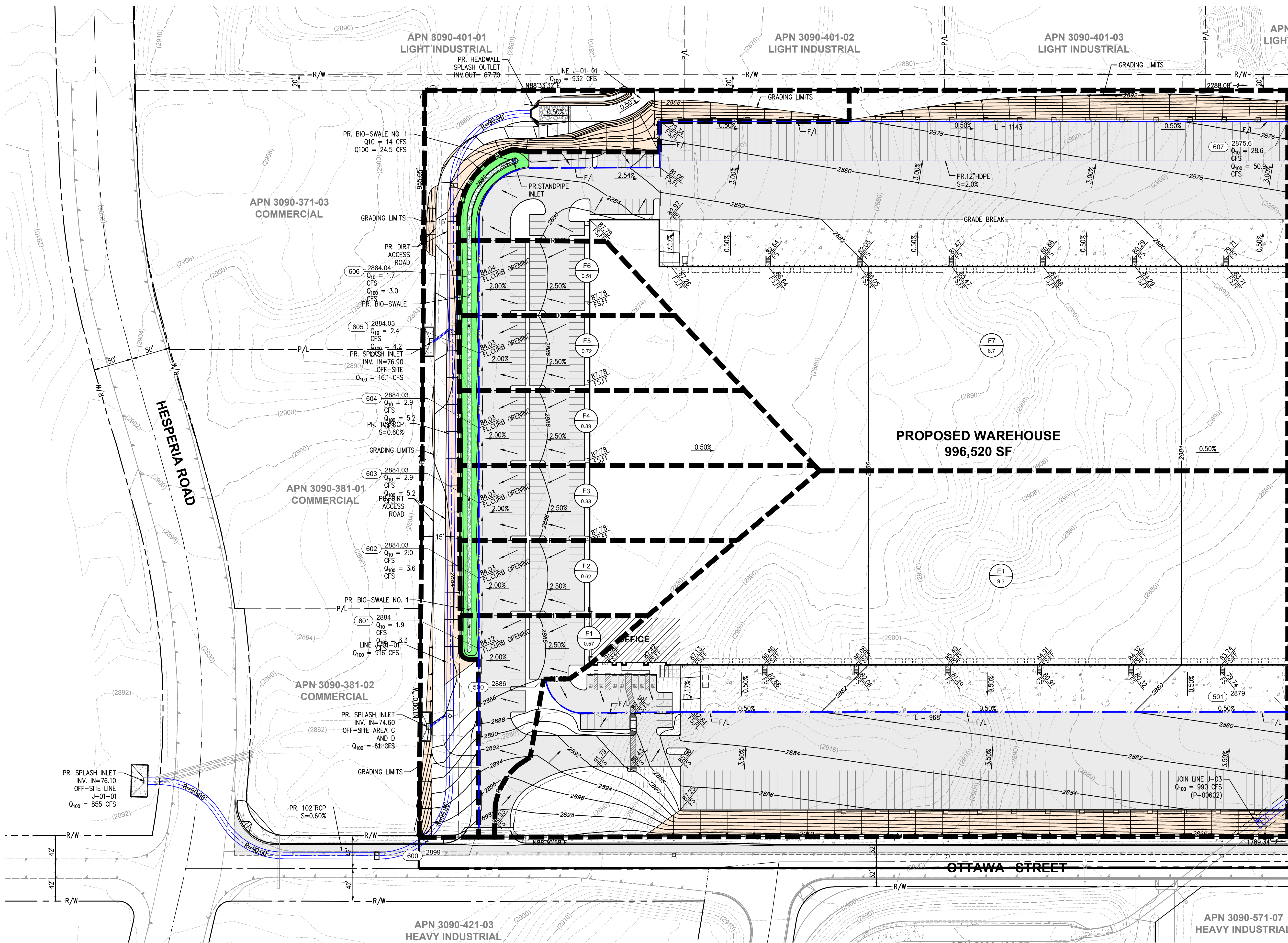
FS ELEVATION (NODE #)
INV ELEVATION (NODE #)



SPACE CENTER WAREHOUSE IN THE CITY OF VICTORVILLE

DAVID EVANS AND ASSOCIATES INC.
14297 Cajon Avenue Suite 101
Victorville California 92392-2335
Phone: 760.524.9100

Onsite Existing Condition Hydrology Map



Notes:
Total Acreage = 51.92 Acres

- LEGEND:**
- HYDROLOGY BOUNDARY
 - FLOWLINE
 - DRAINAGE AREA ID
TOTAL ACREAGE
 - FLOW DIRECTION
 - CONCENTRATION/NODE ID
 - AC PAVEMENT
 - CONCRETE PAVEMENT
 - BIO-SWALE AREA
 - GRADE SLOPE AREA
 - PROPOSED CONTOUR
 - EXISTING CONTOUR

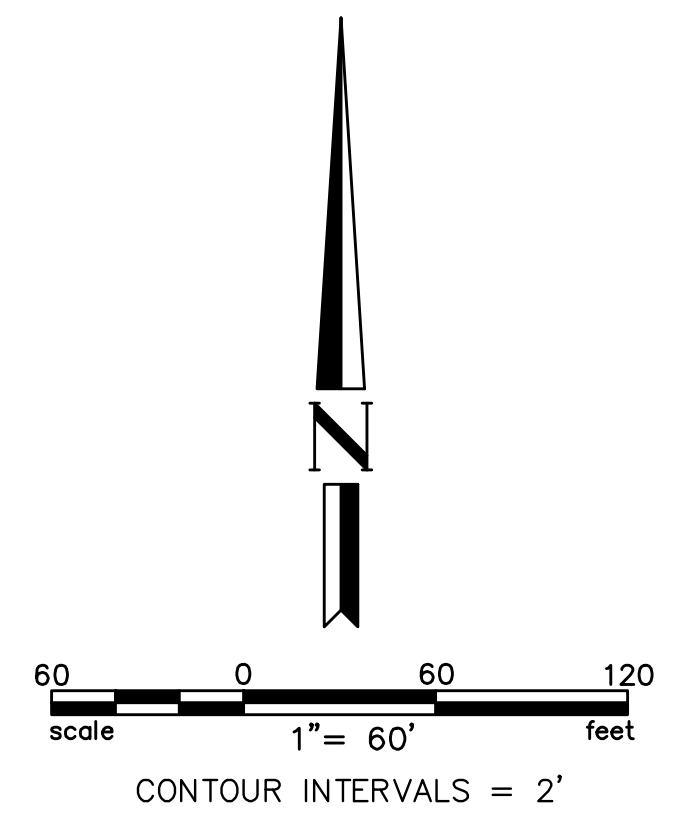


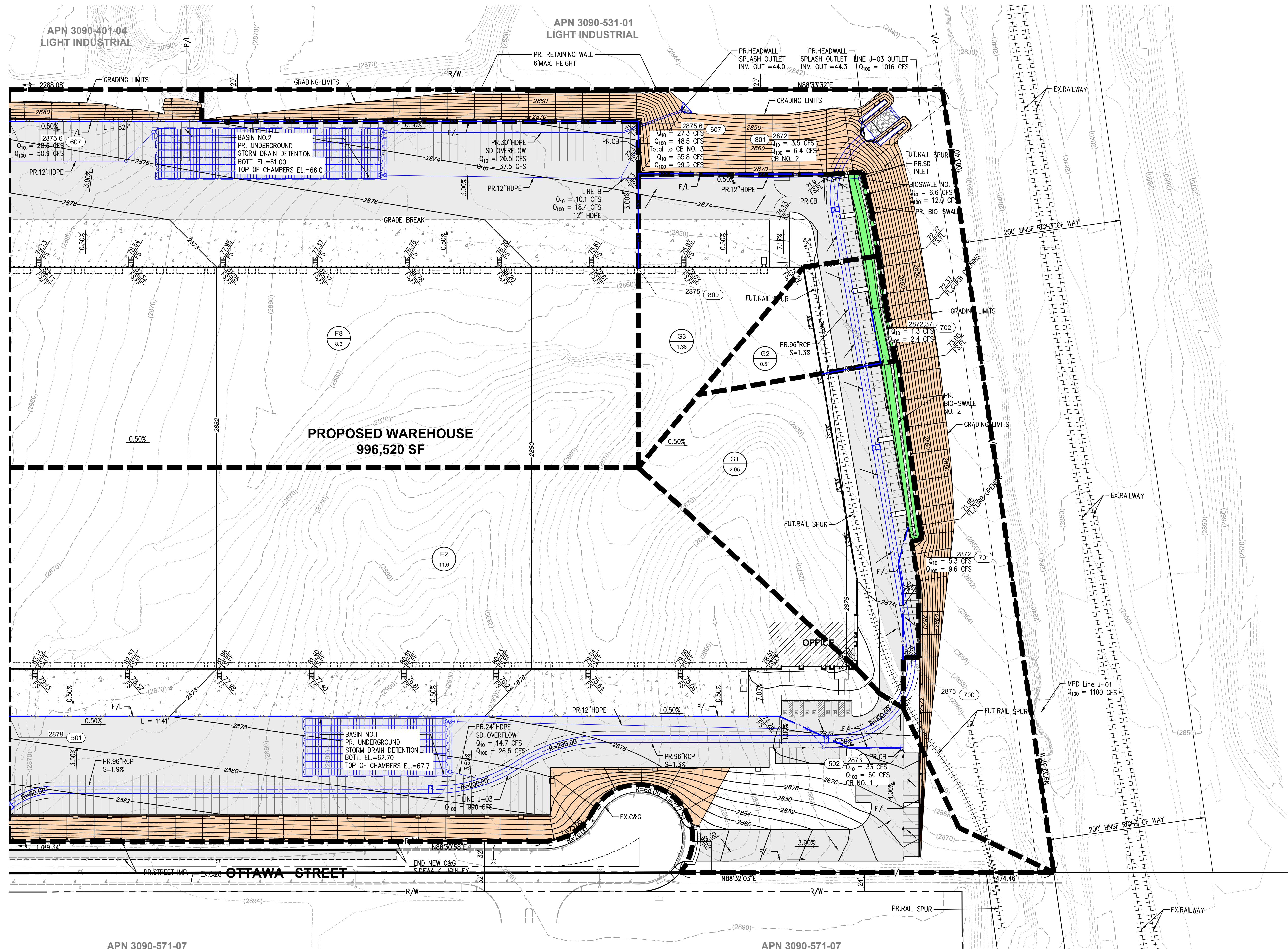
Figure 4

Plot Date: 1/6/2022 12:03 PM
 Save Date: 1/6/2022 11:46 AM
 By: Jose Aguilera
 File: P:\SSPACH\MEL\003\0600\NFC\0570\Report\Hydrology Report\CADA_3_Developed Condition Hydrology Map_WEST.dwg

DE
DAVID EVANS
AND ASSOCIATES INC.
 18484 Outer Highway 18 N Suite 225
 Apple Valley California 92307
 Phone: 760.524.9100
 SSchubert@deainc.com

IN THE CITY OF VICTORVILLE OTTAWA STREET LOGISTICS CENTER	
DEVELOPED CONDITION HYDROLOGY MAP	FILE NO. DRAWING NO. SH. 1 OF 2

Plot Date: 1/6/2022 12:00 PM
 Save Date: 1/6/2022 11:59 AM
 By: Jose Aguilera
 File: P:\SSPACH\ML0030600\NF\0570\Report\Hydrology\Report\CADA_4_Developed Condition Hydrology Map.dwg



- Notes:**
 Total Acreage = 51.92 Acres
- LEGEND:**
- HYDROLOGY BOUNDARY
 - FLOWLINE
 - DRAINAGE AREA ID
 - TOTAL ACREAGE
 - FLOW DIRECTION
 - CONCENTRATION/NODE ID
 - AC PAVEMENT
 - CONCRETE PAVEMENT
 - BIO-SWALE AREA
 - GRADE SLOPE AREA
 - PROPOSED CONTOUR
 - EXISTING CONTOUR

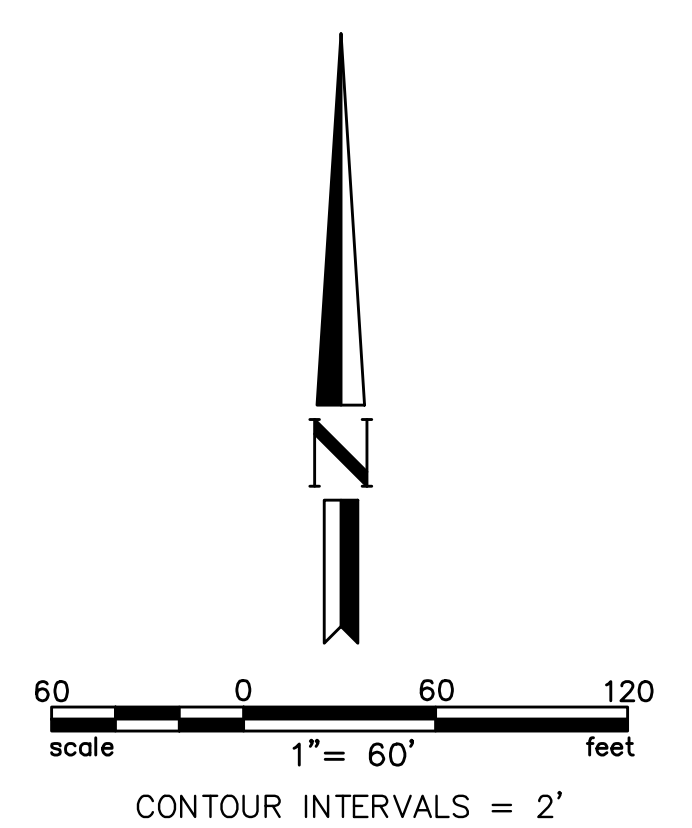


Figure 4

DE
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IN THE CITY OF VICTORVILLE
OTTAWA STREET LOGISTICS CENTER

DEVELOPED CONDITION HYDROLOGY MAP

FILE NO.	
DRAWING NO.	
SH. 2 OF 2	

APPENDIX 'B'

Rational Method Existing Condition

Offsite 100-year Storm Event

On-Site, 10 and 100-year Storm Event

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 05/05/21

Space Center
Q100 offsite
Area A
NW Hesperia and Ottawa

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

++++
Process from Point/Station 100.000 to Point/Station 104.000
**** INITIAL AREA EVALUATION ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 56.00
Pervious ratio(Ap) = 0.2200 Max loss rate(Fm)= 0.161(In/Hr)
Initial subarea data:
Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 944.000(Ft.)
Bottom (of initial area) elevation = 897.000(Ft.)
Difference in elevation = 47.000(Ft.)
Slope = 0.04700 s(%)= 4.70
TC = k(0.329)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.604 min.
Rainfall intensity = 3.930(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.863
Subarea runoff = 33.919(CFS)
Total initial stream area = 10.000(Ac.)
Pervious area fraction = 0.220
Initial area Fm value = 0.161(In/Hr)

++++
Process from Point/Station 302.000 to Point/Station 104.000
**** SUBAREA FLOW ADDITION ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 56.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.734(In/Hr)
Time of concentration = 9.60 min.
Rainfall intensity = 3.930(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.850
Subarea runoff = 3.222(CFS) for 1.120(Ac.)
Total runoff = 37.141(CFS)
Effective area this stream = 11.12(Ac.)
Total Study Area (Main Stream No. 1) = 11.12(Ac.)
Area averaged Fm value = 0.219(In/Hr)

++++
Process from Point/Station 104.000 to Point/Station 104.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 11.120(Ac.)
Runoff from this stream = 37.141(CFS)
Time of concentration = 9.60 min.
Rainfall intensity = 3.930(In/Hr)
Area averaged loss rate (Fm) = 0.2191(In/Hr)
Area averaged Pervious ratio (Ap) = 0.2986
Program is now starting with Main Stream No. 2

++++
Process from Point/Station 301.000 to Point/Station 104.000
**** INITIAL AREA EVALUATION ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 56.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.734(In/Hr)
Initial subarea data:
Initial area flow distance = 993.000(Ft.)
Top (of initial area) elevation = 944.000(Ft.)
Bottom (of initial area) elevation = 897.000(Ft.)
Difference in elevation = 47.000(Ft.)
Slope = 0.04733 s(%)= 4.73

TC = $k(0.950)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
 Initial area time of concentration = 27.636 min.
 Rainfall intensity = 1.875(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area (Q=KCIA) is C = 0.548
 Subarea runoff = 0.986(CFS)
 Total initial stream area = 0.960(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.734(In/Hr)

++++++
 Process from Point/Station 301.000 to Point/Station 104.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 2
 Stream flow area = 0.960(Ac.)
 Runoff from this stream = 0.986(CFS)
 Time of concentration = 27.64 min.
 Rainfall intensity = 1.875(In/Hr)
 Area averaged loss rate (Fm) = 0.7339(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	37.14	11.120	9.60	0.219	3.930
2	0.99	0.960	27.64	0.734	1.875

Qmax(1) =
 $1.000 * 37.141 + 2.800 * 0.348 * 0.986 = 38.100$
 Qmax(2) =
 $0.446 * 37.141 + 1.000 * 0.986 = 17.563$

Total of 2 main streams to confluence:

Flow rates before confluence point:

38.141 1.986

Maximum flow rates at confluence using above data:

38.100 17.563

Area of streams before confluence:

11.120 0.960

Effective area values after confluence:

11.454 12.080

Results of confluence:

Total flow rate = 38.100(CFS)

Time of concentration = 9.604 min.
Effective stream area after confluence = 11.454(Ac.)
Study area average Pervious fraction(A_p) = 0.354
Study area average soil loss rate(F_m) = 0.260(In/Hr)
Study area total = 12.08(Ac.)
End of computations, Total Study Area = 12.08 (Ac.)

The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.354
Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 05/05/21

Space Center
Q100 offsite
Area B

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 201.000 to Point/Station 102.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 461.000(Ft.)
Top (of initial area) elevation = 928.000(Ft.)
Bottom (of initial area) elevation = 925.000(Ft.)
Difference in elevation = 3.000(Ft.)
Slope = 0.00651 s(%)= 0.65
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.675 min.
Rainfall intensity = 3.910(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887

Subarea runoff = 10.825(CFS)
 Total initial stream area = 3.120(Ac.)
 Pervious area fraction = 0.100
 Initial area Fm value = 0.055(In/Hr)

++++
 Process from Point/Station 102.000 to Point/Station 104.000
 **** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 1.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 69.00
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
 Time of concentration = 9.68 min.
 Rainfall intensity = 3.910(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.887
 Subarea runoff = 42.329(CFS) for 12.200(Ac.)
 Total runoff = 53.154(CFS)
 Effective area this stream = 15.32(Ac.)
 Total Study Area (Main Stream No. 1) = 15.32(Ac.)
 Area averaged Fm value = 0.055(In/Hr)

++++
 Process from Point/Station 201.000 to Point/Station 104.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
 Stream flow area = 15.320(Ac.)
 Runoff from this stream = 53.154(CFS)
 Time of concentration = 9.68 min.
 Rainfall intensity = 3.910(In/Hr)
 Area averaged loss rate (Fm) = 0.0548(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.1000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	53.15	15.320	9.68	0.055	3.910

Qmax(1) = 1.000 * 1.000 * 53.154) + = 53.154

Total of 1 main streams to confluence:
Flow rates before confluence point:
54.154
Maximum flow rates at confluence using above data:
53.154
Area of streams before confluence:
15.320
Effective area values after confluence:
15.320

Results of confluence:

Total flow rate = 53.154(CFS)
Time of concentration = 9.675 min.
Effective stream area after confluence = 15.320(Ac.)
Study area average Pervious fraction(A_p) = 0.100
Study area average soil loss rate(F_m) = 0.055(In/Hr)
Study area total = 15.32(Ac.)
End of computations, Total Study Area = 15.32 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 05/04/21

Space Center
Q100
Area C and D

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 103.000 to Point/Station 113.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 604.000(Ft.)
Top (of initial area) elevation = 920.000(Ft.)
Bottom (of initial area) elevation = 915.000(Ft.)
Difference in elevation = 5.000(Ft.)
Slope = 0.00828 s(%)= 0.83
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.273 min.
Rainfall intensity = 3.749(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887

Subarea runoff = 10.972(CFS)
 Total initial stream area = 3.300(Ac.)
 Pervious area fraction = 0.100
 Initial area Fm value = 0.055(In/Hr)

++++
 Process from Point/Station 113.000 to Point/Station 105.000
 **** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
 Decimal fraction soil group A = 0.000
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 1.000
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 69.00
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
 Time of concentration = 10.27 min.
 Rainfall intensity = 3.749(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.887
 Subarea runoff = 33.582(CFS) for 10.100(Ac.)
 Total runoff = 44.555(CFS)
 Effective area this stream = 13.40(Ac.)
 Total Study Area (Main Stream No. 1) = 13.40(Ac.)
 Area averaged Fm value = 0.055(In/Hr)

++++
 Process from Point/Station 103.000 to Point/Station 105.000
 **** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
 Stream flow area = 13.400(Ac.)
 Runoff from this stream = 44.555(CFS)
 Time of concentration = 10.27 min.
 Rainfall intensity = 3.749(In/Hr)
 Area averaged loss rate (Fm) = 0.0548(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.1000
 Summary of stream data:

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

1	44.55	13.400	10.27	0.055	3.749
Qmax(1) =					
	1.000 *	1.000 *		44.555) + =	44.555

Total of 1 main streams to confluence:
Flow rates before confluence point:
45.555
Maximum flow rates at confluence using above data:
44.555
Area of streams before confluence:
13.400
Effective area values after confluence:
13.400

Results of confluence:
Total flow rate = 44.555(CFS)
Time of concentration = 10.273 min.
Effective stream area after confluence = 13.400(Ac.)
Study area average Pervious fraction(Ap) = 0.100
Study area average soil loss rate(Fm) = 0.055(In/Hr)
Study area total = 13.40(Ac.)

++++
Process from Point/Station 107.000 to Point/Station 105.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 10.27 min.
Rainfall intensity = 3.749(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.887
Subarea runoff = 15.960(CFS) for 4.800(Ac.)
Total runoff = 60.515(CFS)
Effective area this stream = 18.20(Ac.)
Total Study Area (Main Stream No. 1) = 18.20(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++
Process from Point/Station 107.000 to Point/Station 105.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1
Stream flow area = 18.200(Ac.)
Runoff from this stream = 60.515(CFS)

Time of concentration = 10.27 min.
 Rainfall intensity = 3.749(In/Hr)
 Area averaged loss rate (Fm) = 0.0548(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.1000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	60.51	18.200	10.27	0.055	3.749

$Q_{max}(1) = 1.000 * 1.000 * 60.515) + = 60.515$

Total of 1 main streams to confluence:
 Flow rates before confluence point:
 61.515
 Maximum flow rates at confluence using above data:
 60.515
 Area of streams before confluence:
 18.200
 Effective area values after confluence:
 18.200

Results of confluence:
 Total flow rate = 60.515(CFS)
 Time of concentration = 10.273 min.
 Effective stream area after confluence = 18.200(Ac.)
 Study area average Pervious fraction(Ap) = 0.100
 Study area average soil loss rate(Fm) = 0.055(In/Hr)
 Study area total = 18.20(Ac.)
 End of computations, Total Study Area = 18.20 (Ac.)

The following figures may be used for a unit hydrograph study of the same area.
 Note: These figures do not consider reduced effective area effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
 Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 05/05/21

Space Center
Q100
Area E

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 109.000 to Point/Station 110.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 408.000(Ft.)
Top (of initial area) elevation = 906.000(Ft.)
Bottom (of initial area) elevation = 883.000(Ft.)
Difference in elevation = 23.000(Ft.)
Slope = 0.05637 s(%)= 5.64
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 5.983 min.
Rainfall intensity = 5.474(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.891

Subarea runoff = 16.094(CFS)
Total initial stream area = 3.300(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)
End of computations, Total Study Area = 3.30 (Ac.)

The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.100
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 05/04/21

Street Area CD1
Ottawa east of Hesperia Road
Q100

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 20.000 to Point/Station 21.000
**** INITIAL AREA EVALUATION ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 56.00
Pervious ratio(Ap) = 0.9800 Max loss rate(Fm)= 0.719(In/Hr)
Initial subarea data:
Initial area flow distance = 705.000(Ft.)
Top (of initial area) elevation = 902.000(Ft.)
Bottom (of initial area) elevation = 897.000(Ft.)
Difference in elevation = 5.000(Ft.)
Slope = 0.00709 s(%)= 0.71
TC = k(0.516)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 19.139 min.
Rainfall intensity = 2.425(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.633
Subarea runoff = 2.073(CFS)
Total initial stream area = 1.350(Ac.)
Pervious area fraction = 0.980

Initial area Fm value = 0.719(In/Hr)
End of computations, Total Study Area = 1.35 (Ac.)

The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.980

Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 05/05/21

Street area along areas D and E
Hesperia Road East 1/2
Q100

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 11.000 to Point/Station 12.000
**** INITIAL AREA EVALUATION ****

Soil classification AP and SCS values input by user
USER INPUT of soil data for subarea
SCS curve number for soil(AMC 2) = 56.00
Pervious ratio(Ap) = 0.9800 Max loss rate(Fm)= 0.719(In/Hr)
Initial subarea data:
Initial area flow distance = 790.000(Ft.)
Top (of initial area) elevation = 909.000(Ft.)
Bottom (of initial area) elevation = 897.000(Ft.)
Difference in elevation = 12.000(Ft.)
Slope = 0.01519 s(%)= 1.52
TC = k(0.516)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 17.200 min.
Rainfall intensity = 2.614(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.652
Subarea runoff = 1.910(CFS)
Total initial stream area = 1.120(Ac.)
Pervious area fraction = 0.980
Initial area Fm value = 0.719(In/Hr)

End of computations, Total Study Area = 1.12 (Ac.)

The following figures may
be used for a unit hydrograph study of the same area.

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

Area averaged pervious area fraction(A_p) = 0.980

Area averaged SCS curve number = 56.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/02/21

Space Center
undeveloped 10-year
Area A

Program License Serial Number 6385

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.618 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.125
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.875
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 83.63
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.307(In/Hr)
Initial subarea data:
Initial area flow distance = 704.000(Ft.)
Top (of initial area) elevation = 2891.000(Ft.)
Bottom (of initial area) elevation = 2872.000(Ft.)
Difference in elevation = 19.000(Ft.)
Slope = 0.02699 s(%)= 2.70
TC = $k(0.525)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 14.892 min.
Rainfall intensity = 1.639(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.731

Subarea runoff = 8.955(CFS)
 Total initial stream area = 7.470(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.307(In/Hr)

++++
 Process from Point/Station 101.000 to Point/Station 102.000
 **** SUBAREA FLOW ADDITION ****

UNDEVELOPED (poor cover) subarea
 Decimal fraction soil group A = 0.125
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.875
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 83.63
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.307(In/Hr)
 Time of concentration = 14.89 min.
 Rainfall intensity = 1.639(In/Hr) for a 10.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.731
 Subarea runoff = 10.286(CFS) for 8.580(Ac.)
 Total runoff = 19.241(CFS)
 Effective area this stream = 16.05(Ac.)
 Total Study Area (Main Stream No. 1) = 16.05(Ac.)
 Area averaged Fm value = 0.307(In/Hr)

++++
 Process from Point/Station 100.000 to Point/Station 102.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 16.050(Ac.)
 Runoff from this stream = 19.241(CFS)
 Time of concentration = 14.89 min.
 Rainfall intensity = 1.639(In/Hr)
 Area averaged loss rate (Fm) = 0.3072(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	19.24	16.050	14.89	0.307	1.639
Qmax(1) =					
		1.000 *	1.000 *	19.241)	+ = 19.241

Total of 1 streams to confluence:

Flow rates before confluence point:

19.241

Maximum flow rates at confluence using above data:

19.241

Area of streams before confluence:

16.050

Effective area values after confluence:

16.050

Results of confluence:

Total flow rate = 19.241(CFS)

Time of concentration = 14.892 min.

Effective stream area after confluence = 16.050(Ac.)

Study area average Pervious fraction(A_p) = 1.000

Study area average soil loss rate(F_m) = 0.307(In/Hr)

Study area total (this main stream) = 16.05(Ac.)

End of computations, Total Study Area = 16.05 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

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

Area averaged pervious area fraction(A_p) = 1.000

Area averaged SCS curve number = 83.6

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/02/21

Space Center
undeveloped 10-year
Area B

Program License Serial Number 6385

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.618 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.163
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.837
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 82.90
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.320(In/Hr)
Initial subarea data:
Initial area flow distance = 507.000(Ft.)
Top (of initial area) elevation = 2890.000(Ft.)
Bottom (of initial area) elevation = 2861.000(Ft.)
Difference in elevation = 29.000(Ft.)
Slope = 0.05720 s(%)= 5.72
TC = k(0.525)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.238 min.
Rainfall intensity = 1.996(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.756

Subarea runoff = 13.308(CFS)
 Total initial stream area = 8.820(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.320(In/Hr)

++++
 Process from Point/Station 201.000 to Point/Station 202.000
 **** SUBAREA FLOW ADDITION ****

UNDEVELOPED (poor cover) subarea
 Decimal fraction soil group A = 0.163
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.837
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 82.90
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.320(In/Hr)
 Time of concentration = 11.24 min.
 Rainfall intensity = 1.996(In/Hr) for a 10.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.756
 Subarea runoff = 21.380(CFS) for 14.170(Ac.)
 Total runoff = 34.688(CFS)
 Effective area this stream = 22.99(Ac.)
 Total Study Area (Main Stream No. 1) = 22.99(Ac.)
 Area averaged Fm value = 0.320(In/Hr)

++++
 Process from Point/Station 200.000 to Point/Station 202.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 22.990(Ac.)
 Runoff from this stream = 34.688(CFS)
 Time of concentration = 11.24 min.
 Rainfall intensity = 1.996(In/Hr)
 Area averaged loss rate (Fm) = 0.3198(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	34.69	22.990	11.24	0.320	1.996
Qmax(1) =					
1.000 * 1.000 * 34.688) + = 34.688					

Total of 1 streams to confluence:

Flow rates before confluence point:

34.688

Maximum flow rates at confluence using above data:

34.688

Area of streams before confluence:

22.990

Effective area values after confluence:

22.990

Results of confluence:

Total flow rate = 34.688(CFS)

Time of concentration = 11.238 min.

Effective stream area after confluence = 22.990(Ac.)

Study area average Pervious fraction(A_p) = 1.000

Study area average soil loss rate(F_m) = 0.320(In/Hr)

Study area total (this main stream) = 22.99(Ac.)

End of computations, Total Study Area = 22.99 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

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

Area averaged pervious area fraction(A_p) = 1.000

Area averaged SCS curve number = 82.9

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/02/21

Space Center
10-year undeveloped
Area C

Program License Serial Number 6385

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.618 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.617
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.383
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 74.28
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.465(In/Hr)
Initial subarea data:
Initial area flow distance = 645.000(Ft.)
Top (of initial area) elevation = 2890.000(Ft.)
Bottom (of initial area) elevation = 2862.400(Ft.)
Difference in elevation = 27.600(Ft.)
Slope = 0.04279 s(%)= 4.28
TC = $k(0.525)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 13.113 min.
Rainfall intensity = 1.792(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.667

Subarea runoff = 4.013(CFS)
 Total initial stream area = 3.360(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.465(In/Hr)

++++
 Process from Point/Station 301.000 to Point/Station 302.000
 **** SUBAREA FLOW ADDITION ****

UNDEVELOPED (poor cover) subarea
 Decimal fraction soil group A = 0.617
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.383
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 74.28
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.465(In/Hr)
 Time of concentration = 13.11 min.
 Rainfall intensity = 1.792(In/Hr) for a 10.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.667
 Subarea runoff = 5.088(CFS) for 4.260(Ac.)
 Total runoff = 9.101(CFS)
 Effective area this stream = 7.62(Ac.)
 Total Study Area (Main Stream No. 1) = 7.62(Ac.)
 Area averaged Fm value = 0.465(In/Hr)

++++
 Process from Point/Station 300.000 to Point/Station 302.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 7.620(Ac.)
 Runoff from this stream = 9.101(CFS)
 Time of concentration = 13.11 min.
 Rainfall intensity = 1.792(In/Hr)
 Area averaged loss rate (Fm) = 0.4647(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	9.10	7.620	13.11	0.465	1.792
Qmax(1) =					
	1.000 *	1.000 *		9.101) + =	9.101

Total of 1 streams to confluence:

Flow rates before confluence point:

9.101

Maximum flow rates at confluence using above data:

9.101

Area of streams before confluence:

7.620

Effective area values after confluence:

7.620

Results of confluence:

Total flow rate = 9.101(CFS)

Time of concentration = 13.113 min.

Effective stream area after confluence = 7.620(Ac.)

Study area average Pervious fraction(A_p) = 1.000

Study area average soil loss rate(F_m) = 0.465(In/Hr)

Study area total (this main stream) = 7.62(Ac.)

End of computations, Total Study Area = 7.62 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

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

Area averaged pervious area fraction(A_p) = 1.000

Area averaged SCS curve number = 74.3

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/02/21

Space Center
undeveloped 10-year
Area D

Program License Serial Number 6385

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.618 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 400.000 to Point/Station 401.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.430
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.570
SCS curve number for soil(AMC 2) = 79.54
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.378(In/Hr)
Initial subarea data:
Initial area flow distance = 467.000(Ft.)
Top (of initial area) elevation = 2891.000(Ft.)
Bottom (of initial area) elevation = 2854.000(Ft.)
Difference in elevation = 37.000(Ft.)
Slope = 0.07923 s(%)= 7.92
TC = $k(0.525)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 10.188 min.
Rainfall intensity = 2.138(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.741

Subarea runoff = 8.334(CFS)
Total initial stream area = 5.260(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.378(In/Hr)
End of computations, Total Study Area = 5.26 (Ac.)

The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 1.000
Area averaged SCS curve number = 79.5

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/02/21

Space Center
undeveloped 100-year
Area A

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.125
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.875
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 83.63
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.307(In/Hr)
Initial subarea data:
Initial area flow distance = 704.000(Ft.)
Top (of initial area) elevation = 2891.000(Ft.)
Bottom (of initial area) elevation = 2872.000(Ft.)
Difference in elevation = 19.000(Ft.)
Slope = 0.02699 s(%)= 2.70
TC = $k(0.525)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 14.892 min.
Rainfall intensity = 2.891(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.804

Subarea runoff = 17.372(CFS)
 Total initial stream area = 7.470(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.307(In/Hr)

++++
 Process from Point/Station 101.000 to Point/Station 102.000
 **** SUBAREA FLOW ADDITION ****

UNDEVELOPED (poor cover) subarea
 Decimal fraction soil group A = 0.125
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.875
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 83.63
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.307(In/Hr)
 Time of concentration = 14.89 min.
 Rainfall intensity = 2.891(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.804
 Subarea runoff = 19.953(CFS) for 8.580(Ac.)
 Total runoff = 37.325(CFS)
 Effective area this stream = 16.05(Ac.)
 Total Study Area (Main Stream No. 1) = 16.05(Ac.)
 Area averaged Fm value = 0.307(In/Hr)

++++
 Process from Point/Station 100.000 to Point/Station 102.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 16.050(Ac.)
 Runoff from this stream = 37.325(CFS)
 Time of concentration = 14.89 min.
 Rainfall intensity = 2.891(In/Hr)
 Area averaged loss rate (Fm) = 0.3072(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	37.33	16.050	14.89	0.307	2.891
Qmax(1) =					
1.000 * 1.000 * 37.325) + = 37.325					

Total of 1 streams to confluence:

Flow rates before confluence point:

37.325

Maximum flow rates at confluence using above data:

37.325

Area of streams before confluence:

16.050

Effective area values after confluence:

16.050

Results of confluence:

Total flow rate = 37.325(CFS)

Time of concentration = 14.892 min.

Effective stream area after confluence = 16.050(Ac.)

Study area average Pervious fraction(A_p) = 1.000

Study area average soil loss rate(F_m) = 0.307(In/Hr)

Study area total (this main stream) = 16.05(Ac.)

End of computations, Total Study Area = 16.05 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

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

Area averaged pervious area fraction(A_p) = 1.000

Area averaged SCS curve number = 83.6

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

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Rational Hydrology Study Date: 08/02/21

Space Center
undeveloped 100-year
Area B

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.163
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.837
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 82.90
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.320(In/Hr)
Initial subarea data:
Initial area flow distance = 507.000(Ft.)
Top (of initial area) elevation = 2890.000(Ft.)
Bottom (of initial area) elevation = 2861.000(Ft.)
Difference in elevation = 29.000(Ft.)
Slope = 0.05720 s(%)= 5.72
TC = $k(0.525)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 11.238 min.
Rainfall intensity = 3.521(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.818

Subarea runoff = 25.410(CFS)
 Total initial stream area = 8.820(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.320(In/Hr)

++++
 Process from Point/Station 201.000 to Point/Station 202.000
 **** SUBAREA FLOW ADDITION ****

UNDEVELOPED (poor cover) subarea
 Decimal fraction soil group A = 0.163
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.837
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 82.90
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.320(In/Hr)
 Time of concentration = 11.24 min.
 Rainfall intensity = 3.521(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.818
 Subarea runoff = 40.824(CFS) for 14.170(Ac.)
 Total runoff = 66.234(CFS)
 Effective area this stream = 22.99(Ac.)
 Total Study Area (Main Stream No. 1) = 22.99(Ac.)
 Area averaged Fm value = 0.320(In/Hr)

++++
 Process from Point/Station 200.000 to Point/Station 202.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 22.990(Ac.)
 Runoff from this stream = 66.234(CFS)
 Time of concentration = 11.24 min.
 Rainfall intensity = 3.521(In/Hr)
 Area averaged loss rate (Fm) = 0.3198(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	66.23	22.990	11.24	0.320	3.521
Qmax(1) =					
1.000 * 1.000 * 66.234) + = 66.234					

Total of 1 streams to confluence:

Flow rates before confluence point:

66.234

Maximum flow rates at confluence using above data:

66.234

Area of streams before confluence:

22.990

Effective area values after confluence:

22.990

Results of confluence:

Total flow rate = 66.234(CFS)

Time of concentration = 11.238 min.

Effective stream area after confluence = 22.990(Ac.)

Study area average Pervious fraction(A_p) = 1.000

Study area average soil loss rate(F_m) = 0.320(In/Hr)

Study area total (this main stream) = 22.99(Ac.)

End of computations, Total Study Area = 22.99 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

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

Area averaged pervious area fraction(A_p) = 1.000

Area averaged SCS curve number = 82.9

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/02/21

Space Center
undeveloped 100-year
Area C

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.617
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.383
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 74.28
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.465(In/Hr)
Initial subarea data:
Initial area flow distance = 645.000(Ft.)
Top (of initial area) elevation = 2890.000(Ft.)
Bottom (of initial area) elevation = 2862.400(Ft.)
Difference in elevation = 27.600(Ft.)
Slope = 0.04279 s(%)= 4.28
TC = $k(0.525)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 13.113 min.
Rainfall intensity = 3.160(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.768

Subarea runoff = 8.152(CFS)
 Total initial stream area = 3.360(Ac.)
 Pervious area fraction = 1.000
 Initial area Fm value = 0.465(In/Hr)

++++
 Process from Point/Station 301.000 to Point/Station 302.000
 **** SUBAREA FLOW ADDITION ****

UNDEVELOPED (poor cover) subarea
 Decimal fraction soil group A = 0.617
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.383
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 74.28
 Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.465(In/Hr)
 Time of concentration = 13.11 min.
 Rainfall intensity = 3.160(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.768
 Subarea runoff = 10.335(CFS) for 4.260(Ac.)
 Total runoff = 18.487(CFS)
 Effective area this stream = 7.62(Ac.)
 Total Study Area (Main Stream No. 1) = 7.62(Ac.)
 Area averaged Fm value = 0.465(In/Hr)

++++
 Process from Point/Station 300.000 to Point/Station 302.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 7.620(Ac.)
 Runoff from this stream = 18.487(CFS)
 Time of concentration = 13.11 min.
 Rainfall intensity = 3.160(In/Hr)
 Area averaged loss rate (Fm) = 0.4647(In/Hr)
 Area averaged Pervious ratio (Ap) = 1.0000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	18.49	7.620	13.11	0.465	3.160
Qmax(1) =					
		1.000 *	1.000 *	18.487)	+ = 18.487

Total of 1 streams to confluence:

Flow rates before confluence point:

18.487

Maximum flow rates at confluence using above data:

18.487

Area of streams before confluence:

7.620

Effective area values after confluence:

7.620

Results of confluence:

Total flow rate = 18.487(CFS)

Time of concentration = 13.113 min.

Effective stream area after confluence = 7.620(Ac.)

Study area average Pervious fraction(A_p) = 1.000

Study area average soil loss rate(F_m) = 0.465(In/Hr)

Study area total (this main stream) = 7.62(Ac.)

End of computations, Total Study Area = 7.62 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

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

Area averaged pervious area fraction(A_p) = 1.000

Area averaged SCS curve number = 74.3

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/02/21

Space Center
undeveloped 100-year
Area D

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 400.000 to Point/Station 401.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.430
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.570
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 77.83
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.406(In/Hr)
Initial subarea data:
Initial area flow distance = 467.000(Ft.)
Top (of initial area) elevation = 2891.000(Ft.)
Bottom (of initial area) elevation = 2854.000(Ft.)
Difference in elevation = 37.000(Ft.)
Slope = 0.07923 s(%)= 7.92
TC = $k(0.525)*[(\text{length}^3)/(\text{elevation change})]^{0.2}$
Initial area time of concentration = 10.188 min.
Rainfall intensity = 3.771(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.803

Subarea runoff = 15.928(CFS)
Total initial stream area = 5.260(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.406(In/Hr)
End of computations, Total Study Area = 5.26 (Ac.)

The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 1.000
Area averaged SCS curve number = 77.8

APPENDIX 'C'

Rational Method Developed Condition
On-Site, 10, and 100-year Storm Event

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/06/21

Space Center
Developed 10-year
Area E

Program License Serial Number 6385

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.618 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

++++
Process from Point/Station 500.000 to Point/Station 501.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 968.000(Ft.)
Top (of initial area) elevation = 2886.000(Ft.)
Bottom (of initial area) elevation = 2879.000(Ft.)
Difference in elevation = 7.000(Ft.)
Slope = 0.00723 s(%)= 0.72
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.746 min.
Rainfall intensity = 1.828(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.873
Subarea runoff = 14.936(CFS)

Total initial stream area = 9.360(Ac.)
 Pervious area fraction = 0.100
 Initial area Fm value = 0.055(In/Hr)

++++
 Process from Point/Station 501.000 to Point/Station 502.000
 **** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
 Decimal fraction soil group A = 0.200
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.800
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 61.60
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.066(In/Hr)
 Time of concentration = 12.75 min.
 Rainfall intensity = 1.828(In/Hr) for a 10.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.870
 Subarea runoff = 18.301(CFS) for 11.540(Ac.)
 Total runoff = 33.237(CFS)
 Effective area this stream = 20.90(Ac.)
 Total Study Area (Main Stream No. 1) = 20.90(Ac.)
 Area averaged Fm value = 0.061(In/Hr)

++++
 Process from Point/Station 502.000 to Point/Station 502.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 20.900(Ac.)
 Runoff from this stream = 33.237(CFS)
 Time of concentration = 12.75 min.
 Rainfall intensity = 1.828(In/Hr)
 Area averaged loss rate (Fm) = 0.0608(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.1000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	33.24	20.900	12.75	0.061	1.828

Qmax(1) = 1.000 * 1.000 * 33.237) + = 33.237

Total of 1 streams to confluence:
 Flow rates before confluence point:

33.237

Maximum flow rates at confluence using above data:

33.237

Area of streams before confluence:

20.900

Effective area values after confluence:

20.900

Results of confluence:

Total flow rate = 33.237(CFS)

Time of concentration = 12.746 min.

Effective stream area after confluence = 20.900(Ac.)

Study area average Pervious fraction(A_p) = 0.100

Study area average soil loss rate(F_m) = 0.061(In/Hr)

Study area total (this main stream) = 20.90(Ac.)

End of computations, Total Study Area = 20.90 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

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

Area averaged pervious area fraction(A_p) = 0.100

Area averaged SCS curve number = 64.9

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/06/21

Space Center
developed 10-year
Area F

Program License Serial Number 6385

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.618 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 600.000 to Point/Station 601.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 230.000(Ft.)
Top (of initial area) elevation = 2899.000(Ft.)
Bottom (of initial area) elevation = 2884.000(Ft.)
Difference in elevation = 15.000(Ft.)
Slope = 0.06522 s(%)= 6.52
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 4.621 min.
Rainfall intensity = 3.719(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff = 1.880(CFS)

Total initial stream area = 0.570(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++++
Process from Point/Station 601.000 to Point/Station 602.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 3.719(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.887
Subarea runoff = 2.045(CFS) for 0.620(Ac.)
Total runoff = 3.924(CFS)
Effective area this stream = 1.19(Ac.)
Total Study Area (Main Stream No. 1) = 1.19(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++
Process from Point/Station 602.000 to Point/Station 603.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 3.719(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.887
Subarea runoff = 2.902(CFS) for 0.880(Ac.)
Total runoff = 6.826(CFS)
Effective area this stream = 2.07(Ac.)
Total Study Area (Main Stream No. 1) = 2.07(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++

Process from Point/Station 603.000 to Point/Station 604.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 3.719(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.887
Subarea runoff = 2.935(CFS) for 0.890(Ac.)
Total runoff = 9.761(CFS)
Effective area this stream = 2.96(Ac.)
Total Study Area (Main Stream No. 1) = 2.96(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++
Process from Point/Station 604.000 to Point/Station 605.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 3.719(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.887
Subarea runoff = 2.374(CFS) for 0.720(Ac.)
Total runoff = 12.135(CFS)
Effective area this stream = 3.68(Ac.)
Total Study Area (Main Stream No. 1) = 3.68(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++
Process from Point/Station 605.000 to Point/Station 606.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000

Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 3.719(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.887
Subarea runoff = 1.682(CFS) for 0.510(Ac.)
Total runoff = 13.817(CFS)
Effective area this stream = 4.19(Ac.)
Total Study Area (Main Stream No. 1) = 4.19(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++
Process from Point/Station 606.000 to Point/Station 607.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.900
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 65.30
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.060(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 3.719(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.886
Subarea runoff = 28.646(CFS) for 8.700(Ac.)
Total runoff = 42.463(CFS)
Effective area this stream = 12.89(Ac.)
Total Study Area (Main Stream No. 1) = 12.89(Ac.)
Area averaged Fm value = 0.059(In/Hr)

++++
Process from Point/Station 607.000 to Point/Station 608.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.066(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 3.719(In/Hr) for a 10.0 year storm

Effective runoff coefficient used for area,(total area with modified rational method)(Q=KCIA) is $C = 0.885$
 Subarea runoff = 27.289(CFS) for 8.300(Ac.)
 Total runoff = 69.752(CFS)
 Effective area this stream = 21.19(Ac.)
 Total Study Area (Main Stream No. 1) = 21.19(Ac.)
 Area averaged Fm value = 0.061(In/Hr)

++++
 Process from Point/Station 608.000 to Point/Station 608.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 21.190(Ac.)
 Runoff from this stream = 69.752(CFS)
 Time of concentration = 4.62 min.
 Rainfall intensity = 3.719(In/Hr)
 Area averaged loss rate (Fm) = 0.0614(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.1000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	69.75	21.190	4.62	0.061	3.719
Qmax(1) =					
	1.000 *	1.000 *		69.752)	+ = 69.752

Total of 1 streams to confluence:
 Flow rates before confluence point:
 69.752
 Maximum flow rates at confluence using above data:
 69.752
 Area of streams before confluence:
 21.190
 Effective area values after confluence:
 21.190
 Results of confluence:
 Total flow rate = 69.752(CFS)
 Time of concentration = 4.621 min.
 Effective stream area after confluence = 21.190(Ac.)
 Study area average Pervious fraction(Ap) = 0.100
 Study area average soil loss rate(Fm) = 0.061(In/Hr)
 Study area total (this main stream) = 21.19(Ac.)
 End of computations, Total Study Area = 21.19 (Ac.)
 The following figures may
 be used for a unit hydrograph study of the same area.
 Note: These figures do not consider reduced effective area

effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.100

Area averaged SCS curve number = 64.6

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/06/21

Space Center
Developed 10-year
Area G

Program License Serial Number 6385

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.618 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 700.000 to Point/Station 701.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 50.50
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.080(In/Hr)
Initial subarea data:
Initial area flow distance = 233.000(Ft.)
Top (of initial area) elevation = 2875.000(Ft.)
Bottom (of initial area) elevation = 2872.000(Ft.)
Difference in elevation = 3.000(Ft.)
Slope = 0.01288 s(%)= 1.29
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.425 min.
Rainfall intensity = 2.953(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.876

Subarea runoff = 5.299(CFS)
Total initial stream area = 2.050(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.080(In/Hr)

++++
Process from Point/Station 701.000 to Point/Station 702.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 50.50
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.080(In/Hr)
Time of concentration = 6.42 min.
Rainfall intensity = 2.953(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.876
Subarea runoff = 1.318(CFS) for 0.510(Ac.)
Total runoff = 6.617(CFS)
Effective area this stream = 2.56(Ac.)
Total Study Area (Main Stream No. 1) = 2.56(Ac.)
Area averaged Fm value = 0.080(In/Hr)

++++
Process from Point/Station 800.000 to Point/Station 801.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 46.80
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.085(In/Hr)
Time of concentration = 6.42 min.
Rainfall intensity = 2.953(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.875
Subarea runoff = 3.510(CFS) for 1.360(Ac.)
Total runoff = 10.128(CFS)
Effective area this stream = 3.92(Ac.)
Total Study Area (Main Stream No. 1) = 3.92(Ac.)
Area averaged Fm value = 0.082(In/Hr)

+++++
Process from Point/Station 800.000 to Point/Station 801.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:

In Main Stream number: 1

Stream flow area = 3.920(Ac.)

Runoff from this stream = 10.128(CFS)

Time of concentration = 6.42 min.

Rainfall intensity = 2.953(In/Hr)

Area averaged loss rate (Fm) = 0.0818(In/Hr)

Area averaged Pervious ratio (Ap) = 0.1000

Program is now starting with Main Stream No. 2

End of computations, Total Study Area = 3.92 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

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

Area averaged pervious area fraction(Ap) = 0.100

Area averaged SCS curve number = 49.2

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/06/21

Space Center
Developed 100-year
Area E

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

++++
Process from Point/Station 500.000 to Point/Station 501.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 968.000(Ft.)
Top (of initial area) elevation = 2886.000(Ft.)
Bottom (of initial area) elevation = 2879.000(Ft.)
Difference in elevation = 7.000(Ft.)
Slope = 0.00723 s(%)= 0.72
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.746 min.
Rainfall intensity = 3.224(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.885
Subarea runoff = 26.696(CFS)

Total initial stream area = 9.360(Ac.)
 Pervious area fraction = 0.100
 Initial area Fm value = 0.055(In/Hr)

++++
 Process from Point/Station 501.000 to Point/Station 502.000
 **** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
 Decimal fraction soil group A = 0.200
 Decimal fraction soil group B = 0.000
 Decimal fraction soil group C = 0.800
 Decimal fraction soil group D = 0.000
 SCS curve number for soil(AMC 2) = 61.60
 Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.066(In/Hr)
 Time of concentration = 12.75 min.
 Rainfall intensity = 3.224(In/Hr) for a 100.0 year storm
 Effective runoff coefficient used for area,(total area with modified
 rational method)(Q=KCIA) is C = 0.883
 Subarea runoff = 32.800(CFS) for 11.540(Ac.)
 Total runoff = 59.495(CFS)
 Effective area this stream = 20.90(Ac.)
 Total Study Area (Main Stream No. 1) = 20.90(Ac.)
 Area averaged Fm value = 0.061(In/Hr)

++++
 Process from Point/Station 502.000 to Point/Station 502.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 20.900(Ac.)
 Runoff from this stream = 59.495(CFS)
 Time of concentration = 12.75 min.
 Rainfall intensity = 3.224(In/Hr)
 Area averaged loss rate (Fm) = 0.0608(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.1000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	59.50	20.900	12.75	0.061	3.224

Qmax(1) = 1.000 * 1.000 * 59.495) + = 59.495

Total of 1 streams to confluence:
 Flow rates before confluence point:

59.495

Maximum flow rates at confluence using above data:

59.495

Area of streams before confluence:

20.900

Effective area values after confluence:

20.900

Results of confluence:

Total flow rate = 59.495(CFS)

Time of concentration = 12.746 min.

Effective stream area after confluence = 20.900(Ac.)

Study area average Pervious fraction(A_p) = 0.100

Study area average soil loss rate(F_m) = 0.061(In/Hr)

Study area total (this main stream) = 20.90(Ac.)

End of computations, Total Study Area = 20.90 (Ac.)

The following figures may

be used for a unit hydrograph study of the same area.

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

Area averaged pervious area fraction(A_p) = 0.100

Area averaged SCS curve number = 64.9

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/06/21

Space Center
Developed 100-year
Area F

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

++++
Process from Point/Station 600.000 to Point/Station 601.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Initial subarea data:
Initial area flow distance = 230.000(Ft.)
Top (of initial area) elevation = 2899.000(Ft.)
Bottom (of initial area) elevation = 2884.000(Ft.)
Difference in elevation = 15.000(Ft.)
Slope = 0.06522 s(%)= 6.52
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 4.621 min.
Rainfall intensity = 6.559(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.892
Subarea runoff = 3.337(CFS)

Total initial stream area = 0.570(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.055(In/Hr)

++++
Process from Point/Station 601.000 to Point/Station 602.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 6.559(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.892
Subarea runoff = 3.629(CFS) for 0.620(Ac.)
Total runoff = 6.966(CFS)
Effective area this stream = 1.19(Ac.)
Total Study Area (Main Stream No. 1) = 1.19(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++
Process from Point/Station 602.000 to Point/Station 603.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 6.559(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.892
Subarea runoff = 5.151(CFS) for 0.880(Ac.)
Total runoff = 12.118(CFS)
Effective area this stream = 2.07(Ac.)
Total Study Area (Main Stream No. 1) = 2.07(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++

Process from Point/Station 603.000 to Point/Station 604.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 6.559(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.892
Subarea runoff = 5.210(CFS) for 0.890(Ac.)
Total runoff = 17.328(CFS)
Effective area this stream = 2.96(Ac.)
Total Study Area (Main Stream No. 1) = 2.96(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++
Process from Point/Station 604.000 to Point/Station 605.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 6.559(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.892
Subarea runoff = 4.215(CFS) for 0.720(Ac.)
Total runoff = 21.542(CFS)
Effective area this stream = 3.68(Ac.)
Total Study Area (Main Stream No. 1) = 3.68(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++
Process from Point/Station 605.000 to Point/Station 606.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000

Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.055(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 6.559(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.892
Subarea runoff = 2.986(CFS) for 0.510(Ac.)
Total runoff = 24.528(CFS)
Effective area this stream = 4.19(Ac.)
Total Study Area (Main Stream No. 1) = 4.19(Ac.)
Area averaged Fm value = 0.055(In/Hr)

++++
Process from Point/Station 606.000 to Point/Station 607.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.900
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 65.30
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.060(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 6.559(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.892
Subarea runoff = 50.886(CFS) for 8.700(Ac.)
Total runoff = 75.413(CFS)
Effective area this stream = 12.89(Ac.)
Total Study Area (Main Stream No. 1) = 12.89(Ac.)
Area averaged Fm value = 0.059(In/Hr)

++++
Process from Point/Station 607.000 to Point/Station 608.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type

Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.066(In/Hr)
Time of concentration = 4.62 min.
Rainfall intensity = 6.559(In/Hr) for a 100.0 year storm

Effective runoff coefficient used for area,(total area with modified rational method)(Q=KCIA) is $C = 0.892$
 Subarea runoff = 48.506(CFS) for 8.300(Ac.)
 Total runoff = 123.919(CFS)
 Effective area this stream = 21.19(Ac.)
 Total Study Area (Main Stream No. 1) = 21.19(Ac.)
 Area averaged Fm value = 0.061(In/Hr)

++++
 Process from Point/Station 608.000 to Point/Station 608.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 21.190(Ac.)
 Runoff from this stream = 123.919(CFS)
 Time of concentration = 4.62 min.
 Rainfall intensity = 6.559(In/Hr)
 Area averaged loss rate (Fm) = 0.0614(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.1000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
1	123.92	21.190	4.62	0.061	6.559

$Q_{max}(1) = 1.000 * 1.000 * 123.919) + = 123.919$

Total of 1 streams to confluence:
 Flow rates before confluence point:
 123.919
 Maximum flow rates at confluence using above data:
 123.919
 Area of streams before confluence:
 21.190
 Effective area values after confluence:
 21.190
 Results of confluence:
 Total flow rate = 123.919(CFS)
 Time of concentration = 4.621 min.
 Effective stream area after confluence = 21.190(Ac.)
 Study area average Pervious fraction(Ap) = 0.100
 Study area average soil loss rate(Fm) = 0.061(In/Hr)
 Study area total (this main stream) = 21.19(Ac.)
 End of computations, Total Study Area = 21.19 (Ac.)
 The following figures may
 be used for a unit hydrograph study of the same area.
 Note: These figures do not consider reduced effective area

effects caused by confluences in the rational equation.

Area averaged pervious area fraction(A_p) = 0.100

Area averaged SCS curve number = 64.6

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2014 Version 9.0
Rational Hydrology Study Date: 08/06/21

Space Center
Developed 100-year
Area G

Program License Serial Number 6385

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.090 (In.)
Slope used for rainfall intensity curve b = 0.7000
Soil antecedent moisture condition (AMC) = 2

+++++
Process from Point/Station 700.000 to Point/Station 701.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 50.50
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.080(In/Hr)
Initial subarea data:
Initial area flow distance = 223.000(Ft.)
Top (of initial area) elevation = 2875.000(Ft.)
Bottom (of initial area) elevation = 2872.000(Ft.)
Difference in elevation = 3.000(Ft.)
Slope = 0.01345 s(%)= 1.35
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.258 min.
Rainfall intensity = 5.304(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.886

Subarea runoff = 9.638(CFS)
Total initial stream area = 2.050(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.080(In/Hr)

++++
Process from Point/Station 701.000 to Point/Station 702.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 50.50
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.080(In/Hr)
Time of concentration = 6.26 min.
Rainfall intensity = 5.304(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.886
Subarea runoff = 2.398(CFS) for 0.510(Ac.)
Total runoff = 12.036(CFS)
Effective area this stream = 2.56(Ac.)
Total Study Area (Main Stream No. 1) = 2.56(Ac.)
Area averaged Fm value = 0.080(In/Hr)

++++
Process from Point/Station 800.000 to Point/Station 801.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 50.50
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.080(In/Hr)
Time of concentration = 6.26 min.
Rainfall intensity = 5.304(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.886
Subarea runoff = 6.394(CFS) for 1.360(Ac.)
Total runoff = 18.430(CFS)
Effective area this stream = 3.92(Ac.)
Total Study Area (Main Stream No. 1) = 3.92(Ac.)
Area averaged Fm value = 0.080(In/Hr)

+++++
 Process from Point/Station 800.000 to Point/Station 801.000
 **** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
 Stream flow area = 3.920(Ac.)
 Runoff from this stream = 18.430(CFS)
 Time of concentration = 6.26 min.
 Rainfall intensity = 5.304(In/Hr)
 Area averaged loss rate (Fm) = 0.0804(In/Hr)
 Area averaged Pervious ratio (Ap) = 0.1000
 Summary of stream data:

Stream No.	Flow rate (CFS)	Area (Ac.)	TC (min)	Fm (In/Hr)	Rainfall Intensity (In/Hr)
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1	18.43	3.920	6.26	0.080	5.304
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Qmax(1) = 1.000 * 1.000 * 18.430) + = 18.430

Total of 1 streams to confluence:
 Flow rates before confluence point:
 18.430
 Maximum flow rates at confluence using above data:
 18.430
 Area of streams before confluence:
 3.920
 Effective area values after confluence:
 3.920

Results of confluence:
 Total flow rate = 18.430(CFS)
 Time of concentration = 6.258 min.
 Effective stream area after confluence = 3.920(Ac.)
 Study area average Pervious fraction(Ap) = 0.100
 Study area average soil loss rate(Fm) = 0.080(In/Hr)
 Study area total (this main stream) = 3.92(Ac.)
 End of computations, Total Study Area = 3.92 (Ac.)

The following figures may be used for a unit hydrograph study of the same area.
 Note: These figures do not consider reduced effective area effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.100
 Area averaged SCS curve number = 50.5

APPENDIX 'D'

Unit Hydrograph Analysis

Existing Area 10-year and 100-year

Developed Area 10-year and 100-year

Unit Hydrograph summary

Undeveloped Unit Hydrograph Method

Area ID	Area (ac)	SCS	TC (hour)	Q10 (cfs)	Volume 10-yr (ac.ft)	Q100 (cfs)	Volume 100-yr (ac.ft)
A	16.05	84	0.252	18.71	1.43	35.8	3.057
B	22.99	83	0.192	28.1	2.52	53.3	4.2528
C	7.62	75	0.233	8.05	0.4451	16.0	1.0955
D	5.26	80	0.19	6.2	0.3906	12.1	0.8874
Total	51.92			61.01	4.786	117.2	9.2927

Developed Unit Hydrograph Method

Area ID	Area (ac)	SCS	TC (hour)	Q10 (cfs)	Volume 10-yr (ac.ft)	Q100 (cfs)	Volume 100-yr (ac.ft)
E	20.90	65	0.568	17.8	3.2367	32.0	5.3347
F	31.02	58	0.61	24.7	4.4972	44.93	7.7925
Total	51.92			42.5	7.7339	76.9	13.1272

10-year Pre vs Post = 7.734-4.786 = 2.948 ac.ft = 128,415 CF

Basin Routing

Area ID	Basin ID	10-year out (cfs)	100-year out (cfs)	Comments
E	1	14.7	26.5	South side of project. Overflows into Line J-03 which outlets at northeast area of the Project site and will confluence with off-site Line J-01.
F	2	20.5	37.5	North side of project
Total		35.2	64	

Summary

Comparison with undeveloped can only be done by the total Q produced . Undeveloped Q10 = 61.0 cfs > developed Q10 = 35.2 cfs and undeveloped Q100 = 117.2 cfs > developed Q100 = 64 cfs

Time of concentration is mitigated with the use of the retention basins and bioswales.

Q peak is mitigated below the requirements of 5% below existing.

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 08/03/21

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

Program License Serial Number 6385

Space Center
undeveloped 10-year
Area A

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
16.05	1	0.62

Rainfall data for year 10		
16.05	6	1.27

Rainfall data for year 10		
16.05	24	2.23

+++++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
84.0	84.0	16.05	1.000	0.301	1.000	0.301

Area-averaged adjusted loss rate Fm (In/Hr) = 0.301

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
16.05	1.000	84.0	84.0	1.90	0.408

Area-averaged catchment yield fraction, Y = 0.408

Area-averaged low loss fraction, Yb = 0.592

User entry of time of concentration = 0.252 (hours)

+++++

Watershed area = 16.05(Ac.)

Catchment Lag time = 0.202 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 41.3360

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.301(In/Hr)

Average low loss rate fraction (Yb) = 0.592 (decimal)

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.293(In)

Computed peak 30-minute rainfall = 0.502(In)

Specified peak 1-hour rainfall = 0.618(In)

Computed peak 3-hour rainfall = 0.961(In)

Specified peak 6-hour rainfall = 1.270(In)

Specified peak 24-hour rainfall = 2.230(In)

Rainfall depth area reduction factors:

Using a total area of 16.05(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.293(In)

30-minute factor = 0.999 Adjusted rainfall = 0.502(In)

1-hour factor = 0.999 Adjusted rainfall = 0.618(In)

3-hour factor = 1.000 Adjusted rainfall = 0.961(In)

6-hour factor = 1.000 Adjusted rainfall = 1.270(In)

24-hour factor = 1.000 Adjusted rainfall = 2.230(In)

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

+++++

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))

(K = 194.10 (CFS))		
1	2.897	5.624
2	20.229	33.642
3	51.022	59.771
4	66.916	30.850
5	75.856	17.354
6	81.756	11.452
7	86.053	8.341
8	89.272	6.248
9	91.629	4.575
10	93.556	3.741
11	95.055	2.908
12	96.259	2.338
13	97.199	1.824
14	97.865	1.292
15	98.303	0.851
16	98.788	0.942
17	99.284	0.962
18	99.646	0.703
19	100.000	0.687

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

1	0.2930	0.2930
2	0.3608	0.0677
3	0.4074	0.0467
4	0.4441	0.0367
5	0.4749	0.0308
6	0.5016	0.0267
7	0.5253	0.0237
8	0.5468	0.0215
9	0.5665	0.0197
10	0.5847	0.0182
11	0.6016	0.0170
12	0.6175	0.0159
13	0.6378	0.0202
14	0.6571	0.0193
15	0.6756	0.0185
16	0.6934	0.0178
17	0.7105	0.0171
18	0.7270	0.0165
19	0.7430	0.0160
20	0.7585	0.0155
21	0.7736	0.0150
22	0.7882	0.0146
23	0.8024	0.0142

24	0.8163	0.0139
25	0.8298	0.0135
26	0.8430	0.0132
27	0.8560	0.0129
28	0.8686	0.0126
29	0.8809	0.0124
30	0.8930	0.0121
31	0.9049	0.0119
32	0.9165	0.0116
33	0.9280	0.0114
34	0.9392	0.0112
35	0.9502	0.0110
36	0.9611	0.0108
37	0.9717	0.0106
38	0.9822	0.0105
39	0.9925	0.0103
40	1.0026	0.0102
41	1.0126	0.0100
42	1.0225	0.0099
43	1.0322	0.0097
44	1.0418	0.0096
45	1.0513	0.0095
46	1.0606	0.0093
47	1.0698	0.0092
48	1.0789	0.0091
49	1.0879	0.0090
50	1.0968	0.0089
51	1.1055	0.0088
52	1.1142	0.0087
53	1.1228	0.0086
54	1.1312	0.0085
55	1.1396	0.0084
56	1.1479	0.0083
57	1.1561	0.0082
58	1.1642	0.0081
59	1.1722	0.0080
60	1.1802	0.0079
61	1.1880	0.0079
62	1.1958	0.0078
63	1.2036	0.0077
64	1.2112	0.0076
65	1.2188	0.0076
66	1.2263	0.0075
67	1.2337	0.0074
68	1.2411	0.0074
69	1.2484	0.0073
70	1.2556	0.0072
71	1.2628	0.0072
72	1.2699	0.0071
73	1.2771	0.0071

74	1.2841	0.0071
75	1.2912	0.0070
76	1.2981	0.0070
77	1.3050	0.0069
78	1.3119	0.0069
79	1.3187	0.0068
80	1.3255	0.0068
81	1.3322	0.0067
82	1.3388	0.0067
83	1.3454	0.0066
84	1.3520	0.0066
85	1.3585	0.0065
86	1.3650	0.0065
87	1.3714	0.0064
88	1.3778	0.0064
89	1.3841	0.0063
90	1.3904	0.0063
91	1.3967	0.0063
92	1.4029	0.0062
93	1.4090	0.0062
94	1.4152	0.0061
95	1.4213	0.0061
96	1.4273	0.0061
97	1.4333	0.0060
98	1.4393	0.0060
99	1.4453	0.0059
100	1.4512	0.0059
101	1.4571	0.0059
102	1.4629	0.0058
103	1.4687	0.0058
104	1.4745	0.0058
105	1.4802	0.0057
106	1.4859	0.0057
107	1.4916	0.0057
108	1.4973	0.0056
109	1.5029	0.0056
110	1.5085	0.0056
111	1.5140	0.0056
112	1.5195	0.0055
113	1.5250	0.0055
114	1.5305	0.0055
115	1.5359	0.0054
116	1.5414	0.0054
117	1.5467	0.0054
118	1.5521	0.0054
119	1.5574	0.0053
120	1.5627	0.0053
121	1.5680	0.0053
122	1.5732	0.0053
123	1.5785	0.0052

124	1.5837	0.0052
125	1.5888	0.0052
126	1.5940	0.0051
127	1.5991	0.0051
128	1.6042	0.0051
129	1.6093	0.0051
130	1.6144	0.0051
131	1.6194	0.0050
132	1.6244	0.0050
133	1.6294	0.0050
134	1.6343	0.0050
135	1.6393	0.0049
136	1.6442	0.0049
137	1.6491	0.0049
138	1.6540	0.0049
139	1.6588	0.0049
140	1.6637	0.0048
141	1.6685	0.0048
142	1.6733	0.0048
143	1.6781	0.0048
144	1.6828	0.0048
145	1.6876	0.0047
146	1.6923	0.0047
147	1.6970	0.0047
148	1.7017	0.0047
149	1.7063	0.0047
150	1.7110	0.0046
151	1.7156	0.0046
152	1.7202	0.0046
153	1.7248	0.0046
154	1.7293	0.0046
155	1.7339	0.0046
156	1.7384	0.0045
157	1.7429	0.0045
158	1.7474	0.0045
159	1.7519	0.0045
160	1.7564	0.0045
161	1.7608	0.0045
162	1.7653	0.0044
163	1.7697	0.0044
164	1.7741	0.0044
165	1.7785	0.0044
166	1.7829	0.0044
167	1.7872	0.0044
168	1.7915	0.0043
169	1.7959	0.0043
170	1.8002	0.0043
171	1.8045	0.0043
172	1.8087	0.0043
173	1.8130	0.0043

174	1.8173	0.0042
175	1.8215	0.0042
176	1.8257	0.0042
177	1.8299	0.0042
178	1.8341	0.0042
179	1.8383	0.0042
180	1.8425	0.0042
181	1.8466	0.0042
182	1.8507	0.0041
183	1.8549	0.0041
184	1.8590	0.0041
185	1.8631	0.0041
186	1.8672	0.0041
187	1.8712	0.0041
188	1.8753	0.0041
189	1.8793	0.0040
190	1.8834	0.0040
191	1.8874	0.0040
192	1.8914	0.0040
193	1.8954	0.0040
194	1.8994	0.0040
195	1.9033	0.0040
196	1.9073	0.0040
197	1.9112	0.0039
198	1.9152	0.0039
199	1.9191	0.0039
200	1.9230	0.0039
201	1.9269	0.0039
202	1.9308	0.0039
203	1.9347	0.0039
204	1.9385	0.0039
205	1.9424	0.0039
206	1.9462	0.0038
207	1.9501	0.0038
208	1.9539	0.0038
209	1.9577	0.0038
210	1.9615	0.0038
211	1.9653	0.0038
212	1.9691	0.0038
213	1.9728	0.0038
214	1.9766	0.0038
215	1.9803	0.0037
216	1.9841	0.0037
217	1.9878	0.0037
218	1.9915	0.0037
219	1.9952	0.0037
220	1.9989	0.0037
221	2.0026	0.0037
222	2.0063	0.0037
223	2.0099	0.0037

224	2.0136	0.0037
225	2.0172	0.0036
226	2.0209	0.0036
227	2.0245	0.0036
228	2.0281	0.0036
229	2.0317	0.0036
230	2.0353	0.0036
231	2.0389	0.0036
232	2.0425	0.0036
233	2.0461	0.0036
234	2.0496	0.0036
235	2.0532	0.0036
236	2.0567	0.0035
237	2.0602	0.0035
238	2.0638	0.0035
239	2.0673	0.0035
240	2.0708	0.0035
241	2.0743	0.0035
242	2.0778	0.0035
243	2.0813	0.0035
244	2.0847	0.0035
245	2.0882	0.0035
246	2.0917	0.0035
247	2.0951	0.0034
248	2.0986	0.0034
249	2.1020	0.0034
250	2.1054	0.0034
251	2.1088	0.0034
252	2.1122	0.0034
253	2.1156	0.0034
254	2.1190	0.0034
255	2.1224	0.0034
256	2.1258	0.0034
257	2.1292	0.0034
258	2.1325	0.0034
259	2.1359	0.0034
260	2.1392	0.0033
261	2.1426	0.0033
262	2.1459	0.0033
263	2.1492	0.0033
264	2.1525	0.0033
265	2.1558	0.0033
266	2.1591	0.0033
267	2.1624	0.0033
268	2.1657	0.0033
269	2.1690	0.0033
270	2.1723	0.0033
271	2.1755	0.0033
272	2.1788	0.0033
273	2.1820	0.0032

274	2.1853	0.0032
275	2.1885	0.0032
276	2.1917	0.0032
277	2.1950	0.0032
278	2.1982	0.0032
279	2.2014	0.0032
280	2.2046	0.0032
281	2.2078	0.0032
282	2.2110	0.0032
283	2.2142	0.0032
284	2.2173	0.0032
285	2.2205	0.0032
286	2.2237	0.0032
287	2.2268	0.0032
288	2.2300	0.0031

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0031	0.0019	0.0013
2	0.0032	0.0019	0.0013
3	0.0032	0.0019	0.0013
4	0.0032	0.0019	0.0013
5	0.0032	0.0019	0.0013
6	0.0032	0.0019	0.0013
7	0.0032	0.0019	0.0013
8	0.0032	0.0019	0.0013
9	0.0032	0.0019	0.0013
10	0.0032	0.0019	0.0013
11	0.0032	0.0019	0.0013
12	0.0033	0.0019	0.0013
13	0.0033	0.0019	0.0013
14	0.0033	0.0019	0.0013
15	0.0033	0.0019	0.0013
16	0.0033	0.0020	0.0013
17	0.0033	0.0020	0.0014
18	0.0033	0.0020	0.0014
19	0.0033	0.0020	0.0014
20	0.0033	0.0020	0.0014
21	0.0034	0.0020	0.0014
22	0.0034	0.0020	0.0014
23	0.0034	0.0020	0.0014
24	0.0034	0.0020	0.0014
25	0.0034	0.0020	0.0014
26	0.0034	0.0020	0.0014
27	0.0034	0.0020	0.0014
28	0.0034	0.0020	0.0014
29	0.0035	0.0020	0.0014
30	0.0035	0.0021	0.0014

31	0.0035	0.0021	0.0014
32	0.0035	0.0021	0.0014
33	0.0035	0.0021	0.0014
34	0.0035	0.0021	0.0014
35	0.0035	0.0021	0.0014
36	0.0035	0.0021	0.0014
37	0.0036	0.0021	0.0015
38	0.0036	0.0021	0.0015
39	0.0036	0.0021	0.0015
40	0.0036	0.0021	0.0015
41	0.0036	0.0021	0.0015
42	0.0036	0.0021	0.0015
43	0.0036	0.0022	0.0015
44	0.0037	0.0022	0.0015
45	0.0037	0.0022	0.0015
46	0.0037	0.0022	0.0015
47	0.0037	0.0022	0.0015
48	0.0037	0.0022	0.0015
49	0.0037	0.0022	0.0015
50	0.0037	0.0022	0.0015
51	0.0038	0.0022	0.0015
52	0.0038	0.0022	0.0015
53	0.0038	0.0022	0.0016
54	0.0038	0.0023	0.0016
55	0.0038	0.0023	0.0016
56	0.0038	0.0023	0.0016
57	0.0039	0.0023	0.0016
58	0.0039	0.0023	0.0016
59	0.0039	0.0023	0.0016
60	0.0039	0.0023	0.0016
61	0.0039	0.0023	0.0016
62	0.0039	0.0023	0.0016
63	0.0040	0.0023	0.0016
64	0.0040	0.0024	0.0016
65	0.0040	0.0024	0.0016
66	0.0040	0.0024	0.0016
67	0.0040	0.0024	0.0017
68	0.0041	0.0024	0.0017
69	0.0041	0.0024	0.0017
70	0.0041	0.0024	0.0017
71	0.0041	0.0024	0.0017
72	0.0041	0.0024	0.0017
73	0.0042	0.0025	0.0017
74	0.0042	0.0025	0.0017
75	0.0042	0.0025	0.0017
76	0.0042	0.0025	0.0017
77	0.0042	0.0025	0.0017
78	0.0043	0.0025	0.0017
79	0.0043	0.0025	0.0018
80	0.0043	0.0025	0.0018

81	0.0043	0.0026	0.0018
82	0.0044	0.0026	0.0018
83	0.0044	0.0026	0.0018
84	0.0044	0.0026	0.0018
85	0.0044	0.0026	0.0018
86	0.0045	0.0026	0.0018
87	0.0045	0.0027	0.0018
88	0.0045	0.0027	0.0018
89	0.0045	0.0027	0.0019
90	0.0046	0.0027	0.0019
91	0.0046	0.0027	0.0019
92	0.0046	0.0027	0.0019
93	0.0046	0.0027	0.0019
94	0.0047	0.0028	0.0019
95	0.0047	0.0028	0.0019
96	0.0047	0.0028	0.0019
97	0.0048	0.0028	0.0019
98	0.0048	0.0028	0.0020
99	0.0048	0.0028	0.0020
100	0.0048	0.0029	0.0020
101	0.0049	0.0029	0.0020
102	0.0049	0.0029	0.0020
103	0.0049	0.0029	0.0020
104	0.0050	0.0029	0.0020
105	0.0050	0.0030	0.0020
106	0.0050	0.0030	0.0021
107	0.0051	0.0030	0.0021
108	0.0051	0.0030	0.0021
109	0.0051	0.0030	0.0021
110	0.0052	0.0031	0.0021
111	0.0052	0.0031	0.0021
112	0.0053	0.0031	0.0021
113	0.0053	0.0031	0.0022
114	0.0053	0.0032	0.0022
115	0.0054	0.0032	0.0022
116	0.0054	0.0032	0.0022
117	0.0055	0.0032	0.0022
118	0.0055	0.0033	0.0022
119	0.0056	0.0033	0.0023
120	0.0056	0.0033	0.0023
121	0.0056	0.0033	0.0023
122	0.0057	0.0034	0.0023
123	0.0057	0.0034	0.0023
124	0.0058	0.0034	0.0024
125	0.0058	0.0035	0.0024
126	0.0059	0.0035	0.0024
127	0.0059	0.0035	0.0024
128	0.0060	0.0035	0.0024
129	0.0061	0.0036	0.0025
130	0.0061	0.0036	0.0025

131	0.0062	0.0037	0.0025
132	0.0062	0.0037	0.0025
133	0.0063	0.0037	0.0026
134	0.0063	0.0037	0.0026
135	0.0064	0.0038	0.0026
136	0.0065	0.0038	0.0026
137	0.0066	0.0039	0.0027
138	0.0066	0.0039	0.0027
139	0.0067	0.0040	0.0027
140	0.0068	0.0040	0.0028
141	0.0069	0.0041	0.0028
142	0.0069	0.0041	0.0028
143	0.0070	0.0042	0.0029
144	0.0071	0.0042	0.0029
145	0.0071	0.0042	0.0029
146	0.0072	0.0042	0.0029
147	0.0073	0.0043	0.0030
148	0.0074	0.0044	0.0030
149	0.0075	0.0044	0.0031
150	0.0076	0.0045	0.0031
151	0.0077	0.0046	0.0032
152	0.0078	0.0046	0.0032
153	0.0079	0.0047	0.0032
154	0.0080	0.0047	0.0033
155	0.0082	0.0048	0.0033
156	0.0083	0.0049	0.0034
157	0.0085	0.0050	0.0035
158	0.0086	0.0051	0.0035
159	0.0088	0.0052	0.0036
160	0.0089	0.0052	0.0036
161	0.0091	0.0054	0.0037
162	0.0092	0.0054	0.0038
163	0.0095	0.0056	0.0039
164	0.0096	0.0057	0.0039
165	0.0099	0.0058	0.0040
166	0.0100	0.0059	0.0041
167	0.0103	0.0061	0.0042
168	0.0105	0.0062	0.0043
169	0.0108	0.0064	0.0044
170	0.0110	0.0065	0.0045
171	0.0114	0.0068	0.0047
172	0.0116	0.0069	0.0048
173	0.0121	0.0072	0.0049
174	0.0124	0.0073	0.0050
175	0.0129	0.0076	0.0053
176	0.0132	0.0078	0.0054
177	0.0139	0.0082	0.0057
178	0.0142	0.0084	0.0058
179	0.0150	0.0089	0.0061
180	0.0155	0.0092	0.0063

181	0.0165	0.0098	0.0068
182	0.0171	0.0101	0.0070
183	0.0185	0.0109	0.0076
184	0.0193	0.0114	0.0079
185	0.0159	0.0094	0.0065
186	0.0170	0.0100	0.0069
187	0.0197	0.0116	0.0080
188	0.0215	0.0127	0.0088
189	0.0267	0.0158	0.0109
190	0.0308	0.0182	0.0126
191	0.0467	0.0250	0.0216
192	0.0677	0.0250	0.0427
193	0.2930	0.0250	0.2680
194	0.0367	0.0217	0.0150
195	0.0237	0.0140	0.0097
196	0.0182	0.0108	0.0074
197	0.0202	0.0120	0.0083
198	0.0178	0.0105	0.0073
199	0.0160	0.0095	0.0065
200	0.0146	0.0087	0.0060
201	0.0135	0.0080	0.0055
202	0.0126	0.0075	0.0052
203	0.0119	0.0070	0.0048
204	0.0112	0.0066	0.0046
205	0.0106	0.0063	0.0043
206	0.0102	0.0060	0.0041
207	0.0097	0.0057	0.0040
208	0.0093	0.0055	0.0038
209	0.0090	0.0053	0.0037
210	0.0087	0.0051	0.0035
211	0.0084	0.0050	0.0034
212	0.0081	0.0048	0.0033
213	0.0079	0.0047	0.0032
214	0.0076	0.0045	0.0031
215	0.0074	0.0044	0.0030
216	0.0072	0.0043	0.0030
217	0.0071	0.0042	0.0029
218	0.0070	0.0041	0.0028
219	0.0068	0.0040	0.0028
220	0.0067	0.0039	0.0027
221	0.0065	0.0039	0.0027
222	0.0064	0.0038	0.0026
223	0.0063	0.0037	0.0026
224	0.0061	0.0036	0.0025
225	0.0060	0.0036	0.0025
226	0.0059	0.0035	0.0024
227	0.0058	0.0034	0.0024
228	0.0057	0.0034	0.0023
229	0.0056	0.0033	0.0023
230	0.0055	0.0033	0.0023

231	0.0054	0.0032	0.0022
232	0.0054	0.0032	0.0022
233	0.0053	0.0031	0.0022
234	0.0052	0.0031	0.0021
235	0.0051	0.0030	0.0021
236	0.0051	0.0030	0.0021
237	0.0050	0.0029	0.0020
238	0.0049	0.0029	0.0020
239	0.0049	0.0029	0.0020
240	0.0048	0.0028	0.0020
241	0.0047	0.0028	0.0019
242	0.0047	0.0028	0.0019
243	0.0046	0.0027	0.0019
244	0.0046	0.0027	0.0019
245	0.0045	0.0027	0.0018
246	0.0045	0.0026	0.0018
247	0.0044	0.0026	0.0018
248	0.0044	0.0026	0.0018
249	0.0043	0.0026	0.0018
250	0.0043	0.0025	0.0017
251	0.0042	0.0025	0.0017
252	0.0042	0.0025	0.0017
253	0.0042	0.0025	0.0017
254	0.0041	0.0024	0.0017
255	0.0041	0.0024	0.0017
256	0.0040	0.0024	0.0016
257	0.0040	0.0024	0.0016
258	0.0040	0.0023	0.0016
259	0.0039	0.0023	0.0016
260	0.0039	0.0023	0.0016
261	0.0039	0.0023	0.0016
262	0.0038	0.0023	0.0016
263	0.0038	0.0022	0.0015
264	0.0038	0.0022	0.0015
265	0.0037	0.0022	0.0015
266	0.0037	0.0022	0.0015
267	0.0037	0.0022	0.0015
268	0.0036	0.0022	0.0015
269	0.0036	0.0021	0.0015
270	0.0036	0.0021	0.0015
271	0.0036	0.0021	0.0015
272	0.0035	0.0021	0.0014
273	0.0035	0.0021	0.0014
274	0.0035	0.0021	0.0014
275	0.0034	0.0020	0.0014
276	0.0034	0.0020	0.0014
277	0.0034	0.0020	0.0014
278	0.0034	0.0020	0.0014
279	0.0034	0.0020	0.0014
280	0.0033	0.0020	0.0014

281	0.0033	0.0020	0.0014
282	0.0033	0.0019	0.0013
283	0.0033	0.0019	0.0013
284	0.0032	0.0019	0.0013
285	0.0032	0.0019	0.0013
286	0.0032	0.0019	0.0013
287	0.0032	0.0019	0.0013
288	0.0032	0.0019	0.0013

Total soil rain loss = 1.15(In)
Total effective rainfall = 1.08(In)
Peak flow rate in flood hydrograph = 18.71(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	5.0	10.0	15.0	20.0
0+ 5	0.0000	0.01	Q				
0+10	0.0004	0.05	Q				
0+15	0.0013	0.13	Q				
0+20	0.0024	0.17	Q				
0+25	0.0037	0.19	Q				
0+30	0.0052	0.21	Q				
0+35	0.0067	0.22	Q				
0+40	0.0082	0.23	Q				
0+45	0.0098	0.23	Q				
0+50	0.0114	0.24	Q				
0+55	0.0131	0.24	Q				
1+ 0	0.0148	0.25	Q				
1+ 5	0.0165	0.25	Q				
1+10	0.0183	0.25	Q				
1+15	0.0200	0.25	Q				
1+20	0.0218	0.26	Q				
1+25	0.0235	0.26	Q				
1+30	0.0253	0.26	Q				
1+35	0.0271	0.26	Q				
1+40	0.0289	0.26	Q				
1+45	0.0307	0.26	Q				
1+50	0.0326	0.26	Q				
1+55	0.0344	0.26	Q				
2+ 0	0.0362	0.27	QV				
2+ 5	0.0381	0.27	QV				
2+10	0.0399	0.27	QV				
2+15	0.0417	0.27	QV				

2+20	0.0436	0.27	QV
2+25	0.0455	0.27	QV
2+30	0.0473	0.27	QV
2+35	0.0492	0.27	QV
2+40	0.0511	0.27	QV
2+45	0.0530	0.27	QV
2+50	0.0549	0.28	QV
2+55	0.0568	0.28	QV
3+ 0	0.0587	0.28	QV
3+ 5	0.0606	0.28	QV
3+10	0.0625	0.28	QV
3+15	0.0645	0.28	QV
3+20	0.0664	0.28	QV
3+25	0.0684	0.28	QV
3+30	0.0703	0.28	QV
3+35	0.0723	0.28	Q V
3+40	0.0742	0.29	Q V
3+45	0.0762	0.29	Q V
3+50	0.0782	0.29	Q V
3+55	0.0802	0.29	Q V
4+ 0	0.0822	0.29	Q V
4+ 5	0.0842	0.29	Q V
4+10	0.0862	0.29	Q V
4+15	0.0883	0.29	Q V
4+20	0.0903	0.30	Q V
4+25	0.0923	0.30	Q V
4+30	0.0944	0.30	Q V
4+35	0.0964	0.30	Q V
4+40	0.0985	0.30	Q V
4+45	0.1006	0.30	Q V
4+50	0.1027	0.30	Q V
4+55	0.1048	0.30	Q V
5+ 0	0.1069	0.31	Q V
5+ 5	0.1090	0.31	Q V
5+10	0.1111	0.31	Q V
5+15	0.1132	0.31	Q V
5+20	0.1154	0.31	Q V
5+25	0.1175	0.31	Q V
5+30	0.1197	0.31	Q V
5+35	0.1219	0.32	Q V
5+40	0.1240	0.32	Q V
5+45	0.1262	0.32	Q V
5+50	0.1284	0.32	Q V
5+55	0.1306	0.32	Q V
6+ 0	0.1329	0.32	Q V
6+ 5	0.1351	0.32	Q V
6+10	0.1373	0.33	Q V
6+15	0.1396	0.33	Q V
6+20	0.1419	0.33	Q V
6+25	0.1441	0.33	Q V

6+30	0.1464	0.33	Q	V
6+35	0.1487	0.33	Q	V
6+40	0.1510	0.34	Q	V
6+45	0.1534	0.34	Q	V
6+50	0.1557	0.34	Q	V
6+55	0.1580	0.34	Q	V
7+ 0	0.1604	0.34	Q	V
7+ 5	0.1628	0.34	Q	V
7+10	0.1652	0.35	Q	V
7+15	0.1676	0.35	Q	V
7+20	0.1700	0.35	Q	V
7+25	0.1724	0.35	Q	V
7+30	0.1748	0.35	Q	V
7+35	0.1773	0.36	Q	V
7+40	0.1798	0.36	Q	V
7+45	0.1822	0.36	Q	V
7+50	0.1847	0.36	Q	V
7+55	0.1872	0.36	Q	V
8+ 0	0.1898	0.37	Q	V
8+ 5	0.1923	0.37	Q	V
8+10	0.1949	0.37	Q	V
8+15	0.1974	0.37	Q	V
8+20	0.2000	0.38	Q	V
8+25	0.2026	0.38	Q	V
8+30	0.2052	0.38	Q	V
8+35	0.2079	0.38	Q	V
8+40	0.2105	0.39	Q	V
8+45	0.2132	0.39	Q	V
8+50	0.2159	0.39	Q	V
8+55	0.2186	0.39	Q	V
9+ 0	0.2213	0.40	Q	V
9+ 5	0.2240	0.40	Q	V
9+10	0.2268	0.40	Q	V
9+15	0.2296	0.40	Q	V
9+20	0.2324	0.41	Q	V
9+25	0.2352	0.41	Q	V
9+30	0.2380	0.41	Q	V
9+35	0.2409	0.42	Q	V
9+40	0.2438	0.42	Q	V
9+45	0.2467	0.42	Q	V
9+50	0.2496	0.42	Q	V
9+55	0.2526	0.43	Q	V
10+ 0	0.2555	0.43	Q	V
10+ 5	0.2585	0.43	Q	V
10+10	0.2615	0.44	Q	V
10+15	0.2646	0.44	Q	V
10+20	0.2676	0.45	Q	V
10+25	0.2707	0.45	Q	V
10+30	0.2739	0.45	Q	V
10+35	0.2770	0.46	Q	V

10+40	0.2802	0.46	Q	V				
10+45	0.2834	0.46	Q	V				
10+50	0.2866	0.47	Q	V				
10+55	0.2899	0.47	Q	V				
11+ 0	0.2931	0.48	Q	V				
11+ 5	0.2965	0.48	Q	V				
11+10	0.2998	0.49	Q	V				
11+15	0.3032	0.49	Q	V				
11+20	0.3066	0.50	Q	V				
11+25	0.3101	0.50	Q	V				
11+30	0.3135	0.51	Q	V				
11+35	0.3171	0.51	Q	V				
11+40	0.3206	0.52	Q	V				
11+45	0.3242	0.52	Q	V				
11+50	0.3279	0.53	Q	V				
11+55	0.3315	0.53	Q	V				
12+ 0	0.3352	0.54	Q	V				
12+ 5	0.3390	0.55	Q	V				
12+10	0.3428	0.55	Q	V				
12+15	0.3466	0.56	Q	V				
12+20	0.3505	0.56	Q	V				
12+25	0.3544	0.57	Q	V				
12+30	0.3584	0.58	Q	V				
12+35	0.3624	0.58	Q	V				
12+40	0.3665	0.59	Q	V				
12+45	0.3706	0.60	Q	V				
12+50	0.3748	0.61	Q	V				
12+55	0.3790	0.62	Q	V				
13+ 0	0.3833	0.62	Q	V				
13+ 5	0.3877	0.63	Q	V				
13+10	0.3921	0.64	Q	V				
13+15	0.3966	0.65	Q	V				
13+20	0.4012	0.67	Q	V				
13+25	0.4059	0.68	Q	V				
13+30	0.4106	0.69	Q	V				
13+35	0.4155	0.70	Q	V				
13+40	0.4204	0.71	Q	V				
13+45	0.4254	0.73	Q	V				
13+50	0.4305	0.74	Q	V				
13+55	0.4357	0.76	Q	V				
14+ 0	0.4410	0.77	Q	V				
14+ 5	0.4465	0.79	Q	V				
14+10	0.4520	0.81	Q	V				
14+15	0.4577	0.83	Q	V				
14+20	0.4636	0.85	Q	V				
14+25	0.4696	0.87	Q	V				
14+30	0.4757	0.89	Q	V				
14+35	0.4821	0.92	Q	V				
14+40	0.4886	0.95	Q	V				
14+45	0.4953	0.98	Q	V				

14+50	0.5023	1.01	Q		V			
14+55	0.5095	1.05	Q		V			
15+ 0	0.5169	1.08	Q		V			
15+ 5	0.5247	1.13	Q		V			
15+10	0.5328	1.18	Q		V			
15+15	0.5413	1.23	Q		V			
15+20	0.5502	1.29	Q		V			
15+25	0.5595	1.35	Q		V			
15+30	0.5689	1.36	Q		V			
15+35	0.5781	1.33	Q		V			
15+40	0.5875	1.38	Q		V			
15+45	0.5978	1.48	Q		V			
15+50	0.6091	1.65	Q		V			
15+55	0.6224	1.92	Q		V			
16+ 0	0.6398	2.54	Q	Q	V			
16+ 5	0.6754	5.16		Q	V			
16+10	0.7644	12.93			V	Q		
16+15	0.8933	18.71			V			Q
16+20	0.9680	10.85			Q	V		
16+25	1.0156	6.91		Q		V		
16+30	1.0505	5.08		Q		V		
16+35	1.0787	4.10		Q		V		
16+40	1.1020	3.38		Q		V		
16+45	1.1212	2.79		Q		V		
16+50	1.1379	2.43		Q		V		
16+55	1.1524	2.10		Q		V		
17+ 0	1.1651	1.84		Q		V		
17+ 5	1.1762	1.62		Q		V		
17+10	1.1859	1.40		Q		V		
17+15	1.1944	1.23		Q		V		
17+20	1.2026	1.20		Q		V		
17+25	1.2105	1.15		Q		V		
17+30	1.2176	1.03		Q		V		
17+35	1.2243	0.97		Q		V		
17+40	1.2295	0.76		Q		V		
17+45	1.2345	0.72		Q		V		
17+50	1.2392	0.69		Q		V		
17+55	1.2439	0.67		Q		V		
18+ 0	1.2483	0.65		Q		V		
18+ 5	1.2526	0.63		Q		V		
18+10	1.2568	0.61		Q		V		
18+15	1.2609	0.59		Q		V		
18+20	1.2649	0.58		Q		V		
18+25	1.2688	0.56		Q		V		
18+30	1.2726	0.55		Q		V		
18+35	1.2763	0.54		Q		V		
18+40	1.2799	0.53		Q		V		
18+45	1.2835	0.52		Q		V		
18+50	1.2870	0.50		Q		V		
18+55	1.2904	0.49	Q			V		

19+ 0	1.2937	0.49	Q				V
19+ 5	1.2970	0.48	Q				V
19+10	1.3002	0.47	Q				V
19+15	1.3034	0.46	Q				V
19+20	1.3065	0.45	Q				V
19+25	1.3095	0.44	Q				V
19+30	1.3125	0.44	Q				V
19+35	1.3155	0.43	Q				V
19+40	1.3184	0.42	Q				V
19+45	1.3213	0.42	Q				V
19+50	1.3241	0.41	Q				V
19+55	1.3269	0.41	Q				V
20+ 0	1.3297	0.40	Q				V
20+ 5	1.3324	0.39	Q				V
20+10	1.3351	0.39	Q				V
20+15	1.3377	0.38	Q				V
20+20	1.3403	0.38	Q				V
20+25	1.3429	0.37	Q				V
20+30	1.3454	0.37	Q				V
20+35	1.3480	0.37	Q				V
20+40	1.3505	0.36	Q				V
20+45	1.3529	0.36	Q				V
20+50	1.3553	0.35	Q				V
20+55	1.3577	0.35	Q				V
21+ 0	1.3601	0.35	Q				V
21+ 5	1.3625	0.34	Q				V
21+10	1.3648	0.34	Q				V
21+15	1.3671	0.33	Q				V
21+20	1.3694	0.33	Q				V
21+25	1.3717	0.33	Q				V
21+30	1.3739	0.32	Q				V
21+35	1.3761	0.32	Q				V
21+40	1.3783	0.32	Q				V
21+45	1.3805	0.32	Q				V
21+50	1.3826	0.31	Q				V
21+55	1.3848	0.31	Q				V
22+ 0	1.3869	0.31	Q				V
22+ 5	1.3890	0.30	Q				V
22+10	1.3911	0.30	Q				V
22+15	1.3931	0.30	Q				V
22+20	1.3952	0.30	Q				V
22+25	1.3972	0.29	Q				V
22+30	1.3992	0.29	Q				V
22+35	1.4012	0.29	Q				V
22+40	1.4032	0.29	Q				V
22+45	1.4052	0.29	Q				V
22+50	1.4071	0.28	Q				V
22+55	1.4091	0.28	Q				V
23+ 0	1.4110	0.28	Q				V
23+ 5	1.4129	0.28	Q				V

23+10	1.4148	0.27	Q				V
23+15	1.4167	0.27	Q				V
23+20	1.4185	0.27	Q				V
23+25	1.4204	0.27	Q				V
23+30	1.4222	0.27	Q				V
23+35	1.4240	0.27	Q				V
23+40	1.4259	0.26	Q				V
23+45	1.4277	0.26	Q				V
23+50	1.4294	0.26	Q				V
23+55	1.4312	0.26	Q				V
24+ 0	1.4330	0.26	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 08/03/21

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

Program License Serial Number 6385

Space Center
undeveloped 10-year
Area B

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10 22.99	1	0.62

Rainfall data for year 10 22.99	6	1.27

Rainfall data for year 10 22.99	24	2.23

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
83.0	83.0	22.99	1.000	0.318	1.000	0.318

Area-averaged adjusted loss rate Fm (In/Hr) = 0.318

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
22.99	1.000	83.0	83.0	2.05	0.384

Area-averaged catchment yield fraction, Y = 0.384

Area-averaged low loss fraction, Yb = 0.616

User entry of time of concentration = 0.192 (hours)

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Watershed area = 22.99(Ac.)

Catchment Lag time = 0.154 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 54.2535

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.318(In/Hr)

Average low loss rate fraction (Yb) = 0.457 (decimal)

Note: user entry of the Yb value

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.293(In)

Computed peak 30-minute rainfall = 0.502(In)

Specified peak 1-hour rainfall = 0.618(In)

Computed peak 3-hour rainfall = 0.961(In)

Specified peak 6-hour rainfall = 1.270(In)

Specified peak 24-hour rainfall = 2.230(In)

Rainfall depth area reduction factors:

Using a total area of 22.99(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.293(In)

30-minute factor = 0.999 Adjusted rainfall = 0.501(In)

1-hour factor = 0.999 Adjusted rainfall = 0.617(In)

3-hour factor = 1.000 Adjusted rainfall = 0.961(In)

6-hour factor = 1.000 Adjusted rainfall = 1.270(In)

24-hour factor = 1.000 Adjusted rainfall = 2.230(In)

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

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Interval 'S' Graph Unit Hydrograph
Number Mean values ((CFS))

(K = 278.04 (CFS))

1	4.582	12.739
2	35.377	85.622
3	64.099	79.856
4	76.427	34.276
5	83.603	19.953
6	88.449	13.475
7	91.682	8.988
8	94.097	6.714
9	95.871	4.933
10	97.167	3.603
11	97.993	2.295
12	98.587	1.653
13	99.237	1.805
14	99.703	1.296
15	100.000	0.827

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2929	0.2929
2	0.3606	0.0677
3	0.4073	0.0466
4	0.4440	0.0367
5	0.4747	0.0307
6	0.5014	0.0267
7	0.5252	0.0237
8	0.5466	0.0215
9	0.5663	0.0197
10	0.5845	0.0182
11	0.6014	0.0170
12	0.6173	0.0159
13	0.6376	0.0202
14	0.6569	0.0193
15	0.6754	0.0185
16	0.6932	0.0178
17	0.7103	0.0171
18	0.7269	0.0165
19	0.7429	0.0160
20	0.7584	0.0155
21	0.7734	0.0151
22	0.7881	0.0146
23	0.8023	0.0142
24	0.8162	0.0139
25	0.8297	0.0135
26	0.8429	0.0132

27	0.8559	0.0129
28	0.8685	0.0126
29	0.8808	0.0124
30	0.8930	0.0121
31	0.9048	0.0119
32	0.9165	0.0116
33	0.9279	0.0114
34	0.9391	0.0112
35	0.9502	0.0110
36	0.9610	0.0108
37	0.9717	0.0106
38	0.9821	0.0105
39	0.9924	0.0103
40	1.0026	0.0102
41	1.0126	0.0100
42	1.0225	0.0099
43	1.0322	0.0097
44	1.0418	0.0096
45	1.0512	0.0095
46	1.0606	0.0093
47	1.0698	0.0092
48	1.0789	0.0091
49	1.0878	0.0090
50	1.0967	0.0089
51	1.1055	0.0088
52	1.1142	0.0087
53	1.1227	0.0086
54	1.1312	0.0085
55	1.1396	0.0084
56	1.1479	0.0083
57	1.1561	0.0082
58	1.1642	0.0081
59	1.1722	0.0080
60	1.1801	0.0079
61	1.1880	0.0079
62	1.1958	0.0078
63	1.2035	0.0077
64	1.2112	0.0076
65	1.2187	0.0076
66	1.2262	0.0075
67	1.2337	0.0074
68	1.2411	0.0074
69	1.2484	0.0073
70	1.2556	0.0072
71	1.2628	0.0072
72	1.2699	0.0071
73	1.2770	0.0071
74	1.2841	0.0071
75	1.2911	0.0070
76	1.2981	0.0070

77	1.3050	0.0069
78	1.3119	0.0069
79	1.3187	0.0068
80	1.3254	0.0068
81	1.3321	0.0067
82	1.3388	0.0067
83	1.3454	0.0066
84	1.3520	0.0066
85	1.3585	0.0065
86	1.3649	0.0065
87	1.3714	0.0064
88	1.3777	0.0064
89	1.3841	0.0063
90	1.3904	0.0063
91	1.3966	0.0063
92	1.4028	0.0062
93	1.4090	0.0062
94	1.4151	0.0061
95	1.4212	0.0061
96	1.4273	0.0061
97	1.4333	0.0060
98	1.4393	0.0060
99	1.4452	0.0059
100	1.4512	0.0059
101	1.4570	0.0059
102	1.4629	0.0058
103	1.4687	0.0058
104	1.4745	0.0058
105	1.4802	0.0057
106	1.4859	0.0057
107	1.4916	0.0057
108	1.4972	0.0056
109	1.5029	0.0056
110	1.5084	0.0056
111	1.5140	0.0056
112	1.5195	0.0055
113	1.5250	0.0055
114	1.5305	0.0055
115	1.5359	0.0054
116	1.5413	0.0054
117	1.5467	0.0054
118	1.5521	0.0054
119	1.5574	0.0053
120	1.5627	0.0053
121	1.5680	0.0053
122	1.5732	0.0053
123	1.5784	0.0052
124	1.5836	0.0052
125	1.5888	0.0052
126	1.5940	0.0052

127	1.5991	0.0051
128	1.6042	0.0051
129	1.6093	0.0051
130	1.6143	0.0051
131	1.6194	0.0050
132	1.6244	0.0050
133	1.6294	0.0050
134	1.6343	0.0050
135	1.6393	0.0049
136	1.6442	0.0049
137	1.6491	0.0049
138	1.6540	0.0049
139	1.6588	0.0049
140	1.6637	0.0048
141	1.6685	0.0048
142	1.6733	0.0048
143	1.6780	0.0048
144	1.6828	0.0048
145	1.6875	0.0047
146	1.6923	0.0047
147	1.6970	0.0047
148	1.7016	0.0047
149	1.7063	0.0047
150	1.7109	0.0046
151	1.7156	0.0046
152	1.7202	0.0046
153	1.7247	0.0046
154	1.7293	0.0046
155	1.7339	0.0046
156	1.7384	0.0045
157	1.7429	0.0045
158	1.7474	0.0045
159	1.7519	0.0045
160	1.7564	0.0045
161	1.7608	0.0045
162	1.7653	0.0044
163	1.7697	0.0044
164	1.7741	0.0044
165	1.7785	0.0044
166	1.7828	0.0044
167	1.7872	0.0044
168	1.7915	0.0043
169	1.7958	0.0043
170	1.8002	0.0043
171	1.8044	0.0043
172	1.8087	0.0043
173	1.8130	0.0043
174	1.8172	0.0042
175	1.8215	0.0042
176	1.8257	0.0042

177	1.8299	0.0042
178	1.8341	0.0042
179	1.8383	0.0042
180	1.8424	0.0042
181	1.8466	0.0042
182	1.8507	0.0041
183	1.8548	0.0041
184	1.8590	0.0041
185	1.8630	0.0041
186	1.8671	0.0041
187	1.8712	0.0041
188	1.8753	0.0041
189	1.8793	0.0040
190	1.8833	0.0040
191	1.8874	0.0040
192	1.8914	0.0040
193	1.8954	0.0040
194	1.8993	0.0040
195	1.9033	0.0040
196	1.9073	0.0040
197	1.9112	0.0039
198	1.9151	0.0039
199	1.9191	0.0039
200	1.9230	0.0039
201	1.9269	0.0039
202	1.9308	0.0039
203	1.9346	0.0039
204	1.9385	0.0039
205	1.9424	0.0039
206	1.9462	0.0038
207	1.9500	0.0038
208	1.9539	0.0038
209	1.9577	0.0038
210	1.9615	0.0038
211	1.9653	0.0038
212	1.9690	0.0038
213	1.9728	0.0038
214	1.9766	0.0038
215	1.9803	0.0037
216	1.9840	0.0037
217	1.9878	0.0037
218	1.9915	0.0037
219	1.9952	0.0037
220	1.9989	0.0037
221	2.0026	0.0037
222	2.0062	0.0037
223	2.0099	0.0037
224	2.0136	0.0037
225	2.0172	0.0036
226	2.0208	0.0036

227	2.0245	0.0036
228	2.0281	0.0036
229	2.0317	0.0036
230	2.0353	0.0036
231	2.0389	0.0036
232	2.0425	0.0036
233	2.0460	0.0036
234	2.0496	0.0036
235	2.0531	0.0036
236	2.0567	0.0035
237	2.0602	0.0035
238	2.0638	0.0035
239	2.0673	0.0035
240	2.0708	0.0035
241	2.0743	0.0035
242	2.0778	0.0035
243	2.0813	0.0035
244	2.0847	0.0035
245	2.0882	0.0035
246	2.0917	0.0035
247	2.0951	0.0034
248	2.0985	0.0034
249	2.1020	0.0034
250	2.1054	0.0034
251	2.1088	0.0034
252	2.1122	0.0034
253	2.1156	0.0034
254	2.1190	0.0034
255	2.1224	0.0034
256	2.1258	0.0034
257	2.1291	0.0034
258	2.1325	0.0034
259	2.1359	0.0034
260	2.1392	0.0033
261	2.1425	0.0033
262	2.1459	0.0033
263	2.1492	0.0033
264	2.1525	0.0033
265	2.1558	0.0033
266	2.1591	0.0033
267	2.1624	0.0033
268	2.1657	0.0033
269	2.1690	0.0033
270	2.1722	0.0033
271	2.1755	0.0033
272	2.1788	0.0033
273	2.1820	0.0032
274	2.1853	0.0032
275	2.1885	0.0032
276	2.1917	0.0032

277	2.1949	0.0032
278	2.1982	0.0032
279	2.2014	0.0032
280	2.2046	0.0032
281	2.2078	0.0032
282	2.2109	0.0032
283	2.2141	0.0032
284	2.2173	0.0032
285	2.2205	0.0032
286	2.2236	0.0032
287	2.2268	0.0032
288	2.2299	0.0031

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0031	0.0014	0.0017
2	0.0032	0.0014	0.0017
3	0.0032	0.0014	0.0017
4	0.0032	0.0015	0.0017
5	0.0032	0.0015	0.0017
6	0.0032	0.0015	0.0017
7	0.0032	0.0015	0.0017
8	0.0032	0.0015	0.0017
9	0.0032	0.0015	0.0018
10	0.0032	0.0015	0.0018
11	0.0032	0.0015	0.0018
12	0.0033	0.0015	0.0018
13	0.0033	0.0015	0.0018
14	0.0033	0.0015	0.0018
15	0.0033	0.0015	0.0018
16	0.0033	0.0015	0.0018
17	0.0033	0.0015	0.0018
18	0.0033	0.0015	0.0018
19	0.0033	0.0015	0.0018
20	0.0033	0.0015	0.0018
21	0.0034	0.0015	0.0018
22	0.0034	0.0015	0.0018
23	0.0034	0.0015	0.0018
24	0.0034	0.0015	0.0018
25	0.0034	0.0016	0.0019
26	0.0034	0.0016	0.0019
27	0.0034	0.0016	0.0019
28	0.0034	0.0016	0.0019
29	0.0035	0.0016	0.0019
30	0.0035	0.0016	0.0019
31	0.0035	0.0016	0.0019
32	0.0035	0.0016	0.0019
33	0.0035	0.0016	0.0019

34	0.0035	0.0016	0.0019
35	0.0035	0.0016	0.0019
36	0.0035	0.0016	0.0019
37	0.0036	0.0016	0.0019
38	0.0036	0.0016	0.0019
39	0.0036	0.0016	0.0019
40	0.0036	0.0016	0.0020
41	0.0036	0.0017	0.0020
42	0.0036	0.0017	0.0020
43	0.0036	0.0017	0.0020
44	0.0037	0.0017	0.0020
45	0.0037	0.0017	0.0020
46	0.0037	0.0017	0.0020
47	0.0037	0.0017	0.0020
48	0.0037	0.0017	0.0020
49	0.0037	0.0017	0.0020
50	0.0037	0.0017	0.0020
51	0.0038	0.0017	0.0020
52	0.0038	0.0017	0.0021
53	0.0038	0.0017	0.0021
54	0.0038	0.0017	0.0021
55	0.0038	0.0018	0.0021
56	0.0038	0.0018	0.0021
57	0.0039	0.0018	0.0021
58	0.0039	0.0018	0.0021
59	0.0039	0.0018	0.0021
60	0.0039	0.0018	0.0021
61	0.0039	0.0018	0.0021
62	0.0039	0.0018	0.0021
63	0.0040	0.0018	0.0022
64	0.0040	0.0018	0.0022
65	0.0040	0.0018	0.0022
66	0.0040	0.0018	0.0022
67	0.0040	0.0018	0.0022
68	0.0041	0.0019	0.0022
69	0.0041	0.0019	0.0022
70	0.0041	0.0019	0.0022
71	0.0041	0.0019	0.0022
72	0.0041	0.0019	0.0022
73	0.0042	0.0019	0.0023
74	0.0042	0.0019	0.0023
75	0.0042	0.0019	0.0023
76	0.0042	0.0019	0.0023
77	0.0042	0.0019	0.0023
78	0.0043	0.0019	0.0023
79	0.0043	0.0020	0.0023
80	0.0043	0.0020	0.0023
81	0.0043	0.0020	0.0024
82	0.0044	0.0020	0.0024
83	0.0044	0.0020	0.0024

84	0.0044	0.0020	0.0024
85	0.0044	0.0020	0.0024
86	0.0045	0.0020	0.0024
87	0.0045	0.0020	0.0024
88	0.0045	0.0021	0.0024
89	0.0045	0.0021	0.0025
90	0.0046	0.0021	0.0025
91	0.0046	0.0021	0.0025
92	0.0046	0.0021	0.0025
93	0.0046	0.0021	0.0025
94	0.0047	0.0021	0.0025
95	0.0047	0.0021	0.0026
96	0.0047	0.0022	0.0026
97	0.0048	0.0022	0.0026
98	0.0048	0.0022	0.0026
99	0.0048	0.0022	0.0026
100	0.0048	0.0022	0.0026
101	0.0049	0.0022	0.0026
102	0.0049	0.0022	0.0027
103	0.0049	0.0023	0.0027
104	0.0050	0.0023	0.0027
105	0.0050	0.0023	0.0027
106	0.0050	0.0023	0.0027
107	0.0051	0.0023	0.0028
108	0.0051	0.0023	0.0028
109	0.0052	0.0024	0.0028
110	0.0052	0.0024	0.0028
111	0.0052	0.0024	0.0028
112	0.0053	0.0024	0.0029
113	0.0053	0.0024	0.0029
114	0.0053	0.0024	0.0029
115	0.0054	0.0025	0.0029
116	0.0054	0.0025	0.0029
117	0.0055	0.0025	0.0030
118	0.0055	0.0025	0.0030
119	0.0056	0.0025	0.0030
120	0.0056	0.0026	0.0030
121	0.0056	0.0026	0.0031
122	0.0057	0.0026	0.0031
123	0.0057	0.0026	0.0031
124	0.0058	0.0026	0.0031
125	0.0058	0.0027	0.0032
126	0.0059	0.0027	0.0032
127	0.0059	0.0027	0.0032
128	0.0060	0.0027	0.0032
129	0.0061	0.0028	0.0033
130	0.0061	0.0028	0.0033
131	0.0062	0.0028	0.0034
132	0.0062	0.0028	0.0034
133	0.0063	0.0029	0.0034

134	0.0063	0.0029	0.0034
135	0.0064	0.0029	0.0035
136	0.0065	0.0030	0.0035
137	0.0066	0.0030	0.0036
138	0.0066	0.0030	0.0036
139	0.0067	0.0031	0.0036
140	0.0068	0.0031	0.0037
141	0.0069	0.0031	0.0037
142	0.0069	0.0032	0.0038
143	0.0070	0.0032	0.0038
144	0.0071	0.0032	0.0038
145	0.0071	0.0033	0.0039
146	0.0072	0.0033	0.0039
147	0.0073	0.0033	0.0040
148	0.0074	0.0034	0.0040
149	0.0075	0.0034	0.0041
150	0.0076	0.0035	0.0041
151	0.0077	0.0035	0.0042
152	0.0078	0.0036	0.0042
153	0.0079	0.0036	0.0043
154	0.0080	0.0037	0.0044
155	0.0082	0.0037	0.0045
156	0.0083	0.0038	0.0045
157	0.0085	0.0039	0.0046
158	0.0086	0.0039	0.0047
159	0.0088	0.0040	0.0048
160	0.0089	0.0041	0.0048
161	0.0091	0.0042	0.0049
162	0.0092	0.0042	0.0050
163	0.0095	0.0043	0.0051
164	0.0096	0.0044	0.0052
165	0.0099	0.0045	0.0054
166	0.0100	0.0046	0.0054
167	0.0103	0.0047	0.0056
168	0.0105	0.0048	0.0057
169	0.0108	0.0050	0.0059
170	0.0110	0.0050	0.0060
171	0.0114	0.0052	0.0062
172	0.0116	0.0053	0.0063
173	0.0121	0.0055	0.0066
174	0.0124	0.0056	0.0067
175	0.0129	0.0059	0.0070
176	0.0132	0.0060	0.0072
177	0.0139	0.0063	0.0075
178	0.0142	0.0065	0.0077
179	0.0151	0.0069	0.0082
180	0.0155	0.0071	0.0084
181	0.0165	0.0076	0.0090
182	0.0171	0.0078	0.0093
183	0.0185	0.0085	0.0101

184	0.0193	0.0088	0.0105
185	0.0159	0.0073	0.0086
186	0.0170	0.0077	0.0092
187	0.0197	0.0090	0.0107
188	0.0215	0.0098	0.0117
189	0.0267	0.0122	0.0145
190	0.0307	0.0140	0.0167
191	0.0466	0.0213	0.0253
192	0.0677	0.0265	0.0412
193	0.2929	0.0265	0.2664
194	0.0367	0.0168	0.0199
195	0.0237	0.0108	0.0129
196	0.0182	0.0083	0.0099
197	0.0202	0.0092	0.0110
198	0.0178	0.0081	0.0097
199	0.0160	0.0073	0.0087
200	0.0146	0.0067	0.0079
201	0.0135	0.0062	0.0074
202	0.0126	0.0058	0.0069
203	0.0119	0.0054	0.0064
204	0.0112	0.0051	0.0061
205	0.0106	0.0049	0.0058
206	0.0102	0.0046	0.0055
207	0.0097	0.0044	0.0053
208	0.0093	0.0043	0.0051
209	0.0090	0.0041	0.0049
210	0.0087	0.0040	0.0047
211	0.0084	0.0038	0.0045
212	0.0081	0.0037	0.0044
213	0.0079	0.0036	0.0043
214	0.0076	0.0035	0.0042
215	0.0074	0.0034	0.0040
216	0.0072	0.0033	0.0039
217	0.0071	0.0033	0.0039
218	0.0070	0.0032	0.0038
219	0.0068	0.0031	0.0037
220	0.0067	0.0030	0.0036
221	0.0065	0.0030	0.0035
222	0.0064	0.0029	0.0035
223	0.0063	0.0029	0.0034
224	0.0061	0.0028	0.0033
225	0.0060	0.0028	0.0033
226	0.0059	0.0027	0.0032
227	0.0058	0.0027	0.0032
228	0.0057	0.0026	0.0031
229	0.0056	0.0026	0.0030
230	0.0055	0.0025	0.0030
231	0.0054	0.0025	0.0030
232	0.0054	0.0024	0.0029
233	0.0053	0.0024	0.0029

234	0.0052	0.0024	0.0028
235	0.0051	0.0023	0.0028
236	0.0051	0.0023	0.0027
237	0.0050	0.0023	0.0027
238	0.0049	0.0022	0.0027
239	0.0049	0.0022	0.0026
240	0.0048	0.0022	0.0026
241	0.0047	0.0022	0.0026
242	0.0047	0.0021	0.0025
243	0.0046	0.0021	0.0025
244	0.0046	0.0021	0.0025
245	0.0045	0.0021	0.0025
246	0.0045	0.0020	0.0024
247	0.0044	0.0020	0.0024
248	0.0044	0.0020	0.0024
249	0.0043	0.0020	0.0023
250	0.0043	0.0020	0.0023
251	0.0042	0.0019	0.0023
252	0.0042	0.0019	0.0023
253	0.0042	0.0019	0.0023
254	0.0041	0.0019	0.0022
255	0.0041	0.0019	0.0022
256	0.0040	0.0018	0.0022
257	0.0040	0.0018	0.0022
258	0.0040	0.0018	0.0021
259	0.0039	0.0018	0.0021
260	0.0039	0.0018	0.0021
261	0.0039	0.0018	0.0021
262	0.0038	0.0017	0.0021
263	0.0038	0.0017	0.0021
264	0.0038	0.0017	0.0020
265	0.0037	0.0017	0.0020
266	0.0037	0.0017	0.0020
267	0.0037	0.0017	0.0020
268	0.0036	0.0017	0.0020
269	0.0036	0.0016	0.0020
270	0.0036	0.0016	0.0019
271	0.0036	0.0016	0.0019
272	0.0035	0.0016	0.0019
273	0.0035	0.0016	0.0019
274	0.0035	0.0016	0.0019
275	0.0034	0.0016	0.0019
276	0.0034	0.0016	0.0019
277	0.0034	0.0016	0.0018
278	0.0034	0.0015	0.0018
279	0.0034	0.0015	0.0018
280	0.0033	0.0015	0.0018
281	0.0033	0.0015	0.0018
282	0.0033	0.0015	0.0018
283	0.0033	0.0015	0.0018

284	0.0032	0.0015	0.0018
285	0.0032	0.0015	0.0017
286	0.0032	0.0015	0.0017
287	0.0032	0.0015	0.0017
288	0.0032	0.0014	0.0017

Total soil rain loss = 0.91(In)
Total effective rainfall = 1.32(In)
Peak flow rate in flood hydrograph = 28.08(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0001		0.02	Q				
0+10	0.0013		0.17	Q				
0+15	0.0034		0.31	Q				
0+20	0.0059		0.36	Q				
0+25	0.0087		0.40	Q				
0+30	0.0116		0.42	Q				
0+35	0.0146		0.44	Q				
0+40	0.0178		0.45	Q				
0+45	0.0210		0.46	Q				
0+50	0.0242		0.47	Q				
0+55	0.0275		0.48	Q				
1+ 0	0.0308		0.48	Q				
1+ 5	0.0341		0.49	Q				
1+10	0.0375		0.49	Q				
1+15	0.0409		0.49	Q				
1+20	0.0443		0.49	Q				
1+25	0.0477		0.50	Q				
1+30	0.0511		0.50	Q				
1+35	0.0546		0.50	Q				
1+40	0.0580		0.50	Q				
1+45	0.0615		0.50	Q				
1+50	0.0650		0.50	QV				
1+55	0.0684		0.51	QV				
2+ 0	0.0719		0.51	QV				
2+ 5	0.0755		0.51	QV				
2+10	0.0790		0.51	QV				
2+15	0.0825		0.51	QV				
2+20	0.0861		0.51	QV				
2+25	0.0896		0.52	QV				
2+30	0.0932		0.52	QV				

2+35	0.0968	0.52	QV
2+40	0.1004	0.52	QV
2+45	0.1040	0.52	QV
2+50	0.1076	0.53	QV
2+55	0.1112	0.53	QV
3+ 0	0.1149	0.53	QV
3+ 5	0.1186	0.53	QV
3+10	0.1222	0.53	QV
3+15	0.1259	0.54	QV
3+20	0.1296	0.54	Q V
3+25	0.1334	0.54	Q V
3+30	0.1371	0.54	Q V
3+35	0.1408	0.54	Q V
3+40	0.1446	0.55	Q V
3+45	0.1484	0.55	Q V
3+50	0.1522	0.55	Q V
3+55	0.1560	0.55	Q V
4+ 0	0.1598	0.56	Q V
4+ 5	0.1636	0.56	Q V
4+10	0.1675	0.56	Q V
4+15	0.1714	0.56	Q V
4+20	0.1753	0.56	Q V
4+25	0.1792	0.57	Q V
4+30	0.1831	0.57	Q V
4+35	0.1870	0.57	Q V
4+40	0.1910	0.57	Q V
4+45	0.1949	0.58	Q V
4+50	0.1989	0.58	Q V
4+55	0.2029	0.58	Q V
5+ 0	0.2070	0.58	Q V
5+ 5	0.2110	0.59	Q V
5+10	0.2150	0.59	Q V
5+15	0.2191	0.59	Q V
5+20	0.2232	0.59	Q V
5+25	0.2273	0.60	Q V
5+30	0.2315	0.60	Q V
5+35	0.2356	0.60	Q V
5+40	0.2398	0.61	Q V
5+45	0.2440	0.61	Q V
5+50	0.2482	0.61	Q V
5+55	0.2524	0.61	Q V
6+ 0	0.2567	0.62	Q V
6+ 5	0.2609	0.62	Q V
6+10	0.2652	0.62	Q V
6+15	0.2695	0.63	Q V
6+20	0.2739	0.63	Q V
6+25	0.2782	0.63	Q V
6+30	0.2826	0.64	Q V
6+35	0.2870	0.64	Q V
6+40	0.2914	0.64	Q V

6+45	0.2959	0.65	Q	V
6+50	0.3003	0.65	Q	V
6+55	0.3048	0.65	Q	V
7+ 0	0.3093	0.66	Q	V
7+ 5	0.3139	0.66	Q	V
7+10	0.3184	0.66	Q	V
7+15	0.3230	0.67	Q	V
7+20	0.3276	0.67	Q	V
7+25	0.3323	0.67	Q	V
7+30	0.3370	0.68	Q	V
7+35	0.3416	0.68	Q	V
7+40	0.3464	0.69	Q	V
7+45	0.3511	0.69	Q	V
7+50	0.3559	0.69	Q	V
7+55	0.3607	0.70	Q	V
8+ 0	0.3655	0.70	Q	V
8+ 5	0.3704	0.71	Q	V
8+10	0.3753	0.71	Q	V
8+15	0.3802	0.71	Q	V
8+20	0.3851	0.72	Q	V
8+25	0.3901	0.72	Q	V
8+30	0.3951	0.73	Q	V
8+35	0.4002	0.73	Q	V
8+40	0.4053	0.74	Q	V
8+45	0.4104	0.74	Q	V
8+50	0.4155	0.75	Q	V
8+55	0.4207	0.75	Q	V
9+ 0	0.4259	0.76	Q	V
9+ 5	0.4312	0.76	Q	V
9+10	0.4365	0.77	Q	V
9+15	0.4418	0.77	Q	V
9+20	0.4471	0.78	Q	V
9+25	0.4525	0.78	Q	V
9+30	0.4580	0.79	Q	V
9+35	0.4635	0.80	Q	V
9+40	0.4690	0.80	Q	V
9+45	0.4745	0.81	Q	V
9+50	0.4801	0.81	Q	V
9+55	0.4858	0.82	Q	V
10+ 0	0.4915	0.83	Q	V
10+ 5	0.4972	0.83	Q	V
10+10	0.5030	0.84	Q	V
10+15	0.5088	0.85	Q	V
10+20	0.5147	0.85	Q	V
10+25	0.5206	0.86	Q	V
10+30	0.5266	0.87	Q	V
10+35	0.5327	0.88	Q	V
10+40	0.5387	0.88	Q	V
10+45	0.5449	0.89	Q	V
10+50	0.5511	0.90	Q	V

10+55	0.5573	0.91	Q	V				
11+ 0	0.5636	0.92	Q	V				
11+ 5	0.5700	0.92	Q	V				
11+10	0.5764	0.93	Q	V				
11+15	0.5829	0.94	Q	V				
11+20	0.5895	0.95	Q	V				
11+25	0.5961	0.96	Q	V				
11+30	0.6028	0.97	Q	V				
11+35	0.6096	0.98	Q	V				
11+40	0.6164	0.99	Q	V				
11+45	0.6233	1.00	Q	V				
11+50	0.6303	1.01	Q	V				
11+55	0.6374	1.03	Q	V				
12+ 0	0.6445	1.04	Q	V				
12+ 5	0.6517	1.05	Q	V				
12+10	0.6590	1.06	Q	V				
12+15	0.6664	1.07	Q	V				
12+20	0.6738	1.08	Q	V				
12+25	0.6814	1.09	Q	V				
12+30	0.6890	1.11	Q	V				
12+35	0.6967	1.12	Q	V				
12+40	0.7045	1.14	Q	V				
12+45	0.7125	1.15	Q	V				
12+50	0.7205	1.17	Q	V				
12+55	0.7287	1.19	Q	V				
13+ 0	0.7370	1.20	Q	V				
13+ 5	0.7454	1.22	Q	V				
13+10	0.7540	1.24	Q	V				
13+15	0.7627	1.26	Q	V				
13+20	0.7715	1.28	Q	V				
13+25	0.7805	1.31	Q	V				
13+30	0.7897	1.33	Q	V				
13+35	0.7990	1.35	Q	V				
13+40	0.8085	1.38	Q	V				
13+45	0.8182	1.41	Q	V				
13+50	0.8281	1.44	Q	V				
13+55	0.8381	1.46	Q	V				
14+ 0	0.8485	1.50	Q	V				
14+ 5	0.8590	1.53	Q	V				
14+10	0.8698	1.57	Q	V				
14+15	0.8809	1.61	Q	V				
14+20	0.8922	1.65	Q	V				
14+25	0.9039	1.69	Q	V				
14+30	0.9159	1.74	Q	V				
14+35	0.9282	1.79	Q	V				
14+40	0.9409	1.85	Q	V				
14+45	0.9540	1.91	Q	V				
14+50	0.9676	1.97	Q	V				
14+55	0.9817	2.04	Q	V				
15+ 0	0.9963	2.12	Q	V				

15+ 5	1.0115	2.21	Q		V				
15+10	1.0275	2.31	Q		V				
15+15	1.0442	2.42	Q		V				
15+20	1.0618	2.56	Q		V				
15+25	1.0801	2.66	Q		V				
15+30	1.0980	2.60	Q		V				
15+35	1.1156	2.56	Q		V				
15+40	1.1343	2.71	Q		V				
15+45	1.1546	2.95	Q		V				
15+50	1.1777	3.35	Q	Q	V				
15+55	1.2049	3.94	Q	Q	V				
16+ 0	1.2407	5.20	Q		V				
16+ 5	1.3114	10.27			Q				
16+10	1.5048	28.08				V			Q
16+15	1.6816	25.66					V		Q
16+20	1.7748	13.54			Q		V		
16+25	1.8374	9.10			Q		V		
16+30	1.8859	7.04		Q			V		
16+35	1.9247	5.63		Q			V		
16+40	1.9573	4.73		Q			V		
16+45	1.9848	4.00		Q			V		
16+50	2.0084	3.42		Q			V		
16+55	2.0283	2.89	Q				V		
17+ 0	2.0460	2.57	Q				V		
17+ 5	2.0628	2.45	Q				V		
17+10	2.0779	2.19	Q				V		
17+15	2.0912	1.94	Q				V		
17+20	2.1025	1.64	Q				V		
17+25	2.1132	1.55	Q				V		
17+30	2.1234	1.48	Q				V		
17+35	2.1332	1.42	Q				V		
17+40	2.1426	1.36	Q				V		
17+45	2.1516	1.31	Q				V		
17+50	2.1604	1.27	Q				V		
17+55	2.1688	1.23	Q				V		
18+ 0	2.1770	1.19	Q				V		
18+ 5	2.1850	1.16	Q				V		
18+10	2.1927	1.13	Q				V		
18+15	2.2003	1.10	Q				V		
18+20	2.2077	1.07	Q				V		
18+25	2.2149	1.05	Q				V		
18+30	2.2220	1.03	Q				V		
18+35	2.2289	1.00	Q				V		
18+40	2.2357	0.98	Q				V		
18+45	2.2423	0.96	Q				V		
18+50	2.2488	0.94	Q				V		
18+55	2.2551	0.92	Q				V		
19+ 0	2.2614	0.91	Q				V		
19+ 5	2.2675	0.89	Q				V		
19+10	2.2735	0.88	Q				V		

19+15	2.2795	0.86	Q				V
19+20	2.2853	0.85	Q				V
19+25	2.2910	0.83	Q				V
19+30	2.2967	0.82	Q				V
19+35	2.3022	0.81	Q				V
19+40	2.3077	0.80	Q				V
19+45	2.3131	0.78	Q				V
19+50	2.3184	0.77	Q				V
19+55	2.3237	0.76	Q				V
20+ 0	2.3288	0.75	Q				V
20+ 5	2.3340	0.74	Q				V
20+10	2.3390	0.73	Q				V
20+15	2.3440	0.72	Q				V
20+20	2.3489	0.71	Q				V
20+25	2.3537	0.71	Q				V
20+30	2.3585	0.70	Q				V
20+35	2.3633	0.69	Q				V
20+40	2.3680	0.68	Q				V
20+45	2.3726	0.67	Q				V
20+50	2.3772	0.67	Q				V
20+55	2.3817	0.66	Q				V
21+ 0	2.3862	0.65	Q				V
21+ 5	2.3907	0.64	Q				V
21+10	2.3951	0.64	Q				V
21+15	2.3994	0.63	Q				V
21+20	2.4037	0.63	Q				V
21+25	2.4080	0.62	Q				V
21+30	2.4122	0.61	Q				V
21+35	2.4164	0.61	Q				V
21+40	2.4205	0.60	Q				V
21+45	2.4246	0.60	Q				V
21+50	2.4287	0.59	Q				V
21+55	2.4328	0.59	Q				V
22+ 0	2.4368	0.58	Q				V
22+ 5	2.4407	0.58	Q				V
22+10	2.4447	0.57	Q				V
22+15	2.4486	0.57	Q				V
22+20	2.4524	0.56	Q				V
22+25	2.4563	0.56	Q				V
22+30	2.4601	0.55	Q				V
22+35	2.4638	0.55	Q				V
22+40	2.4676	0.54	Q				V
22+45	2.4713	0.54	Q				V
22+50	2.4750	0.54	Q				V
22+55	2.4787	0.53	Q				V
23+ 0	2.4823	0.53	Q				V
23+ 5	2.4859	0.52	Q				V
23+10	2.4895	0.52	Q				V
23+15	2.4930	0.52	Q				V
23+20	2.4966	0.51	Q				V

23+25	2.5001	0.51	Q				V
23+30	2.5036	0.51	Q				V
23+35	2.5070	0.50	Q				V
23+40	2.5104	0.50	Q				V
23+45	2.5139	0.50	Q				V
23+50	2.5172	0.49	Q				V
23+55	2.5206	0.49	Q				V
24+ 0	2.5240	0.49	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 08/03/21

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

Program License Serial Number 6385

Space Center
undeveloped 10-year
Area C

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
7.62	1	0.62

Rainfall data for year 10
7.62 6 1.27

Rainfall data for year 10
7.62 24 2.23

++++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
75.0	75.0	7.62	1.000	0.453	1.000	0.453

Area-averaged adjusted loss rate Fm (In/Hr) = 0.453

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
7.62	1.000	75.0	75.0	3.33	0.224

Area-averaged catchment yield fraction, Y = 0.224

Area-averaged low loss fraction, Yb = 0.776

User entry of time of concentration = 0.233 (hours)

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Watershed area = 7.62(Ac.)

Catchment Lag time = 0.186 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 44.7067

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.453(In/Hr)

Average low loss rate fraction (Yb) = 0.776 (decimal)

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.293(In)

Computed peak 30-minute rainfall = 0.502(In)

Specified peak 1-hour rainfall = 0.618(In)

Computed peak 3-hour rainfall = 0.961(In)

Specified peak 6-hour rainfall = 1.270(In)

Specified peak 24-hour rainfall = 2.230(In)

Rainfall depth area reduction factors:

Using a total area of 7.62(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.293(In)

30-minute factor = 1.000 Adjusted rainfall = 0.502(In)

1-hour factor = 1.000 Adjusted rainfall = 0.618(In)

3-hour factor = 1.000 Adjusted rainfall = 0.961(In)

6-hour factor = 1.000 Adjusted rainfall = 1.270(In)

24-hour factor = 1.000 Adjusted rainfall = 2.230(In)

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

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Interval 'S' Graph Unit Hydrograph

Number	Mean values	((CFS))
	(K =	92.15 (CFS))
1	3.294	3.035
2	24.225	19.289
3	55.190	28.536
4	69.857	13.516
5	78.269	7.752
6	83.811	5.107
7	87.902	3.770
8	90.765	2.639
9	93.006	2.065
10	94.740	1.598
11	96.104	1.257
12	97.148	0.962
13	97.872	0.667
14	98.350	0.441
15	98.879	0.487
16	99.400	0.481
17	99.735	0.309
18	100.000	0.244

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2931	0.2931
2	0.3609	0.0678
3	0.4076	0.0467
4	0.4443	0.0367
5	0.4751	0.0308
6	0.5018	0.0267
7	0.5255	0.0238
8	0.5470	0.0215
9	0.5667	0.0197
10	0.5849	0.0182
11	0.6019	0.0170
12	0.6178	0.0159
13	0.6380	0.0202
14	0.6573	0.0193
15	0.6758	0.0185
16	0.6936	0.0178
17	0.7107	0.0171
18	0.7272	0.0165
19	0.7432	0.0160
20	0.7587	0.0155
21	0.7738	0.0150
22	0.7884	0.0146
23	0.8026	0.0142
24	0.8165	0.0139
25	0.8300	0.0135

26	0.8432	0.0132
27	0.8561	0.0129
28	0.8687	0.0126
29	0.8810	0.0123
30	0.8931	0.0121
31	0.9050	0.0119
32	0.9166	0.0116
33	0.9280	0.0114
34	0.9393	0.0112
35	0.9503	0.0110
36	0.9611	0.0108
37	0.9717	0.0106
38	0.9822	0.0105
39	0.9925	0.0103
40	1.0027	0.0102
41	1.0127	0.0100
42	1.0226	0.0099
43	1.0323	0.0097
44	1.0419	0.0096
45	1.0513	0.0095
46	1.0606	0.0093
47	1.0699	0.0092
48	1.0789	0.0091
49	1.0879	0.0090
50	1.0968	0.0089
51	1.1056	0.0088
52	1.1142	0.0087
53	1.1228	0.0086
54	1.1313	0.0085
55	1.1396	0.0084
56	1.1479	0.0083
57	1.1561	0.0082
58	1.1642	0.0081
59	1.1723	0.0080
60	1.1802	0.0079
61	1.1881	0.0079
62	1.1959	0.0078
63	1.2036	0.0077
64	1.2112	0.0076
65	1.2188	0.0076
66	1.2263	0.0075
67	1.2337	0.0074
68	1.2411	0.0074
69	1.2484	0.0073
70	1.2557	0.0072
71	1.2628	0.0072
72	1.2700	0.0071
73	1.2771	0.0071
74	1.2842	0.0071
75	1.2912	0.0070

76	1.2982	0.0070
77	1.3051	0.0069
78	1.3119	0.0069
79	1.3187	0.0068
80	1.3255	0.0068
81	1.3322	0.0067
82	1.3388	0.0067
83	1.3455	0.0066
84	1.3520	0.0066
85	1.3585	0.0065
86	1.3650	0.0065
87	1.3714	0.0064
88	1.3778	0.0064
89	1.3841	0.0063
90	1.3904	0.0063
91	1.3967	0.0063
92	1.4029	0.0062
93	1.4091	0.0062
94	1.4152	0.0061
95	1.4213	0.0061
96	1.4274	0.0061
97	1.4334	0.0060
98	1.4394	0.0060
99	1.4453	0.0059
100	1.4512	0.0059
101	1.4571	0.0059
102	1.4629	0.0058
103	1.4687	0.0058
104	1.4745	0.0058
105	1.4803	0.0057
106	1.4860	0.0057
107	1.4916	0.0057
108	1.4973	0.0056
109	1.5029	0.0056
110	1.5085	0.0056
111	1.5140	0.0056
112	1.5196	0.0055
113	1.5251	0.0055
114	1.5305	0.0055
115	1.5360	0.0054
116	1.5414	0.0054
117	1.5468	0.0054
118	1.5521	0.0054
119	1.5575	0.0053
120	1.5628	0.0053
121	1.5680	0.0053
122	1.5733	0.0052
123	1.5785	0.0052
124	1.5837	0.0052
125	1.5889	0.0052

126	1.5940	0.0051
127	1.5992	0.0051
128	1.6043	0.0051
129	1.6093	0.0051
130	1.6144	0.0051
131	1.6194	0.0050
132	1.6244	0.0050
133	1.6294	0.0050
134	1.6344	0.0050
135	1.6393	0.0049
136	1.6442	0.0049
137	1.6491	0.0049
138	1.6540	0.0049
139	1.6589	0.0049
140	1.6637	0.0048
141	1.6685	0.0048
142	1.6733	0.0048
143	1.6781	0.0048
144	1.6829	0.0048
145	1.6876	0.0047
146	1.6923	0.0047
147	1.6970	0.0047
148	1.7017	0.0047
149	1.7063	0.0047
150	1.7110	0.0046
151	1.7156	0.0046
152	1.7202	0.0046
153	1.7248	0.0046
154	1.7294	0.0046
155	1.7339	0.0046
156	1.7385	0.0045
157	1.7430	0.0045
158	1.7475	0.0045
159	1.7520	0.0045
160	1.7564	0.0045
161	1.7609	0.0044
162	1.7653	0.0044
163	1.7697	0.0044
164	1.7741	0.0044
165	1.7785	0.0044
166	1.7829	0.0044
167	1.7872	0.0044
168	1.7916	0.0043
169	1.7959	0.0043
170	1.8002	0.0043
171	1.8045	0.0043
172	1.8088	0.0043
173	1.8130	0.0043
174	1.8173	0.0042
175	1.8215	0.0042

176	1.8257	0.0042
177	1.8300	0.0042
178	1.8341	0.0042
179	1.8383	0.0042
180	1.8425	0.0042
181	1.8466	0.0042
182	1.8508	0.0041
183	1.8549	0.0041
184	1.8590	0.0041
185	1.8631	0.0041
186	1.8672	0.0041
187	1.8713	0.0041
188	1.8753	0.0041
189	1.8794	0.0040
190	1.8834	0.0040
191	1.8874	0.0040
192	1.8914	0.0040
193	1.8954	0.0040
194	1.8994	0.0040
195	1.9034	0.0040
196	1.9073	0.0040
197	1.9113	0.0039
198	1.9152	0.0039
199	1.9191	0.0039
200	1.9230	0.0039
201	1.9269	0.0039
202	1.9308	0.0039
203	1.9347	0.0039
204	1.9386	0.0039
205	1.9424	0.0039
206	1.9463	0.0038
207	1.9501	0.0038
208	1.9539	0.0038
209	1.9577	0.0038
210	1.9615	0.0038
211	1.9653	0.0038
212	1.9691	0.0038
213	1.9728	0.0038
214	1.9766	0.0038
215	1.9804	0.0037
216	1.9841	0.0037
217	1.9878	0.0037
218	1.9915	0.0037
219	1.9952	0.0037
220	1.9989	0.0037
221	2.0026	0.0037
222	2.0063	0.0037
223	2.0100	0.0037
224	2.0136	0.0037
225	2.0173	0.0036

226	2.0209	0.0036
227	2.0245	0.0036
228	2.0281	0.0036
229	2.0317	0.0036
230	2.0353	0.0036
231	2.0389	0.0036
232	2.0425	0.0036
233	2.0461	0.0036
234	2.0496	0.0036
235	2.0532	0.0036
236	2.0567	0.0035
237	2.0603	0.0035
238	2.0638	0.0035
239	2.0673	0.0035
240	2.0708	0.0035
241	2.0743	0.0035
242	2.0778	0.0035
243	2.0813	0.0035
244	2.0848	0.0035
245	2.0882	0.0035
246	2.0917	0.0035
247	2.0951	0.0034
248	2.0986	0.0034
249	2.1020	0.0034
250	2.1054	0.0034
251	2.1089	0.0034
252	2.1123	0.0034
253	2.1157	0.0034
254	2.1191	0.0034
255	2.1224	0.0034
256	2.1258	0.0034
257	2.1292	0.0034
258	2.1326	0.0034
259	2.1359	0.0034
260	2.1392	0.0033
261	2.1426	0.0033
262	2.1459	0.0033
263	2.1492	0.0033
264	2.1526	0.0033
265	2.1559	0.0033
266	2.1592	0.0033
267	2.1625	0.0033
268	2.1657	0.0033
269	2.1690	0.0033
270	2.1723	0.0033
271	2.1756	0.0033
272	2.1788	0.0033
273	2.1821	0.0032
274	2.1853	0.0032
275	2.1885	0.0032

276	2.1918	0.0032
277	2.1950	0.0032
278	2.1982	0.0032
279	2.2014	0.0032
280	2.2046	0.0032
281	2.2078	0.0032
282	2.2110	0.0032
283	2.2142	0.0032
284	2.2173	0.0032
285	2.2205	0.0032
286	2.2237	0.0032
287	2.2268	0.0032
288	2.2300	0.0031

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0031	0.0024	0.0007
2	0.0032	0.0024	0.0007
3	0.0032	0.0025	0.0007
4	0.0032	0.0025	0.0007
5	0.0032	0.0025	0.0007
6	0.0032	0.0025	0.0007
7	0.0032	0.0025	0.0007
8	0.0032	0.0025	0.0007
9	0.0032	0.0025	0.0007
10	0.0032	0.0025	0.0007
11	0.0032	0.0025	0.0007
12	0.0033	0.0025	0.0007
13	0.0033	0.0025	0.0007
14	0.0033	0.0025	0.0007
15	0.0033	0.0026	0.0007
16	0.0033	0.0026	0.0007
17	0.0033	0.0026	0.0007
18	0.0033	0.0026	0.0007
19	0.0033	0.0026	0.0007
20	0.0033	0.0026	0.0007
21	0.0034	0.0026	0.0008
22	0.0034	0.0026	0.0008
23	0.0034	0.0026	0.0008
24	0.0034	0.0026	0.0008
25	0.0034	0.0026	0.0008
26	0.0034	0.0027	0.0008
27	0.0034	0.0027	0.0008
28	0.0034	0.0027	0.0008
29	0.0035	0.0027	0.0008
30	0.0035	0.0027	0.0008
31	0.0035	0.0027	0.0008
32	0.0035	0.0027	0.0008

33	0.0035	0.0027	0.0008
34	0.0035	0.0027	0.0008
35	0.0035	0.0027	0.0008
36	0.0035	0.0028	0.0008
37	0.0036	0.0028	0.0008
38	0.0036	0.0028	0.0008
39	0.0036	0.0028	0.0008
40	0.0036	0.0028	0.0008
41	0.0036	0.0028	0.0008
42	0.0036	0.0028	0.0008
43	0.0036	0.0028	0.0008
44	0.0037	0.0028	0.0008
45	0.0037	0.0029	0.0008
46	0.0037	0.0029	0.0008
47	0.0037	0.0029	0.0008
48	0.0037	0.0029	0.0008
49	0.0037	0.0029	0.0008
50	0.0037	0.0029	0.0008
51	0.0038	0.0029	0.0008
52	0.0038	0.0029	0.0008
53	0.0038	0.0029	0.0009
54	0.0038	0.0030	0.0009
55	0.0038	0.0030	0.0009
56	0.0038	0.0030	0.0009
57	0.0039	0.0030	0.0009
58	0.0039	0.0030	0.0009
59	0.0039	0.0030	0.0009
60	0.0039	0.0030	0.0009
61	0.0039	0.0031	0.0009
62	0.0039	0.0031	0.0009
63	0.0040	0.0031	0.0009
64	0.0040	0.0031	0.0009
65	0.0040	0.0031	0.0009
66	0.0040	0.0031	0.0009
67	0.0040	0.0031	0.0009
68	0.0041	0.0031	0.0009
69	0.0041	0.0032	0.0009
70	0.0041	0.0032	0.0009
71	0.0041	0.0032	0.0009
72	0.0041	0.0032	0.0009
73	0.0042	0.0032	0.0009
74	0.0042	0.0032	0.0009
75	0.0042	0.0033	0.0009
76	0.0042	0.0033	0.0009
77	0.0042	0.0033	0.0010
78	0.0043	0.0033	0.0010
79	0.0043	0.0033	0.0010
80	0.0043	0.0033	0.0010
81	0.0043	0.0034	0.0010
82	0.0044	0.0034	0.0010

83	0.0044	0.0034	0.0010
84	0.0044	0.0034	0.0010
85	0.0044	0.0034	0.0010
86	0.0044	0.0035	0.0010
87	0.0045	0.0035	0.0010
88	0.0045	0.0035	0.0010
89	0.0045	0.0035	0.0010
90	0.0046	0.0035	0.0010
91	0.0046	0.0036	0.0010
92	0.0046	0.0036	0.0010
93	0.0046	0.0036	0.0010
94	0.0047	0.0036	0.0010
95	0.0047	0.0036	0.0011
96	0.0047	0.0037	0.0011
97	0.0048	0.0037	0.0011
98	0.0048	0.0037	0.0011
99	0.0048	0.0037	0.0011
100	0.0048	0.0038	0.0011
101	0.0049	0.0038	0.0011
102	0.0049	0.0038	0.0011
103	0.0049	0.0038	0.0011
104	0.0050	0.0039	0.0011
105	0.0050	0.0039	0.0011
106	0.0050	0.0039	0.0011
107	0.0051	0.0039	0.0011
108	0.0051	0.0040	0.0011
109	0.0051	0.0040	0.0012
110	0.0052	0.0040	0.0012
111	0.0052	0.0041	0.0012
112	0.0052	0.0041	0.0012
113	0.0053	0.0041	0.0012
114	0.0053	0.0041	0.0012
115	0.0054	0.0042	0.0012
116	0.0054	0.0042	0.0012
117	0.0055	0.0042	0.0012
118	0.0055	0.0043	0.0012
119	0.0056	0.0043	0.0012
120	0.0056	0.0043	0.0012
121	0.0056	0.0044	0.0013
122	0.0057	0.0044	0.0013
123	0.0057	0.0045	0.0013
124	0.0058	0.0045	0.0013
125	0.0058	0.0045	0.0013
126	0.0059	0.0046	0.0013
127	0.0059	0.0046	0.0013
128	0.0060	0.0046	0.0013
129	0.0061	0.0047	0.0014
130	0.0061	0.0047	0.0014
131	0.0062	0.0048	0.0014
132	0.0062	0.0048	0.0014

133	0.0063	0.0049	0.0014
134	0.0063	0.0049	0.0014
135	0.0064	0.0050	0.0014
136	0.0065	0.0050	0.0014
137	0.0066	0.0051	0.0015
138	0.0066	0.0051	0.0015
139	0.0067	0.0052	0.0015
140	0.0068	0.0052	0.0015
141	0.0069	0.0053	0.0015
142	0.0069	0.0054	0.0015
143	0.0070	0.0054	0.0016
144	0.0071	0.0055	0.0016
145	0.0071	0.0055	0.0016
146	0.0072	0.0056	0.0016
147	0.0073	0.0057	0.0016
148	0.0074	0.0057	0.0016
149	0.0075	0.0058	0.0017
150	0.0076	0.0059	0.0017
151	0.0077	0.0060	0.0017
152	0.0078	0.0060	0.0017
153	0.0079	0.0062	0.0018
154	0.0080	0.0062	0.0018
155	0.0082	0.0064	0.0018
156	0.0083	0.0064	0.0019
157	0.0085	0.0066	0.0019
158	0.0086	0.0066	0.0019
159	0.0088	0.0068	0.0020
160	0.0089	0.0069	0.0020
161	0.0091	0.0071	0.0020
162	0.0092	0.0071	0.0021
163	0.0095	0.0073	0.0021
164	0.0096	0.0074	0.0021
165	0.0099	0.0077	0.0022
166	0.0100	0.0078	0.0022
167	0.0103	0.0080	0.0023
168	0.0105	0.0081	0.0023
169	0.0108	0.0084	0.0024
170	0.0110	0.0086	0.0025
171	0.0114	0.0089	0.0026
172	0.0116	0.0090	0.0026
173	0.0121	0.0094	0.0027
174	0.0123	0.0096	0.0028
175	0.0129	0.0100	0.0029
176	0.0132	0.0102	0.0030
177	0.0139	0.0108	0.0031
178	0.0142	0.0110	0.0032
179	0.0150	0.0117	0.0034
180	0.0155	0.0120	0.0035
181	0.0165	0.0128	0.0037
182	0.0171	0.0133	0.0038

183	0.0185	0.0144	0.0041
184	0.0193	0.0150	0.0043
185	0.0159	0.0124	0.0036
186	0.0170	0.0132	0.0038
187	0.0197	0.0153	0.0044
188	0.0215	0.0167	0.0048
189	0.0267	0.0207	0.0060
190	0.0308	0.0239	0.0069
191	0.0467	0.0362	0.0104
192	0.0678	0.0377	0.0300
193	0.2931	0.0377	0.2554
194	0.0367	0.0285	0.0082
195	0.0238	0.0184	0.0053
196	0.0182	0.0141	0.0041
197	0.0202	0.0157	0.0045
198	0.0178	0.0138	0.0040
199	0.0160	0.0124	0.0036
200	0.0146	0.0113	0.0033
201	0.0135	0.0105	0.0030
202	0.0126	0.0098	0.0028
203	0.0119	0.0092	0.0027
204	0.0112	0.0087	0.0025
205	0.0106	0.0083	0.0024
206	0.0102	0.0079	0.0023
207	0.0097	0.0075	0.0022
208	0.0093	0.0072	0.0021
209	0.0090	0.0070	0.0020
210	0.0087	0.0067	0.0019
211	0.0084	0.0065	0.0019
212	0.0081	0.0063	0.0018
213	0.0079	0.0061	0.0018
214	0.0076	0.0059	0.0017
215	0.0074	0.0058	0.0017
216	0.0072	0.0056	0.0016
217	0.0071	0.0055	0.0016
218	0.0070	0.0054	0.0016
219	0.0068	0.0053	0.0015
220	0.0067	0.0052	0.0015
221	0.0065	0.0051	0.0015
222	0.0064	0.0050	0.0014
223	0.0063	0.0049	0.0014
224	0.0061	0.0048	0.0014
225	0.0060	0.0047	0.0013
226	0.0059	0.0046	0.0013
227	0.0058	0.0045	0.0013
228	0.0057	0.0044	0.0013
229	0.0056	0.0044	0.0013
230	0.0055	0.0043	0.0012
231	0.0054	0.0042	0.0012
232	0.0054	0.0042	0.0012

233	0.0053	0.0041	0.0012
234	0.0052	0.0040	0.0012
235	0.0051	0.0040	0.0011
236	0.0051	0.0039	0.0011
237	0.0050	0.0039	0.0011
238	0.0049	0.0038	0.0011
239	0.0049	0.0038	0.0011
240	0.0048	0.0037	0.0011
241	0.0047	0.0037	0.0011
242	0.0047	0.0036	0.0010
243	0.0046	0.0036	0.0010
244	0.0046	0.0035	0.0010
245	0.0045	0.0035	0.0010
246	0.0045	0.0035	0.0010
247	0.0044	0.0034	0.0010
248	0.0044	0.0034	0.0010
249	0.0043	0.0034	0.0010
250	0.0043	0.0033	0.0010
251	0.0042	0.0033	0.0009
252	0.0042	0.0033	0.0009
253	0.0042	0.0032	0.0009
254	0.0041	0.0032	0.0009
255	0.0041	0.0032	0.0009
256	0.0040	0.0031	0.0009
257	0.0040	0.0031	0.0009
258	0.0040	0.0031	0.0009
259	0.0039	0.0030	0.0009
260	0.0039	0.0030	0.0009
261	0.0039	0.0030	0.0009
262	0.0038	0.0030	0.0009
263	0.0038	0.0029	0.0008
264	0.0038	0.0029	0.0008
265	0.0037	0.0029	0.0008
266	0.0037	0.0029	0.0008
267	0.0037	0.0028	0.0008
268	0.0036	0.0028	0.0008
269	0.0036	0.0028	0.0008
270	0.0036	0.0028	0.0008
271	0.0036	0.0028	0.0008
272	0.0035	0.0027	0.0008
273	0.0035	0.0027	0.0008
274	0.0035	0.0027	0.0008
275	0.0034	0.0027	0.0008
276	0.0034	0.0027	0.0008
277	0.0034	0.0026	0.0008
278	0.0034	0.0026	0.0008
279	0.0034	0.0026	0.0008
280	0.0033	0.0026	0.0007
281	0.0033	0.0026	0.0007
282	0.0033	0.0026	0.0007

283	0.0033	0.0025	0.0007
284	0.0032	0.0025	0.0007
285	0.0032	0.0025	0.0007
286	0.0032	0.0025	0.0007
287	0.0032	0.0025	0.0007
288	0.0032	0.0025	0.0007

 Total soil rain loss = 1.53(In)
 Total effective rainfall = 0.70(In)
 Peak flow rate in flood hydrograph = 8.05(CFS)

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

 Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000		0.00	Q				
0+10	0.0001		0.02	Q				
0+15	0.0004		0.04	Q				
0+20	0.0007		0.05	Q				
0+25	0.0010		0.05	Q				
0+30	0.0014		0.05	Q				
0+35	0.0018		0.06	Q				
0+40	0.0022		0.06	Q				
0+45	0.0026		0.06	Q				
0+50	0.0031		0.06	Q				
0+55	0.0035		0.06	Q				
1+ 0	0.0040		0.06	Q				
1+ 5	0.0044		0.07	Q				
1+10	0.0049		0.07	Q				
1+15	0.0053		0.07	Q				
1+20	0.0058		0.07	Q				
1+25	0.0062		0.07	Q				
1+30	0.0067		0.07	Q				
1+35	0.0072		0.07	Q				
1+40	0.0077		0.07	Q				
1+45	0.0081		0.07	Q				
1+50	0.0086		0.07	Q				
1+55	0.0091		0.07	Q				
2+ 0	0.0096		0.07	Q				
2+ 5	0.0100		0.07	Q				
2+10	0.0105		0.07	Q				
2+15	0.0110		0.07	Q				
2+20	0.0115		0.07	QV				
2+25	0.0120		0.07	QV				

2+30	0.0124	0.07	QV
2+35	0.0129	0.07	QV
2+40	0.0134	0.07	QV
2+45	0.0139	0.07	QV
2+50	0.0144	0.07	QV
2+55	0.0149	0.07	QV
3+ 0	0.0154	0.07	QV
3+ 5	0.0159	0.07	QV
3+10	0.0164	0.07	QV
3+15	0.0169	0.07	QV
3+20	0.0174	0.07	QV
3+25	0.0179	0.07	QV
3+30	0.0184	0.07	QV
3+35	0.0189	0.07	QV
3+40	0.0195	0.07	QV
3+45	0.0200	0.07	QV
3+50	0.0205	0.08	QV
3+55	0.0210	0.08	QV
4+ 0	0.0215	0.08	QV
4+ 5	0.0220	0.08	QV
4+10	0.0226	0.08	Q V
4+15	0.0231	0.08	Q V
4+20	0.0236	0.08	Q V
4+25	0.0242	0.08	Q V
4+30	0.0247	0.08	Q V
4+35	0.0252	0.08	Q V
4+40	0.0258	0.08	Q V
4+45	0.0263	0.08	Q V
4+50	0.0269	0.08	Q V
4+55	0.0274	0.08	Q V
5+ 0	0.0279	0.08	Q V
5+ 5	0.0285	0.08	Q V
5+10	0.0291	0.08	Q V
5+15	0.0296	0.08	Q V
5+20	0.0302	0.08	Q V
5+25	0.0307	0.08	Q V
5+30	0.0313	0.08	Q V
5+35	0.0319	0.08	Q V
5+40	0.0324	0.08	Q V
5+45	0.0330	0.08	Q V
5+50	0.0336	0.08	Q V
5+55	0.0341	0.08	Q V
6+ 0	0.0347	0.08	Q V
6+ 5	0.0353	0.08	Q V
6+10	0.0359	0.08	Q V
6+15	0.0365	0.09	Q V
6+20	0.0371	0.09	Q V
6+25	0.0377	0.09	Q V
6+30	0.0383	0.09	Q V
6+35	0.0389	0.09	Q V

6+40	0.0395	0.09	Q	V
6+45	0.0401	0.09	Q	V
6+50	0.0407	0.09	Q	V
6+55	0.0413	0.09	Q	V
7+ 0	0.0419	0.09	Q	V
7+ 5	0.0425	0.09	Q	V
7+10	0.0431	0.09	Q	V
7+15	0.0438	0.09	Q	V
7+20	0.0444	0.09	Q	V
7+25	0.0450	0.09	Q	V
7+30	0.0457	0.09	Q	V
7+35	0.0463	0.09	Q	V
7+40	0.0469	0.09	Q	V
7+45	0.0476	0.09	Q	V
7+50	0.0482	0.09	Q	V
7+55	0.0489	0.09	Q	V
8+ 0	0.0495	0.10	Q	V
8+ 5	0.0502	0.10	Q	V
8+10	0.0509	0.10	Q	V
8+15	0.0515	0.10	Q	V
8+20	0.0522	0.10	Q	V
8+25	0.0529	0.10	Q	V
8+30	0.0536	0.10	Q	V
8+35	0.0543	0.10	Q	V
8+40	0.0550	0.10	Q	V
8+45	0.0557	0.10	Q	V
8+50	0.0564	0.10	Q	V
8+55	0.0571	0.10	Q	V
9+ 0	0.0578	0.10	Q	V
9+ 5	0.0585	0.10	Q	V
9+10	0.0592	0.10	Q	V
9+15	0.0599	0.11	Q	V
9+20	0.0607	0.11	Q	V
9+25	0.0614	0.11	Q	V
9+30	0.0621	0.11	Q	V
9+35	0.0629	0.11	Q	V
9+40	0.0636	0.11	Q	V
9+45	0.0644	0.11	Q	V
9+50	0.0651	0.11	Q	V
9+55	0.0659	0.11	Q	V
10+ 0	0.0667	0.11	Q	V
10+ 5	0.0675	0.11	Q	V
10+10	0.0683	0.11	Q	V
10+15	0.0690	0.12	Q	V
10+20	0.0698	0.12	Q	V
10+25	0.0707	0.12	Q	V
10+30	0.0715	0.12	Q	V
10+35	0.0723	0.12	Q	V
10+40	0.0731	0.12	Q	V
10+45	0.0739	0.12	Q	V

10+50	0.0748	0.12	Q	V				
10+55	0.0756	0.12	Q	V				
11+ 0	0.0765	0.12	Q	V				
11+ 5	0.0774	0.13	Q	V				
11+10	0.0782	0.13	Q	V				
11+15	0.0791	0.13	Q	V				
11+20	0.0800	0.13	Q	V				
11+25	0.0809	0.13	Q	V				
11+30	0.0818	0.13	Q	V				
11+35	0.0827	0.13	Q	V				
11+40	0.0837	0.13	Q	V				
11+45	0.0846	0.14	Q	V				
11+50	0.0855	0.14	Q	V				
11+55	0.0865	0.14	Q	V				
12+ 0	0.0875	0.14	Q	V				
12+ 5	0.0885	0.14	Q	V				
12+10	0.0894	0.14	Q	V				
12+15	0.0904	0.15	Q	V				
12+20	0.0915	0.15	Q	V				
12+25	0.0925	0.15	Q	V				
12+30	0.0935	0.15	Q	V				
12+35	0.0946	0.15	Q	V				
12+40	0.0956	0.15	Q	V				
12+45	0.0967	0.16	Q	V				
12+50	0.0978	0.16	Q	V				
12+55	0.0989	0.16	Q	V				
13+ 0	0.1000	0.16	Q	V				
13+ 5	0.1012	0.17	Q	V				
13+10	0.1023	0.17	Q	V				
13+15	0.1035	0.17	Q	V				
13+20	0.1047	0.17	Q	V				
13+25	0.1059	0.18	Q	V				
13+30	0.1072	0.18	Q	V				
13+35	0.1084	0.18	Q	V				
13+40	0.1097	0.19	Q	V				
13+45	0.1110	0.19	Q	V				
13+50	0.1123	0.19	Q	V				
13+55	0.1137	0.20	Q	V				
14+ 0	0.1151	0.20	Q	V				
14+ 5	0.1165	0.21	Q	V				
14+10	0.1180	0.21	Q	V				
14+15	0.1195	0.22	Q	V				
14+20	0.1210	0.22	Q	V				
14+25	0.1226	0.23	Q	V				
14+30	0.1242	0.23	Q	V				
14+35	0.1258	0.24	Q	V				
14+40	0.1275	0.25	Q	V				
14+45	0.1293	0.26	Q	V				
14+50	0.1311	0.26	Q	V				
14+55	0.1330	0.27	Q	V				

15+ 0	0.1350	0.28	Q			V			
15+ 5	0.1370	0.30	Q			V			
15+10	0.1391	0.31	Q			V			
15+15	0.1414	0.32	Q			V			
15+20	0.1437	0.34	Q			V			
15+25	0.1462	0.36	Q			V			
15+30	0.1486	0.35	Q			V			
15+35	0.1510	0.35	Q			V			
15+40	0.1535	0.36	Q			V			
15+45	0.1562	0.39	Q			V			
15+50	0.1592	0.44	Q			V			
15+55	0.1627	0.51	Q			V			
16+ 0	0.1674	0.69	Q			V			
16+ 5	0.1803	1.87		Q		V			
16+10	0.2223	6.09			Q		V		
16+15	0.2778	8.05					V		Q
16+20	0.3064	4.16				Q		V	
16+25	0.3243	2.59			Q			V	
16+30	0.3369	1.84		Q				V	
16+35	0.3469	1.45		Q				V	
16+40	0.3547	1.12		Q				V	
16+45	0.3611	0.93		Q				V	
16+50	0.3664	0.78		Q				V	
16+55	0.3710	0.66	Q					V	
17+ 0	0.3748	0.56	Q					V	
17+ 5	0.3780	0.46	Q					V	
17+10	0.3807	0.39	Q					V	
17+15	0.3833	0.38	Q					V	
17+20	0.3858	0.36	Q					V	
17+25	0.3879	0.31	Q					V	
17+30	0.3898	0.27	Q					V	
17+35	0.3911	0.20	Q					V	
17+40	0.3925	0.19	Q					V	
17+45	0.3937	0.19	Q					V	
17+50	0.3950	0.18	Q					V	
17+55	0.3962	0.17	Q					V	
18+ 0	0.3973	0.17	Q					V	
18+ 5	0.3984	0.16	Q					V	
18+10	0.3995	0.16	Q					V	
18+15	0.4005	0.15	Q					V	
18+20	0.4016	0.15	Q					V	
18+25	0.4026	0.15	Q					V	
18+30	0.4036	0.14	Q					V	
18+35	0.4045	0.14	Q					V	
18+40	0.4055	0.14	Q					V	
18+45	0.4064	0.13	Q					V	
18+50	0.4073	0.13	Q					V	
18+55	0.4082	0.13	Q					V	
19+ 0	0.4090	0.13	Q					V	
19+ 5	0.4099	0.12	Q					V	

19+10	0.4107	0.12	Q				V
19+15	0.4115	0.12	Q				V
19+20	0.4123	0.12	Q				V
19+25	0.4131	0.11	Q				V
19+30	0.4139	0.11	Q				V
19+35	0.4147	0.11	Q				V
19+40	0.4154	0.11	Q				V
19+45	0.4162	0.11	Q				V
19+50	0.4169	0.11	Q				V
19+55	0.4176	0.10	Q				V
20+ 0	0.4183	0.10	Q				V
20+ 5	0.4190	0.10	Q				V
20+10	0.4197	0.10	Q				V
20+15	0.4204	0.10	Q				V
20+20	0.4211	0.10	Q				V
20+25	0.4218	0.10	Q				V
20+30	0.4224	0.10	Q				V
20+35	0.4231	0.09	Q				V
20+40	0.4237	0.09	Q				V
20+45	0.4243	0.09	Q				V
20+50	0.4250	0.09	Q				V
20+55	0.4256	0.09	Q				V
21+ 0	0.4262	0.09	Q				V
21+ 5	0.4268	0.09	Q				V
21+10	0.4274	0.09	Q				V
21+15	0.4280	0.09	Q				V
21+20	0.4286	0.09	Q				V
21+25	0.4292	0.09	Q				V
21+30	0.4298	0.08	Q				V
21+35	0.4304	0.08	Q				V
21+40	0.4309	0.08	Q				V
21+45	0.4315	0.08	Q				V
21+50	0.4321	0.08	Q				V
21+55	0.4326	0.08	Q				V
22+ 0	0.4332	0.08	Q				V
22+ 5	0.4337	0.08	Q				V
22+10	0.4342	0.08	Q				V
22+15	0.4348	0.08	Q				V
22+20	0.4353	0.08	Q				V
22+25	0.4358	0.08	Q				V
22+30	0.4364	0.08	Q				V
22+35	0.4369	0.08	Q				V
22+40	0.4374	0.07	Q				V
22+45	0.4379	0.07	Q				V
22+50	0.4384	0.07	Q				V
22+55	0.4389	0.07	Q				V
23+ 0	0.4394	0.07	Q				V
23+ 5	0.4399	0.07	Q				V
23+10	0.4404	0.07	Q				V
23+15	0.4409	0.07	Q				V

23+20	0.4414	0.07	Q				V
23+25	0.4419	0.07	Q				V
23+30	0.4423	0.07	Q				V
23+35	0.4428	0.07	Q				V
23+40	0.4433	0.07	Q				V
23+45	0.4437	0.07	Q				V
23+50	0.4442	0.07	Q				V
23+55	0.4447	0.07	Q				V
24+ 0	0.4451	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

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Study date 08/03/21

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

Program License Serial Number 6385

Space Center
undeveloped 10-year
Area D

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
5.26	1	0.62

Rainfall data for year 10		
5.26	6	1.27

Rainfall data for year 10		
5.26	24	2.23

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
80.0	80.0	5.26	1.000	0.370	1.000	0.370

Area-averaged adjusted loss rate Fm (In/Hr) = 0.370

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
5.26	1.000	80.0	80.0	2.50	0.317

Area-averaged catchment yield fraction, Y = 0.317

Area-averaged low loss fraction, Yb = 0.683

User entry of time of concentration = 0.190 (hours)

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Watershed area = 5.26(Ac.)

Catchment Lag time = 0.152 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 54.8246

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.370(In/Hr)

Average low loss rate fraction (Yb) = 0.683 (decimal)

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.294(In)

Computed peak 30-minute rainfall = 0.504(In)

Specified peak 1-hour rainfall = 0.620(In)

Computed peak 3-hour rainfall = 0.962(In)

Specified peak 6-hour rainfall = 1.270(In)

Specified peak 24-hour rainfall = 2.230(In)

Rainfall depth area reduction factors:

Using a total area of 5.26(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.294(In)

30-minute factor = 1.000 Adjusted rainfall = 0.503(In)

1-hour factor = 1.000 Adjusted rainfall = 0.620(In)

3-hour factor = 1.000 Adjusted rainfall = 0.962(In)

6-hour factor = 1.000 Adjusted rainfall = 1.270(In)

24-hour factor = 1.000 Adjusted rainfall = 2.230(In)

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

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))

	(K =	63.61 (CFS))
1	4.674	2.973
2	36.009	19.933
3	64.533	18.145
4	76.752	7.773
5	83.874	4.531
6	88.669	3.050
7	91.870	2.036
8	94.256	1.518
9	96.007	1.114
10	97.272	0.805
11	98.057	0.499
12	98.666	0.388
13	99.315	0.413
14	99.751	0.277
15	100.000	0.159

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

1	0.2941	0.2941
2	0.3621	0.0680
3	0.4089	0.0468
4	0.4458	0.0369
5	0.4767	0.0309
6	0.5035	0.0268
7	0.5273	0.0238
8	0.5489	0.0216
9	0.5686	0.0197
10	0.5869	0.0183
11	0.6039	0.0170
12	0.6198	0.0160
13	0.6400	0.0202
14	0.6593	0.0193
15	0.6778	0.0185
16	0.6955	0.0177
17	0.7126	0.0171
18	0.7291	0.0165
19	0.7451	0.0160
20	0.7605	0.0155
21	0.7755	0.0150
22	0.7901	0.0146
23	0.8043	0.0142
24	0.8181	0.0138
25	0.8316	0.0135
26	0.8448	0.0132
27	0.8576	0.0129

28	0.8702	0.0126
29	0.8825	0.0123
30	0.8946	0.0121
31	0.9064	0.0118
32	0.9180	0.0116
33	0.9294	0.0114
34	0.9405	0.0112
35	0.9515	0.0110
36	0.9623	0.0108
37	0.9729	0.0106
38	0.9834	0.0104
39	0.9936	0.0103
40	1.0038	0.0101
41	1.0137	0.0100
42	1.0236	0.0098
43	1.0332	0.0097
44	1.0428	0.0096
45	1.0522	0.0094
46	1.0615	0.0093
47	1.0707	0.0092
48	1.0797	0.0091
49	1.0887	0.0089
50	1.0975	0.0088
51	1.1063	0.0087
52	1.1149	0.0086
53	1.1234	0.0085
54	1.1319	0.0084
55	1.1402	0.0083
56	1.1485	0.0083
57	1.1566	0.0082
58	1.1647	0.0081
59	1.1727	0.0080
60	1.1806	0.0079
61	1.1884	0.0078
62	1.1962	0.0078
63	1.2039	0.0077
64	1.2115	0.0076
65	1.2190	0.0075
66	1.2265	0.0075
67	1.2339	0.0074
68	1.2413	0.0073
69	1.2485	0.0073
70	1.2557	0.0072
71	1.2629	0.0071
72	1.2700	0.0071
73	1.2771	0.0071
74	1.2842	0.0071
75	1.2912	0.0070
76	1.2982	0.0070
77	1.3051	0.0069

78	1.3119	0.0069
79	1.3187	0.0068
80	1.3255	0.0068
81	1.3322	0.0067
82	1.3389	0.0067
83	1.3455	0.0066
84	1.3520	0.0066
85	1.3585	0.0065
86	1.3650	0.0065
87	1.3714	0.0064
88	1.3778	0.0064
89	1.3841	0.0063
90	1.3904	0.0063
91	1.3967	0.0063
92	1.4029	0.0062
93	1.4091	0.0062
94	1.4152	0.0061
95	1.4213	0.0061
96	1.4274	0.0061
97	1.4334	0.0060
98	1.4394	0.0060
99	1.4453	0.0059
100	1.4512	0.0059
101	1.4571	0.0059
102	1.4629	0.0058
103	1.4688	0.0058
104	1.4745	0.0058
105	1.4803	0.0057
106	1.4860	0.0057
107	1.4917	0.0057
108	1.4973	0.0056
109	1.5029	0.0056
110	1.5085	0.0056
111	1.5141	0.0056
112	1.5196	0.0055
113	1.5251	0.0055
114	1.5305	0.0055
115	1.5360	0.0054
116	1.5414	0.0054
117	1.5468	0.0054
118	1.5521	0.0054
119	1.5575	0.0053
120	1.5628	0.0053
121	1.5680	0.0053
122	1.5733	0.0052
123	1.5785	0.0052
124	1.5837	0.0052
125	1.5889	0.0052
126	1.5940	0.0051
127	1.5992	0.0051

128	1.6043	0.0051
129	1.6093	0.0051
130	1.6144	0.0051
131	1.6194	0.0050
132	1.6244	0.0050
133	1.6294	0.0050
134	1.6344	0.0050
135	1.6393	0.0049
136	1.6443	0.0049
137	1.6492	0.0049
138	1.6540	0.0049
139	1.6589	0.0049
140	1.6637	0.0048
141	1.6685	0.0048
142	1.6733	0.0048
143	1.6781	0.0048
144	1.6829	0.0048
145	1.6876	0.0047
146	1.6923	0.0047
147	1.6970	0.0047
148	1.7017	0.0047
149	1.7064	0.0047
150	1.7110	0.0046
151	1.7156	0.0046
152	1.7202	0.0046
153	1.7248	0.0046
154	1.7294	0.0046
155	1.7339	0.0046
156	1.7385	0.0045
157	1.7430	0.0045
158	1.7475	0.0045
159	1.7520	0.0045
160	1.7564	0.0045
161	1.7609	0.0044
162	1.7653	0.0044
163	1.7697	0.0044
164	1.7741	0.0044
165	1.7785	0.0044
166	1.7829	0.0044
167	1.7872	0.0044
168	1.7916	0.0043
169	1.7959	0.0043
170	1.8002	0.0043
171	1.8045	0.0043
172	1.8088	0.0043
173	1.8131	0.0043
174	1.8173	0.0042
175	1.8215	0.0042
176	1.8258	0.0042
177	1.8300	0.0042

178	1.8342	0.0042
179	1.8383	0.0042
180	1.8425	0.0042
181	1.8466	0.0042
182	1.8508	0.0041
183	1.8549	0.0041
184	1.8590	0.0041
185	1.8631	0.0041
186	1.8672	0.0041
187	1.8713	0.0041
188	1.8753	0.0041
189	1.8794	0.0040
190	1.8834	0.0040
191	1.8874	0.0040
192	1.8914	0.0040
193	1.8954	0.0040
194	1.8994	0.0040
195	1.9034	0.0040
196	1.9073	0.0040
197	1.9113	0.0039
198	1.9152	0.0039
199	1.9191	0.0039
200	1.9230	0.0039
201	1.9269	0.0039
202	1.9308	0.0039
203	1.9347	0.0039
204	1.9386	0.0039
205	1.9424	0.0039
206	1.9463	0.0038
207	1.9501	0.0038
208	1.9539	0.0038
209	1.9577	0.0038
210	1.9615	0.0038
211	1.9653	0.0038
212	1.9691	0.0038
213	1.9729	0.0038
214	1.9766	0.0038
215	1.9804	0.0037
216	1.9841	0.0037
217	1.9878	0.0037
218	1.9915	0.0037
219	1.9952	0.0037
220	1.9989	0.0037
221	2.0026	0.0037
222	2.0063	0.0037
223	2.0100	0.0037
224	2.0136	0.0037
225	2.0173	0.0036
226	2.0209	0.0036
227	2.0245	0.0036

228	2.0281	0.0036
229	2.0318	0.0036
230	2.0353	0.0036
231	2.0389	0.0036
232	2.0425	0.0036
233	2.0461	0.0036
234	2.0497	0.0036
235	2.0532	0.0036
236	2.0567	0.0035
237	2.0603	0.0035
238	2.0638	0.0035
239	2.0673	0.0035
240	2.0708	0.0035
241	2.0743	0.0035
242	2.0778	0.0035
243	2.0813	0.0035
244	2.0848	0.0035
245	2.0882	0.0035
246	2.0917	0.0035
247	2.0952	0.0034
248	2.0986	0.0034
249	2.1020	0.0034
250	2.1055	0.0034
251	2.1089	0.0034
252	2.1123	0.0034
253	2.1157	0.0034
254	2.1191	0.0034
255	2.1225	0.0034
256	2.1258	0.0034
257	2.1292	0.0034
258	2.1326	0.0034
259	2.1359	0.0034
260	2.1393	0.0033
261	2.1426	0.0033
262	2.1459	0.0033
263	2.1492	0.0033
264	2.1526	0.0033
265	2.1559	0.0033
266	2.1592	0.0033
267	2.1625	0.0033
268	2.1657	0.0033
269	2.1690	0.0033
270	2.1723	0.0033
271	2.1756	0.0033
272	2.1788	0.0033
273	2.1821	0.0032
274	2.1853	0.0032
275	2.1885	0.0032
276	2.1918	0.0032
277	2.1950	0.0032

278	2.1982	0.0032
279	2.2014	0.0032
280	2.2046	0.0032
281	2.2078	0.0032
282	2.2110	0.0032
283	2.2142	0.0032
284	2.2174	0.0032
285	2.2205	0.0032
286	2.2237	0.0032
287	2.2268	0.0032
288	2.2300	0.0031

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0031	0.0021	0.0010
2	0.0032	0.0022	0.0010
3	0.0032	0.0022	0.0010
4	0.0032	0.0022	0.0010
5	0.0032	0.0022	0.0010
6	0.0032	0.0022	0.0010
7	0.0032	0.0022	0.0010
8	0.0032	0.0022	0.0010
9	0.0032	0.0022	0.0010
10	0.0032	0.0022	0.0010
11	0.0032	0.0022	0.0010
12	0.0033	0.0022	0.0010
13	0.0033	0.0022	0.0010
14	0.0033	0.0022	0.0010
15	0.0033	0.0022	0.0010
16	0.0033	0.0023	0.0010
17	0.0033	0.0023	0.0011
18	0.0033	0.0023	0.0011
19	0.0033	0.0023	0.0011
20	0.0033	0.0023	0.0011
21	0.0034	0.0023	0.0011
22	0.0034	0.0023	0.0011
23	0.0034	0.0023	0.0011
24	0.0034	0.0023	0.0011
25	0.0034	0.0023	0.0011
26	0.0034	0.0023	0.0011
27	0.0034	0.0023	0.0011
28	0.0034	0.0023	0.0011
29	0.0035	0.0024	0.0011
30	0.0035	0.0024	0.0011
31	0.0035	0.0024	0.0011
32	0.0035	0.0024	0.0011
33	0.0035	0.0024	0.0011
34	0.0035	0.0024	0.0011

35	0.0035	0.0024	0.0011
36	0.0035	0.0024	0.0011
37	0.0036	0.0024	0.0011
38	0.0036	0.0024	0.0011
39	0.0036	0.0025	0.0011
40	0.0036	0.0025	0.0011
41	0.0036	0.0025	0.0011
42	0.0036	0.0025	0.0012
43	0.0036	0.0025	0.0012
44	0.0037	0.0025	0.0012
45	0.0037	0.0025	0.0012
46	0.0037	0.0025	0.0012
47	0.0037	0.0025	0.0012
48	0.0037	0.0025	0.0012
49	0.0037	0.0026	0.0012
50	0.0037	0.0026	0.0012
51	0.0038	0.0026	0.0012
52	0.0038	0.0026	0.0012
53	0.0038	0.0026	0.0012
54	0.0038	0.0026	0.0012
55	0.0038	0.0026	0.0012
56	0.0038	0.0026	0.0012
57	0.0039	0.0026	0.0012
58	0.0039	0.0026	0.0012
59	0.0039	0.0027	0.0012
60	0.0039	0.0027	0.0012
61	0.0039	0.0027	0.0012
62	0.0039	0.0027	0.0013
63	0.0040	0.0027	0.0013
64	0.0040	0.0027	0.0013
65	0.0040	0.0027	0.0013
66	0.0040	0.0027	0.0013
67	0.0040	0.0028	0.0013
68	0.0041	0.0028	0.0013
69	0.0041	0.0028	0.0013
70	0.0041	0.0028	0.0013
71	0.0041	0.0028	0.0013
72	0.0041	0.0028	0.0013
73	0.0042	0.0028	0.0013
74	0.0042	0.0029	0.0013
75	0.0042	0.0029	0.0013
76	0.0042	0.0029	0.0013
77	0.0042	0.0029	0.0013
78	0.0043	0.0029	0.0014
79	0.0043	0.0029	0.0014
80	0.0043	0.0029	0.0014
81	0.0043	0.0030	0.0014
82	0.0044	0.0030	0.0014
83	0.0044	0.0030	0.0014
84	0.0044	0.0030	0.0014

85	0.0044	0.0030	0.0014
86	0.0044	0.0030	0.0014
87	0.0045	0.0031	0.0014
88	0.0045	0.0031	0.0014
89	0.0045	0.0031	0.0014
90	0.0046	0.0031	0.0014
91	0.0046	0.0031	0.0015
92	0.0046	0.0031	0.0015
93	0.0046	0.0032	0.0015
94	0.0047	0.0032	0.0015
95	0.0047	0.0032	0.0015
96	0.0047	0.0032	0.0015
97	0.0048	0.0032	0.0015
98	0.0048	0.0033	0.0015
99	0.0048	0.0033	0.0015
100	0.0048	0.0033	0.0015
101	0.0049	0.0033	0.0015
102	0.0049	0.0033	0.0016
103	0.0049	0.0034	0.0016
104	0.0050	0.0034	0.0016
105	0.0050	0.0034	0.0016
106	0.0050	0.0034	0.0016
107	0.0051	0.0035	0.0016
108	0.0051	0.0035	0.0016
109	0.0051	0.0035	0.0016
110	0.0052	0.0035	0.0016
111	0.0052	0.0036	0.0017
112	0.0052	0.0036	0.0017
113	0.0053	0.0036	0.0017
114	0.0053	0.0036	0.0017
115	0.0054	0.0037	0.0017
116	0.0054	0.0037	0.0017
117	0.0055	0.0037	0.0017
118	0.0055	0.0038	0.0017
119	0.0056	0.0038	0.0018
120	0.0056	0.0038	0.0018
121	0.0056	0.0039	0.0018
122	0.0057	0.0039	0.0018
123	0.0057	0.0039	0.0018
124	0.0058	0.0039	0.0018
125	0.0058	0.0040	0.0019
126	0.0059	0.0040	0.0019
127	0.0059	0.0041	0.0019
128	0.0060	0.0041	0.0019
129	0.0061	0.0041	0.0019
130	0.0061	0.0042	0.0019
131	0.0062	0.0042	0.0020
132	0.0062	0.0042	0.0020
133	0.0063	0.0043	0.0020
134	0.0063	0.0043	0.0020

135	0.0064	0.0044	0.0020
136	0.0065	0.0044	0.0021
137	0.0066	0.0045	0.0021
138	0.0066	0.0045	0.0021
139	0.0067	0.0046	0.0021
140	0.0068	0.0046	0.0021
141	0.0069	0.0047	0.0022
142	0.0069	0.0047	0.0022
143	0.0070	0.0048	0.0022
144	0.0071	0.0048	0.0022
145	0.0071	0.0048	0.0022
146	0.0071	0.0049	0.0023
147	0.0073	0.0050	0.0023
148	0.0073	0.0050	0.0023
149	0.0075	0.0051	0.0024
150	0.0075	0.0051	0.0024
151	0.0077	0.0052	0.0024
152	0.0078	0.0053	0.0025
153	0.0079	0.0054	0.0025
154	0.0080	0.0055	0.0025
155	0.0082	0.0056	0.0026
156	0.0083	0.0056	0.0026
157	0.0084	0.0058	0.0027
158	0.0085	0.0058	0.0027
159	0.0087	0.0060	0.0028
160	0.0088	0.0060	0.0028
161	0.0091	0.0062	0.0029
162	0.0092	0.0063	0.0029
163	0.0094	0.0064	0.0030
164	0.0096	0.0065	0.0030
165	0.0098	0.0067	0.0031
166	0.0100	0.0068	0.0032
167	0.0103	0.0070	0.0033
168	0.0104	0.0071	0.0033
169	0.0108	0.0074	0.0034
170	0.0110	0.0075	0.0035
171	0.0114	0.0078	0.0036
172	0.0116	0.0079	0.0037
173	0.0121	0.0082	0.0038
174	0.0123	0.0084	0.0039
175	0.0129	0.0088	0.0041
176	0.0132	0.0090	0.0042
177	0.0138	0.0094	0.0044
178	0.0142	0.0097	0.0045
179	0.0150	0.0102	0.0048
180	0.0155	0.0106	0.0049
181	0.0165	0.0113	0.0052
182	0.0171	0.0117	0.0054
183	0.0185	0.0126	0.0059
184	0.0193	0.0132	0.0061

185	0.0160	0.0109	0.0051
186	0.0170	0.0116	0.0054
187	0.0197	0.0135	0.0063
188	0.0216	0.0147	0.0068
189	0.0268	0.0183	0.0085
190	0.0309	0.0211	0.0098
191	0.0468	0.0308	0.0160
192	0.0680	0.0308	0.0372
193	0.2941	0.0308	0.2633
194	0.0369	0.0252	0.0117
195	0.0238	0.0163	0.0076
196	0.0183	0.0125	0.0058
197	0.0202	0.0138	0.0064
198	0.0177	0.0121	0.0056
199	0.0160	0.0109	0.0051
200	0.0146	0.0100	0.0046
201	0.0135	0.0092	0.0043
202	0.0126	0.0086	0.0040
203	0.0118	0.0081	0.0038
204	0.0112	0.0076	0.0035
205	0.0106	0.0072	0.0034
206	0.0101	0.0069	0.0032
207	0.0097	0.0066	0.0031
208	0.0093	0.0063	0.0029
209	0.0089	0.0061	0.0028
210	0.0086	0.0059	0.0027
211	0.0083	0.0057	0.0026
212	0.0081	0.0055	0.0026
213	0.0078	0.0053	0.0025
214	0.0076	0.0052	0.0024
215	0.0074	0.0051	0.0023
216	0.0072	0.0049	0.0023
217	0.0071	0.0049	0.0023
218	0.0070	0.0048	0.0022
219	0.0068	0.0046	0.0022
220	0.0067	0.0045	0.0021
221	0.0065	0.0044	0.0021
222	0.0064	0.0044	0.0020
223	0.0063	0.0043	0.0020
224	0.0061	0.0042	0.0019
225	0.0060	0.0041	0.0019
226	0.0059	0.0040	0.0019
227	0.0058	0.0040	0.0018
228	0.0057	0.0039	0.0018
229	0.0056	0.0038	0.0018
230	0.0055	0.0038	0.0018
231	0.0054	0.0037	0.0017
232	0.0054	0.0037	0.0017
233	0.0053	0.0036	0.0017
234	0.0052	0.0035	0.0016

235	0.0051	0.0035	0.0016
236	0.0051	0.0035	0.0016
237	0.0050	0.0034	0.0016
238	0.0049	0.0034	0.0016
239	0.0049	0.0033	0.0015
240	0.0048	0.0033	0.0015
241	0.0047	0.0032	0.0015
242	0.0047	0.0032	0.0015
243	0.0046	0.0032	0.0015
244	0.0046	0.0031	0.0014
245	0.0045	0.0031	0.0014
246	0.0045	0.0030	0.0014
247	0.0044	0.0030	0.0014
248	0.0044	0.0030	0.0014
249	0.0043	0.0030	0.0014
250	0.0043	0.0029	0.0014
251	0.0042	0.0029	0.0013
252	0.0042	0.0029	0.0013
253	0.0042	0.0028	0.0013
254	0.0041	0.0028	0.0013
255	0.0041	0.0028	0.0013
256	0.0040	0.0028	0.0013
257	0.0040	0.0027	0.0013
258	0.0040	0.0027	0.0013
259	0.0039	0.0027	0.0012
260	0.0039	0.0027	0.0012
261	0.0039	0.0026	0.0012
262	0.0038	0.0026	0.0012
263	0.0038	0.0026	0.0012
264	0.0038	0.0026	0.0012
265	0.0037	0.0025	0.0012
266	0.0037	0.0025	0.0012
267	0.0037	0.0025	0.0012
268	0.0036	0.0025	0.0012
269	0.0036	0.0025	0.0011
270	0.0036	0.0024	0.0011
271	0.0036	0.0024	0.0011
272	0.0035	0.0024	0.0011
273	0.0035	0.0024	0.0011
274	0.0035	0.0024	0.0011
275	0.0034	0.0024	0.0011
276	0.0034	0.0023	0.0011
277	0.0034	0.0023	0.0011
278	0.0034	0.0023	0.0011
279	0.0034	0.0023	0.0011
280	0.0033	0.0023	0.0011
281	0.0033	0.0023	0.0010
282	0.0033	0.0022	0.0010
283	0.0033	0.0022	0.0010
284	0.0032	0.0022	0.0010

285	0.0032	0.0022	0.0010
286	0.0032	0.0022	0.0010
287	0.0032	0.0022	0.0010
288	0.0032	0.0022	0.0010

Total soil rain loss = 1.34(In)
Total effective rainfall = 0.89(In)
Peak flow rate in flood hydrograph = 6.20(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000		0.00	Q				
0+10	0.0002		0.02	Q				
0+15	0.0005		0.04	Q				
0+20	0.0008		0.05	Q				
0+25	0.0012		0.05	Q				
0+30	0.0016		0.06	Q				
0+35	0.0020		0.06	Q				
0+40	0.0024		0.06	Q				
0+45	0.0028		0.06	Q				
0+50	0.0032		0.06	Q				
0+55	0.0037		0.06	Q				
1+ 0	0.0041		0.06	Q				
1+ 5	0.0046		0.06	Q				
1+10	0.0050		0.07	Q				
1+15	0.0055		0.07	Q				
1+20	0.0059		0.07	Q				
1+25	0.0064		0.07	Q				
1+30	0.0068		0.07	Q				
1+35	0.0073		0.07	Q				
1+40	0.0078		0.07	Q				
1+45	0.0082		0.07	Q				
1+50	0.0087		0.07	Q				
1+55	0.0092		0.07	Q				
2+ 0	0.0096		0.07	Q				
2+ 5	0.0101		0.07	QV				
2+10	0.0106		0.07	QV				
2+15	0.0110		0.07	QV				
2+20	0.0115		0.07	QV				
2+25	0.0120		0.07	QV				
2+30	0.0125		0.07	QV				
2+35	0.0129		0.07	QV				

2+40	0.0134	0.07	QV
2+45	0.0139	0.07	QV
2+50	0.0144	0.07	QV
2+55	0.0149	0.07	QV
3+ 0	0.0154	0.07	QV
3+ 5	0.0159	0.07	QV
3+10	0.0164	0.07	QV
3+15	0.0168	0.07	QV
3+20	0.0173	0.07	QV
3+25	0.0178	0.07	QV
3+30	0.0183	0.07	QV
3+35	0.0188	0.07	QV
3+40	0.0193	0.07	QV
3+45	0.0198	0.07	Q V
3+50	0.0204	0.07	Q V
3+55	0.0209	0.07	Q V
4+ 0	0.0214	0.07	Q V
4+ 5	0.0219	0.07	Q V
4+10	0.0224	0.07	Q V
4+15	0.0229	0.08	Q V
4+20	0.0234	0.08	Q V
4+25	0.0240	0.08	Q V
4+30	0.0245	0.08	Q V
4+35	0.0250	0.08	Q V
4+40	0.0255	0.08	Q V
4+45	0.0261	0.08	Q V
4+50	0.0266	0.08	Q V
4+55	0.0271	0.08	Q V
5+ 0	0.0277	0.08	Q V
5+ 5	0.0282	0.08	Q V
5+10	0.0288	0.08	Q V
5+15	0.0293	0.08	Q V
5+20	0.0299	0.08	Q V
5+25	0.0304	0.08	Q V
5+30	0.0310	0.08	Q V
5+35	0.0315	0.08	Q V
5+40	0.0321	0.08	Q V
5+45	0.0326	0.08	Q V
5+50	0.0332	0.08	Q V
5+55	0.0338	0.08	Q V
6+ 0	0.0343	0.08	Q V
6+ 5	0.0349	0.08	Q V
6+10	0.0355	0.08	Q V
6+15	0.0360	0.08	Q V
6+20	0.0366	0.08	Q V
6+25	0.0372	0.08	Q V
6+30	0.0378	0.08	Q V
6+35	0.0384	0.09	Q V
6+40	0.0390	0.09	Q V
6+45	0.0396	0.09	Q V

6+50	0.0402	0.09	Q	V				
6+55	0.0408	0.09	Q	V				
7+ 0	0.0414	0.09	Q	V				
7+ 5	0.0420	0.09	Q	V				
7+10	0.0426	0.09	Q	V				
7+15	0.0432	0.09	Q	V				
7+20	0.0438	0.09	Q	V				
7+25	0.0444	0.09	Q	V				
7+30	0.0451	0.09	Q	V				
7+35	0.0457	0.09	Q	V				
7+40	0.0463	0.09	Q	V				
7+45	0.0469	0.09	Q	V				
7+50	0.0476	0.09	Q	V				
7+55	0.0482	0.09	Q	V				
8+ 0	0.0489	0.09	Q	V				
8+ 5	0.0495	0.09	Q	V				
8+10	0.0502	0.09	Q	V				
8+15	0.0508	0.10	Q	V				
8+20	0.0515	0.10	Q	V				
8+25	0.0522	0.10	Q	V				
8+30	0.0528	0.10	Q	V				
8+35	0.0535	0.10	Q	V				
8+40	0.0542	0.10	Q	V				
8+45	0.0549	0.10	Q	V				
8+50	0.0556	0.10	Q	V				
8+55	0.0562	0.10	Q	V				
9+ 0	0.0569	0.10	Q	V				
9+ 5	0.0576	0.10	Q	V				
9+10	0.0584	0.10	Q	V				
9+15	0.0591	0.10	Q	V				
9+20	0.0598	0.10	Q	V				
9+25	0.0605	0.10	Q	V				
9+30	0.0612	0.11	Q	V				
9+35	0.0620	0.11	Q	V				
9+40	0.0627	0.11	Q	V				
9+45	0.0634	0.11	Q	V				
9+50	0.0642	0.11	Q	V				
9+55	0.0650	0.11	Q	V				
10+ 0	0.0657	0.11	Q	V				
10+ 5	0.0665	0.11	Q	V				
10+10	0.0673	0.11	Q	V				
10+15	0.0680	0.11	Q	V				
10+20	0.0688	0.11	Q	V				
10+25	0.0696	0.12	Q	V				
10+30	0.0704	0.12	Q	V				
10+35	0.0712	0.12	Q	V				
10+40	0.0720	0.12	Q	V				
10+45	0.0729	0.12	Q	V				
10+50	0.0737	0.12	Q	V				
10+55	0.0745	0.12	Q	V				

11+ 0	0.0754	0.12	Q	V			
11+ 5	0.0762	0.12	Q	V			
11+10	0.0771	0.12	Q	V			
11+15	0.0779	0.13	Q	V			
11+20	0.0788	0.13	Q	V			
11+25	0.0797	0.13	Q	V			
11+30	0.0806	0.13	Q	V			
11+35	0.0815	0.13	Q	V			
11+40	0.0824	0.13	Q	V			
11+45	0.0833	0.13	Q	V			
11+50	0.0843	0.14	Q	V			
11+55	0.0852	0.14	Q	V			
12+ 0	0.0862	0.14	Q	V			
12+ 5	0.0871	0.14	Q	V			
12+10	0.0881	0.14	Q	V			
12+15	0.0891	0.14	Q	V			
12+20	0.0901	0.14	Q	V			
12+25	0.0911	0.15	Q	V			
12+30	0.0921	0.15	Q	V			
12+35	0.0931	0.15	Q	V			
12+40	0.0942	0.15	Q	V			
12+45	0.0952	0.15	Q	V			
12+50	0.0963	0.16	Q	V			
12+55	0.0974	0.16	Q	V			
13+ 0	0.0985	0.16	Q	V			
13+ 5	0.0996	0.16	Q	V			
13+10	0.1008	0.17	Q	V			
13+15	0.1019	0.17	Q	V			
13+20	0.1031	0.17	Q	V			
13+25	0.1043	0.17	Q	V			
13+30	0.1055	0.18	Q	V			
13+35	0.1067	0.18	Q	V			
13+40	0.1080	0.18	Q	V			
13+45	0.1093	0.19	Q	V			
13+50	0.1106	0.19	Q	V			
13+55	0.1120	0.20	Q	V			
14+ 0	0.1133	0.20	Q	V			
14+ 5	0.1147	0.20	Q	V			
14+10	0.1162	0.21	Q	V			
14+15	0.1177	0.21	Q	V			
14+20	0.1192	0.22	Q	V			
14+25	0.1207	0.23	Q	V			
14+30	0.1223	0.23	Q	V			
14+35	0.1240	0.24	Q	V			
14+40	0.1257	0.25	Q	V			
14+45	0.1274	0.25	Q	V			
14+50	0.1292	0.26	Q	V			
14+55	0.1311	0.27	Q	V			
15+ 0	0.1330	0.28	Q	V			
15+ 5	0.1351	0.29	Q	V			

15+10	0.1372	0.31	Q		V			
15+15	0.1394	0.32	Q		V			
15+20	0.1418	0.34	Q		V			
15+25	0.1442	0.36	Q		V			
15+30	0.1466	0.35	Q		V			
15+35	0.1490	0.34	Q		V			
15+40	0.1515	0.36	Q		V			
15+45	0.1542	0.40	Q		V			
15+50	0.1573	0.45	Q		V			
15+55	0.1610	0.53	Q	Q	V			
16+ 0	0.1662	0.76	Q	Q	V			
16+ 5	0.1800	1.99		Q	V			
16+10	0.2226	6.20			V	Q		
16+15	0.2603	5.47			Q	V		
16+20	0.2789	2.70			Q	V		
16+25	0.2909	1.74		Q		V		
16+30	0.2998	1.29		Q		V		
16+35	0.3066	0.99		Q		V		
16+40	0.3122	0.81		Q		V		
16+45	0.3167	0.66		Q		V		
16+50	0.3205	0.55		Q		V		
16+55	0.3235	0.44	Q			V		
17+ 0	0.3262	0.39	Q			V		
17+ 5	0.3288	0.37	Q			V		
17+10	0.3310	0.32	Q			V		
17+15	0.3328	0.27	Q			V		
17+20	0.3343	0.22	Q			V		
17+25	0.3358	0.21	Q			V		
17+30	0.3371	0.20	Q			V		
17+35	0.3384	0.19	Q			V		
17+40	0.3397	0.18	Q			V		
17+45	0.3409	0.17	Q			V		
17+50	0.3420	0.17	Q			V		
17+55	0.3432	0.16	Q			V		
18+ 0	0.3442	0.16	Q			V		
18+ 5	0.3453	0.15	Q			V		
18+10	0.3463	0.15	Q			V		
18+15	0.3474	0.15	Q			V		
18+20	0.3483	0.14	Q			V		
18+25	0.3493	0.14	Q			V		
18+30	0.3502	0.14	Q			V		
18+35	0.3512	0.13	Q			V		
18+40	0.3521	0.13	Q			V		
18+45	0.3530	0.13	Q			V		
18+50	0.3538	0.13	Q			V		
18+55	0.3547	0.12	Q			V		
19+ 0	0.3555	0.12	Q			V		
19+ 5	0.3563	0.12	Q			V		
19+10	0.3571	0.12	Q			V		
19+15	0.3579	0.11	Q			V		

19+20	0.3587	0.11	Q				V
19+25	0.3595	0.11	Q				V
19+30	0.3602	0.11	Q				V
19+35	0.3610	0.11	Q				V
19+40	0.3617	0.11	Q				V
19+45	0.3624	0.10	Q				V
19+50	0.3631	0.10	Q				V
19+55	0.3638	0.10	Q				V
20+ 0	0.3645	0.10	Q				V
20+ 5	0.3652	0.10	Q				V
20+10	0.3659	0.10	Q				V
20+15	0.3665	0.10	Q				V
20+20	0.3672	0.10	Q				V
20+25	0.3678	0.09	Q				V
20+30	0.3685	0.09	Q				V
20+35	0.3691	0.09	Q				V
20+40	0.3697	0.09	Q				V
20+45	0.3704	0.09	Q				V
20+50	0.3710	0.09	Q				V
20+55	0.3716	0.09	Q				V
21+ 0	0.3722	0.09	Q				V
21+ 5	0.3728	0.09	Q				V
21+10	0.3734	0.09	Q				V
21+15	0.3739	0.08	Q				V
21+20	0.3745	0.08	Q				V
21+25	0.3751	0.08	Q				V
21+30	0.3757	0.08	Q				V
21+35	0.3762	0.08	Q				V
21+40	0.3768	0.08	Q				V
21+45	0.3773	0.08	Q				V
21+50	0.3779	0.08	Q				V
21+55	0.3784	0.08	Q				V
22+ 0	0.3789	0.08	Q				V
22+ 5	0.3795	0.08	Q				V
22+10	0.3800	0.08	Q				V
22+15	0.3805	0.08	Q				V
22+20	0.3810	0.08	Q				V
22+25	0.3815	0.07	Q				V
22+30	0.3821	0.07	Q				V
22+35	0.3826	0.07	Q				V
22+40	0.3831	0.07	Q				V
22+45	0.3836	0.07	Q				V
22+50	0.3840	0.07	Q				V
22+55	0.3845	0.07	Q				V
23+ 0	0.3850	0.07	Q				V
23+ 5	0.3855	0.07	Q				V
23+10	0.3860	0.07	Q				V
23+15	0.3865	0.07	Q				V
23+20	0.3869	0.07	Q				V
23+25	0.3874	0.07	Q				V

23+30	0.3879	0.07	Q				V
23+35	0.3883	0.07	Q				V
23+40	0.3888	0.07	Q				V
23+45	0.3892	0.07	Q				V
23+50	0.3897	0.07	Q				V
23+55	0.3901	0.07	Q				V
24+ 0	0.3906	0.06	Q				V

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

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Study date 08/03/21

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

Program License Serial Number 6385

Space Center
undeveloped 100-year
Area A

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
16.05	1	1.09

Rainfall data for year 100		
16.05	6	2.09

Rainfall data for year 100		
16.05	24	3.64

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
84.0	84.0	16.05	1.000	0.301	1.000	0.301

Area-averaged adjusted loss rate Fm (In/Hr) = 0.301

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
16.05	1.000	84.0	84.0	1.90	0.565

Area-averaged catchment yield fraction, Y = 0.565

Area-averaged low loss fraction, Yb = 0.435

User entry of time of concentration = 0.252 (hours)

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Watershed area = 16.05(Ac.)

Catchment Lag time = 0.202 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 41.3360

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.301(In/Hr)

Average low loss rate fraction (Yb) = 0.435 (decimal)

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.517(In)

Computed peak 30-minute rainfall = 0.885(In)

Specified peak 1-hour rainfall = 1.090(In)

Computed peak 3-hour rainfall = 1.625(In)

Specified peak 6-hour rainfall = 2.090(In)

Specified peak 24-hour rainfall = 3.640(In)

Rainfall depth area reduction factors:

Using a total area of 16.05(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.517(In)

30-minute factor = 0.999 Adjusted rainfall = 0.885(In)

1-hour factor = 0.999 Adjusted rainfall = 1.089(In)

3-hour factor = 1.000 Adjusted rainfall = 1.625(In)

6-hour factor = 1.000 Adjusted rainfall = 2.090(In)

24-hour factor = 1.000 Adjusted rainfall = 3.640(In)

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

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))

(K = 194.10 (CFS))		
1	2.897	5.624
2	20.229	33.642
3	51.022	59.771
4	66.916	30.850
5	75.856	17.354
6	81.756	11.452
7	86.053	8.341
8	89.272	6.248
9	91.629	4.575
10	93.556	3.741
11	95.055	2.908
12	96.259	2.338
13	97.199	1.824
14	97.865	1.292
15	98.303	0.851
16	98.788	0.942
17	99.284	0.962
18	99.646	0.703
19	100.000	0.687

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

1	0.5168	0.5168
2	0.6363	0.1195
3	0.7186	0.0823
4	0.7834	0.0648
5	0.8376	0.0542
6	0.8847	0.0471
7	0.9266	0.0419
8	0.9644	0.0379
9	0.9991	0.0347
10	1.0312	0.0321
11	1.0611	0.0299
12	1.0892	0.0281
13	1.1214	0.0322
14	1.1520	0.0307
15	1.1813	0.0293
16	1.2094	0.0281
17	1.2364	0.0270
18	1.2624	0.0260
19	1.2874	0.0251
20	1.3117	0.0243
21	1.3352	0.0235
22	1.3580	0.0228
23	1.3801	0.0221

24	1.4017	0.0215
25	1.4227	0.0210
26	1.4431	0.0205
27	1.4631	0.0200
28	1.4826	0.0195
29	1.5016	0.0191
30	1.5203	0.0186
31	1.5385	0.0182
32	1.5564	0.0179
33	1.5739	0.0175
34	1.5911	0.0172
35	1.6080	0.0169
36	1.6246	0.0166
37	1.6408	0.0163
38	1.6568	0.0160
39	1.6725	0.0157
40	1.6880	0.0155
41	1.7032	0.0152
42	1.7182	0.0150
43	1.7329	0.0148
44	1.7474	0.0145
45	1.7618	0.0143
46	1.7759	0.0141
47	1.7898	0.0139
48	1.8036	0.0137
49	1.8171	0.0136
50	1.8305	0.0134
51	1.8438	0.0132
52	1.8568	0.0131
53	1.8697	0.0129
54	1.8824	0.0127
55	1.8950	0.0126
56	1.9075	0.0124
57	1.9198	0.0123
58	1.9320	0.0122
59	1.9440	0.0120
60	1.9559	0.0119
61	1.9677	0.0118
62	1.9794	0.0117
63	1.9909	0.0115
64	2.0023	0.0114
65	2.0136	0.0113
66	2.0248	0.0112
67	2.0359	0.0111
68	2.0469	0.0110
69	2.0578	0.0109
70	2.0686	0.0108
71	2.0793	0.0107
72	2.0899	0.0106
73	2.1015	0.0116

74	2.1129	0.0115
75	2.1243	0.0114
76	2.1356	0.0113
77	2.1468	0.0112
78	2.1579	0.0111
79	2.1690	0.0110
80	2.1799	0.0109
81	2.1908	0.0109
82	2.2016	0.0108
83	2.2123	0.0107
84	2.2229	0.0106
85	2.2335	0.0106
86	2.2439	0.0105
87	2.2543	0.0104
88	2.2647	0.0103
89	2.2749	0.0103
90	2.2851	0.0102
91	2.2953	0.0101
92	2.3053	0.0101
93	2.3153	0.0100
94	2.3253	0.0099
95	2.3351	0.0099
96	2.3449	0.0098
97	2.3547	0.0097
98	2.3644	0.0097
99	2.3740	0.0096
100	2.3836	0.0096
101	2.3931	0.0095
102	2.4025	0.0095
103	2.4119	0.0094
104	2.4213	0.0093
105	2.4306	0.0093
106	2.4398	0.0092
107	2.4490	0.0092
108	2.4581	0.0091
109	2.4672	0.0091
110	2.4762	0.0090
111	2.4852	0.0090
112	2.4942	0.0089
113	2.5031	0.0089
114	2.5119	0.0088
115	2.5207	0.0088
116	2.5294	0.0088
117	2.5381	0.0087
118	2.5468	0.0087
119	2.5554	0.0086
120	2.5640	0.0086
121	2.5725	0.0085
122	2.5810	0.0085
123	2.5895	0.0084

124	2.5979	0.0084
125	2.6062	0.0084
126	2.6146	0.0083
127	2.6228	0.0083
128	2.6311	0.0082
129	2.6393	0.0082
130	2.6475	0.0082
131	2.6556	0.0081
132	2.6637	0.0081
133	2.6718	0.0081
134	2.6798	0.0080
135	2.6878	0.0080
136	2.6957	0.0080
137	2.7036	0.0079
138	2.7115	0.0079
139	2.7194	0.0078
140	2.7272	0.0078
141	2.7349	0.0078
142	2.7427	0.0077
143	2.7504	0.0077
144	2.7581	0.0077
145	2.7657	0.0077
146	2.7734	0.0076
147	2.7809	0.0076
148	2.7885	0.0076
149	2.7960	0.0075
150	2.8035	0.0075
151	2.8110	0.0075
152	2.8184	0.0074
153	2.8258	0.0074
154	2.8332	0.0074
155	2.8406	0.0073
156	2.8479	0.0073
157	2.8552	0.0073
158	2.8624	0.0073
159	2.8697	0.0072
160	2.8769	0.0072
161	2.8841	0.0072
162	2.8912	0.0072
163	2.8984	0.0071
164	2.9055	0.0071
165	2.9125	0.0071
166	2.9196	0.0071
167	2.9266	0.0070
168	2.9336	0.0070
169	2.9406	0.0070
170	2.9475	0.0070
171	2.9545	0.0069
172	2.9614	0.0069
173	2.9683	0.0069

174	2.9751	0.0069
175	2.9819	0.0068
176	2.9887	0.0068
177	2.9955	0.0068
178	3.0023	0.0068
179	3.0090	0.0067
180	3.0158	0.0067
181	3.0224	0.0067
182	3.0291	0.0067
183	3.0358	0.0067
184	3.0424	0.0066
185	3.0490	0.0066
186	3.0556	0.0066
187	3.0622	0.0066
188	3.0687	0.0065
189	3.0752	0.0065
190	3.0817	0.0065
191	3.0882	0.0065
192	3.0947	0.0065
193	3.1011	0.0064
194	3.1075	0.0064
195	3.1139	0.0064
196	3.1203	0.0064
197	3.1267	0.0064
198	3.1330	0.0063
199	3.1393	0.0063
200	3.1456	0.0063
201	3.1519	0.0063
202	3.1582	0.0063
203	3.1644	0.0062
204	3.1707	0.0062
205	3.1769	0.0062
206	3.1831	0.0062
207	3.1893	0.0062
208	3.1954	0.0062
209	3.2016	0.0061
210	3.2077	0.0061
211	3.2138	0.0061
212	3.2199	0.0061
213	3.2259	0.0061
214	3.2320	0.0061
215	3.2380	0.0060
216	3.2440	0.0060
217	3.2501	0.0060
218	3.2560	0.0060
219	3.2620	0.0060
220	3.2680	0.0060
221	3.2739	0.0059
222	3.2798	0.0059
223	3.2857	0.0059

224	3.2916	0.0059
225	3.2975	0.0059
226	3.3033	0.0059
227	3.3092	0.0058
228	3.3150	0.0058
229	3.3208	0.0058
230	3.3266	0.0058
231	3.3324	0.0058
232	3.3382	0.0058
233	3.3439	0.0058
234	3.3497	0.0057
235	3.3554	0.0057
236	3.3611	0.0057
237	3.3668	0.0057
238	3.3725	0.0057
239	3.3781	0.0057
240	3.3838	0.0057
241	3.3894	0.0056
242	3.3950	0.0056
243	3.4006	0.0056
244	3.4062	0.0056
245	3.4118	0.0056
246	3.4174	0.0056
247	3.4229	0.0056
248	3.4285	0.0055
249	3.4340	0.0055
250	3.4395	0.0055
251	3.4450	0.0055
252	3.4505	0.0055
253	3.4560	0.0055
254	3.4614	0.0055
255	3.4669	0.0054
256	3.4723	0.0054
257	3.4777	0.0054
258	3.4831	0.0054
259	3.4885	0.0054
260	3.4939	0.0054
261	3.4993	0.0054
262	3.5047	0.0054
263	3.5100	0.0053
264	3.5153	0.0053
265	3.5207	0.0053
266	3.5260	0.0053
267	3.5313	0.0053
268	3.5366	0.0053
269	3.5418	0.0053
270	3.5471	0.0053
271	3.5524	0.0053
272	3.5576	0.0052
273	3.5628	0.0052

274	3.5680	0.0052
275	3.5733	0.0052
276	3.5784	0.0052
277	3.5836	0.0052
278	3.5888	0.0052
279	3.5940	0.0052
280	3.5991	0.0052
281	3.6043	0.0051
282	3.6094	0.0051
283	3.6145	0.0051
284	3.6196	0.0051
285	3.6247	0.0051
286	3.6298	0.0051
287	3.6349	0.0051
288	3.6399	0.0051

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0051	0.0022	0.0029
2	0.0051	0.0022	0.0029
3	0.0051	0.0022	0.0029
4	0.0051	0.0022	0.0029
5	0.0051	0.0022	0.0029
6	0.0051	0.0022	0.0029
7	0.0052	0.0022	0.0029
8	0.0052	0.0022	0.0029
9	0.0052	0.0023	0.0029
10	0.0052	0.0023	0.0029
11	0.0052	0.0023	0.0030
12	0.0052	0.0023	0.0030
13	0.0053	0.0023	0.0030
14	0.0053	0.0023	0.0030
15	0.0053	0.0023	0.0030
16	0.0053	0.0023	0.0030
17	0.0053	0.0023	0.0030
18	0.0053	0.0023	0.0030
19	0.0054	0.0023	0.0030
20	0.0054	0.0023	0.0030
21	0.0054	0.0024	0.0031
22	0.0054	0.0024	0.0031
23	0.0054	0.0024	0.0031
24	0.0055	0.0024	0.0031
25	0.0055	0.0024	0.0031
26	0.0055	0.0024	0.0031
27	0.0055	0.0024	0.0031
28	0.0055	0.0024	0.0031
29	0.0056	0.0024	0.0031
30	0.0056	0.0024	0.0032

31	0.0056	0.0024	0.0032
32	0.0056	0.0024	0.0032
33	0.0057	0.0025	0.0032
34	0.0057	0.0025	0.0032
35	0.0057	0.0025	0.0032
36	0.0057	0.0025	0.0032
37	0.0057	0.0025	0.0032
38	0.0058	0.0025	0.0033
39	0.0058	0.0025	0.0033
40	0.0058	0.0025	0.0033
41	0.0058	0.0025	0.0033
42	0.0058	0.0025	0.0033
43	0.0059	0.0026	0.0033
44	0.0059	0.0026	0.0033
45	0.0059	0.0026	0.0033
46	0.0059	0.0026	0.0034
47	0.0060	0.0026	0.0034
48	0.0060	0.0026	0.0034
49	0.0060	0.0026	0.0034
50	0.0060	0.0026	0.0034
51	0.0061	0.0026	0.0034
52	0.0061	0.0026	0.0034
53	0.0061	0.0027	0.0035
54	0.0061	0.0027	0.0035
55	0.0062	0.0027	0.0035
56	0.0062	0.0027	0.0035
57	0.0062	0.0027	0.0035
58	0.0062	0.0027	0.0035
59	0.0063	0.0027	0.0036
60	0.0063	0.0027	0.0036
61	0.0063	0.0028	0.0036
62	0.0064	0.0028	0.0036
63	0.0064	0.0028	0.0036
64	0.0064	0.0028	0.0036
65	0.0065	0.0028	0.0037
66	0.0065	0.0028	0.0037
67	0.0065	0.0028	0.0037
68	0.0065	0.0028	0.0037
69	0.0066	0.0029	0.0037
70	0.0066	0.0029	0.0037
71	0.0067	0.0029	0.0038
72	0.0067	0.0029	0.0038
73	0.0067	0.0029	0.0038
74	0.0067	0.0029	0.0038
75	0.0068	0.0030	0.0038
76	0.0068	0.0030	0.0038
77	0.0069	0.0030	0.0039
78	0.0069	0.0030	0.0039
79	0.0069	0.0030	0.0039
80	0.0070	0.0030	0.0039

81	0.0070	0.0030	0.0040
82	0.0070	0.0031	0.0040
83	0.0071	0.0031	0.0040
84	0.0071	0.0031	0.0040
85	0.0072	0.0031	0.0040
86	0.0072	0.0031	0.0041
87	0.0072	0.0031	0.0041
88	0.0073	0.0032	0.0041
89	0.0073	0.0032	0.0041
90	0.0073	0.0032	0.0042
91	0.0074	0.0032	0.0042
92	0.0074	0.0032	0.0042
93	0.0075	0.0033	0.0042
94	0.0075	0.0033	0.0043
95	0.0076	0.0033	0.0043
96	0.0076	0.0033	0.0043
97	0.0077	0.0033	0.0043
98	0.0077	0.0034	0.0044
99	0.0078	0.0034	0.0044
100	0.0078	0.0034	0.0044
101	0.0079	0.0034	0.0045
102	0.0079	0.0034	0.0045
103	0.0080	0.0035	0.0045
104	0.0080	0.0035	0.0045
105	0.0081	0.0035	0.0046
106	0.0081	0.0035	0.0046
107	0.0082	0.0036	0.0046
108	0.0082	0.0036	0.0047
109	0.0083	0.0036	0.0047
110	0.0084	0.0036	0.0047
111	0.0084	0.0037	0.0048
112	0.0085	0.0037	0.0048
113	0.0086	0.0037	0.0048
114	0.0086	0.0037	0.0049
115	0.0087	0.0038	0.0049
116	0.0088	0.0038	0.0049
117	0.0088	0.0038	0.0050
118	0.0089	0.0039	0.0050
119	0.0090	0.0039	0.0051
120	0.0090	0.0039	0.0051
121	0.0091	0.0040	0.0052
122	0.0092	0.0040	0.0052
123	0.0093	0.0040	0.0053
124	0.0093	0.0041	0.0053
125	0.0095	0.0041	0.0053
126	0.0095	0.0041	0.0054
127	0.0096	0.0042	0.0054
128	0.0097	0.0042	0.0055
129	0.0098	0.0043	0.0055
130	0.0099	0.0043	0.0056

131	0.0100	0.0043	0.0056
132	0.0101	0.0044	0.0057
133	0.0102	0.0044	0.0058
134	0.0103	0.0045	0.0058
135	0.0104	0.0045	0.0059
136	0.0105	0.0046	0.0059
137	0.0106	0.0046	0.0060
138	0.0107	0.0047	0.0061
139	0.0109	0.0047	0.0061
140	0.0109	0.0048	0.0062
141	0.0111	0.0048	0.0063
142	0.0112	0.0049	0.0063
143	0.0114	0.0050	0.0064
144	0.0115	0.0050	0.0065
145	0.0106	0.0046	0.0060
146	0.0107	0.0046	0.0060
147	0.0109	0.0047	0.0062
148	0.0110	0.0048	0.0062
149	0.0112	0.0049	0.0063
150	0.0113	0.0049	0.0064
151	0.0115	0.0050	0.0065
152	0.0117	0.0051	0.0066
153	0.0119	0.0052	0.0067
154	0.0120	0.0052	0.0068
155	0.0123	0.0054	0.0070
156	0.0124	0.0054	0.0070
157	0.0127	0.0055	0.0072
158	0.0129	0.0056	0.0073
159	0.0132	0.0057	0.0075
160	0.0134	0.0058	0.0076
161	0.0137	0.0060	0.0078
162	0.0139	0.0061	0.0079
163	0.0143	0.0062	0.0081
164	0.0145	0.0063	0.0082
165	0.0150	0.0065	0.0085
166	0.0152	0.0066	0.0086
167	0.0157	0.0068	0.0089
168	0.0160	0.0069	0.0090
169	0.0166	0.0072	0.0094
170	0.0169	0.0073	0.0095
171	0.0175	0.0076	0.0099
172	0.0179	0.0078	0.0101
173	0.0186	0.0081	0.0105
174	0.0191	0.0083	0.0108
175	0.0200	0.0087	0.0113
176	0.0205	0.0089	0.0116
177	0.0215	0.0094	0.0122
178	0.0221	0.0096	0.0125
179	0.0235	0.0102	0.0133
180	0.0243	0.0106	0.0137

181	0.0260	0.0113	0.0147
182	0.0270	0.0117	0.0152
183	0.0293	0.0127	0.0166
184	0.0307	0.0133	0.0173
185	0.0281	0.0122	0.0159
186	0.0299	0.0130	0.0169
187	0.0347	0.0151	0.0196
188	0.0379	0.0165	0.0214
189	0.0471	0.0205	0.0266
190	0.0542	0.0236	0.0306
191	0.0823	0.0250	0.0573
192	0.1195	0.0250	0.0944
193	0.5168	0.0250	0.4918
194	0.0648	0.0250	0.0397
195	0.0419	0.0182	0.0237
196	0.0321	0.0140	0.0181
197	0.0322	0.0140	0.0182
198	0.0281	0.0122	0.0159
199	0.0251	0.0109	0.0142
200	0.0228	0.0099	0.0129
201	0.0210	0.0091	0.0119
202	0.0195	0.0085	0.0110
203	0.0182	0.0079	0.0103
204	0.0172	0.0075	0.0097
205	0.0163	0.0071	0.0092
206	0.0155	0.0067	0.0087
207	0.0148	0.0064	0.0083
208	0.0141	0.0061	0.0080
209	0.0136	0.0059	0.0077
210	0.0131	0.0057	0.0074
211	0.0126	0.0055	0.0071
212	0.0122	0.0053	0.0069
213	0.0118	0.0051	0.0067
214	0.0114	0.0050	0.0065
215	0.0111	0.0048	0.0063
216	0.0108	0.0047	0.0061
217	0.0116	0.0050	0.0065
218	0.0113	0.0049	0.0064
219	0.0110	0.0048	0.0062
220	0.0108	0.0047	0.0061
221	0.0106	0.0046	0.0060
222	0.0103	0.0045	0.0058
223	0.0101	0.0044	0.0057
224	0.0099	0.0043	0.0056
225	0.0097	0.0042	0.0055
226	0.0096	0.0042	0.0054
227	0.0094	0.0041	0.0053
228	0.0092	0.0040	0.0052
229	0.0091	0.0040	0.0051
230	0.0089	0.0039	0.0051

231	0.0088	0.0038	0.0050
232	0.0087	0.0038	0.0049
233	0.0085	0.0037	0.0048
234	0.0084	0.0037	0.0047
235	0.0083	0.0036	0.0047
236	0.0082	0.0036	0.0046
237	0.0081	0.0035	0.0046
238	0.0080	0.0035	0.0045
239	0.0078	0.0034	0.0044
240	0.0077	0.0034	0.0044
241	0.0077	0.0033	0.0043
242	0.0076	0.0033	0.0043
243	0.0075	0.0032	0.0042
244	0.0074	0.0032	0.0042
245	0.0073	0.0032	0.0041
246	0.0072	0.0031	0.0041
247	0.0071	0.0031	0.0040
248	0.0071	0.0031	0.0040
249	0.0070	0.0030	0.0039
250	0.0069	0.0030	0.0039
251	0.0068	0.0030	0.0039
252	0.0068	0.0029	0.0038
253	0.0067	0.0029	0.0038
254	0.0066	0.0029	0.0037
255	0.0066	0.0029	0.0037
256	0.0065	0.0028	0.0037
257	0.0064	0.0028	0.0036
258	0.0064	0.0028	0.0036
259	0.0063	0.0028	0.0036
260	0.0063	0.0027	0.0035
261	0.0062	0.0027	0.0035
262	0.0062	0.0027	0.0035
263	0.0061	0.0027	0.0034
264	0.0061	0.0026	0.0034
265	0.0060	0.0026	0.0034
266	0.0060	0.0026	0.0034
267	0.0059	0.0026	0.0033
268	0.0059	0.0025	0.0033
269	0.0058	0.0025	0.0033
270	0.0058	0.0025	0.0033
271	0.0057	0.0025	0.0032
272	0.0057	0.0025	0.0032
273	0.0056	0.0025	0.0032
274	0.0056	0.0024	0.0032
275	0.0056	0.0024	0.0031
276	0.0055	0.0024	0.0031
277	0.0055	0.0024	0.0031
278	0.0054	0.0024	0.0031
279	0.0054	0.0023	0.0030
280	0.0054	0.0023	0.0030

281	0.0053	0.0023	0.0030
282	0.0053	0.0023	0.0030
283	0.0053	0.0023	0.0030
284	0.0052	0.0023	0.0029
285	0.0052	0.0023	0.0029
286	0.0052	0.0022	0.0029
287	0.0051	0.0022	0.0029
288	0.0051	0.0022	0.0029

Total soil rain loss = 1.34(In)
Total effective rainfall = 2.30(In)
Peak flow rate in flood hydrograph = 35.82(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	10.0	20.0	30.0	40.0
0+ 5	0.0001	0.02	Q				
0+10	0.0009	0.11	Q				
0+15	0.0028	0.28	Q				
0+20	0.0054	0.37	Q				
0+25	0.0083	0.42	Q				
0+30	0.0115	0.46	Q				
0+35	0.0148	0.48	Q				
0+40	0.0183	0.50	Q				
0+45	0.0218	0.52	Q				
0+50	0.0255	0.53	Q				
0+55	0.0292	0.54	Q				
1+ 0	0.0330	0.55	Q				
1+ 5	0.0368	0.55	Q				
1+10	0.0406	0.56	Q				
1+15	0.0445	0.56	Q				
1+20	0.0485	0.57	Q				
1+25	0.0524	0.57	Q				
1+30	0.0564	0.58	Q				
1+35	0.0604	0.58	Q				
1+40	0.0644	0.58	Q				
1+45	0.0684	0.59	Q				
1+50	0.0725	0.59	Q				
1+55	0.0766	0.59	Q				
2+ 0	0.0806	0.59	QV				
2+ 5	0.0847	0.59	QV				
2+10	0.0888	0.60	QV				
2+15	0.0929	0.60	QV				

2+20	0.0971	0.60	QV
2+25	0.1012	0.60	QV
2+30	0.1054	0.60	QV
2+35	0.1096	0.61	QV
2+40	0.1138	0.61	QV
2+45	0.1180	0.61	QV
2+50	0.1222	0.61	QV
2+55	0.1264	0.62	QV
3+ 0	0.1307	0.62	QV
3+ 5	0.1350	0.62	QV
3+10	0.1393	0.62	QV
3+15	0.1436	0.63	QV
3+20	0.1479	0.63	QV
3+25	0.1522	0.63	QV
3+30	0.1566	0.63	Q V
3+35	0.1610	0.63	Q V
3+40	0.1653	0.64	Q V
3+45	0.1698	0.64	Q V
3+50	0.1742	0.64	Q V
3+55	0.1786	0.65	Q V
4+ 0	0.1831	0.65	Q V
4+ 5	0.1876	0.65	Q V
4+10	0.1921	0.65	Q V
4+15	0.1966	0.66	Q V
4+20	0.2011	0.66	Q V
4+25	0.2057	0.66	Q V
4+30	0.2102	0.66	Q V
4+35	0.2148	0.67	Q V
4+40	0.2194	0.67	Q V
4+45	0.2241	0.67	Q V
4+50	0.2287	0.68	Q V
4+55	0.2334	0.68	Q V
5+ 0	0.2381	0.68	Q V
5+ 5	0.2428	0.68	Q V
5+10	0.2475	0.69	Q V
5+15	0.2523	0.69	Q V
5+20	0.2571	0.69	Q V
5+25	0.2619	0.70	Q V
5+30	0.2667	0.70	Q V
5+35	0.2715	0.70	Q V
5+40	0.2764	0.71	Q V
5+45	0.2813	0.71	Q V
5+50	0.2862	0.71	Q V
5+55	0.2911	0.72	Q V
6+ 0	0.2961	0.72	Q V
6+ 5	0.3011	0.72	Q V
6+10	0.3061	0.73	Q V
6+15	0.3111	0.73	Q V
6+20	0.3162	0.73	Q V
6+25	0.3212	0.74	Q V

6+30	0.3263	0.74	Q	V				
6+35	0.3315	0.75	Q	V				
6+40	0.3366	0.75	Q	V				
6+45	0.3418	0.75	Q	V				
6+50	0.3470	0.76	Q	V				
6+55	0.3523	0.76	Q	V				
7+ 0	0.3575	0.77	Q	V				
7+ 5	0.3628	0.77	Q	V				
7+10	0.3682	0.77	Q	V				
7+15	0.3735	0.78	Q	V				
7+20	0.3789	0.78	Q	V				
7+25	0.3843	0.79	Q	V				
7+30	0.3898	0.79	Q	V				
7+35	0.3953	0.80	Q	V				
7+40	0.4008	0.80	Q	V				
7+45	0.4063	0.80	Q	V				
7+50	0.4119	0.81	Q	V				
7+55	0.4175	0.81	Q	V				
8+ 0	0.4231	0.82	Q	V				
8+ 5	0.4288	0.82	Q	V				
8+10	0.4345	0.83	Q	V				
8+15	0.4402	0.83	Q	V				
8+20	0.4460	0.84	Q	V				
8+25	0.4518	0.84	Q	V				
8+30	0.4577	0.85	Q	V				
8+35	0.4636	0.86	Q	V				
8+40	0.4695	0.86	Q	V				
8+45	0.4755	0.87	Q	V				
8+50	0.4815	0.87	Q	V				
8+55	0.4875	0.88	Q	V				
9+ 0	0.4936	0.88	Q	V				
9+ 5	0.4997	0.89	Q	V				
9+10	0.5059	0.90	Q	V				
9+15	0.5121	0.90	Q	V				
9+20	0.5184	0.91	Q	V				
9+25	0.5247	0.92	Q	V				
9+30	0.5310	0.92	Q	V				
9+35	0.5374	0.93	Q	V				
9+40	0.5439	0.94	Q	V				
9+45	0.5504	0.94	Q	V				
9+50	0.5569	0.95	Q	V				
9+55	0.5635	0.96	Q	V				
10+ 0	0.5702	0.96	Q	V				
10+ 5	0.5769	0.97	Q	V				
10+10	0.5836	0.98	Q	V				
10+15	0.5904	0.99	Q	V				
10+20	0.5973	1.00	Q	V				
10+25	0.6042	1.01	Q	V				
10+30	0.6112	1.01	Q	V				
10+35	0.6182	1.02	Q	V				

10+40	0.6253	1.03	Q	V				
10+45	0.6325	1.04	Q	V				
10+50	0.6397	1.05	Q	V				
10+55	0.6470	1.06	Q	V				
11+ 0	0.6544	1.07	Q	V				
11+ 5	0.6618	1.08	Q	V				
11+10	0.6693	1.09	Q	V				
11+15	0.6769	1.10	Q	V				
11+20	0.6845	1.11	Q	V				
11+25	0.6923	1.12	Q	V				
11+30	0.7001	1.13	Q	V				
11+35	0.7080	1.15	Q	V				
11+40	0.7160	1.16	Q	V				
11+45	0.7240	1.17	Q	V				
11+50	0.7322	1.18	Q	V				
11+55	0.7404	1.20	Q	V				
12+ 0	0.7488	1.21	Q	V				
12+ 5	0.7572	1.22	Q	V				
12+10	0.7655	1.22	Q	V				
12+15	0.7738	1.19	Q	V				
12+20	0.7820	1.19	Q	V				
12+25	0.7902	1.20	Q	V				
12+30	0.7985	1.21	Q	V				
12+35	0.8069	1.22	Q	V				
12+40	0.8154	1.23	Q	V				
12+45	0.8239	1.25	Q	V				
12+50	0.8326	1.26	Q	V				
12+55	0.8415	1.28	Q	V				
13+ 0	0.8504	1.30	Q	V				
13+ 5	0.8595	1.32	Q	V				
13+10	0.8687	1.34	Q	V				
13+15	0.8781	1.36	Q	V				
13+20	0.8876	1.39	Q	V				
13+25	0.8973	1.41	Q	V				
13+30	0.9072	1.44	Q	V				
13+35	0.9173	1.46	Q	V				
13+40	0.9276	1.49	Q	V				
13+45	0.9381	1.52	Q	V				
13+50	0.9488	1.55	Q	V				
13+55	0.9597	1.59	Q	V				
14+ 0	0.9709	1.62	Q	V				
14+ 5	0.9823	1.66	Q	V				
14+10	0.9941	1.70	Q	V				
14+15	1.0061	1.75	Q	V				
14+20	1.0185	1.79	Q	V				
14+25	1.0312	1.84	Q	V				
14+30	1.0442	1.90	Q	V				
14+35	1.0577	1.96	Q	V				
14+40	1.0716	2.02	Q	V				
14+45	1.0859	2.08	Q	V				

14+50	1.1008	2.16	Q		V			
14+55	1.1162	2.24	Q		V			
15+ 0	1.1322	2.33	Q		V			
15+ 5	1.1490	2.43	Q		V			
15+10	1.1665	2.54	Q		V			
15+15	1.1848	2.67	Q		V			
15+20	1.2042	2.81	Q		V			
15+25	1.2246	2.96	Q		V			
15+30	1.2455	3.04	Q		V			
15+35	1.2667	3.08	Q		V			
15+40	1.2890	3.24	Q		V			
15+45	1.3134	3.54	Q		V			
15+50	1.3406	3.95	Q		V			
15+55	1.3728	4.67	Q		V			
16+ 0	1.4159	6.26	Q	Q	V			
16+ 5	1.4958	11.60		Q	V			
16+10	1.6724	25.64			V	Q		
16+15	1.9191	35.82			V		Q	
16+20	2.0673	21.53			Q	V		
16+25	2.1641	14.05		Q		V		
16+30	2.2360	10.45		Q		V		
16+35	2.2942	8.45		Q		V		
16+40	2.3422	6.98		Q		V		
16+45	2.3822	5.79		Q		V		
16+50	2.4169	5.05		Q		V		
16+55	2.4470	4.36		Q		V		
17+ 0	2.4734	3.84	Q			V		
17+ 5	2.4966	3.37	Q			V		
17+10	2.5168	2.93	Q			V		
17+15	2.5346	2.59	Q			V		
17+20	2.5518	2.50	Q			V		
17+25	2.5682	2.38	Q			V		
17+30	2.5830	2.14	Q			V		
17+35	2.5967	2.00	Q			V		
17+40	2.6077	1.60	Q			V		
17+45	2.6181	1.52	Q			V		
17+50	2.6281	1.45	Q			V		
17+55	2.6378	1.40	Q			V		
18+ 0	2.6470	1.35	Q			V		
18+ 5	2.6560	1.30	Q			V		
18+10	2.6648	1.28	Q			V		
18+15	2.6737	1.28	Q			V		
18+20	2.6824	1.26	Q			V		
18+25	2.6909	1.24	Q			V		
18+30	2.6993	1.22	Q			V		
18+35	2.7075	1.19	Q			V		
18+40	2.7155	1.17	Q			V		
18+45	2.7234	1.15	Q			V		
18+50	2.7312	1.12	Q			V		
18+55	2.7388	1.10	Q			V		

19+ 0	2.7462	1.08	Q				V
19+ 5	2.7536	1.06	Q				V
19+10	2.7607	1.04	Q				V
19+15	2.7678	1.03	Q				V
19+20	2.7748	1.01	Q				V
19+25	2.7816	0.99	Q				V
19+30	2.7883	0.98	Q				V
19+35	2.7950	0.96	Q				V
19+40	2.8015	0.95	Q				V
19+45	2.8079	0.93	Q				V
19+50	2.8142	0.92	Q				V
19+55	2.8205	0.91	Q				V
20+ 0	2.8266	0.89	Q				V
20+ 5	2.8327	0.88	Q				V
20+10	2.8387	0.87	Q				V
20+15	2.8446	0.86	Q				V
20+20	2.8504	0.85	Q				V
20+25	2.8562	0.84	Q				V
20+30	2.8619	0.83	Q				V
20+35	2.8675	0.82	Q				V
20+40	2.8731	0.81	Q				V
20+45	2.8786	0.80	Q				V
20+50	2.8840	0.79	Q				V
20+55	2.8894	0.78	Q				V
21+ 0	2.8947	0.77	Q				V
21+ 5	2.8999	0.76	Q				V
21+10	2.9051	0.76	Q				V
21+15	2.9103	0.75	Q				V
21+20	2.9154	0.74	Q				V
21+25	2.9204	0.73	Q				V
21+30	2.9254	0.73	Q				V
21+35	2.9304	0.72	Q				V
21+40	2.9353	0.71	Q				V
21+45	2.9401	0.70	Q				V
21+50	2.9449	0.70	Q				V
21+55	2.9497	0.69	Q				V
22+ 0	2.9544	0.69	Q				V
22+ 5	2.9591	0.68	Q				V
22+10	2.9637	0.67	Q				V
22+15	2.9683	0.67	Q				V
22+20	2.9729	0.66	Q				V
22+25	2.9774	0.66	Q				V
22+30	2.9819	0.65	Q				V
22+35	2.9864	0.65	Q				V
22+40	2.9908	0.64	Q				V
22+45	2.9951	0.64	Q				V
22+50	2.9995	0.63	Q				V
22+55	3.0038	0.63	Q				V
23+ 0	3.0081	0.62	Q				V
23+ 5	3.0123	0.62	Q				V

23+10	3.0166	0.61	Q				V
23+15	3.0207	0.61	Q				V
23+20	3.0249	0.60	Q				V
23+25	3.0290	0.60	Q				V
23+30	3.0331	0.59	Q				V
23+35	3.0372	0.59	Q				V
23+40	3.0412	0.59	Q				V
23+45	3.0452	0.58	Q				V
23+50	3.0492	0.58	Q				V
23+55	3.0532	0.57	Q				V
24+ 0	3.0571	0.57	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 08/03/21

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

Program License Serial Number 6385

Space Center
undeveloped 100-year
Area B

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100 22.99	1	1.09

Rainfall data for year 100 22.99	6	2.09

Rainfall data for year 100 22.99	24	3.64

+++++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
83.0	83.0	22.99	1.000	0.318	1.000	0.318

Area-averaged adjusted loss rate Fm (In/Hr) = 0.318

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
22.99	1.000	83.0	83.0	2.05	0.543

Area-averaged catchment yield fraction, Y = 0.543

Area-averaged low loss fraction, Yb = 0.457

User entry of time of concentration = 0.192 (hours)

+++++

Watershed area = 22.99(Ac.)

Catchment Lag time = 0.154 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 54.2535

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.318(In/Hr)

Average low loss rate fraction (Yb) = 0.457 (decimal)

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.517(In)

Computed peak 30-minute rainfall = 0.885(In)

Specified peak 1-hour rainfall = 1.090(In)

Computed peak 3-hour rainfall = 1.625(In)

Specified peak 6-hour rainfall = 2.090(In)

Specified peak 24-hour rainfall = 3.640(In)

Rainfall depth area reduction factors:

Using a total area of 22.99(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.517(In)

30-minute factor = 0.999 Adjusted rainfall = 0.884(In)

1-hour factor = 0.999 Adjusted rainfall = 1.089(In)

3-hour factor = 1.000 Adjusted rainfall = 1.624(In)

6-hour factor = 1.000 Adjusted rainfall = 2.090(In)

24-hour factor = 1.000 Adjusted rainfall = 3.640(In)

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

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))

(K = 278.04 (CFS))		
1	4.582	12.739
2	35.377	85.622
3	64.099	79.856
4	76.427	34.276
5	83.603	19.953
6	88.449	13.475
7	91.682	8.988
8	94.097	6.714
9	95.871	4.933
10	97.167	3.603
11	97.993	2.295
12	98.587	1.653
13	99.237	1.805
14	99.703	1.296
15	100.000	0.827

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

1	0.5167	0.5167
2	0.6361	0.1194
3	0.7184	0.0823
4	0.7831	0.0648
5	0.8373	0.0542
6	0.8844	0.0471
7	0.9263	0.0419
8	0.9641	0.0379
9	0.9988	0.0347
10	1.0309	0.0321
11	1.0608	0.0299
12	1.0888	0.0281
13	1.1210	0.0322
14	1.1517	0.0307
15	1.1810	0.0293
16	1.2091	0.0281
17	1.2361	0.0270
18	1.2621	0.0260
19	1.2872	0.0251
20	1.3114	0.0243
21	1.3350	0.0235
22	1.3578	0.0228
23	1.3799	0.0222
24	1.4015	0.0216
25	1.4225	0.0210
26	1.4429	0.0205
27	1.4629	0.0200

28	1.4824	0.0195
29	1.5015	0.0191
30	1.5201	0.0187
31	1.5384	0.0183
32	1.5563	0.0179
33	1.5738	0.0175
34	1.5910	0.0172
35	1.6079	0.0169
36	1.6245	0.0166
37	1.6407	0.0163
38	1.6567	0.0160
39	1.6724	0.0157
40	1.6879	0.0155
41	1.7031	0.0152
42	1.7181	0.0150
43	1.7328	0.0148
44	1.7474	0.0145
45	1.7617	0.0143
46	1.7758	0.0141
47	1.7898	0.0139
48	1.8035	0.0137
49	1.8171	0.0136
50	1.8305	0.0134
51	1.8437	0.0132
52	1.8568	0.0131
53	1.8696	0.0129
54	1.8824	0.0127
55	1.8950	0.0126
56	1.9074	0.0124
57	1.9197	0.0123
58	1.9319	0.0122
59	1.9440	0.0120
60	1.9559	0.0119
61	1.9677	0.0118
62	1.9793	0.0117
63	1.9909	0.0115
64	2.0023	0.0114
65	2.0136	0.0113
66	2.0248	0.0112
67	2.0359	0.0111
68	2.0469	0.0110
69	2.0578	0.0109
70	2.0686	0.0108
71	2.0793	0.0107
72	2.0898	0.0106
73	2.1014	0.0116
74	2.1129	0.0115
75	2.1243	0.0114
76	2.1356	0.0113
77	2.1468	0.0112

78	2.1579	0.0111
79	2.1689	0.0110
80	2.1799	0.0109
81	2.1907	0.0109
82	2.2015	0.0108
83	2.2122	0.0107
84	2.2229	0.0106
85	2.2334	0.0106
86	2.2439	0.0105
87	2.2543	0.0104
88	2.2646	0.0103
89	2.2749	0.0103
90	2.2851	0.0102
91	2.2952	0.0101
92	2.3053	0.0101
93	2.3153	0.0100
94	2.3252	0.0099
95	2.3351	0.0099
96	2.3449	0.0098
97	2.3546	0.0097
98	2.3643	0.0097
99	2.3739	0.0096
100	2.3835	0.0096
101	2.3930	0.0095
102	2.4025	0.0095
103	2.4119	0.0094
104	2.4212	0.0093
105	2.4305	0.0093
106	2.4398	0.0092
107	2.4489	0.0092
108	2.4581	0.0091
109	2.4672	0.0091
110	2.4762	0.0090
111	2.4852	0.0090
112	2.4941	0.0089
113	2.5030	0.0089
114	2.5118	0.0088
115	2.5206	0.0088
116	2.5294	0.0088
117	2.5381	0.0087
118	2.5468	0.0087
119	2.5554	0.0086
120	2.5640	0.0086
121	2.5725	0.0085
122	2.5810	0.0085
123	2.5894	0.0084
124	2.5978	0.0084
125	2.6062	0.0084
126	2.6145	0.0083
127	2.6228	0.0083

128	2.6310	0.0082
129	2.6393	0.0082
130	2.6474	0.0082
131	2.6556	0.0081
132	2.6637	0.0081
133	2.6717	0.0081
134	2.6797	0.0080
135	2.6877	0.0080
136	2.6957	0.0080
137	2.7036	0.0079
138	2.7115	0.0079
139	2.7193	0.0078
140	2.7271	0.0078
141	2.7349	0.0078
142	2.7427	0.0077
143	2.7504	0.0077
144	2.7580	0.0077
145	2.7657	0.0077
146	2.7733	0.0076
147	2.7809	0.0076
148	2.7885	0.0076
149	2.7960	0.0075
150	2.8035	0.0075
151	2.8109	0.0075
152	2.8184	0.0074
153	2.8258	0.0074
154	2.8332	0.0074
155	2.8405	0.0073
156	2.8478	0.0073
157	2.8551	0.0073
158	2.8624	0.0073
159	2.8696	0.0072
160	2.8768	0.0072
161	2.8840	0.0072
162	2.8912	0.0072
163	2.8983	0.0071
164	2.9054	0.0071
165	2.9125	0.0071
166	2.9195	0.0071
167	2.9266	0.0070
168	2.9336	0.0070
169	2.9406	0.0070
170	2.9475	0.0070
171	2.9544	0.0069
172	2.9613	0.0069
173	2.9682	0.0069
174	2.9751	0.0069
175	2.9819	0.0068
176	2.9887	0.0068
177	2.9955	0.0068

178	3.0023	0.0068
179	3.0090	0.0067
180	3.0157	0.0067
181	3.0224	0.0067
182	3.0291	0.0067
183	3.0357	0.0067
184	3.0424	0.0066
185	3.0490	0.0066
186	3.0556	0.0066
187	3.0621	0.0066
188	3.0687	0.0065
189	3.0752	0.0065
190	3.0817	0.0065
191	3.0882	0.0065
192	3.0946	0.0065
193	3.1011	0.0064
194	3.1075	0.0064
195	3.1139	0.0064
196	3.1203	0.0064
197	3.1266	0.0064
198	3.1330	0.0063
199	3.1393	0.0063
200	3.1456	0.0063
201	3.1519	0.0063
202	3.1582	0.0063
203	3.1644	0.0062
204	3.1706	0.0062
205	3.1769	0.0062
206	3.1830	0.0062
207	3.1892	0.0062
208	3.1954	0.0062
209	3.2015	0.0061
210	3.2076	0.0061
211	3.2137	0.0061
212	3.2198	0.0061
213	3.2259	0.0061
214	3.2320	0.0061
215	3.2380	0.0060
216	3.2440	0.0060
217	3.2500	0.0060
218	3.2560	0.0060
219	3.2620	0.0060
220	3.2679	0.0060
221	3.2739	0.0059
222	3.2798	0.0059
223	3.2857	0.0059
224	3.2916	0.0059
225	3.2975	0.0059
226	3.3033	0.0059
227	3.3092	0.0058

228	3.3150	0.0058
229	3.3208	0.0058
230	3.3266	0.0058
231	3.3324	0.0058
232	3.3381	0.0058
233	3.3439	0.0058
234	3.3496	0.0057
235	3.3553	0.0057
236	3.3611	0.0057
237	3.3667	0.0057
238	3.3724	0.0057
239	3.3781	0.0057
240	3.3837	0.0057
241	3.3894	0.0056
242	3.3950	0.0056
243	3.4006	0.0056
244	3.4062	0.0056
245	3.4118	0.0056
246	3.4173	0.0056
247	3.4229	0.0056
248	3.4284	0.0055
249	3.4340	0.0055
250	3.4395	0.0055
251	3.4450	0.0055
252	3.4505	0.0055
253	3.4559	0.0055
254	3.4614	0.0055
255	3.4668	0.0054
256	3.4723	0.0054
257	3.4777	0.0054
258	3.4831	0.0054
259	3.4885	0.0054
260	3.4939	0.0054
261	3.4993	0.0054
262	3.5046	0.0054
263	3.5100	0.0053
264	3.5153	0.0053
265	3.5206	0.0053
266	3.5259	0.0053
267	3.5312	0.0053
268	3.5365	0.0053
269	3.5418	0.0053
270	3.5471	0.0053
271	3.5523	0.0053
272	3.5576	0.0052
273	3.5628	0.0052
274	3.5680	0.0052
275	3.5732	0.0052
276	3.5784	0.0052
277	3.5836	0.0052

278	3.5888	0.0052
279	3.5939	0.0052
280	3.5991	0.0052
281	3.6042	0.0051
282	3.6094	0.0051
283	3.6145	0.0051
284	3.6196	0.0051
285	3.6247	0.0051
286	3.6298	0.0051
287	3.6348	0.0051
288	3.6399	0.0051

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0051	0.0023	0.0028
2	0.0051	0.0023	0.0028
3	0.0051	0.0023	0.0028
4	0.0051	0.0023	0.0028
5	0.0051	0.0023	0.0028
6	0.0051	0.0023	0.0028
7	0.0052	0.0024	0.0028
8	0.0052	0.0024	0.0028
9	0.0052	0.0024	0.0028
10	0.0052	0.0024	0.0028
11	0.0052	0.0024	0.0028
12	0.0052	0.0024	0.0028
13	0.0053	0.0024	0.0029
14	0.0053	0.0024	0.0029
15	0.0053	0.0024	0.0029
16	0.0053	0.0024	0.0029
17	0.0053	0.0024	0.0029
18	0.0053	0.0024	0.0029
19	0.0054	0.0025	0.0029
20	0.0054	0.0025	0.0029
21	0.0054	0.0025	0.0029
22	0.0054	0.0025	0.0029
23	0.0054	0.0025	0.0030
24	0.0055	0.0025	0.0030
25	0.0055	0.0025	0.0030
26	0.0055	0.0025	0.0030
27	0.0055	0.0025	0.0030
28	0.0055	0.0025	0.0030
29	0.0056	0.0025	0.0030
30	0.0056	0.0025	0.0030
31	0.0056	0.0026	0.0030
32	0.0056	0.0026	0.0031
33	0.0057	0.0026	0.0031
34	0.0057	0.0026	0.0031

35	0.0057	0.0026	0.0031
36	0.0057	0.0026	0.0031
37	0.0057	0.0026	0.0031
38	0.0058	0.0026	0.0031
39	0.0058	0.0026	0.0031
40	0.0058	0.0026	0.0031
41	0.0058	0.0027	0.0032
42	0.0058	0.0027	0.0032
43	0.0059	0.0027	0.0032
44	0.0059	0.0027	0.0032
45	0.0059	0.0027	0.0032
46	0.0059	0.0027	0.0032
47	0.0060	0.0027	0.0032
48	0.0060	0.0027	0.0033
49	0.0060	0.0028	0.0033
50	0.0060	0.0028	0.0033
51	0.0061	0.0028	0.0033
52	0.0061	0.0028	0.0033
53	0.0061	0.0028	0.0033
54	0.0061	0.0028	0.0033
55	0.0062	0.0028	0.0034
56	0.0062	0.0028	0.0034
57	0.0062	0.0028	0.0034
58	0.0062	0.0029	0.0034
59	0.0063	0.0029	0.0034
60	0.0063	0.0029	0.0034
61	0.0063	0.0029	0.0034
62	0.0064	0.0029	0.0035
63	0.0064	0.0029	0.0035
64	0.0064	0.0029	0.0035
65	0.0065	0.0030	0.0035
66	0.0065	0.0030	0.0035
67	0.0065	0.0030	0.0035
68	0.0065	0.0030	0.0036
69	0.0066	0.0030	0.0036
70	0.0066	0.0030	0.0036
71	0.0067	0.0030	0.0036
72	0.0067	0.0030	0.0036
73	0.0067	0.0031	0.0036
74	0.0067	0.0031	0.0037
75	0.0068	0.0031	0.0037
76	0.0068	0.0031	0.0037
77	0.0069	0.0031	0.0037
78	0.0069	0.0031	0.0037
79	0.0069	0.0032	0.0038
80	0.0070	0.0032	0.0038
81	0.0070	0.0032	0.0038
82	0.0070	0.0032	0.0038
83	0.0071	0.0032	0.0038
84	0.0071	0.0032	0.0039

85	0.0072	0.0033	0.0039
86	0.0072	0.0033	0.0039
87	0.0072	0.0033	0.0039
88	0.0073	0.0033	0.0039
89	0.0073	0.0033	0.0040
90	0.0073	0.0034	0.0040
91	0.0074	0.0034	0.0040
92	0.0074	0.0034	0.0040
93	0.0075	0.0034	0.0041
94	0.0075	0.0034	0.0041
95	0.0076	0.0035	0.0041
96	0.0076	0.0035	0.0041
97	0.0077	0.0035	0.0042
98	0.0077	0.0035	0.0042
99	0.0078	0.0036	0.0042
100	0.0078	0.0036	0.0042
101	0.0079	0.0036	0.0043
102	0.0079	0.0036	0.0043
103	0.0080	0.0036	0.0043
104	0.0080	0.0037	0.0044
105	0.0081	0.0037	0.0044
106	0.0081	0.0037	0.0044
107	0.0082	0.0038	0.0045
108	0.0082	0.0038	0.0045
109	0.0083	0.0038	0.0045
110	0.0084	0.0038	0.0045
111	0.0084	0.0039	0.0046
112	0.0085	0.0039	0.0046
113	0.0086	0.0039	0.0047
114	0.0086	0.0039	0.0047
115	0.0087	0.0040	0.0047
116	0.0088	0.0040	0.0048
117	0.0088	0.0040	0.0048
118	0.0089	0.0041	0.0048
119	0.0090	0.0041	0.0049
120	0.0090	0.0041	0.0049
121	0.0091	0.0042	0.0050
122	0.0092	0.0042	0.0050
123	0.0093	0.0042	0.0050
124	0.0093	0.0043	0.0051
125	0.0095	0.0043	0.0051
126	0.0095	0.0043	0.0052
127	0.0096	0.0044	0.0052
128	0.0097	0.0044	0.0053
129	0.0098	0.0045	0.0053
130	0.0099	0.0045	0.0054
131	0.0100	0.0046	0.0054
132	0.0101	0.0046	0.0055
133	0.0102	0.0047	0.0055
134	0.0103	0.0047	0.0056

135	0.0104	0.0048	0.0057
136	0.0105	0.0048	0.0057
137	0.0106	0.0049	0.0058
138	0.0107	0.0049	0.0058
139	0.0109	0.0050	0.0059
140	0.0109	0.0050	0.0059
141	0.0111	0.0051	0.0060
142	0.0112	0.0051	0.0061
143	0.0114	0.0052	0.0062
144	0.0115	0.0052	0.0062
145	0.0106	0.0048	0.0058
146	0.0107	0.0049	0.0058
147	0.0109	0.0050	0.0059
148	0.0110	0.0050	0.0060
149	0.0112	0.0051	0.0061
150	0.0113	0.0052	0.0061
151	0.0115	0.0053	0.0063
152	0.0117	0.0053	0.0063
153	0.0119	0.0054	0.0065
154	0.0120	0.0055	0.0065
155	0.0123	0.0056	0.0067
156	0.0124	0.0057	0.0068
157	0.0127	0.0058	0.0069
158	0.0129	0.0059	0.0070
159	0.0132	0.0060	0.0072
160	0.0134	0.0061	0.0073
161	0.0137	0.0063	0.0075
162	0.0139	0.0064	0.0076
163	0.0143	0.0065	0.0078
164	0.0145	0.0066	0.0079
165	0.0150	0.0068	0.0081
166	0.0152	0.0070	0.0083
167	0.0157	0.0072	0.0085
168	0.0160	0.0073	0.0087
169	0.0166	0.0076	0.0090
170	0.0169	0.0077	0.0092
171	0.0175	0.0080	0.0095
172	0.0179	0.0082	0.0097
173	0.0187	0.0085	0.0101
174	0.0191	0.0087	0.0104
175	0.0200	0.0091	0.0108
176	0.0205	0.0093	0.0111
177	0.0216	0.0098	0.0117
178	0.0222	0.0101	0.0120
179	0.0235	0.0107	0.0128
180	0.0243	0.0111	0.0132
181	0.0260	0.0119	0.0141
182	0.0270	0.0123	0.0147
183	0.0293	0.0134	0.0159
184	0.0307	0.0140	0.0167

185	0.0281	0.0128	0.0152
186	0.0299	0.0137	0.0162
187	0.0347	0.0158	0.0188
188	0.0379	0.0173	0.0206
189	0.0471	0.0215	0.0256
190	0.0542	0.0248	0.0294
191	0.0823	0.0265	0.0558
192	0.1194	0.0265	0.0929
193	0.5167	0.0265	0.4902
194	0.0648	0.0265	0.0382
195	0.0419	0.0191	0.0227
196	0.0321	0.0147	0.0174
197	0.0322	0.0147	0.0175
198	0.0281	0.0128	0.0153
199	0.0251	0.0115	0.0136
200	0.0228	0.0104	0.0124
201	0.0210	0.0096	0.0114
202	0.0195	0.0089	0.0106
203	0.0183	0.0083	0.0099
204	0.0172	0.0079	0.0093
205	0.0163	0.0074	0.0088
206	0.0155	0.0071	0.0084
207	0.0148	0.0067	0.0080
208	0.0141	0.0065	0.0077
209	0.0136	0.0062	0.0074
210	0.0131	0.0060	0.0071
211	0.0126	0.0058	0.0068
212	0.0122	0.0056	0.0066
213	0.0118	0.0054	0.0064
214	0.0114	0.0052	0.0062
215	0.0111	0.0051	0.0060
216	0.0108	0.0049	0.0059
217	0.0116	0.0053	0.0063
218	0.0113	0.0052	0.0061
219	0.0110	0.0050	0.0060
220	0.0108	0.0049	0.0059
221	0.0106	0.0048	0.0057
222	0.0103	0.0047	0.0056
223	0.0101	0.0046	0.0055
224	0.0099	0.0045	0.0054
225	0.0097	0.0045	0.0053
226	0.0096	0.0044	0.0052
227	0.0094	0.0043	0.0051
228	0.0092	0.0042	0.0050
229	0.0091	0.0042	0.0049
230	0.0089	0.0041	0.0049
231	0.0088	0.0040	0.0048
232	0.0087	0.0040	0.0047
233	0.0085	0.0039	0.0046
234	0.0084	0.0038	0.0046

235	0.0083	0.0038	0.0045
236	0.0082	0.0037	0.0044
237	0.0081	0.0037	0.0044
238	0.0080	0.0036	0.0043
239	0.0078	0.0036	0.0043
240	0.0077	0.0035	0.0042
241	0.0077	0.0035	0.0042
242	0.0076	0.0035	0.0041
243	0.0075	0.0034	0.0041
244	0.0074	0.0034	0.0040
245	0.0073	0.0033	0.0040
246	0.0072	0.0033	0.0039
247	0.0071	0.0033	0.0039
248	0.0071	0.0032	0.0038
249	0.0070	0.0032	0.0038
250	0.0069	0.0032	0.0037
251	0.0068	0.0031	0.0037
252	0.0068	0.0031	0.0037
253	0.0067	0.0031	0.0036
254	0.0066	0.0030	0.0036
255	0.0066	0.0030	0.0036
256	0.0065	0.0030	0.0035
257	0.0064	0.0029	0.0035
258	0.0064	0.0029	0.0035
259	0.0063	0.0029	0.0034
260	0.0063	0.0029	0.0034
261	0.0062	0.0028	0.0034
262	0.0062	0.0028	0.0033
263	0.0061	0.0028	0.0033
264	0.0061	0.0028	0.0033
265	0.0060	0.0027	0.0033
266	0.0060	0.0027	0.0032
267	0.0059	0.0027	0.0032
268	0.0059	0.0027	0.0032
269	0.0058	0.0027	0.0032
270	0.0058	0.0026	0.0031
271	0.0057	0.0026	0.0031
272	0.0057	0.0026	0.0031
273	0.0056	0.0026	0.0031
274	0.0056	0.0026	0.0030
275	0.0056	0.0025	0.0030
276	0.0055	0.0025	0.0030
277	0.0055	0.0025	0.0030
278	0.0054	0.0025	0.0030
279	0.0054	0.0025	0.0029
280	0.0054	0.0024	0.0029
281	0.0053	0.0024	0.0029
282	0.0053	0.0024	0.0029
283	0.0053	0.0024	0.0029
284	0.0052	0.0024	0.0028

285	0.0052	0.0024	0.0028
286	0.0052	0.0024	0.0028
287	0.0051	0.0023	0.0028
288	0.0051	0.0023	0.0028

Total soil rain loss = 1.41(In)
Total effective rainfall = 2.23(In)
Peak flow rate in flood hydrograph = 53.28(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	15.0	30.0	45.0	60.0
0+ 5	0.0002		0.04	Q				
0+10	0.0021		0.27	Q				
0+15	0.0055		0.49	Q				
0+20	0.0095		0.59	Q				
0+25	0.0140		0.64	Q				
0+30	0.0187		0.68	Q				
0+35	0.0235		0.71	Q				
0+40	0.0286		0.73	Q				
0+45	0.0337		0.75	Q				
0+50	0.0389		0.76	Q				
0+55	0.0442		0.77	Q				
1+ 0	0.0495		0.77	Q				
1+ 5	0.0549		0.78	Q				
1+10	0.0603		0.79	Q				
1+15	0.0658		0.79	Q				
1+20	0.0713		0.80	Q				
1+25	0.0768		0.80	Q				
1+30	0.0823		0.80	Q				
1+35	0.0878		0.80	Q				
1+40	0.0934		0.81	Q				
1+45	0.0989		0.81	Q				
1+50	0.1045		0.81	Q				
1+55	0.1101		0.81	QV				
2+ 0	0.1158		0.82	QV				
2+ 5	0.1214		0.82	QV				
2+10	0.1271		0.82	QV				
2+15	0.1328		0.83	QV				
2+20	0.1385		0.83	QV				
2+25	0.1442		0.83	QV				
2+30	0.1500		0.83	QV				
2+35	0.1557		0.84	QV				

2+40	0.1615	0.84	QV
2+45	0.1673	0.84	QV
2+50	0.1732	0.85	QV
2+55	0.1790	0.85	QV
3+ 0	0.1849	0.85	QV
3+ 5	0.1908	0.86	QV
3+10	0.1967	0.86	QV
3+15	0.2027	0.86	QV
3+20	0.2087	0.87	QV
3+25	0.2146	0.87	Q V
3+30	0.2207	0.87	Q V
3+35	0.2267	0.88	Q V
3+40	0.2328	0.88	Q V
3+45	0.2389	0.88	Q V
3+50	0.2450	0.89	Q V
3+55	0.2511	0.89	Q V
4+ 0	0.2573	0.89	Q V
4+ 5	0.2634	0.90	Q V
4+10	0.2697	0.90	Q V
4+15	0.2759	0.91	Q V
4+20	0.2822	0.91	Q V
4+25	0.2884	0.91	Q V
4+30	0.2948	0.92	Q V
4+35	0.3011	0.92	Q V
4+40	0.3075	0.93	Q V
4+45	0.3139	0.93	Q V
4+50	0.3203	0.93	Q V
4+55	0.3268	0.94	Q V
5+ 0	0.3332	0.94	Q V
5+ 5	0.3398	0.95	Q V
5+10	0.3463	0.95	Q V
5+15	0.3529	0.95	Q V
5+20	0.3595	0.96	Q V
5+25	0.3661	0.96	Q V
5+30	0.3728	0.97	Q V
5+35	0.3794	0.97	Q V
5+40	0.3862	0.98	Q V
5+45	0.3929	0.98	Q V
5+50	0.3997	0.99	Q V
5+55	0.4065	0.99	Q V
6+ 0	0.4134	1.00	Q V
6+ 5	0.4203	1.00	Q V
6+10	0.4272	1.00	Q V
6+15	0.4342	1.01	Q V
6+20	0.4411	1.02	Q V
6+25	0.4482	1.02	Q V
6+30	0.4552	1.03	Q V
6+35	0.4623	1.03	Q V
6+40	0.4695	1.04	Q V
6+45	0.4766	1.04	Q V

6+50	0.4838	1.05	Q	V
6+55	0.4911	1.05	Q	V
7+ 0	0.4984	1.06	Q	V
7+ 5	0.5057	1.06	Q	V
7+10	0.5131	1.07	Q	V
7+15	0.5205	1.08	Q	V
7+20	0.5279	1.08	Q	V
7+25	0.5354	1.09	Q	V
7+30	0.5430	1.09	Q	V
7+35	0.5505	1.10	Q	V
7+40	0.5581	1.11	Q	V
7+45	0.5658	1.11	Q	V
7+50	0.5735	1.12	Q	V
7+55	0.5813	1.13	Q	V
8+ 0	0.5891	1.13	Q	V
8+ 5	0.5969	1.14	Q	V
8+10	0.6048	1.15	Q	V
8+15	0.6128	1.15	Q	V
8+20	0.6208	1.16	Q	V
8+25	0.6288	1.17	Q	V
8+30	0.6369	1.18	Q	V
8+35	0.6451	1.18	Q	V
8+40	0.6533	1.19	Q	V
8+45	0.6615	1.20	Q	V
8+50	0.6698	1.21	Q	V
8+55	0.6782	1.22	Q	V
9+ 0	0.6866	1.22	Q	V
9+ 5	0.6951	1.23	Q	V
9+10	0.7037	1.24	Q	V
9+15	0.7123	1.25	Q	V
9+20	0.7209	1.26	Q	V
9+25	0.7297	1.27	Q	V
9+30	0.7385	1.28	Q	V
9+35	0.7473	1.29	Q	V
9+40	0.7563	1.30	Q	V
9+45	0.7653	1.31	Q	V
9+50	0.7743	1.32	Q	V
9+55	0.7835	1.33	Q	V
10+ 0	0.7927	1.34	Q	V
10+ 5	0.8019	1.35	Q	V
10+10	0.8113	1.36	Q	V
10+15	0.8207	1.37	Q	V
10+20	0.8302	1.38	Q	V
10+25	0.8398	1.39	Q	V
10+30	0.8495	1.41	Q	V
10+35	0.8593	1.42	Q	V
10+40	0.8691	1.43	Q	V
10+45	0.8791	1.44	Q	V
10+50	0.8891	1.46	Q	V
10+55	0.8992	1.47	Q	V

11+ 0	0.9094	1.48	Q	V			
11+ 5	0.9197	1.50	Q	V			
11+10	0.9302	1.51	Q	V			
11+15	0.9407	1.53	Q	V			
11+20	0.9513	1.54	Q	V			
11+25	0.9620	1.56	Q	V			
11+30	0.9729	1.57	Q	V			
11+35	0.9838	1.59	Q	V			
11+40	0.9949	1.61	Q	V			
11+45	1.0061	1.63	Q	V			
11+50	1.0174	1.64	Q	V			
11+55	1.0289	1.66	Q	V			
12+ 0	1.0405	1.68	Q	V			
12+ 5	1.0521	1.69	Q	V			
12+10	1.0636	1.67	Q	V			
12+15	1.0749	1.64	Q	V			
12+20	1.0862	1.64	Q	V			
12+25	1.0976	1.65	Q	V			
12+30	1.1091	1.67	Q	V			
12+35	1.1207	1.69	Q	V			
12+40	1.1324	1.71	Q	V			
12+45	1.1443	1.73	Q	V			
12+50	1.1564	1.75	Q	V			
12+55	1.1687	1.78	Q	V			
13+ 0	1.1811	1.81	Q	V			
13+ 5	1.1937	1.84	Q	V			
13+10	1.2066	1.87	Q	V			
13+15	1.2197	1.90	Q	V			
13+20	1.2330	1.93	Q	V			
13+25	1.2465	1.97	Q	V			
13+30	1.2603	2.01	Q	V			
13+35	1.2744	2.04	Q	V			
13+40	1.2888	2.09	Q	V			
13+45	1.3034	2.13	Q	V			
13+50	1.3184	2.18	Q	V			
13+55	1.3337	2.22	Q	V			
14+ 0	1.3494	2.28	Q	V			
14+ 5	1.3655	2.33	Q	V			
14+10	1.3819	2.39	Q	V			
14+15	1.3988	2.45	Q	V			
14+20	1.4162	2.52	Q	V			
14+25	1.4340	2.59	Q	V			
14+30	1.4524	2.67	Q	V			
14+35	1.4714	2.75	Q	V			
14+40	1.4910	2.85	Q	V			
14+45	1.5113	2.94	Q	V			
14+50	1.5323	3.05	Q	V			
14+55	1.5541	3.17	Q	V			
15+ 0	1.5769	3.30	Q	V			
15+ 5	1.6006	3.45	Q	V			

15+10	1.6255	3.62	Q		V			
15+15	1.6517	3.80	Q		V			
15+20	1.6794	4.02	Q		V			
15+25	1.7085	4.23	Q		V			
15+30	1.7379	4.26	Q		V			
15+35	1.7678	4.34	Q		V			
15+40	1.7999	4.67	Q		V			
15+45	1.8352	5.13	Q		V			
15+50	1.8756	5.86	Q		V			
15+55	1.9242	7.06	Q		V			
16+ 0	1.9954	10.35	Q		V			
16+ 5	2.1399	20.98		Q	V			
16+10	2.5069	53.28			V		Q	
16+15	2.8377	48.04				V	Q	
16+20	3.0124	25.36		Q		V		
16+25	3.1288	16.90		Q		V		
16+30	3.2171	12.82		Q		V		
16+35	3.2860	10.01		Q		V		
16+40	3.3430	8.28		Q		V		
16+45	3.3904	6.88		Q		V		
16+50	3.4302	5.78	Q			V		
16+55	3.4633	4.81	Q			V		
17+ 0	3.4924	4.22	Q			V		
17+ 5	3.5199	4.00	Q			V		
17+10	3.5441	3.51	Q			V		
17+15	3.5652	3.06	Q			V		
17+20	3.5825	2.52	Q			V		
17+25	3.5989	2.37	Q			V		
17+30	3.6144	2.25	Q			V		
17+35	3.6292	2.15	Q			V		
17+40	3.6434	2.06	Q			V		
17+45	3.6571	1.98	Q			V		
17+50	3.6702	1.91	Q			V		
17+55	3.6829	1.84	Q			V		
18+ 0	3.6952	1.78	Q			V		
18+ 5	3.7071	1.73	Q			V		
18+10	3.7191	1.73	Q			V		
18+15	3.7310	1.73	Q			V		
18+20	3.7427	1.71	Q			V		
18+25	3.7543	1.68	Q			V		
18+30	3.7656	1.64	Q			V		
18+35	3.7767	1.61	Q			V		
18+40	3.7876	1.58	Q			V		
18+45	3.7983	1.55	Q			V		
18+50	3.8088	1.52	Q			V		
18+55	3.8190	1.49	Q			V		
19+ 0	3.8291	1.47	Q			V		
19+ 5	3.8391	1.44	Q			V		
19+10	3.8488	1.42	Q			V		
19+15	3.8584	1.39	Q			V		

19+20	3.8678	1.37	Q				V
19+25	3.8771	1.35	Q				V
19+30	3.8862	1.33	Q				V
19+35	3.8952	1.31	Q				V
19+40	3.9041	1.29	Q				V
19+45	3.9128	1.27	Q				V
19+50	3.9214	1.25	Q				V
19+55	3.9299	1.23	Q				V
20+ 0	3.9383	1.21	Q				V
20+ 5	3.9465	1.20	Q				V
20+10	3.9546	1.18	Q				V
20+15	3.9627	1.17	Q				V
20+20	3.9706	1.15	Q				V
20+25	3.9785	1.14	Q				V
20+30	3.9862	1.13	Q				V
20+35	3.9939	1.11	Q				V
20+40	4.0014	1.10	Q				V
20+45	4.0089	1.09	Q				V
20+50	4.0163	1.07	Q				V
20+55	4.0236	1.06	Q				V
21+ 0	4.0309	1.05	Q				V
21+ 5	4.0381	1.04	Q				V
21+10	4.0451	1.03	Q				V
21+15	4.0522	1.02	Q				V
21+20	4.0591	1.01	Q				V
21+25	4.0660	1.00	Q				V
21+30	4.0728	0.99	Q				V
21+35	4.0796	0.98	Q				V
21+40	4.0862	0.97	Q				V
21+45	4.0929	0.96	Q				V
21+50	4.0994	0.95	Q				V
21+55	4.1059	0.94	Q				V
22+ 0	4.1124	0.94	Q				V
22+ 5	4.1188	0.93	Q				V
22+10	4.1251	0.92	Q				V
22+15	4.1314	0.91	Q				V
22+20	4.1376	0.90	Q				V
22+25	4.1438	0.90	Q				V
22+30	4.1500	0.89	Q				V
22+35	4.1560	0.88	Q				V
22+40	4.1621	0.88	Q				V
22+45	4.1681	0.87	Q				V
22+50	4.1740	0.86	Q				V
22+55	4.1799	0.86	Q				V
23+ 0	4.1857	0.85	Q				V
23+ 5	4.1916	0.84	Q				V
23+10	4.1973	0.84	Q				V
23+15	4.2030	0.83	Q				V
23+20	4.2087	0.83	Q				V
23+25	4.2144	0.82	Q				V

23+30	4.2200	0.81	Q				V
23+35	4.2255	0.81	Q				V
23+40	4.2311	0.80	Q				V
23+45	4.2366	0.80	Q				V
23+50	4.2420	0.79	Q				V
23+55	4.2474	0.79	Q				V
24+ 0	4.2528	0.78	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 08/03/21

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

Program License Serial Number 6385

Space Center
undeveloped 100-year
Area C

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
7.62	1	1.09

Rainfall data for year 100		
7.62	6	2.09

Rainfall data for year 100		
7.62	24	3.64

+++++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
75.0	75.0	7.62	1.000	0.453	1.000	0.453

Area-averaged adjusted loss rate Fm (In/Hr) = 0.453

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
7.62	1.000	75.0	75.0	3.33	0.385

Area-averaged catchment yield fraction, Y = 0.385

Area-averaged low loss fraction, Yb = 0.615

User entry of time of concentration = 0.233 (hours)

+++++

Watershed area = 7.62(Ac.)

Catchment Lag time = 0.186 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 44.7067

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.453(In/Hr)

Average low loss rate fraction (Yb) = 0.615 (decimal)

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.517(In)

Computed peak 30-minute rainfall = 0.885(In)

Specified peak 1-hour rainfall = 1.090(In)

Computed peak 3-hour rainfall = 1.625(In)

Specified peak 6-hour rainfall = 2.090(In)

Specified peak 24-hour rainfall = 3.640(In)

Rainfall depth area reduction factors:

Using a total area of 7.62(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.517(In)

30-minute factor = 1.000 Adjusted rainfall = 0.885(In)

1-hour factor = 1.000 Adjusted rainfall = 1.090(In)

3-hour factor = 1.000 Adjusted rainfall = 1.625(In)

6-hour factor = 1.000 Adjusted rainfall = 2.090(In)

24-hour factor = 1.000 Adjusted rainfall = 3.640(In)

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

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))

	(K =	92.15 (CFS))
1	3.294	3.035
2	24.225	19.289
3	55.190	28.536
4	69.857	13.516
5	78.269	7.752
6	83.811	5.107
7	87.902	3.770
8	90.765	2.639
9	93.006	2.065
10	94.740	1.598
11	96.104	1.257
12	97.148	0.962
13	97.872	0.667
14	98.350	0.441
15	98.879	0.487
16	99.400	0.481
17	99.735	0.309
18	100.000	0.244

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

1	0.5170	0.5170
2	0.6365	0.1195
3	0.7189	0.0823
4	0.7837	0.0648
5	0.8379	0.0543
6	0.8850	0.0471
7	0.9269	0.0419
8	0.9648	0.0379
9	0.9995	0.0347
10	1.0316	0.0321
11	1.0615	0.0299
12	1.0896	0.0281
13	1.1218	0.0322
14	1.1524	0.0306
15	1.1817	0.0293
16	1.2098	0.0281
17	1.2367	0.0270
18	1.2627	0.0260
19	1.2878	0.0251
20	1.3120	0.0242
21	1.3355	0.0235
22	1.3583	0.0228
23	1.3804	0.0221
24	1.4019	0.0215

25	1.4229	0.0210
26	1.4433	0.0204
27	1.4633	0.0199
28	1.4828	0.0195
29	1.5018	0.0190
30	1.5204	0.0186
31	1.5387	0.0182
32	1.5565	0.0179
33	1.5740	0.0175
34	1.5912	0.0172
35	1.6081	0.0169
36	1.6246	0.0166
37	1.6409	0.0163
38	1.6569	0.0160
39	1.6726	0.0157
40	1.6880	0.0155
41	1.7032	0.0152
42	1.7182	0.0150
43	1.7330	0.0148
44	1.7475	0.0145
45	1.7618	0.0143
46	1.7760	0.0141
47	1.7899	0.0139
48	1.8037	0.0137
49	1.8172	0.0136
50	1.8306	0.0134
51	1.8438	0.0132
52	1.8569	0.0131
53	1.8698	0.0129
54	1.8825	0.0127
55	1.8951	0.0126
56	1.9076	0.0124
57	1.9199	0.0123
58	1.9320	0.0122
59	1.9441	0.0120
60	1.9560	0.0119
61	1.9678	0.0118
62	1.9794	0.0117
63	1.9910	0.0115
64	2.0024	0.0114
65	2.0137	0.0113
66	2.0249	0.0112
67	2.0360	0.0111
68	2.0470	0.0110
69	2.0579	0.0109
70	2.0687	0.0108
71	2.0794	0.0107
72	2.0900	0.0106
73	2.1015	0.0116
74	2.1130	0.0115

75	2.1244	0.0114
76	2.1357	0.0113
77	2.1469	0.0112
78	2.1580	0.0111
79	2.1690	0.0110
80	2.1800	0.0109
81	2.1908	0.0109
82	2.2016	0.0108
83	2.2123	0.0107
84	2.2230	0.0106
85	2.2335	0.0106
86	2.2440	0.0105
87	2.2544	0.0104
88	2.2647	0.0103
89	2.2750	0.0103
90	2.2852	0.0102
91	2.2953	0.0101
92	2.3054	0.0101
93	2.3154	0.0100
94	2.3253	0.0099
95	2.3352	0.0099
96	2.3450	0.0098
97	2.3547	0.0097
98	2.3644	0.0097
99	2.3740	0.0096
100	2.3836	0.0096
101	2.3931	0.0095
102	2.4026	0.0095
103	2.4120	0.0094
104	2.4213	0.0093
105	2.4306	0.0093
106	2.4399	0.0092
107	2.4490	0.0092
108	2.4582	0.0091
109	2.4673	0.0091
110	2.4763	0.0090
111	2.4853	0.0090
112	2.4942	0.0089
113	2.5031	0.0089
114	2.5119	0.0088
115	2.5207	0.0088
116	2.5295	0.0088
117	2.5382	0.0087
118	2.5469	0.0087
119	2.5555	0.0086
120	2.5640	0.0086
121	2.5726	0.0085
122	2.5811	0.0085
123	2.5895	0.0084
124	2.5979	0.0084

125	2.6063	0.0084
126	2.6146	0.0083
127	2.6229	0.0083
128	2.6311	0.0082
129	2.6393	0.0082
130	2.6475	0.0082
131	2.6556	0.0081
132	2.6637	0.0081
133	2.6718	0.0081
134	2.6798	0.0080
135	2.6878	0.0080
136	2.6958	0.0080
137	2.7037	0.0079
138	2.7116	0.0079
139	2.7194	0.0078
140	2.7272	0.0078
141	2.7350	0.0078
142	2.7427	0.0077
143	2.7505	0.0077
144	2.7581	0.0077
145	2.7658	0.0076
146	2.7734	0.0076
147	2.7810	0.0076
148	2.7886	0.0076
149	2.7961	0.0075
150	2.8036	0.0075
151	2.8110	0.0075
152	2.8185	0.0074
153	2.8259	0.0074
154	2.8333	0.0074
155	2.8406	0.0073
156	2.8479	0.0073
157	2.8552	0.0073
158	2.8625	0.0073
159	2.8697	0.0072
160	2.8769	0.0072
161	2.8841	0.0072
162	2.8913	0.0072
163	2.8984	0.0071
164	2.9055	0.0071
165	2.9126	0.0071
166	2.9196	0.0071
167	2.9267	0.0070
168	2.9337	0.0070
169	2.9406	0.0070
170	2.9476	0.0070
171	2.9545	0.0069
172	2.9614	0.0069
173	2.9683	0.0069
174	2.9752	0.0069

175	2.9820	0.0068
176	2.9888	0.0068
177	2.9956	0.0068
178	3.0023	0.0068
179	3.0091	0.0067
180	3.0158	0.0067
181	3.0225	0.0067
182	3.0292	0.0067
183	3.0358	0.0067
184	3.0424	0.0066
185	3.0491	0.0066
186	3.0556	0.0066
187	3.0622	0.0066
188	3.0687	0.0065
189	3.0753	0.0065
190	3.0818	0.0065
191	3.0883	0.0065
192	3.0947	0.0065
193	3.1012	0.0064
194	3.1076	0.0064
195	3.1140	0.0064
196	3.1204	0.0064
197	3.1267	0.0064
198	3.1331	0.0063
199	3.1394	0.0063
200	3.1457	0.0063
201	3.1520	0.0063
202	3.1582	0.0063
203	3.1645	0.0062
204	3.1707	0.0062
205	3.1769	0.0062
206	3.1831	0.0062
207	3.1893	0.0062
208	3.1955	0.0062
209	3.2016	0.0061
210	3.2077	0.0061
211	3.2138	0.0061
212	3.2199	0.0061
213	3.2260	0.0061
214	3.2320	0.0061
215	3.2381	0.0060
216	3.2441	0.0060
217	3.2501	0.0060
218	3.2561	0.0060
219	3.2621	0.0060
220	3.2680	0.0060
221	3.2739	0.0059
222	3.2799	0.0059
223	3.2858	0.0059
224	3.2917	0.0059

225	3.2975	0.0059
226	3.3034	0.0059
227	3.3092	0.0058
228	3.3151	0.0058
229	3.3209	0.0058
230	3.3267	0.0058
231	3.3324	0.0058
232	3.3382	0.0058
233	3.3440	0.0058
234	3.3497	0.0057
235	3.3554	0.0057
236	3.3611	0.0057
237	3.3668	0.0057
238	3.3725	0.0057
239	3.3782	0.0057
240	3.3838	0.0056
241	3.3895	0.0056
242	3.3951	0.0056
243	3.4007	0.0056
244	3.4063	0.0056
245	3.4119	0.0056
246	3.4174	0.0056
247	3.4230	0.0056
248	3.4285	0.0055
249	3.4340	0.0055
250	3.4396	0.0055
251	3.4451	0.0055
252	3.4505	0.0055
253	3.4560	0.0055
254	3.4615	0.0055
255	3.4669	0.0054
256	3.4724	0.0054
257	3.4778	0.0054
258	3.4832	0.0054
259	3.4886	0.0054
260	3.4940	0.0054
261	3.4993	0.0054
262	3.5047	0.0054
263	3.5101	0.0053
264	3.5154	0.0053
265	3.5207	0.0053
266	3.5260	0.0053
267	3.5313	0.0053
268	3.5366	0.0053
269	3.5419	0.0053
270	3.5471	0.0053
271	3.5524	0.0053
272	3.5576	0.0052
273	3.5629	0.0052
274	3.5681	0.0052

275	3.5733	0.0052
276	3.5785	0.0052
277	3.5837	0.0052
278	3.5888	0.0052
279	3.5940	0.0052
280	3.5992	0.0052
281	3.6043	0.0051
282	3.6094	0.0051
283	3.6145	0.0051
284	3.6196	0.0051
285	3.6247	0.0051
286	3.6298	0.0051
287	3.6349	0.0051
288	3.6400	0.0051

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0051	0.0031	0.0020
2	0.0051	0.0031	0.0020
3	0.0051	0.0031	0.0020
4	0.0051	0.0031	0.0020
5	0.0051	0.0032	0.0020
6	0.0051	0.0032	0.0020
7	0.0052	0.0032	0.0020
8	0.0052	0.0032	0.0020
9	0.0052	0.0032	0.0020
10	0.0052	0.0032	0.0020
11	0.0052	0.0032	0.0020
12	0.0052	0.0032	0.0020
13	0.0053	0.0032	0.0020
14	0.0053	0.0032	0.0020
15	0.0053	0.0033	0.0020
16	0.0053	0.0033	0.0020
17	0.0053	0.0033	0.0021
18	0.0053	0.0033	0.0021
19	0.0054	0.0033	0.0021
20	0.0054	0.0033	0.0021
21	0.0054	0.0033	0.0021
22	0.0054	0.0033	0.0021
23	0.0054	0.0033	0.0021
24	0.0055	0.0034	0.0021
25	0.0055	0.0034	0.0021
26	0.0055	0.0034	0.0021
27	0.0055	0.0034	0.0021
28	0.0055	0.0034	0.0021
29	0.0056	0.0034	0.0021
30	0.0056	0.0034	0.0021
31	0.0056	0.0034	0.0022

32	0.0056	0.0035	0.0022
33	0.0056	0.0035	0.0022
34	0.0057	0.0035	0.0022
35	0.0057	0.0035	0.0022
36	0.0057	0.0035	0.0022
37	0.0057	0.0035	0.0022
38	0.0058	0.0035	0.0022
39	0.0058	0.0036	0.0022
40	0.0058	0.0036	0.0022
41	0.0058	0.0036	0.0022
42	0.0058	0.0036	0.0022
43	0.0059	0.0036	0.0023
44	0.0059	0.0036	0.0023
45	0.0059	0.0036	0.0023
46	0.0059	0.0037	0.0023
47	0.0060	0.0037	0.0023
48	0.0060	0.0037	0.0023
49	0.0060	0.0037	0.0023
50	0.0060	0.0037	0.0023
51	0.0061	0.0037	0.0023
52	0.0061	0.0037	0.0023
53	0.0061	0.0038	0.0024
54	0.0061	0.0038	0.0024
55	0.0062	0.0038	0.0024
56	0.0062	0.0038	0.0024
57	0.0062	0.0038	0.0024
58	0.0062	0.0038	0.0024
59	0.0063	0.0039	0.0024
60	0.0063	0.0039	0.0024
61	0.0063	0.0039	0.0024
62	0.0064	0.0039	0.0025
63	0.0064	0.0039	0.0025
64	0.0064	0.0039	0.0025
65	0.0065	0.0040	0.0025
66	0.0065	0.0040	0.0025
67	0.0065	0.0040	0.0025
68	0.0065	0.0040	0.0025
69	0.0066	0.0040	0.0025
70	0.0066	0.0041	0.0025
71	0.0067	0.0041	0.0026
72	0.0067	0.0041	0.0026
73	0.0067	0.0041	0.0026
74	0.0067	0.0041	0.0026
75	0.0068	0.0042	0.0026
76	0.0068	0.0042	0.0026
77	0.0069	0.0042	0.0026
78	0.0069	0.0042	0.0026
79	0.0069	0.0043	0.0027
80	0.0070	0.0043	0.0027
81	0.0070	0.0043	0.0027

82	0.0070	0.0043	0.0027
83	0.0071	0.0044	0.0027
84	0.0071	0.0044	0.0027
85	0.0072	0.0044	0.0028
86	0.0072	0.0044	0.0028
87	0.0072	0.0045	0.0028
88	0.0073	0.0045	0.0028
89	0.0073	0.0045	0.0028
90	0.0073	0.0045	0.0028
91	0.0074	0.0046	0.0029
92	0.0074	0.0046	0.0029
93	0.0075	0.0046	0.0029
94	0.0075	0.0046	0.0029
95	0.0076	0.0047	0.0029
96	0.0076	0.0047	0.0029
97	0.0077	0.0047	0.0030
98	0.0077	0.0047	0.0030
99	0.0078	0.0048	0.0030
100	0.0078	0.0048	0.0030
101	0.0079	0.0048	0.0030
102	0.0079	0.0049	0.0030
103	0.0080	0.0049	0.0031
104	0.0080	0.0049	0.0031
105	0.0081	0.0050	0.0031
106	0.0081	0.0050	0.0031
107	0.0082	0.0050	0.0032
108	0.0082	0.0051	0.0032
109	0.0083	0.0051	0.0032
110	0.0084	0.0051	0.0032
111	0.0084	0.0052	0.0033
112	0.0085	0.0052	0.0033
113	0.0086	0.0053	0.0033
114	0.0086	0.0053	0.0033
115	0.0087	0.0054	0.0034
116	0.0088	0.0054	0.0034
117	0.0088	0.0054	0.0034
118	0.0089	0.0055	0.0034
119	0.0090	0.0055	0.0035
120	0.0090	0.0056	0.0035
121	0.0091	0.0056	0.0035
122	0.0092	0.0056	0.0035
123	0.0093	0.0057	0.0036
124	0.0093	0.0057	0.0036
125	0.0095	0.0058	0.0036
126	0.0095	0.0058	0.0037
127	0.0096	0.0059	0.0037
128	0.0097	0.0060	0.0037
129	0.0098	0.0060	0.0038
130	0.0099	0.0061	0.0038
131	0.0100	0.0061	0.0038

132	0.0101	0.0062	0.0039
133	0.0102	0.0063	0.0039
134	0.0103	0.0063	0.0040
135	0.0104	0.0064	0.0040
136	0.0105	0.0064	0.0040
137	0.0106	0.0065	0.0041
138	0.0107	0.0066	0.0041
139	0.0109	0.0067	0.0042
140	0.0109	0.0067	0.0042
141	0.0111	0.0068	0.0043
142	0.0112	0.0069	0.0043
143	0.0114	0.0070	0.0044
144	0.0115	0.0071	0.0044
145	0.0106	0.0065	0.0041
146	0.0107	0.0066	0.0041
147	0.0109	0.0067	0.0042
148	0.0110	0.0068	0.0042
149	0.0112	0.0069	0.0043
150	0.0113	0.0070	0.0044
151	0.0115	0.0071	0.0044
152	0.0117	0.0072	0.0045
153	0.0119	0.0073	0.0046
154	0.0120	0.0074	0.0046
155	0.0123	0.0076	0.0047
156	0.0124	0.0077	0.0048
157	0.0127	0.0078	0.0049
158	0.0129	0.0079	0.0050
159	0.0132	0.0081	0.0051
160	0.0134	0.0082	0.0052
161	0.0137	0.0085	0.0053
162	0.0139	0.0086	0.0054
163	0.0143	0.0088	0.0055
164	0.0145	0.0089	0.0056
165	0.0150	0.0092	0.0058
166	0.0152	0.0094	0.0059
167	0.0157	0.0097	0.0061
168	0.0160	0.0098	0.0062
169	0.0166	0.0102	0.0064
170	0.0169	0.0104	0.0065
171	0.0175	0.0108	0.0067
172	0.0179	0.0110	0.0069
173	0.0186	0.0115	0.0072
174	0.0190	0.0117	0.0073
175	0.0199	0.0123	0.0077
176	0.0204	0.0126	0.0079
177	0.0215	0.0132	0.0083
178	0.0221	0.0136	0.0085
179	0.0235	0.0144	0.0090
180	0.0242	0.0149	0.0093
181	0.0260	0.0160	0.0100

182	0.0270	0.0166	0.0104
183	0.0293	0.0180	0.0113
184	0.0306	0.0188	0.0118
185	0.0281	0.0173	0.0108
186	0.0299	0.0184	0.0115
187	0.0347	0.0213	0.0134
188	0.0379	0.0233	0.0146
189	0.0471	0.0290	0.0181
190	0.0543	0.0334	0.0209
191	0.0823	0.0377	0.0446
192	0.1195	0.0377	0.0818
193	0.5170	0.0377	0.4793
194	0.0648	0.0377	0.0270
195	0.0419	0.0258	0.0161
196	0.0321	0.0197	0.0124
197	0.0322	0.0198	0.0124
198	0.0281	0.0173	0.0108
199	0.0251	0.0154	0.0097
200	0.0228	0.0140	0.0088
201	0.0210	0.0129	0.0081
202	0.0195	0.0120	0.0075
203	0.0182	0.0112	0.0070
204	0.0172	0.0106	0.0066
205	0.0163	0.0100	0.0063
206	0.0155	0.0095	0.0060
207	0.0148	0.0091	0.0057
208	0.0141	0.0087	0.0054
209	0.0136	0.0083	0.0052
210	0.0131	0.0080	0.0050
211	0.0126	0.0077	0.0048
212	0.0122	0.0075	0.0047
213	0.0118	0.0072	0.0045
214	0.0114	0.0070	0.0044
215	0.0111	0.0068	0.0043
216	0.0108	0.0066	0.0042
217	0.0116	0.0071	0.0045
218	0.0113	0.0069	0.0043
219	0.0110	0.0068	0.0042
220	0.0108	0.0066	0.0042
221	0.0106	0.0065	0.0041
222	0.0103	0.0064	0.0040
223	0.0101	0.0062	0.0039
224	0.0099	0.0061	0.0038
225	0.0097	0.0060	0.0038
226	0.0096	0.0059	0.0037
227	0.0094	0.0058	0.0036
228	0.0092	0.0057	0.0036
229	0.0091	0.0056	0.0035
230	0.0089	0.0055	0.0034
231	0.0088	0.0054	0.0034

232	0.0087	0.0053	0.0033
233	0.0085	0.0052	0.0033
234	0.0084	0.0052	0.0032
235	0.0083	0.0051	0.0032
236	0.0082	0.0050	0.0031
237	0.0081	0.0050	0.0031
238	0.0080	0.0049	0.0031
239	0.0078	0.0048	0.0030
240	0.0077	0.0048	0.0030
241	0.0076	0.0047	0.0029
242	0.0076	0.0046	0.0029
243	0.0075	0.0046	0.0029
244	0.0074	0.0045	0.0028
245	0.0073	0.0045	0.0028
246	0.0072	0.0044	0.0028
247	0.0071	0.0044	0.0027
248	0.0071	0.0043	0.0027
249	0.0070	0.0043	0.0027
250	0.0069	0.0042	0.0027
251	0.0068	0.0042	0.0026
252	0.0068	0.0042	0.0026
253	0.0067	0.0041	0.0026
254	0.0066	0.0041	0.0026
255	0.0066	0.0040	0.0025
256	0.0065	0.0040	0.0025
257	0.0064	0.0040	0.0025
258	0.0064	0.0039	0.0025
259	0.0063	0.0039	0.0024
260	0.0063	0.0039	0.0024
261	0.0062	0.0038	0.0024
262	0.0062	0.0038	0.0024
263	0.0061	0.0038	0.0024
264	0.0061	0.0037	0.0023
265	0.0060	0.0037	0.0023
266	0.0060	0.0037	0.0023
267	0.0059	0.0036	0.0023
268	0.0059	0.0036	0.0023
269	0.0058	0.0036	0.0022
270	0.0058	0.0035	0.0022
271	0.0057	0.0035	0.0022
272	0.0057	0.0035	0.0022
273	0.0056	0.0035	0.0022
274	0.0056	0.0034	0.0022
275	0.0056	0.0034	0.0021
276	0.0055	0.0034	0.0021
277	0.0055	0.0034	0.0021
278	0.0054	0.0033	0.0021
279	0.0054	0.0033	0.0021
280	0.0054	0.0033	0.0021
281	0.0053	0.0033	0.0021

282	0.0053	0.0033	0.0020
283	0.0053	0.0032	0.0020
284	0.0052	0.0032	0.0020
285	0.0052	0.0032	0.0020
286	0.0052	0.0032	0.0020
287	0.0051	0.0031	0.0020
288	0.0051	0.0031	0.0020

Total soil rain loss = 1.91(In)
Total effective rainfall = 1.73(In)
Peak flow rate in flood hydrograph = 16.01(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	5.0	10.0	15.0	20.0
0+ 5	0.0000	0.01	Q				
0+10	0.0003	0.04	Q				
0+15	0.0010	0.10	Q				
0+20	0.0019	0.13	Q				
0+25	0.0029	0.14	Q				
0+30	0.0039	0.15	Q				
0+35	0.0050	0.16	Q				
0+40	0.0062	0.17	Q				
0+45	0.0073	0.17	Q				
0+50	0.0085	0.17	Q				
0+55	0.0097	0.18	Q				
1+ 0	0.0110	0.18	Q				
1+ 5	0.0122	0.18	Q				
1+10	0.0135	0.18	Q				
1+15	0.0147	0.18	Q				
1+20	0.0160	0.19	Q				
1+25	0.0173	0.19	Q				
1+30	0.0186	0.19	Q				
1+35	0.0199	0.19	Q				
1+40	0.0212	0.19	Q				
1+45	0.0225	0.19	Q				
1+50	0.0238	0.19	Q				
1+55	0.0251	0.19	Q				
2+ 0	0.0264	0.19	Q				
2+ 5	0.0278	0.19	QV				
2+10	0.0291	0.19	QV				
2+15	0.0304	0.19	QV				
2+20	0.0318	0.19	QV				

2+25	0.0331	0.20	QV
2+30	0.0345	0.20	QV
2+35	0.0358	0.20	QV
2+40	0.0372	0.20	QV
2+45	0.0385	0.20	QV
2+50	0.0399	0.20	QV
2+55	0.0413	0.20	QV
3+ 0	0.0427	0.20	QV
3+ 5	0.0440	0.20	QV
3+10	0.0454	0.20	QV
3+15	0.0468	0.20	QV
3+20	0.0482	0.20	QV
3+25	0.0496	0.20	QV
3+30	0.0510	0.20	QV
3+35	0.0525	0.21	QV
3+40	0.0539	0.21	QV
3+45	0.0553	0.21	Q V
3+50	0.0567	0.21	Q V
3+55	0.0582	0.21	Q V
4+ 0	0.0596	0.21	Q V
4+ 5	0.0611	0.21	Q V
4+10	0.0625	0.21	Q V
4+15	0.0640	0.21	Q V
4+20	0.0655	0.21	Q V
4+25	0.0669	0.21	Q V
4+30	0.0684	0.22	Q V
4+35	0.0699	0.22	Q V
4+40	0.0714	0.22	Q V
4+45	0.0729	0.22	Q V
4+50	0.0744	0.22	Q V
4+55	0.0759	0.22	Q V
5+ 0	0.0774	0.22	Q V
5+ 5	0.0790	0.22	Q V
5+10	0.0805	0.22	Q V
5+15	0.0820	0.22	Q V
5+20	0.0836	0.22	Q V
5+25	0.0851	0.23	Q V
5+30	0.0867	0.23	Q V
5+35	0.0883	0.23	Q V
5+40	0.0898	0.23	Q V
5+45	0.0914	0.23	Q V
5+50	0.0930	0.23	Q V
5+55	0.0946	0.23	Q V
6+ 0	0.0962	0.23	Q V
6+ 5	0.0978	0.23	Q V
6+10	0.0995	0.24	Q V
6+15	0.1011	0.24	Q V
6+20	0.1027	0.24	Q V
6+25	0.1044	0.24	Q V
6+30	0.1060	0.24	Q V

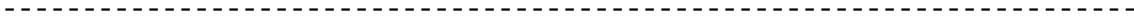
6+35	0.1077	0.24	Q	V
6+40	0.1094	0.24	Q	V
6+45	0.1110	0.24	Q	V
6+50	0.1127	0.25	Q	V
6+55	0.1144	0.25	Q	V
7+ 0	0.1161	0.25	Q	V
7+ 5	0.1179	0.25	Q	V
7+10	0.1196	0.25	Q	V
7+15	0.1213	0.25	Q	V
7+20	0.1231	0.25	Q	V
7+25	0.1248	0.25	Q	V
7+30	0.1266	0.26	Q	V
7+35	0.1284	0.26	Q	V
7+40	0.1301	0.26	Q	V
7+45	0.1319	0.26	Q	V
7+50	0.1337	0.26	Q	V
7+55	0.1356	0.26	Q	V
8+ 0	0.1374	0.27	Q	V
8+ 5	0.1392	0.27	Q	V
8+10	0.1411	0.27	Q	V
8+15	0.1429	0.27	Q	V
8+20	0.1448	0.27	Q	V
8+25	0.1467	0.27	Q	V
8+30	0.1486	0.28	Q	V
8+35	0.1505	0.28	Q	V
8+40	0.1524	0.28	Q	V
8+45	0.1544	0.28	Q	V
8+50	0.1563	0.28	Q	V
8+55	0.1583	0.28	Q	V
9+ 0	0.1602	0.29	Q	V
9+ 5	0.1622	0.29	Q	V
9+10	0.1642	0.29	Q	V
9+15	0.1662	0.29	Q	V
9+20	0.1683	0.29	Q	V
9+25	0.1703	0.30	Q	V
9+30	0.1724	0.30	Q	V
9+35	0.1744	0.30	Q	V
9+40	0.1765	0.30	Q	V
9+45	0.1786	0.31	Q	V
9+50	0.1808	0.31	Q	V
9+55	0.1829	0.31	Q	V
10+ 0	0.1850	0.31	Q	V
10+ 5	0.1872	0.32	Q	V
10+10	0.1894	0.32	Q	V
10+15	0.1916	0.32	Q	V
10+20	0.1938	0.32	Q	V
10+25	0.1961	0.33	Q	V
10+30	0.1983	0.33	Q	V
10+35	0.2006	0.33	Q	V
10+40	0.2029	0.33	Q	V

10+45	0.2053	0.34	Q	V				
10+50	0.2076	0.34	Q	V				
10+55	0.2100	0.34	Q	V				
11+ 0	0.2124	0.35	Q	V				
11+ 5	0.2148	0.35	Q	V				
11+10	0.2172	0.35	Q	V				
11+15	0.2197	0.36	Q	V				
11+20	0.2221	0.36	Q	V				
11+25	0.2247	0.36	Q	V				
11+30	0.2272	0.37	Q	V				
11+35	0.2297	0.37	Q	V				
11+40	0.2323	0.38	Q	V				
11+45	0.2350	0.38	Q	V				
11+50	0.2376	0.38	Q	V				
11+55	0.2403	0.39	Q	V				
12+ 0	0.2430	0.39	Q	V				
12+ 5	0.2457	0.40	Q	V				
12+10	0.2484	0.39	Q	V				
12+15	0.2511	0.39	Q	V				
12+20	0.2537	0.39	Q	V				
12+25	0.2564	0.39	Q	V				
12+30	0.2591	0.39	Q	V				
12+35	0.2618	0.39	Q	V				
12+40	0.2645	0.40	Q	V				
12+45	0.2673	0.40	Q	V				
12+50	0.2702	0.41	Q	V				
12+55	0.2730	0.42	Q	V				
13+ 0	0.2759	0.42	Q	V				
13+ 5	0.2789	0.43	Q	V				
13+10	0.2819	0.44	Q	V				
13+15	0.2849	0.44	Q	V				
13+20	0.2880	0.45	Q	V				
13+25	0.2912	0.46	Q	V				
13+30	0.2944	0.47	Q	V				
13+35	0.2976	0.48	Q	V				
13+40	0.3010	0.48	Q	V				
13+45	0.3044	0.50	Q	V				
13+50	0.3079	0.51	Q	V				
13+55	0.3114	0.52	Q	V				
14+ 0	0.3151	0.53	Q	V				
14+ 5	0.3188	0.54	Q	V				
14+10	0.3226	0.55	Q	V				
14+15	0.3265	0.57	Q	V				
14+20	0.3306	0.58	Q	V				
14+25	0.3347	0.60	Q	V				
14+30	0.3389	0.62	Q	V				
14+35	0.3433	0.64	Q	V				
14+40	0.3478	0.66	Q	V				
14+45	0.3525	0.68	Q	V				
14+50	0.3574	0.70	Q	V				

14+55	0.3624	0.73	Q		V			
15+ 0	0.3676	0.76	Q		V			
15+ 5	0.3731	0.79	Q		V			
15+10	0.3788	0.83	Q		V			
15+15	0.3848	0.87	Q		V			
15+20	0.3911	0.92	Q		V			
15+25	0.3978	0.97	Q		V			
15+30	0.4046	0.99	Q		V			
15+35	0.4115	1.00	Q		V			
15+40	0.4189	1.06	Q		V			
15+45	0.4269	1.16	Q		V			
15+50	0.4359	1.31	Q		V			
15+55	0.4467	1.57	Q		V			
16+ 0	0.4625	2.29	Q		V			
16+ 5	0.4967	4.97		Q		V		
16+10	0.5842	12.70				V	Q	
16+15	0.6944	16.01					V	Q
16+20	0.7543	8.69			Q		V	
16+25	0.7927	5.58		Q			V	
16+30	0.8206	4.06		Q			V	
16+35	0.8429	3.24		Q			V	
16+40	0.8605	2.55		Q			V	
16+45	0.8752	2.14		Q			V	
16+50	0.8876	1.80		Q			V	
16+55	0.8983	1.54		Q			V	
17+ 0	0.9073	1.32	Q				V	
17+ 5	0.9150	1.11	Q				V	
17+10	0.9216	0.96	Q				V	
17+15	0.9279	0.93	Q				V	
17+20	0.9339	0.87	Q				V	
17+25	0.9391	0.75	Q				V	
17+30	0.9437	0.67	Q				V	
17+35	0.9473	0.53	Q				V	
17+40	0.9508	0.50	Q				V	
17+45	0.9541	0.48	Q				V	
17+50	0.9573	0.46	Q				V	
17+55	0.9604	0.45	Q				V	
18+ 0	0.9633	0.43	Q				V	
18+ 5	0.9662	0.42	Q				V	
18+10	0.9690	0.41	Q				V	
18+15	0.9719	0.41	Q				V	
18+20	0.9747	0.41	Q				V	
18+25	0.9774	0.40	Q				V	
18+30	0.9801	0.39	Q				V	
18+35	0.9828	0.38	Q				V	
18+40	0.9853	0.38	Q				V	
18+45	0.9879	0.37	Q				V	
18+50	0.9904	0.36	Q				V	
18+55	0.9928	0.36	Q				V	
19+ 0	0.9952	0.35	Q				V	

19+ 5	0.9976	0.34	Q				V
19+10	0.9999	0.34	Q				V
19+15	1.0022	0.33	Q				V
19+20	1.0044	0.33	Q				V
19+25	1.0066	0.32	Q				V
19+30	1.0088	0.31	Q				V
19+35	1.0109	0.31	Q				V
19+40	1.0130	0.31	Q				V
19+45	1.0151	0.30	Q				V
19+50	1.0171	0.30	Q				V
19+55	1.0191	0.29	Q				V
20+ 0	1.0211	0.29	Q				V
20+ 5	1.0231	0.28	Q				V
20+10	1.0250	0.28	Q				V
20+15	1.0269	0.28	Q				V
20+20	1.0288	0.27	Q				V
20+25	1.0307	0.27	Q				V
20+30	1.0325	0.27	Q				V
20+35	1.0343	0.26	Q				V
20+40	1.0361	0.26	Q				V
20+45	1.0379	0.26	Q				V
20+50	1.0396	0.25	Q				V
20+55	1.0413	0.25	Q				V
21+ 0	1.0431	0.25	Q				V
21+ 5	1.0448	0.25	Q				V
21+10	1.0464	0.24	Q				V
21+15	1.0481	0.24	Q				V
21+20	1.0497	0.24	Q				V
21+25	1.0514	0.24	Q				V
21+30	1.0530	0.23	Q				V
21+35	1.0546	0.23	Q				V
21+40	1.0562	0.23	Q				V
21+45	1.0577	0.23	Q				V
21+50	1.0593	0.23	Q				V
21+55	1.0608	0.22	Q				V
22+ 0	1.0623	0.22	Q				V
22+ 5	1.0638	0.22	Q				V
22+10	1.0653	0.22	Q				V
22+15	1.0668	0.22	Q				V
22+20	1.0683	0.21	Q				V
22+25	1.0698	0.21	Q				V
22+30	1.0712	0.21	Q				V
22+35	1.0726	0.21	Q				V
22+40	1.0741	0.21	Q				V
22+45	1.0755	0.21	Q				V
22+50	1.0769	0.20	Q				V
22+55	1.0783	0.20	Q				V
23+ 0	1.0797	0.20	Q				V
23+ 5	1.0810	0.20	Q				V
23+10	1.0824	0.20	Q				V

23+15	1.0837	0.20	Q				V
23+20	1.0851	0.19	Q				V
23+25	1.0864	0.19	Q				V
23+30	1.0877	0.19	Q				V
23+35	1.0891	0.19	Q				V
23+40	1.0904	0.19	Q				V
23+45	1.0917	0.19	Q				V
23+50	1.0929	0.19	Q				V
23+55	1.0942	0.19	Q				V
24+ 0	1.0955	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

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Study date 08/03/21

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

Program License Serial Number 6385

Space Center
undeveloped 100-year
Area D

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
5.26	1	1.09

Rainfall data for year 100		
5.26	6	2.09

Rainfall data for year 100		
5.26	24	3.64

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
80.0	80.0	5.26	1.000	0.370	1.000	0.370

Area-averaged adjusted loss rate Fm (In/Hr) = 0.370

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
5.26	1.000	80.0	80.0	2.50	0.480

Area-averaged catchment yield fraction, Y = 0.480

Area-averaged low loss fraction, Yb = 0.520

User entry of time of concentration = 0.190 (hours)

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Watershed area = 5.26(Ac.)

Catchment Lag time = 0.152 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 54.8246

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.370(In/Hr)

Average low loss rate fraction (Yb) = 0.520 (decimal)

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.517(In)

Computed peak 30-minute rainfall = 0.885(In)

Specified peak 1-hour rainfall = 1.090(In)

Computed peak 3-hour rainfall = 1.625(In)

Specified peak 6-hour rainfall = 2.090(In)

Specified peak 24-hour rainfall = 3.640(In)

Rainfall depth area reduction factors:

Using a total area of 5.26(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.517(In)

30-minute factor = 1.000 Adjusted rainfall = 0.885(In)

1-hour factor = 1.000 Adjusted rainfall = 1.090(In)

3-hour factor = 1.000 Adjusted rainfall = 1.625(In)

6-hour factor = 1.000 Adjusted rainfall = 2.090(In)

24-hour factor = 1.000 Adjusted rainfall = 3.640(In)

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

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))

	(K =	63.61 (CFS))
1	4.674	2.973
2	36.009	19.933
3	64.533	18.145
4	76.752	7.773
5	83.874	4.531
6	88.669	3.050
7	91.870	2.036
8	94.256	1.518
9	96.007	1.114
10	97.272	0.805
11	98.057	0.499
12	98.666	0.388
13	99.315	0.413
14	99.751	0.277
15	100.000	0.159

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

1	0.5171	0.5171
2	0.6366	0.1195
3	0.7190	0.0823
4	0.7838	0.0648
5	0.8380	0.0543
6	0.8851	0.0471
7	0.9270	0.0419
8	0.9649	0.0379
9	0.9996	0.0347
10	1.0317	0.0321
11	1.0617	0.0299
12	1.0897	0.0281
13	1.1219	0.0322
14	1.1525	0.0306
15	1.1818	0.0293
16	1.2099	0.0281
17	1.2368	0.0270
18	1.2628	0.0260
19	1.2879	0.0251
20	1.3121	0.0242
21	1.3356	0.0235
22	1.3584	0.0228
23	1.3805	0.0221
24	1.4020	0.0215
25	1.4230	0.0210
26	1.4434	0.0204
27	1.4633	0.0199

28	1.4828	0.0195
29	1.5018	0.0190
30	1.5205	0.0186
31	1.5387	0.0182
32	1.5566	0.0179
33	1.5741	0.0175
34	1.5912	0.0172
35	1.6081	0.0169
36	1.6247	0.0166
37	1.6409	0.0163
38	1.6569	0.0160
39	1.6726	0.0157
40	1.6881	0.0155
41	1.7033	0.0152
42	1.7183	0.0150
43	1.7330	0.0148
44	1.7475	0.0145
45	1.7619	0.0143
46	1.7760	0.0141
47	1.7899	0.0139
48	1.8037	0.0137
49	1.8172	0.0136
50	1.8306	0.0134
51	1.8438	0.0132
52	1.8569	0.0131
53	1.8698	0.0129
54	1.8825	0.0127
55	1.8951	0.0126
56	1.9076	0.0124
57	1.9199	0.0123
58	1.9321	0.0122
59	1.9441	0.0120
60	1.9560	0.0119
61	1.9678	0.0118
62	1.9794	0.0117
63	1.9910	0.0115
64	2.0024	0.0114
65	2.0137	0.0113
66	2.0249	0.0112
67	2.0360	0.0111
68	2.0470	0.0110
69	2.0579	0.0109
70	2.0687	0.0108
71	2.0794	0.0107
72	2.0900	0.0106
73	2.1015	0.0116
74	2.1130	0.0115
75	2.1244	0.0114
76	2.1357	0.0113
77	2.1469	0.0112

78	2.1580	0.0111
79	2.1690	0.0110
80	2.1800	0.0109
81	2.1908	0.0109
82	2.2016	0.0108
83	2.2123	0.0107
84	2.2230	0.0106
85	2.2335	0.0106
86	2.2440	0.0105
87	2.2544	0.0104
88	2.2647	0.0103
89	2.2750	0.0103
90	2.2852	0.0102
91	2.2953	0.0101
92	2.3054	0.0101
93	2.3154	0.0100
94	2.3253	0.0099
95	2.3352	0.0099
96	2.3450	0.0098
97	2.3547	0.0097
98	2.3644	0.0097
99	2.3741	0.0096
100	2.3836	0.0096
101	2.3931	0.0095
102	2.4026	0.0095
103	2.4120	0.0094
104	2.4213	0.0093
105	2.4306	0.0093
106	2.4399	0.0092
107	2.4491	0.0092
108	2.4582	0.0091
109	2.4673	0.0091
110	2.4763	0.0090
111	2.4853	0.0090
112	2.4942	0.0089
113	2.5031	0.0089
114	2.5120	0.0088
115	2.5208	0.0088
116	2.5295	0.0088
117	2.5382	0.0087
118	2.5469	0.0087
119	2.5555	0.0086
120	2.5641	0.0086
121	2.5726	0.0085
122	2.5811	0.0085
123	2.5895	0.0084
124	2.5979	0.0084
125	2.6063	0.0084
126	2.6146	0.0083
127	2.6229	0.0083

128	2.6312	0.0082
129	2.6394	0.0082
130	2.6475	0.0082
131	2.6557	0.0081
132	2.6638	0.0081
133	2.6718	0.0081
134	2.6798	0.0080
135	2.6878	0.0080
136	2.6958	0.0080
137	2.7037	0.0079
138	2.7116	0.0079
139	2.7194	0.0078
140	2.7272	0.0078
141	2.7350	0.0078
142	2.7428	0.0077
143	2.7505	0.0077
144	2.7582	0.0077
145	2.7658	0.0076
146	2.7734	0.0076
147	2.7810	0.0076
148	2.7886	0.0076
149	2.7961	0.0075
150	2.8036	0.0075
151	2.8111	0.0075
152	2.8185	0.0074
153	2.8259	0.0074
154	2.8333	0.0074
155	2.8406	0.0073
156	2.8479	0.0073
157	2.8552	0.0073
158	2.8625	0.0073
159	2.8697	0.0072
160	2.8769	0.0072
161	2.8841	0.0072
162	2.8913	0.0072
163	2.8984	0.0071
164	2.9055	0.0071
165	2.9126	0.0071
166	2.9197	0.0071
167	2.9267	0.0070
168	2.9337	0.0070
169	2.9407	0.0070
170	2.9476	0.0070
171	2.9545	0.0069
172	2.9614	0.0069
173	2.9683	0.0069
174	2.9752	0.0069
175	2.9820	0.0068
176	2.9888	0.0068
177	2.9956	0.0068

178	3.0024	0.0068
179	3.0091	0.0067
180	3.0158	0.0067
181	3.0225	0.0067
182	3.0292	0.0067
183	3.0358	0.0067
184	3.0425	0.0066
185	3.0491	0.0066
186	3.0557	0.0066
187	3.0622	0.0066
188	3.0688	0.0065
189	3.0753	0.0065
190	3.0818	0.0065
191	3.0883	0.0065
192	3.0947	0.0065
193	3.1012	0.0064
194	3.1076	0.0064
195	3.1140	0.0064
196	3.1204	0.0064
197	3.1267	0.0064
198	3.1331	0.0063
199	3.1394	0.0063
200	3.1457	0.0063
201	3.1520	0.0063
202	3.1583	0.0063
203	3.1645	0.0062
204	3.1707	0.0062
205	3.1769	0.0062
206	3.1831	0.0062
207	3.1893	0.0062
208	3.1955	0.0062
209	3.2016	0.0061
210	3.2077	0.0061
211	3.2138	0.0061
212	3.2199	0.0061
213	3.2260	0.0061
214	3.2320	0.0061
215	3.2381	0.0060
216	3.2441	0.0060
217	3.2501	0.0060
218	3.2561	0.0060
219	3.2621	0.0060
220	3.2680	0.0060
221	3.2740	0.0059
222	3.2799	0.0059
223	3.2858	0.0059
224	3.2917	0.0059
225	3.2975	0.0059
226	3.3034	0.0059
227	3.3092	0.0058

228	3.3151	0.0058
229	3.3209	0.0058
230	3.3267	0.0058
231	3.3325	0.0058
232	3.3382	0.0058
233	3.3440	0.0058
234	3.3497	0.0057
235	3.3554	0.0057
236	3.3611	0.0057
237	3.3668	0.0057
238	3.3725	0.0057
239	3.3782	0.0057
240	3.3838	0.0056
241	3.3895	0.0056
242	3.3951	0.0056
243	3.4007	0.0056
244	3.4063	0.0056
245	3.4119	0.0056
246	3.4174	0.0056
247	3.4230	0.0056
248	3.4285	0.0055
249	3.4341	0.0055
250	3.4396	0.0055
251	3.4451	0.0055
252	3.4506	0.0055
253	3.4560	0.0055
254	3.4615	0.0055
255	3.4669	0.0054
256	3.4724	0.0054
257	3.4778	0.0054
258	3.4832	0.0054
259	3.4886	0.0054
260	3.4940	0.0054
261	3.4994	0.0054
262	3.5047	0.0054
263	3.5101	0.0053
264	3.5154	0.0053
265	3.5207	0.0053
266	3.5260	0.0053
267	3.5313	0.0053
268	3.5366	0.0053
269	3.5419	0.0053
270	3.5472	0.0053
271	3.5524	0.0053
272	3.5577	0.0052
273	3.5629	0.0052
274	3.5681	0.0052
275	3.5733	0.0052
276	3.5785	0.0052
277	3.5837	0.0052

278	3.5889	0.0052
279	3.5940	0.0052
280	3.5992	0.0052
281	3.6043	0.0051
282	3.6094	0.0051
283	3.6146	0.0051
284	3.6197	0.0051
285	3.6248	0.0051
286	3.6298	0.0051
287	3.6349	0.0051
288	3.6400	0.0051

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0051	0.0026	0.0024
2	0.0051	0.0026	0.0024
3	0.0051	0.0026	0.0024
4	0.0051	0.0027	0.0025
5	0.0051	0.0027	0.0025
6	0.0051	0.0027	0.0025
7	0.0052	0.0027	0.0025
8	0.0052	0.0027	0.0025
9	0.0052	0.0027	0.0025
10	0.0052	0.0027	0.0025
11	0.0052	0.0027	0.0025
12	0.0052	0.0027	0.0025
13	0.0053	0.0027	0.0025
14	0.0053	0.0027	0.0025
15	0.0053	0.0028	0.0025
16	0.0053	0.0028	0.0026
17	0.0053	0.0028	0.0026
18	0.0053	0.0028	0.0026
19	0.0054	0.0028	0.0026
20	0.0054	0.0028	0.0026
21	0.0054	0.0028	0.0026
22	0.0054	0.0028	0.0026
23	0.0054	0.0028	0.0026
24	0.0055	0.0028	0.0026
25	0.0055	0.0029	0.0026
26	0.0055	0.0029	0.0026
27	0.0055	0.0029	0.0027
28	0.0055	0.0029	0.0027
29	0.0056	0.0029	0.0027
30	0.0056	0.0029	0.0027
31	0.0056	0.0029	0.0027
32	0.0056	0.0029	0.0027
33	0.0056	0.0029	0.0027
34	0.0057	0.0029	0.0027

35	0.0057	0.0030	0.0027
36	0.0057	0.0030	0.0027
37	0.0057	0.0030	0.0028
38	0.0058	0.0030	0.0028
39	0.0058	0.0030	0.0028
40	0.0058	0.0030	0.0028
41	0.0058	0.0030	0.0028
42	0.0058	0.0030	0.0028
43	0.0059	0.0031	0.0028
44	0.0059	0.0031	0.0028
45	0.0059	0.0031	0.0028
46	0.0059	0.0031	0.0029
47	0.0060	0.0031	0.0029
48	0.0060	0.0031	0.0029
49	0.0060	0.0031	0.0029
50	0.0060	0.0031	0.0029
51	0.0061	0.0032	0.0029
52	0.0061	0.0032	0.0029
53	0.0061	0.0032	0.0029
54	0.0061	0.0032	0.0029
55	0.0062	0.0032	0.0030
56	0.0062	0.0032	0.0030
57	0.0062	0.0032	0.0030
58	0.0062	0.0032	0.0030
59	0.0063	0.0033	0.0030
60	0.0063	0.0033	0.0030
61	0.0063	0.0033	0.0030
62	0.0064	0.0033	0.0031
63	0.0064	0.0033	0.0031
64	0.0064	0.0033	0.0031
65	0.0065	0.0034	0.0031
66	0.0065	0.0034	0.0031
67	0.0065	0.0034	0.0031
68	0.0065	0.0034	0.0031
69	0.0066	0.0034	0.0032
70	0.0066	0.0034	0.0032
71	0.0067	0.0035	0.0032
72	0.0067	0.0035	0.0032
73	0.0067	0.0035	0.0032
74	0.0067	0.0035	0.0032
75	0.0068	0.0035	0.0033
76	0.0068	0.0035	0.0033
77	0.0069	0.0036	0.0033
78	0.0069	0.0036	0.0033
79	0.0069	0.0036	0.0033
80	0.0070	0.0036	0.0033
81	0.0070	0.0036	0.0034
82	0.0070	0.0037	0.0034
83	0.0071	0.0037	0.0034
84	0.0071	0.0037	0.0034

85	0.0072	0.0037	0.0034
86	0.0072	0.0037	0.0034
87	0.0072	0.0038	0.0035
88	0.0073	0.0038	0.0035
89	0.0073	0.0038	0.0035
90	0.0073	0.0038	0.0035
91	0.0074	0.0038	0.0036
92	0.0074	0.0039	0.0036
93	0.0075	0.0039	0.0036
94	0.0075	0.0039	0.0036
95	0.0076	0.0039	0.0036
96	0.0076	0.0040	0.0037
97	0.0077	0.0040	0.0037
98	0.0077	0.0040	0.0037
99	0.0078	0.0040	0.0037
100	0.0078	0.0041	0.0038
101	0.0079	0.0041	0.0038
102	0.0079	0.0041	0.0038
103	0.0080	0.0042	0.0038
104	0.0080	0.0042	0.0039
105	0.0081	0.0042	0.0039
106	0.0081	0.0042	0.0039
107	0.0082	0.0043	0.0039
108	0.0082	0.0043	0.0040
109	0.0083	0.0043	0.0040
110	0.0084	0.0043	0.0040
111	0.0084	0.0044	0.0041
112	0.0085	0.0044	0.0041
113	0.0086	0.0045	0.0041
114	0.0086	0.0045	0.0041
115	0.0087	0.0045	0.0042
116	0.0088	0.0045	0.0042
117	0.0088	0.0046	0.0042
118	0.0089	0.0046	0.0043
119	0.0090	0.0047	0.0043
120	0.0090	0.0047	0.0043
121	0.0091	0.0047	0.0044
122	0.0092	0.0048	0.0044
123	0.0093	0.0048	0.0045
124	0.0093	0.0049	0.0045
125	0.0095	0.0049	0.0045
126	0.0095	0.0049	0.0046
127	0.0096	0.0050	0.0046
128	0.0097	0.0050	0.0047
129	0.0098	0.0051	0.0047
130	0.0099	0.0051	0.0047
131	0.0100	0.0052	0.0048
132	0.0101	0.0052	0.0048
133	0.0102	0.0053	0.0049
134	0.0103	0.0053	0.0049

135	0.0104	0.0054	0.0050
136	0.0105	0.0054	0.0050
137	0.0106	0.0055	0.0051
138	0.0107	0.0056	0.0051
139	0.0109	0.0056	0.0052
140	0.0109	0.0057	0.0053
141	0.0111	0.0058	0.0053
142	0.0112	0.0058	0.0054
143	0.0114	0.0059	0.0055
144	0.0115	0.0060	0.0055
145	0.0106	0.0055	0.0051
146	0.0107	0.0056	0.0051
147	0.0109	0.0057	0.0052
148	0.0110	0.0057	0.0053
149	0.0112	0.0058	0.0054
150	0.0113	0.0059	0.0054
151	0.0115	0.0060	0.0055
152	0.0117	0.0061	0.0056
153	0.0119	0.0062	0.0057
154	0.0120	0.0063	0.0058
155	0.0123	0.0064	0.0059
156	0.0124	0.0065	0.0060
157	0.0127	0.0066	0.0061
158	0.0129	0.0067	0.0062
159	0.0132	0.0069	0.0063
160	0.0134	0.0070	0.0064
161	0.0137	0.0071	0.0066
162	0.0139	0.0072	0.0067
163	0.0143	0.0074	0.0069
164	0.0145	0.0076	0.0070
165	0.0150	0.0078	0.0072
166	0.0152	0.0079	0.0073
167	0.0157	0.0082	0.0075
168	0.0160	0.0083	0.0077
169	0.0166	0.0086	0.0079
170	0.0169	0.0088	0.0081
171	0.0175	0.0091	0.0084
172	0.0179	0.0093	0.0086
173	0.0186	0.0097	0.0089
174	0.0190	0.0099	0.0091
175	0.0199	0.0104	0.0096
176	0.0204	0.0106	0.0098
177	0.0215	0.0112	0.0103
178	0.0221	0.0115	0.0106
179	0.0235	0.0122	0.0113
180	0.0242	0.0126	0.0116
181	0.0260	0.0135	0.0125
182	0.0270	0.0140	0.0129
183	0.0293	0.0152	0.0141
184	0.0306	0.0159	0.0147

185	0.0281	0.0146	0.0135
186	0.0299	0.0156	0.0144
187	0.0347	0.0180	0.0167
188	0.0379	0.0197	0.0182
189	0.0471	0.0245	0.0226
190	0.0543	0.0282	0.0261
191	0.0823	0.0308	0.0515
192	0.1195	0.0308	0.0887
193	0.5171	0.0308	0.4863
194	0.0648	0.0308	0.0340
195	0.0419	0.0218	0.0201
196	0.0321	0.0167	0.0154
197	0.0322	0.0167	0.0155
198	0.0281	0.0146	0.0135
199	0.0251	0.0130	0.0120
200	0.0228	0.0118	0.0109
201	0.0210	0.0109	0.0101
202	0.0195	0.0101	0.0094
203	0.0182	0.0095	0.0088
204	0.0172	0.0089	0.0082
205	0.0163	0.0084	0.0078
206	0.0155	0.0080	0.0074
207	0.0148	0.0077	0.0071
208	0.0141	0.0073	0.0068
209	0.0136	0.0070	0.0065
210	0.0131	0.0068	0.0063
211	0.0126	0.0065	0.0060
212	0.0122	0.0063	0.0058
213	0.0118	0.0061	0.0057
214	0.0114	0.0059	0.0055
215	0.0111	0.0058	0.0053
216	0.0108	0.0056	0.0052
217	0.0116	0.0060	0.0056
218	0.0113	0.0059	0.0054
219	0.0110	0.0057	0.0053
220	0.0108	0.0056	0.0052
221	0.0106	0.0055	0.0051
222	0.0103	0.0054	0.0050
223	0.0101	0.0053	0.0049
224	0.0099	0.0052	0.0048
225	0.0097	0.0051	0.0047
226	0.0096	0.0050	0.0046
227	0.0094	0.0049	0.0045
228	0.0092	0.0048	0.0044
229	0.0091	0.0047	0.0044
230	0.0089	0.0046	0.0043
231	0.0088	0.0046	0.0042
232	0.0087	0.0045	0.0042
233	0.0085	0.0044	0.0041
234	0.0084	0.0044	0.0040

235	0.0083	0.0043	0.0040
236	0.0082	0.0042	0.0039
237	0.0081	0.0042	0.0039
238	0.0080	0.0041	0.0038
239	0.0078	0.0041	0.0038
240	0.0077	0.0040	0.0037
241	0.0076	0.0040	0.0037
242	0.0076	0.0039	0.0036
243	0.0075	0.0039	0.0036
244	0.0074	0.0038	0.0035
245	0.0073	0.0038	0.0035
246	0.0072	0.0037	0.0035
247	0.0071	0.0037	0.0034
248	0.0071	0.0037	0.0034
249	0.0070	0.0036	0.0034
250	0.0069	0.0036	0.0033
251	0.0068	0.0036	0.0033
252	0.0068	0.0035	0.0032
253	0.0067	0.0035	0.0032
254	0.0066	0.0034	0.0032
255	0.0066	0.0034	0.0032
256	0.0065	0.0034	0.0031
257	0.0064	0.0033	0.0031
258	0.0064	0.0033	0.0031
259	0.0063	0.0033	0.0030
260	0.0063	0.0033	0.0030
261	0.0062	0.0032	0.0030
262	0.0062	0.0032	0.0030
263	0.0061	0.0032	0.0029
264	0.0061	0.0031	0.0029
265	0.0060	0.0031	0.0029
266	0.0060	0.0031	0.0029
267	0.0059	0.0031	0.0028
268	0.0059	0.0030	0.0028
269	0.0058	0.0030	0.0028
270	0.0058	0.0030	0.0028
271	0.0057	0.0030	0.0027
272	0.0057	0.0030	0.0027
273	0.0056	0.0029	0.0027
274	0.0056	0.0029	0.0027
275	0.0056	0.0029	0.0027
276	0.0055	0.0029	0.0026
277	0.0055	0.0028	0.0026
278	0.0054	0.0028	0.0026
279	0.0054	0.0028	0.0026
280	0.0054	0.0028	0.0026
281	0.0053	0.0028	0.0026
282	0.0053	0.0027	0.0025
283	0.0053	0.0027	0.0025
284	0.0052	0.0027	0.0025

285	0.0052	0.0027	0.0025
286	0.0052	0.0027	0.0025
287	0.0051	0.0027	0.0025
288	0.0051	0.0026	0.0024

Total soil rain loss = 1.61(In)
Total effective rainfall = 2.03(In)
Peak flow rate in flood hydrograph = 12.10(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	5.0	10.0	15.0	20.0
0+ 5	0.0000	0.01	Q				
0+10	0.0004	0.06	Q				
0+15	0.0011	0.10	Q				
0+20	0.0019	0.12	Q				
0+25	0.0028	0.13	Q				
0+30	0.0038	0.14	Q				
0+35	0.0048	0.14	Q				
0+40	0.0058	0.15	Q				
0+45	0.0068	0.15	Q				
0+50	0.0079	0.15	Q				
0+55	0.0090	0.16	Q				
1+ 0	0.0101	0.16	Q				
1+ 5	0.0111	0.16	Q				
1+10	0.0122	0.16	Q				
1+15	0.0133	0.16	Q				
1+20	0.0145	0.16	Q				
1+25	0.0156	0.16	Q				
1+30	0.0167	0.16	Q				
1+35	0.0178	0.16	Q				
1+40	0.0189	0.16	Q				
1+45	0.0200	0.16	Q				
1+50	0.0212	0.16	Q				
1+55	0.0223	0.16	QV				
2+ 0	0.0235	0.17	QV				
2+ 5	0.0246	0.17	QV				
2+10	0.0257	0.17	QV				
2+15	0.0269	0.17	QV				
2+20	0.0281	0.17	QV				
2+25	0.0292	0.17	QV				
2+30	0.0304	0.17	QV				
2+35	0.0315	0.17	QV				

2+40	0.0327	0.17	QV
2+45	0.0339	0.17	QV
2+50	0.0351	0.17	QV
2+55	0.0363	0.17	QV
3+ 0	0.0374	0.17	QV
3+ 5	0.0386	0.17	QV
3+10	0.0398	0.17	QV
3+15	0.0410	0.17	QV
3+20	0.0422	0.18	QV
3+25	0.0435	0.18	QV
3+30	0.0447	0.18	Q V
3+35	0.0459	0.18	Q V
3+40	0.0471	0.18	Q V
3+45	0.0484	0.18	Q V
3+50	0.0496	0.18	Q V
3+55	0.0508	0.18	Q V
4+ 0	0.0521	0.18	Q V
4+ 5	0.0533	0.18	Q V
4+10	0.0546	0.18	Q V
4+15	0.0559	0.18	Q V
4+20	0.0571	0.18	Q V
4+25	0.0584	0.18	Q V
4+30	0.0597	0.19	Q V
4+35	0.0610	0.19	Q V
4+40	0.0622	0.19	Q V
4+45	0.0635	0.19	Q V
4+50	0.0648	0.19	Q V
4+55	0.0661	0.19	Q V
5+ 0	0.0675	0.19	Q V
5+ 5	0.0688	0.19	Q V
5+10	0.0701	0.19	Q V
5+15	0.0714	0.19	Q V
5+20	0.0728	0.19	Q V
5+25	0.0741	0.19	Q V
5+30	0.0755	0.20	Q V
5+35	0.0768	0.20	Q V
5+40	0.0782	0.20	Q V
5+45	0.0795	0.20	Q V
5+50	0.0809	0.20	Q V
5+55	0.0823	0.20	Q V
6+ 0	0.0837	0.20	Q V
6+ 5	0.0851	0.20	Q V
6+10	0.0865	0.20	Q V
6+15	0.0879	0.20	Q V
6+20	0.0893	0.21	Q V
6+25	0.0907	0.21	Q V
6+30	0.0921	0.21	Q V
6+35	0.0936	0.21	Q V
6+40	0.0950	0.21	Q V
6+45	0.0965	0.21	Q V

6+50	0.0979	0.21	Q	V				
6+55	0.0994	0.21	Q	V				
7+ 0	0.1009	0.21	Q	V				
7+ 5	0.1024	0.22	Q	V				
7+10	0.1038	0.22	Q	V				
7+15	0.1053	0.22	Q	V				
7+20	0.1069	0.22	Q	V				
7+25	0.1084	0.22	Q	V				
7+30	0.1099	0.22	Q	V				
7+35	0.1114	0.22	Q	V				
7+40	0.1130	0.22	Q	V				
7+45	0.1145	0.23	Q	V				
7+50	0.1161	0.23	Q	V				
7+55	0.1176	0.23	Q	V				
8+ 0	0.1192	0.23	Q	V				
8+ 5	0.1208	0.23	Q	V				
8+10	0.1224	0.23	Q	V				
8+15	0.1240	0.23	Q	V				
8+20	0.1256	0.23	Q	V				
8+25	0.1273	0.24	Q	V				
8+30	0.1289	0.24	Q	V				
8+35	0.1306	0.24	Q	V				
8+40	0.1322	0.24	Q	V				
8+45	0.1339	0.24	Q	V				
8+50	0.1356	0.24	Q	V				
8+55	0.1373	0.25	Q	V				
9+ 0	0.1390	0.25	Q	V				
9+ 5	0.1407	0.25	Q	V				
9+10	0.1424	0.25	Q	V				
9+15	0.1442	0.25	Q	V				
9+20	0.1459	0.25	Q	V				
9+25	0.1477	0.26	Q	V				
9+30	0.1495	0.26	Q	V				
9+35	0.1512	0.26	Q	V				
9+40	0.1531	0.26	Q	V				
9+45	0.1549	0.26	Q	V				
9+50	0.1567	0.27	Q	V				
9+55	0.1586	0.27	Q	V				
10+ 0	0.1604	0.27	Q	V				
10+ 5	0.1623	0.27	Q	V				
10+10	0.1642	0.27	Q	V				
10+15	0.1661	0.28	Q	V				
10+20	0.1680	0.28	Q	V				
10+25	0.1700	0.28	Q	V				
10+30	0.1719	0.28	Q	V				
10+35	0.1739	0.29	Q	V				
10+40	0.1759	0.29	Q	V				
10+45	0.1779	0.29	Q	V				
10+50	0.1799	0.29	Q	V				
10+55	0.1820	0.30	Q	V				

11+ 0	0.1840	0.30	Q	V				
11+ 5	0.1861	0.30	Q	V				
11+10	0.1882	0.31	Q	V				
11+15	0.1904	0.31	Q	V				
11+20	0.1925	0.31	Q	V				
11+25	0.1947	0.32	Q	V				
11+30	0.1969	0.32	Q	V				
11+35	0.1991	0.32	Q	V				
11+40	0.2013	0.33	Q	V				
11+45	0.2036	0.33	Q	V				
11+50	0.2059	0.33	Q	V				
11+55	0.2082	0.34	Q	V				
12+ 0	0.2106	0.34	Q	V				
12+ 5	0.2129	0.34	Q	V				
12+10	0.2152	0.34	Q	V				
12+15	0.2175	0.33	Q	V				
12+20	0.2198	0.33	Q	V				
12+25	0.2221	0.33	Q	V				
12+30	0.2244	0.34	Q	V				
12+35	0.2268	0.34	Q	V				
12+40	0.2292	0.35	Q	V				
12+45	0.2316	0.35	Q	V				
12+50	0.2340	0.35	Q	V				
12+55	0.2365	0.36	Q	V				
13+ 0	0.2390	0.37	Q	V				
13+ 5	0.2416	0.37	Q	V				
13+10	0.2442	0.38	Q	V				
13+15	0.2468	0.38	Q	V				
13+20	0.2495	0.39	Q	V				
13+25	0.2523	0.40	Q	V				
13+30	0.2551	0.41	Q	V				
13+35	0.2579	0.41	Q	V				
13+40	0.2608	0.42	Q	V				
13+45	0.2638	0.43	Q	V				
13+50	0.2668	0.44	Q	V				
13+55	0.2699	0.45	Q	V				
14+ 0	0.2731	0.46	Q	V				
14+ 5	0.2763	0.47	Q	V				
14+10	0.2797	0.48	Q	V				
14+15	0.2831	0.50	Q	V				
14+20	0.2866	0.51	Q	V				
14+25	0.2902	0.52	Q	V				
14+30	0.2939	0.54	Q	V				
14+35	0.2978	0.56	Q	V				
14+40	0.3017	0.58	Q	V				
14+45	0.3058	0.59	Q	V				
14+50	0.3101	0.62	Q	V				
14+55	0.3145	0.64	Q	V				
15+ 0	0.3191	0.67	Q	V				
15+ 5	0.3239	0.70	Q	V				

15+10	0.3289	0.73	Q		V			
15+15	0.3342	0.77	Q		V			
15+20	0.3398	0.81	Q		V			
15+25	0.3457	0.86	Q		V			
15+30	0.3517	0.86	Q		V			
15+35	0.3577	0.88	Q		V			
15+40	0.3642	0.95	Q		V			
15+45	0.3714	1.04	Q		V			
15+50	0.3796	1.19	Q		V			
15+55	0.3895	1.44	Q		V			
16+ 0	0.4045	2.17	Q		V			
16+ 5	0.4362	4.61		Q	V			
16+10	0.5196	12.10			VQ			
16+15	0.5932	10.69			Q	V		
16+20	0.6314	5.55		Q		V		
16+25	0.6567	3.67		Q		V		
16+30	0.6757	2.76		Q		V		
16+35	0.6904	2.13		Q		V		
16+40	0.7024	1.75		Q		V		
16+45	0.7124	1.45		Q		V		
16+50	0.7207	1.20		Q		V		
16+55	0.7275	0.99	Q			V		
17+ 0	0.7335	0.88	Q			V		
17+ 5	0.7392	0.83	Q			V		
17+10	0.7442	0.71	Q			V		
17+15	0.7484	0.61	Q			V		
17+20	0.7519	0.51	Q			V		
17+25	0.7552	0.48	Q			V		
17+30	0.7583	0.46	Q			V		
17+35	0.7613	0.43	Q			V		
17+40	0.7642	0.42	Q			V		
17+45	0.7669	0.40	Q			V		
17+50	0.7696	0.39	Q			V		
17+55	0.7721	0.37	Q			V		
18+ 0	0.7746	0.36	Q			V		
18+ 5	0.7770	0.35	Q			V		
18+10	0.7795	0.35	Q			V		
18+15	0.7819	0.35	Q			V		
18+20	0.7842	0.35	Q			V		
18+25	0.7866	0.34	Q			V		
18+30	0.7889	0.33	Q			V		
18+35	0.7911	0.33	Q			V		
18+40	0.7933	0.32	Q			V		
18+45	0.7955	0.31	Q			V		
18+50	0.7976	0.31	Q			V		
18+55	0.7997	0.30	Q			V		
19+ 0	0.8017	0.30	Q			V		
19+ 5	0.8037	0.29	Q			V		
19+10	0.8057	0.29	Q			V		
19+15	0.8076	0.28	Q			V		

19+20	0.8095	0.28	Q				V
19+25	0.8114	0.27	Q				V
19+30	0.8133	0.27	Q				V
19+35	0.8151	0.26	Q				V
19+40	0.8169	0.26	Q				V
19+45	0.8186	0.26	Q				V
19+50	0.8204	0.25	Q				V
19+55	0.8221	0.25	Q				V
20+ 0	0.8238	0.25	Q				V
20+ 5	0.8254	0.24	Q				V
20+10	0.8271	0.24	Q				V
20+15	0.8287	0.24	Q				V
20+20	0.8303	0.23	Q				V
20+25	0.8319	0.23	Q				V
20+30	0.8335	0.23	Q				V
20+35	0.8350	0.22	Q				V
20+40	0.8366	0.22	Q				V
20+45	0.8381	0.22	Q				V
20+50	0.8396	0.22	Q				V
20+55	0.8411	0.21	Q				V
21+ 0	0.8425	0.21	Q				V
21+ 5	0.8440	0.21	Q				V
21+10	0.8454	0.21	Q				V
21+15	0.8468	0.21	Q				V
21+20	0.8482	0.20	Q				V
21+25	0.8496	0.20	Q				V
21+30	0.8510	0.20	Q				V
21+35	0.8524	0.20	Q				V
21+40	0.8537	0.20	Q				V
21+45	0.8551	0.19	Q				V
21+50	0.8564	0.19	Q				V
21+55	0.8577	0.19	Q				V
22+ 0	0.8590	0.19	Q				V
22+ 5	0.8603	0.19	Q				V
22+10	0.8616	0.19	Q				V
22+15	0.8628	0.18	Q				V
22+20	0.8641	0.18	Q				V
22+25	0.8654	0.18	Q				V
22+30	0.8666	0.18	Q				V
22+35	0.8678	0.18	Q				V
22+40	0.8690	0.18	Q				V
22+45	0.8703	0.18	Q				V
22+50	0.8715	0.17	Q				V
22+55	0.8727	0.17	Q				V
23+ 0	0.8738	0.17	Q				V
23+ 5	0.8750	0.17	Q				V
23+10	0.8762	0.17	Q				V
23+15	0.8773	0.17	Q				V
23+20	0.8785	0.17	Q				V
23+25	0.8796	0.17	Q				V

23+30	0.8808	0.16	Q				V
23+35	0.8819	0.16	Q				V
23+40	0.8830	0.16	Q				V
23+45	0.8841	0.16	Q				V
23+50	0.8852	0.16	Q				V
23+55	0.8863	0.16	Q				V
24+ 0	0.8874	0.16	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 08/04/21

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

Program License Serial Number 6385

Space Center
Developed 10-year
Area E

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
20.90	1	0.62

Rainfall data for year 10		
20.90	6	1.27

Rainfall data for year 10		
20.90	24	2.23

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
65.0	65.0	20.90	1.000	0.608	0.160	0.097

Area-averaged adjusted loss rate Fm (In/Hr) = 0.097

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
3.34	0.160	65.0	65.0	5.38	0.091
17.56	0.840	98.0	98.0	0.20	0.898

Area-averaged catchment yield fraction, Y = 0.769

Area-averaged low loss fraction, Yb = 0.231

User entry of time of concentration = 0.192 (hours)

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Watershed area = 20.90(Ac.)

Catchment Lag time = 0.154 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 54.2535

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.097(In/Hr)

Average low loss rate fraction (Yb) = 0.178 (decimal)

Note: user entry of the Yb value

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.293(In)

Computed peak 30-minute rainfall = 0.502(In)

Specified peak 1-hour rainfall = 0.618(In)

Computed peak 3-hour rainfall = 0.961(In)

Specified peak 6-hour rainfall = 1.270(In)

Specified peak 24-hour rainfall = 2.230(In)

Rainfall depth area reduction factors:

Using a total area of 20.90(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.293(In)

30-minute factor = 0.999 Adjusted rainfall = 0.501(In)

1-hour factor = 0.999 Adjusted rainfall = 0.617(In)

3-hour factor = 1.000 Adjusted rainfall = 0.961(In)

6-hour factor = 1.000 Adjusted rainfall = 1.270(In)

24-hour factor = 1.000 Adjusted rainfall = 2.230(In)

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

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Interval 'S' Graph Unit Hydrograph
Number Mean values ((CFS))

(K = 252.76 (CFS))

1	4.582	11.581
2	35.377	77.838
3	64.099	72.597
4	76.427	31.160
5	83.603	18.139
6	88.449	12.250
7	91.682	8.171
8	94.097	6.104
9	95.871	4.485
10	97.167	3.276
11	97.993	2.086
12	98.587	1.503
13	99.237	1.641
14	99.703	1.178
15	100.000	0.752

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2930	0.2930
2	0.3607	0.0677
3	0.4073	0.0467
4	0.4440	0.0367
5	0.4748	0.0307
6	0.5015	0.0267
7	0.5252	0.0237
8	0.5467	0.0215
9	0.5663	0.0197
10	0.5845	0.0182
11	0.6015	0.0170
12	0.6174	0.0159
13	0.6376	0.0202
14	0.6569	0.0193
15	0.6755	0.0185
16	0.6932	0.0178
17	0.7104	0.0171
18	0.7269	0.0165
19	0.7429	0.0160
20	0.7584	0.0155
21	0.7735	0.0151
22	0.7881	0.0146
23	0.8024	0.0142
24	0.8162	0.0139
25	0.8298	0.0135
26	0.8430	0.0132

27	0.8559	0.0129
28	0.8685	0.0126
29	0.8809	0.0124
30	0.8930	0.0121
31	0.9049	0.0119
32	0.9165	0.0116
33	0.9279	0.0114
34	0.9392	0.0112
35	0.9502	0.0110
36	0.9610	0.0108
37	0.9717	0.0106
38	0.9821	0.0105
39	0.9925	0.0103
40	1.0026	0.0102
41	1.0126	0.0100
42	1.0225	0.0099
43	1.0322	0.0097
44	1.0418	0.0096
45	1.0512	0.0095
46	1.0606	0.0093
47	1.0698	0.0092
48	1.0789	0.0091
49	1.0879	0.0090
50	1.0967	0.0089
51	1.1055	0.0088
52	1.1142	0.0087
53	1.1227	0.0086
54	1.1312	0.0085
55	1.1396	0.0084
56	1.1479	0.0083
57	1.1561	0.0082
58	1.1642	0.0081
59	1.1722	0.0080
60	1.1802	0.0079
61	1.1880	0.0079
62	1.1958	0.0078
63	1.2035	0.0077
64	1.2112	0.0076
65	1.2188	0.0076
66	1.2263	0.0075
67	1.2337	0.0074
68	1.2411	0.0074
69	1.2484	0.0073
70	1.2556	0.0072
71	1.2628	0.0072
72	1.2699	0.0071
73	1.2771	0.0071
74	1.2841	0.0071
75	1.2911	0.0070
76	1.2981	0.0070

77	1.3050	0.0069
78	1.3119	0.0069
79	1.3187	0.0068
80	1.3254	0.0068
81	1.3321	0.0067
82	1.3388	0.0067
83	1.3454	0.0066
84	1.3520	0.0066
85	1.3585	0.0065
86	1.3649	0.0065
87	1.3714	0.0064
88	1.3777	0.0064
89	1.3841	0.0063
90	1.3904	0.0063
91	1.3966	0.0063
92	1.4028	0.0062
93	1.4090	0.0062
94	1.4152	0.0061
95	1.4213	0.0061
96	1.4273	0.0061
97	1.4333	0.0060
98	1.4393	0.0060
99	1.4453	0.0059
100	1.4512	0.0059
101	1.4570	0.0059
102	1.4629	0.0058
103	1.4687	0.0058
104	1.4745	0.0058
105	1.4802	0.0057
106	1.4859	0.0057
107	1.4916	0.0057
108	1.4972	0.0056
109	1.5029	0.0056
110	1.5084	0.0056
111	1.5140	0.0056
112	1.5195	0.0055
113	1.5250	0.0055
114	1.5305	0.0055
115	1.5359	0.0054
116	1.5413	0.0054
117	1.5467	0.0054
118	1.5521	0.0054
119	1.5574	0.0053
120	1.5627	0.0053
121	1.5680	0.0053
122	1.5732	0.0053
123	1.5785	0.0052
124	1.5837	0.0052
125	1.5888	0.0052
126	1.5940	0.0052

127	1.5991	0.0051
128	1.6042	0.0051
129	1.6093	0.0051
130	1.6143	0.0051
131	1.6194	0.0050
132	1.6244	0.0050
133	1.6294	0.0050
134	1.6343	0.0050
135	1.6393	0.0049
136	1.6442	0.0049
137	1.6491	0.0049
138	1.6540	0.0049
139	1.6588	0.0049
140	1.6637	0.0048
141	1.6685	0.0048
142	1.6733	0.0048
143	1.6781	0.0048
144	1.6828	0.0048
145	1.6875	0.0047
146	1.6923	0.0047
147	1.6970	0.0047
148	1.7016	0.0047
149	1.7063	0.0047
150	1.7109	0.0046
151	1.7156	0.0046
152	1.7202	0.0046
153	1.7248	0.0046
154	1.7293	0.0046
155	1.7339	0.0046
156	1.7384	0.0045
157	1.7429	0.0045
158	1.7474	0.0045
159	1.7519	0.0045
160	1.7564	0.0045
161	1.7608	0.0045
162	1.7653	0.0044
163	1.7697	0.0044
164	1.7741	0.0044
165	1.7785	0.0044
166	1.7828	0.0044
167	1.7872	0.0044
168	1.7915	0.0043
169	1.7959	0.0043
170	1.8002	0.0043
171	1.8045	0.0043
172	1.8087	0.0043
173	1.8130	0.0043
174	1.8172	0.0042
175	1.8215	0.0042
176	1.8257	0.0042

177	1.8299	0.0042
178	1.8341	0.0042
179	1.8383	0.0042
180	1.8424	0.0042
181	1.8466	0.0042
182	1.8507	0.0041
183	1.8548	0.0041
184	1.8590	0.0041
185	1.8631	0.0041
186	1.8671	0.0041
187	1.8712	0.0041
188	1.8753	0.0041
189	1.8793	0.0040
190	1.8833	0.0040
191	1.8874	0.0040
192	1.8914	0.0040
193	1.8954	0.0040
194	1.8993	0.0040
195	1.9033	0.0040
196	1.9073	0.0040
197	1.9112	0.0039
198	1.9152	0.0039
199	1.9191	0.0039
200	1.9230	0.0039
201	1.9269	0.0039
202	1.9308	0.0039
203	1.9347	0.0039
204	1.9385	0.0039
205	1.9424	0.0039
206	1.9462	0.0038
207	1.9500	0.0038
208	1.9539	0.0038
209	1.9577	0.0038
210	1.9615	0.0038
211	1.9653	0.0038
212	1.9690	0.0038
213	1.9728	0.0038
214	1.9766	0.0038
215	1.9803	0.0037
216	1.9840	0.0037
217	1.9878	0.0037
218	1.9915	0.0037
219	1.9952	0.0037
220	1.9989	0.0037
221	2.0026	0.0037
222	2.0062	0.0037
223	2.0099	0.0037
224	2.0136	0.0037
225	2.0172	0.0036
226	2.0208	0.0036

227	2.0245	0.0036
228	2.0281	0.0036
229	2.0317	0.0036
230	2.0353	0.0036
231	2.0389	0.0036
232	2.0425	0.0036
233	2.0460	0.0036
234	2.0496	0.0036
235	2.0532	0.0036
236	2.0567	0.0035
237	2.0602	0.0035
238	2.0638	0.0035
239	2.0673	0.0035
240	2.0708	0.0035
241	2.0743	0.0035
242	2.0778	0.0035
243	2.0813	0.0035
244	2.0847	0.0035
245	2.0882	0.0035
246	2.0917	0.0035
247	2.0951	0.0034
248	2.0985	0.0034
249	2.1020	0.0034
250	2.1054	0.0034
251	2.1088	0.0034
252	2.1122	0.0034
253	2.1156	0.0034
254	2.1190	0.0034
255	2.1224	0.0034
256	2.1258	0.0034
257	2.1292	0.0034
258	2.1325	0.0034
259	2.1359	0.0034
260	2.1392	0.0033
261	2.1425	0.0033
262	2.1459	0.0033
263	2.1492	0.0033
264	2.1525	0.0033
265	2.1558	0.0033
266	2.1591	0.0033
267	2.1624	0.0033
268	2.1657	0.0033
269	2.1690	0.0033
270	2.1723	0.0033
271	2.1755	0.0033
272	2.1788	0.0033
273	2.1820	0.0032
274	2.1853	0.0032
275	2.1885	0.0032
276	2.1917	0.0032

277	2.1950	0.0032
278	2.1982	0.0032
279	2.2014	0.0032
280	2.2046	0.0032
281	2.2078	0.0032
282	2.2110	0.0032
283	2.2141	0.0032
284	2.2173	0.0032
285	2.2205	0.0032
286	2.2236	0.0032
287	2.2268	0.0032
288	2.2299	0.0031

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0031	0.0006	0.0026
2	0.0032	0.0006	0.0026
3	0.0032	0.0006	0.0026
4	0.0032	0.0006	0.0026
5	0.0032	0.0006	0.0026
6	0.0032	0.0006	0.0026
7	0.0032	0.0006	0.0026
8	0.0032	0.0006	0.0026
9	0.0032	0.0006	0.0027
10	0.0032	0.0006	0.0027
11	0.0032	0.0006	0.0027
12	0.0033	0.0006	0.0027
13	0.0033	0.0006	0.0027
14	0.0033	0.0006	0.0027
15	0.0033	0.0006	0.0027
16	0.0033	0.0006	0.0027
17	0.0033	0.0006	0.0027
18	0.0033	0.0006	0.0027
19	0.0033	0.0006	0.0027
20	0.0033	0.0006	0.0028
21	0.0034	0.0006	0.0028
22	0.0034	0.0006	0.0028
23	0.0034	0.0006	0.0028
24	0.0034	0.0006	0.0028
25	0.0034	0.0006	0.0028
26	0.0034	0.0006	0.0028
27	0.0034	0.0006	0.0028
28	0.0034	0.0006	0.0028
29	0.0035	0.0006	0.0028
30	0.0035	0.0006	0.0029
31	0.0035	0.0006	0.0029
32	0.0035	0.0006	0.0029
33	0.0035	0.0006	0.0029

34	0.0035	0.0006	0.0029
35	0.0035	0.0006	0.0029
36	0.0035	0.0006	0.0029
37	0.0036	0.0006	0.0029
38	0.0036	0.0006	0.0029
39	0.0036	0.0006	0.0030
40	0.0036	0.0006	0.0030
41	0.0036	0.0006	0.0030
42	0.0036	0.0006	0.0030
43	0.0036	0.0006	0.0030
44	0.0037	0.0006	0.0030
45	0.0037	0.0007	0.0030
46	0.0037	0.0007	0.0030
47	0.0037	0.0007	0.0030
48	0.0037	0.0007	0.0031
49	0.0037	0.0007	0.0031
50	0.0037	0.0007	0.0031
51	0.0038	0.0007	0.0031
52	0.0038	0.0007	0.0031
53	0.0038	0.0007	0.0031
54	0.0038	0.0007	0.0031
55	0.0038	0.0007	0.0032
56	0.0038	0.0007	0.0032
57	0.0039	0.0007	0.0032
58	0.0039	0.0007	0.0032
59	0.0039	0.0007	0.0032
60	0.0039	0.0007	0.0032
61	0.0039	0.0007	0.0032
62	0.0039	0.0007	0.0032
63	0.0040	0.0007	0.0033
64	0.0040	0.0007	0.0033
65	0.0040	0.0007	0.0033
66	0.0040	0.0007	0.0033
67	0.0040	0.0007	0.0033
68	0.0041	0.0007	0.0033
69	0.0041	0.0007	0.0034
70	0.0041	0.0007	0.0034
71	0.0041	0.0007	0.0034
72	0.0041	0.0007	0.0034
73	0.0042	0.0007	0.0034
74	0.0042	0.0007	0.0034
75	0.0042	0.0007	0.0035
76	0.0042	0.0007	0.0035
77	0.0042	0.0008	0.0035
78	0.0043	0.0008	0.0035
79	0.0043	0.0008	0.0035
80	0.0043	0.0008	0.0035
81	0.0043	0.0008	0.0036
82	0.0044	0.0008	0.0036
83	0.0044	0.0008	0.0036

84	0.0044	0.0008	0.0036
85	0.0044	0.0008	0.0036
86	0.0045	0.0008	0.0037
87	0.0045	0.0008	0.0037
88	0.0045	0.0008	0.0037
89	0.0045	0.0008	0.0037
90	0.0046	0.0008	0.0037
91	0.0046	0.0008	0.0038
92	0.0046	0.0008	0.0038
93	0.0046	0.0008	0.0038
94	0.0047	0.0008	0.0038
95	0.0047	0.0008	0.0039
96	0.0047	0.0008	0.0039
97	0.0048	0.0008	0.0039
98	0.0048	0.0008	0.0039
99	0.0048	0.0009	0.0040
100	0.0048	0.0009	0.0040
101	0.0049	0.0009	0.0040
102	0.0049	0.0009	0.0040
103	0.0049	0.0009	0.0041
104	0.0050	0.0009	0.0041
105	0.0050	0.0009	0.0041
106	0.0050	0.0009	0.0041
107	0.0051	0.0009	0.0042
108	0.0051	0.0009	0.0042
109	0.0052	0.0009	0.0042
110	0.0052	0.0009	0.0043
111	0.0052	0.0009	0.0043
112	0.0053	0.0009	0.0043
113	0.0053	0.0009	0.0044
114	0.0053	0.0009	0.0044
115	0.0054	0.0010	0.0044
116	0.0054	0.0010	0.0044
117	0.0055	0.0010	0.0045
118	0.0055	0.0010	0.0045
119	0.0056	0.0010	0.0046
120	0.0056	0.0010	0.0046
121	0.0056	0.0010	0.0046
122	0.0057	0.0010	0.0047
123	0.0057	0.0010	0.0047
124	0.0058	0.0010	0.0047
125	0.0058	0.0010	0.0048
126	0.0059	0.0010	0.0048
127	0.0059	0.0011	0.0049
128	0.0060	0.0011	0.0049
129	0.0061	0.0011	0.0050
130	0.0061	0.0011	0.0050
131	0.0062	0.0011	0.0051
132	0.0062	0.0011	0.0051
133	0.0063	0.0011	0.0052

134	0.0063	0.0011	0.0052
135	0.0064	0.0011	0.0053
136	0.0065	0.0011	0.0053
137	0.0066	0.0012	0.0054
138	0.0066	0.0012	0.0054
139	0.0067	0.0012	0.0055
140	0.0068	0.0012	0.0056
141	0.0069	0.0012	0.0056
142	0.0069	0.0012	0.0057
143	0.0070	0.0012	0.0058
144	0.0071	0.0013	0.0058
145	0.0071	0.0013	0.0059
146	0.0072	0.0013	0.0059
147	0.0073	0.0013	0.0060
148	0.0074	0.0013	0.0061
149	0.0075	0.0013	0.0062
150	0.0076	0.0013	0.0062
151	0.0077	0.0014	0.0063
152	0.0078	0.0014	0.0064
153	0.0079	0.0014	0.0065
154	0.0080	0.0014	0.0066
155	0.0082	0.0015	0.0067
156	0.0083	0.0015	0.0068
157	0.0085	0.0015	0.0070
158	0.0086	0.0015	0.0070
159	0.0088	0.0016	0.0072
160	0.0089	0.0016	0.0073
161	0.0091	0.0016	0.0075
162	0.0092	0.0016	0.0076
163	0.0095	0.0017	0.0078
164	0.0096	0.0017	0.0079
165	0.0099	0.0018	0.0081
166	0.0100	0.0018	0.0082
167	0.0103	0.0018	0.0085
168	0.0105	0.0019	0.0086
169	0.0108	0.0019	0.0089
170	0.0110	0.0020	0.0091
171	0.0114	0.0020	0.0094
172	0.0116	0.0021	0.0096
173	0.0121	0.0022	0.0100
174	0.0124	0.0022	0.0102
175	0.0129	0.0023	0.0106
176	0.0132	0.0023	0.0109
177	0.0139	0.0025	0.0114
178	0.0142	0.0025	0.0117
179	0.0151	0.0027	0.0124
180	0.0155	0.0028	0.0128
181	0.0165	0.0029	0.0136
182	0.0171	0.0030	0.0141
183	0.0185	0.0033	0.0152

184	0.0193	0.0034	0.0159
185	0.0159	0.0028	0.0131
186	0.0170	0.0030	0.0139
187	0.0197	0.0035	0.0162
188	0.0215	0.0038	0.0177
189	0.0267	0.0047	0.0220
190	0.0307	0.0055	0.0253
191	0.0467	0.0081	0.0385
192	0.0677	0.0081	0.0596
193	0.2930	0.0081	0.2849
194	0.0367	0.0065	0.0302
195	0.0237	0.0042	0.0195
196	0.0182	0.0032	0.0150
197	0.0202	0.0036	0.0166
198	0.0178	0.0032	0.0146
199	0.0160	0.0028	0.0132
200	0.0146	0.0026	0.0120
201	0.0135	0.0024	0.0111
202	0.0126	0.0022	0.0104
203	0.0119	0.0021	0.0098
204	0.0112	0.0020	0.0092
205	0.0106	0.0019	0.0088
206	0.0102	0.0018	0.0084
207	0.0097	0.0017	0.0080
208	0.0093	0.0017	0.0077
209	0.0090	0.0016	0.0074
210	0.0087	0.0015	0.0071
211	0.0084	0.0015	0.0069
212	0.0081	0.0014	0.0067
213	0.0079	0.0014	0.0065
214	0.0076	0.0014	0.0063
215	0.0074	0.0013	0.0061
216	0.0072	0.0013	0.0060
217	0.0071	0.0013	0.0059
218	0.0070	0.0012	0.0057
219	0.0068	0.0012	0.0056
220	0.0067	0.0012	0.0055
221	0.0065	0.0012	0.0054
222	0.0064	0.0011	0.0052
223	0.0063	0.0011	0.0051
224	0.0061	0.0011	0.0050
225	0.0060	0.0011	0.0050
226	0.0059	0.0011	0.0049
227	0.0058	0.0010	0.0048
228	0.0057	0.0010	0.0047
229	0.0056	0.0010	0.0046
230	0.0055	0.0010	0.0045
231	0.0054	0.0010	0.0045
232	0.0054	0.0010	0.0044
233	0.0053	0.0009	0.0043

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

284	0.0032	0.0006	0.0027
285	0.0032	0.0006	0.0026
286	0.0032	0.0006	0.0026
287	0.0032	0.0006	0.0026
288	0.0032	0.0006	0.0026

Total soil rain loss = 0.35(In)
Total effective rainfall = 1.88(In)
Peak flow rate in flood hydrograph = 29.23(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume	Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0002		0.03	Q				
0+10	0.0018		0.23	Q				
0+15	0.0047		0.42	Q				
0+20	0.0082		0.50	Q				
0+25	0.0119		0.55	Q				
0+30	0.0160		0.58	Q				
0+35	0.0201		0.61	Q				
0+40	0.0244		0.62	Q				
0+45	0.0288		0.64	Q				
0+50	0.0333		0.65	Q				
0+55	0.0378		0.66	Q				
1+ 0	0.0424		0.66	Q				
1+ 5	0.0470		0.67	Q				
1+10	0.0516		0.67	Q				
1+15	0.0563		0.68	Q				
1+20	0.0610		0.68	Q				
1+25	0.0657		0.68	Q				
1+30	0.0704		0.68	Q				
1+35	0.0751		0.69	Q				
1+40	0.0799		0.69	Q				
1+45	0.0846		0.69	QV				
1+50	0.0894		0.69	QV				
1+55	0.0942		0.70	QV				
2+ 0	0.0990		0.70	QV				
2+ 5	0.1039		0.70	QV				
2+10	0.1087		0.70	QV				
2+15	0.1136		0.71	QV				
2+20	0.1185		0.71	QV				
2+25	0.1234		0.71	QV				
2+30	0.1283		0.71	QV				

2+35	0.1332	0.72	QV
2+40	0.1382	0.72	QV
2+45	0.1431	0.72	QV
2+50	0.1481	0.72	QV
2+55	0.1531	0.73	QV
3+ 0	0.1581	0.73	QV
3+ 5	0.1632	0.73	QV
3+10	0.1683	0.74	Q V
3+15	0.1733	0.74	Q V
3+20	0.1784	0.74	Q V
3+25	0.1836	0.74	Q V
3+30	0.1887	0.75	Q V
3+35	0.1939	0.75	Q V
3+40	0.1990	0.75	QV
3+45	0.2042	0.76	QV
3+50	0.2095	0.76	QV
3+55	0.2147	0.76	QV
4+ 0	0.2200	0.76	QV
4+ 5	0.2253	0.77	QV
4+10	0.2306	0.77	QV
4+15	0.2359	0.77	QV
4+20	0.2412	0.78	QV
4+25	0.2466	0.78	Q V
4+30	0.2520	0.78	Q V
4+35	0.2574	0.79	Q V
4+40	0.2629	0.79	Q V
4+45	0.2683	0.79	Q V
4+50	0.2738	0.80	Q V
4+55	0.2793	0.80	Q V
5+ 0	0.2849	0.80	Q V
5+ 5	0.2904	0.81	Q V
5+10	0.2960	0.81	Q V
5+15	0.3016	0.81	Q V
5+20	0.3073	0.82	Q V
5+25	0.3129	0.82	Q V
5+30	0.3186	0.83	Q V
5+35	0.3243	0.83	Q V
5+40	0.3301	0.83	Q V
5+45	0.3358	0.84	Q V
5+50	0.3416	0.84	Q V
5+55	0.3474	0.85	Q V
6+ 0	0.3533	0.85	Q V
6+ 5	0.3592	0.85	Q V
6+10	0.3651	0.86	Q V
6+15	0.3710	0.86	Q V
6+20	0.3770	0.87	Q V
6+25	0.3830	0.87	Q V
6+30	0.3890	0.87	Q V
6+35	0.3951	0.88	Q V
6+40	0.4011	0.88	Q V

6+45	0.4073	0.89	Q	V				
6+50	0.4134	0.89	Q	V				
6+55	0.4196	0.90	Q	V				
7+ 0	0.4258	0.90	Q	V				
7+ 5	0.4321	0.91	Q	V				
7+10	0.4383	0.91	Q	V				
7+15	0.4447	0.92	Q	V				
7+20	0.4510	0.92	Q	V				
7+25	0.4574	0.93	Q	V				
7+30	0.4638	0.93	Q	V				
7+35	0.4703	0.94	Q	V				
7+40	0.4768	0.94	Q	V				
7+45	0.4833	0.95	Q	V				
7+50	0.4899	0.95	Q	V				
7+55	0.4965	0.96	Q	V				
8+ 0	0.5031	0.97	Q	V				
8+ 5	0.5098	0.97	Q	V				
8+10	0.5166	0.98	Q	V				
8+15	0.5233	0.98	Q	V				
8+20	0.5301	0.99	Q	V				
8+25	0.5370	1.00	Q	V				
8+30	0.5439	1.00	Q	V				
8+35	0.5509	1.01	Q	V				
8+40	0.5578	1.02	Q	V				
8+45	0.5649	1.02	Q	V				
8+50	0.5720	1.03	Q	V				
8+55	0.5791	1.04	Q	V				
9+ 0	0.5863	1.04	Q	V				
9+ 5	0.5935	1.05	Q	V				
9+10	0.6008	1.06	Q	V				
9+15	0.6081	1.06	Q	V				
9+20	0.6155	1.07	Q	V				
9+25	0.6229	1.08	Q	V				
9+30	0.6304	1.09	Q	V				
9+35	0.6379	1.10	Q	V				
9+40	0.6455	1.10	Q	V				
9+45	0.6532	1.11	Q	V				
9+50	0.6609	1.12	Q	V				
9+55	0.6687	1.13	Q	V				
10+ 0	0.6765	1.14	Q	V				
10+ 5	0.6844	1.15	Q	V				
10+10	0.6924	1.16	Q	V				
10+15	0.7004	1.17	Q	V				
10+20	0.7085	1.18	Q	V				
10+25	0.7167	1.18	Q	V				
10+30	0.7249	1.20	Q	V				
10+35	0.7332	1.21	Q	V				
10+40	0.7416	1.22	Q	V				
10+45	0.7500	1.23	Q	V				
10+50	0.7586	1.24	Q	V				

10+55	0.7672	1.25	Q	V			
11+ 0	0.7758	1.26	Q	V			
11+ 5	0.7846	1.27	Q	V			
11+10	0.7935	1.29	Q	V			
11+15	0.8024	1.30	Q	V			
11+20	0.8114	1.31	Q	V			
11+25	0.8205	1.32	Q	V			
11+30	0.8298	1.34	Q	V			
11+35	0.8391	1.35	Q	V			
11+40	0.8485	1.37	Q	V			
11+45	0.8580	1.38	Q	V			
11+50	0.8676	1.40	Q	V			
11+55	0.8773	1.41	Q	V			
12+ 0	0.8872	1.43	Q	V			
12+ 5	0.8971	1.44	Q	V			
12+10	0.9071	1.46	Q	V			
12+15	0.9173	1.47	Q	V			
12+20	0.9275	1.49	Q	V			
12+25	0.9379	1.51	Q	V			
12+30	0.9484	1.52	Q	V			
12+35	0.9590	1.54	Q	V			
12+40	0.9698	1.57	Q	V			
12+45	0.9807	1.59	Q	V			
12+50	0.9918	1.61	Q	V			
12+55	1.0031	1.63	Q	V			
13+ 0	1.0145	1.66	Q	V			
13+ 5	1.0261	1.68	Q	V			
13+10	1.0378	1.71	Q	V			
13+15	1.0498	1.74	Q	V			
13+20	1.0620	1.77	Q	V			
13+25	1.0744	1.80	Q	V			
13+30	1.0870	1.83	Q	V			
13+35	1.0998	1.86	Q	V			
13+40	1.1129	1.90	Q	V			
13+45	1.1262	1.94	Q	V			
13+50	1.1398	1.98	Q	V			
13+55	1.1537	2.02	Q	V			
14+ 0	1.1679	2.06	Q	V			
14+ 5	1.1824	2.11	Q	V			
14+10	1.1973	2.16	Q	V			
14+15	1.2125	2.21	Q	V			
14+20	1.2281	2.27	Q	V			
14+25	1.2442	2.33	Q	V			
14+30	1.2607	2.40	Q	V			
14+35	1.2776	2.46	Q	V			
14+40	1.2951	2.54	Q	V			
14+45	1.3132	2.62	Q	V			
14+50	1.3319	2.71	Q	V			
14+55	1.3512	2.81	Q	V			
15+ 0	1.3714	2.92	Q	V			

15+ 5	1.3923	3.04	Q		V			
15+10	1.4143	3.18	Q		V			
15+15	1.4372	3.33	Q		V			
15+20	1.4615	3.52	Q		V			
15+25	1.4867	3.67	Q		V			
15+30	1.5113	3.57	Q		V			
15+35	1.5356	3.53	Q		V			
15+40	1.5613	3.73	Q		V			
15+45	1.5893	4.06	Q	Q	V			
15+50	1.6211	4.62	Q	Q	V			
15+55	1.6585	5.43	Q	Q	V			
16+ 0	1.7077	7.14		Q	V			
16+ 5	1.7942	12.57			Q	V		
16+10	1.9955	29.23				V		Q
16+15	2.1789	26.63				V		Q
16+20	2.2815	14.89			Q	V		
16+25	2.3527	10.34		Q		V		
16+30	2.4093	8.21		Q		V		
16+35	2.4558	6.76		Q		V		
16+40	2.4956	5.78		Q		V		
16+45	2.5298	4.97		Q		V		
16+50	2.5595	4.31		Q		V		
16+55	2.5852	3.73		Q		V		
17+ 0	2.6083	3.35		Q		V		
17+ 5	2.6302	3.17		Q		V		
17+10	2.6499	2.87		Q		V		
17+15	2.6677	2.58		Q		V		
17+20	2.6832	2.25		Q		V		
17+25	2.6979	2.14		Q		V		
17+30	2.7119	2.04		Q		V		
17+35	2.7254	1.96		Q		V		
17+40	2.7383	1.88		Q		V		
17+45	2.7508	1.81		Q		V		
17+50	2.7628	1.75		Q		V		
17+55	2.7745	1.69		Q		V		
18+ 0	2.7857	1.64		Q		V		
18+ 5	2.7967	1.59		Q		V		
18+10	2.8074	1.55		Q		V		
18+15	2.8178	1.51		Q		V		
18+20	2.8280	1.48		Q		V		
18+25	2.8379	1.44		Q		V		
18+30	2.8476	1.41		Q		V		
18+35	2.8571	1.38		Q		V		
18+40	2.8664	1.35		Q		V		
18+45	2.8756	1.32		Q		V		
18+50	2.8845	1.30		Q		V		
18+55	2.8933	1.27		Q		V		
19+ 0	2.9019	1.25		Q		V		
19+ 5	2.9103	1.23		Q		V		
19+10	2.9186	1.20		Q		V		

19+15	2.9268	1.18	Q				V
19+20	2.9348	1.16	Q				V
19+25	2.9427	1.15	Q				V
19+30	2.9504	1.13	Q				V
19+35	2.9581	1.11	Q				V
19+40	2.9656	1.09	Q				V
19+45	2.9731	1.08	Q				V
19+50	2.9804	1.06	Q				V
19+55	2.9876	1.05	Q				V
20+ 0	2.9947	1.03	Q				V
20+ 5	3.0017	1.02	Q				V
20+10	3.0087	1.01	Q				V
20+15	3.0155	0.99	Q				V
20+20	3.0223	0.98	Q				V
20+25	3.0290	0.97	Q				V
20+30	3.0356	0.96	Q				V
20+35	3.0421	0.95	Q				V
20+40	3.0486	0.94	Q				V
20+45	3.0550	0.93	Q				V
20+50	3.0613	0.92	Q				V
20+55	3.0675	0.91	Q				V
21+ 0	3.0737	0.90	Q				V
21+ 5	3.0798	0.89	Q				V
21+10	3.0859	0.88	Q				V
21+15	3.0918	0.87	Q				V
21+20	3.0978	0.86	Q				V
21+25	3.1036	0.85	Q				V
21+30	3.1095	0.84	Q				V
21+35	3.1152	0.84	Q				V
21+40	3.1209	0.83	Q				V
21+45	3.1266	0.82	Q				V
21+50	3.1322	0.81	Q				V
21+55	3.1378	0.81	Q				V
22+ 0	3.1433	0.80	Q				V
22+ 5	3.1487	0.79	Q				V
22+10	3.1541	0.79	Q				V
22+15	3.1595	0.78	Q				V
22+20	3.1648	0.77	Q				V
22+25	3.1701	0.77	Q				V
22+30	3.1753	0.76	Q				V
22+35	3.1805	0.75	Q				V
22+40	3.1857	0.75	Q				V
22+45	3.1908	0.74	Q				V
22+50	3.1959	0.74	Q				V
22+55	3.2009	0.73	Q				V
23+ 0	3.2059	0.73	Q				V
23+ 5	3.2109	0.72	Q				V
23+10	3.2158	0.72	Q				V
23+15	3.2207	0.71	Q				V
23+20	3.2256	0.71	Q				V

23+25	3.2304	0.70	Q				V
23+30	3.2352	0.70	Q				V
23+35	3.2400	0.69	Q				V
23+40	3.2447	0.69	Q				V
23+45	3.2494	0.68	Q				V
23+50	3.2541	0.68	Q				V
23+55	3.2587	0.67	Q				V
24+ 0	3.2633	0.67	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 08/04/21

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

Program License Serial Number 6385

Space Center
developed 10-year
Area F

Storm Event Year = 10

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
31.02	1	0.62

Rainfall data for year 10
31.02 6 1.27

Rainfall data for year 10
31.02 24 2.23

+++++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
58.0	58.0	31.02	1.000	0.707	0.160	0.113

Area-averaged adjusted loss rate Fm (In/Hr) = 0.113

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
4.96	0.160	58.0	58.0	7.24	0.034
26.06	0.840	98.0	98.0	0.20	0.898

Area-averaged catchment yield fraction, Y = 0.760

Area-averaged low loss fraction, Yb = 0.240

User entry of time of concentration = 0.610 (hours)

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Watershed area = 31.02(Ac.)

Catchment Lag time = 0.488 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 17.0765

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.113(In/Hr)

Average low loss rate fraction (Yb) = 0.240 (decimal)

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.293(In)

Computed peak 30-minute rainfall = 0.502(In)

Specified peak 1-hour rainfall = 0.618(In)

Computed peak 3-hour rainfall = 0.961(In)

Specified peak 6-hour rainfall = 1.270(In)

Specified peak 24-hour rainfall = 2.230(In)

Rainfall depth area reduction factors:

Using a total area of 31.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.293(In)

30-minute factor = 0.999 Adjusted rainfall = 0.501(In)

1-hour factor = 0.999 Adjusted rainfall = 0.617(In)

3-hour factor = 1.000 Adjusted rainfall = 0.961(In)

6-hour factor = 1.000 Adjusted rainfall = 1.270(In)

24-hour factor = 1.000 Adjusted rainfall = 2.230(In)

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

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))

	(K =	375.15 (CFS))
1	0.800	3.003
2	3.500	10.126
3	8.087	17.208
4	17.130	33.928
5	32.658	58.253
6	46.060	50.275
7	55.521	35.496
8	62.196	25.040
9	67.209	18.806
10	71.354	15.551
11	74.745	12.719
12	77.666	10.960
13	80.076	9.041
14	82.191	7.934
15	84.029	6.893
16	85.710	6.307
17	87.240	5.739
18	88.575	5.011
19	89.655	4.050
20	90.648	3.724
21	91.586	3.523
22	92.423	3.138
23	93.206	2.937
24	93.929	2.712
25	94.525	2.236
26	95.105	2.178
27	95.657	2.071
28	96.110	1.697
29	96.554	1.666
30	96.962	1.533
31	97.275	1.173
32	97.582	1.153
33	97.847	0.992
34	98.021	0.652
35	98.191	0.641
36	98.375	0.688
37	98.580	0.768
38	98.784	0.769
39	98.989	0.769
40	99.194	0.769
41	99.399	0.769
42	99.554	0.582
43	99.661	0.400
44	99.768	0.400
45	99.874	0.400

46

100.000

0.200

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2928	0.2928
2	0.3605	0.0677
3	0.4071	0.0466
4	0.4438	0.0367
5	0.4746	0.0307
6	0.5012	0.0267
7	0.5250	0.0237
8	0.5464	0.0215
9	0.5661	0.0197
10	0.5843	0.0182
11	0.6012	0.0169
12	0.6171	0.0159
13	0.6373	0.0202
14	0.6567	0.0193
15	0.6752	0.0185
16	0.6930	0.0178
17	0.7101	0.0171
18	0.7267	0.0166
19	0.7427	0.0160
20	0.7582	0.0155
21	0.7733	0.0151
22	0.7879	0.0146
23	0.8022	0.0142
24	0.8161	0.0139
25	0.8296	0.0135
26	0.8428	0.0132
27	0.8557	0.0129
28	0.8684	0.0126
29	0.8807	0.0124
30	0.8929	0.0121
31	0.9048	0.0119
32	0.9164	0.0117
33	0.9278	0.0114
34	0.9391	0.0112
35	0.9501	0.0110
36	0.9610	0.0109
37	0.9716	0.0106
38	0.9821	0.0105
39	0.9924	0.0103
40	1.0026	0.0102
41	1.0126	0.0100
42	1.0224	0.0099
43	1.0321	0.0097
44	1.0417	0.0096
45	1.0512	0.0095
46	1.0605	0.0093

47	1.0697	0.0092
48	1.0788	0.0091
49	1.0878	0.0090
50	1.0967	0.0089
51	1.1054	0.0088
52	1.1141	0.0087
53	1.1227	0.0086
54	1.1312	0.0085
55	1.1395	0.0084
56	1.1478	0.0083
57	1.1560	0.0082
58	1.1641	0.0081
59	1.1722	0.0080
60	1.1801	0.0079
61	1.1880	0.0079
62	1.1958	0.0078
63	1.2035	0.0077
64	1.2111	0.0076
65	1.2187	0.0076
66	1.2262	0.0075
67	1.2337	0.0074
68	1.2410	0.0074
69	1.2483	0.0073
70	1.2556	0.0072
71	1.2628	0.0072
72	1.2699	0.0071
73	1.2770	0.0071
74	1.2841	0.0071
75	1.2911	0.0070
76	1.2981	0.0070
77	1.3050	0.0069
78	1.3118	0.0069
79	1.3186	0.0068
80	1.3254	0.0068
81	1.3321	0.0067
82	1.3388	0.0067
83	1.3454	0.0066
84	1.3519	0.0066
85	1.3584	0.0065
86	1.3649	0.0065
87	1.3713	0.0064
88	1.3777	0.0064
89	1.3840	0.0063
90	1.3903	0.0063
91	1.3966	0.0063
92	1.4028	0.0062
93	1.4090	0.0062
94	1.4151	0.0061
95	1.4212	0.0061
96	1.4273	0.0061

97	1.4333	0.0060
98	1.4393	0.0060
99	1.4452	0.0059
100	1.4511	0.0059
101	1.4570	0.0059
102	1.4628	0.0058
103	1.4687	0.0058
104	1.4744	0.0058
105	1.4802	0.0057
106	1.4859	0.0057
107	1.4916	0.0057
108	1.4972	0.0056
109	1.5028	0.0056
110	1.5084	0.0056
111	1.5140	0.0056
112	1.5195	0.0055
113	1.5250	0.0055
114	1.5304	0.0055
115	1.5359	0.0054
116	1.5413	0.0054
117	1.5467	0.0054
118	1.5520	0.0054
119	1.5574	0.0053
120	1.5627	0.0053
121	1.5679	0.0053
122	1.5732	0.0053
123	1.5784	0.0052
124	1.5836	0.0052
125	1.5888	0.0052
126	1.5939	0.0052
127	1.5991	0.0051
128	1.6042	0.0051
129	1.6092	0.0051
130	1.6143	0.0051
131	1.6193	0.0050
132	1.6243	0.0050
133	1.6293	0.0050
134	1.6343	0.0050
135	1.6392	0.0049
136	1.6442	0.0049
137	1.6491	0.0049
138	1.6539	0.0049
139	1.6588	0.0049
140	1.6636	0.0048
141	1.6684	0.0048
142	1.6732	0.0048
143	1.6780	0.0048
144	1.6828	0.0048
145	1.6875	0.0047
146	1.6922	0.0047

147	1.6969	0.0047
148	1.7016	0.0047
149	1.7063	0.0047
150	1.7109	0.0046
151	1.7155	0.0046
152	1.7201	0.0046
153	1.7247	0.0046
154	1.7293	0.0046
155	1.7338	0.0046
156	1.7384	0.0045
157	1.7429	0.0045
158	1.7474	0.0045
159	1.7519	0.0045
160	1.7563	0.0045
161	1.7608	0.0045
162	1.7652	0.0044
163	1.7696	0.0044
164	1.7740	0.0044
165	1.7784	0.0044
166	1.7828	0.0044
167	1.7872	0.0044
168	1.7915	0.0043
169	1.7958	0.0043
170	1.8001	0.0043
171	1.8044	0.0043
172	1.8087	0.0043
173	1.8130	0.0043
174	1.8172	0.0042
175	1.8214	0.0042
176	1.8257	0.0042
177	1.8299	0.0042
178	1.8341	0.0042
179	1.8382	0.0042
180	1.8424	0.0042
181	1.8466	0.0042
182	1.8507	0.0041
183	1.8548	0.0041
184	1.8589	0.0041
185	1.8630	0.0041
186	1.8671	0.0041
187	1.8712	0.0041
188	1.8752	0.0041
189	1.8793	0.0040
190	1.8833	0.0040
191	1.8873	0.0040
192	1.8913	0.0040
193	1.8953	0.0040
194	1.8993	0.0040
195	1.9033	0.0040
196	1.9072	0.0040

197	1.9112	0.0039
198	1.9151	0.0039
199	1.9190	0.0039
200	1.9230	0.0039
201	1.9269	0.0039
202	1.9307	0.0039
203	1.9346	0.0039
204	1.9385	0.0039
205	1.9423	0.0039
206	1.9462	0.0038
207	1.9500	0.0038
208	1.9538	0.0038
209	1.9576	0.0038
210	1.9614	0.0038
211	1.9652	0.0038
212	1.9690	0.0038
213	1.9728	0.0038
214	1.9765	0.0038
215	1.9803	0.0037
216	1.9840	0.0037
217	1.9877	0.0037
218	1.9915	0.0037
219	1.9952	0.0037
220	1.9989	0.0037
221	2.0025	0.0037
222	2.0062	0.0037
223	2.0099	0.0037
224	2.0135	0.0037
225	2.0172	0.0036
226	2.0208	0.0036
227	2.0244	0.0036
228	2.0281	0.0036
229	2.0317	0.0036
230	2.0353	0.0036
231	2.0389	0.0036
232	2.0424	0.0036
233	2.0460	0.0036
234	2.0496	0.0036
235	2.0531	0.0036
236	2.0567	0.0035
237	2.0602	0.0035
238	2.0637	0.0035
239	2.0672	0.0035
240	2.0708	0.0035
241	2.0743	0.0035
242	2.0777	0.0035
243	2.0812	0.0035
244	2.0847	0.0035
245	2.0882	0.0035
246	2.0916	0.0035

247	2.0951	0.0034
248	2.0985	0.0034
249	2.1019	0.0034
250	2.1054	0.0034
251	2.1088	0.0034
252	2.1122	0.0034
253	2.1156	0.0034
254	2.1190	0.0034
255	2.1224	0.0034
256	2.1258	0.0034
257	2.1291	0.0034
258	2.1325	0.0034
259	2.1358	0.0034
260	2.1392	0.0033
261	2.1425	0.0033
262	2.1458	0.0033
263	2.1492	0.0033
264	2.1525	0.0033
265	2.1558	0.0033
266	2.1591	0.0033
267	2.1624	0.0033
268	2.1657	0.0033
269	2.1690	0.0033
270	2.1722	0.0033
271	2.1755	0.0033
272	2.1787	0.0033
273	2.1820	0.0032
274	2.1852	0.0032
275	2.1885	0.0032
276	2.1917	0.0032
277	2.1949	0.0032
278	2.1981	0.0032
279	2.2013	0.0032
280	2.2045	0.0032
281	2.2077	0.0032
282	2.2109	0.0032
283	2.2141	0.0032
284	2.2173	0.0032
285	2.2205	0.0032
286	2.2236	0.0032
287	2.2268	0.0032
288	2.2299	0.0031

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0031	0.0008	0.0024
2	0.0032	0.0008	0.0024
3	0.0032	0.0008	0.0024

4	0.0032	0.0008	0.0024
5	0.0032	0.0008	0.0024
6	0.0032	0.0008	0.0024
7	0.0032	0.0008	0.0024
8	0.0032	0.0008	0.0024
9	0.0032	0.0008	0.0025
10	0.0032	0.0008	0.0025
11	0.0032	0.0008	0.0025
12	0.0033	0.0008	0.0025
13	0.0033	0.0008	0.0025
14	0.0033	0.0008	0.0025
15	0.0033	0.0008	0.0025
16	0.0033	0.0008	0.0025
17	0.0033	0.0008	0.0025
18	0.0033	0.0008	0.0025
19	0.0033	0.0008	0.0025
20	0.0033	0.0008	0.0025
21	0.0034	0.0008	0.0026
22	0.0034	0.0008	0.0026
23	0.0034	0.0008	0.0026
24	0.0034	0.0008	0.0026
25	0.0034	0.0008	0.0026
26	0.0034	0.0008	0.0026
27	0.0034	0.0008	0.0026
28	0.0034	0.0008	0.0026
29	0.0035	0.0008	0.0026
30	0.0035	0.0008	0.0026
31	0.0035	0.0008	0.0026
32	0.0035	0.0008	0.0027
33	0.0035	0.0008	0.0027
34	0.0035	0.0008	0.0027
35	0.0035	0.0008	0.0027
36	0.0035	0.0009	0.0027
37	0.0036	0.0009	0.0027
38	0.0036	0.0009	0.0027
39	0.0036	0.0009	0.0027
40	0.0036	0.0009	0.0027
41	0.0036	0.0009	0.0027
42	0.0036	0.0009	0.0028
43	0.0036	0.0009	0.0028
44	0.0037	0.0009	0.0028
45	0.0037	0.0009	0.0028
46	0.0037	0.0009	0.0028
47	0.0037	0.0009	0.0028
48	0.0037	0.0009	0.0028
49	0.0037	0.0009	0.0028
50	0.0037	0.0009	0.0028
51	0.0038	0.0009	0.0029
52	0.0038	0.0009	0.0029
53	0.0038	0.0009	0.0029

54	0.0038	0.0009	0.0029
55	0.0038	0.0009	0.0029
56	0.0038	0.0009	0.0029
57	0.0039	0.0009	0.0029
58	0.0039	0.0009	0.0029
59	0.0039	0.0009	0.0030
60	0.0039	0.0009	0.0030
61	0.0039	0.0009	0.0030
62	0.0039	0.0009	0.0030
63	0.0040	0.0010	0.0030
64	0.0040	0.0010	0.0030
65	0.0040	0.0010	0.0030
66	0.0040	0.0010	0.0031
67	0.0040	0.0010	0.0031
68	0.0041	0.0010	0.0031
69	0.0041	0.0010	0.0031
70	0.0041	0.0010	0.0031
71	0.0041	0.0010	0.0031
72	0.0041	0.0010	0.0031
73	0.0042	0.0010	0.0032
74	0.0042	0.0010	0.0032
75	0.0042	0.0010	0.0032
76	0.0042	0.0010	0.0032
77	0.0042	0.0010	0.0032
78	0.0043	0.0010	0.0032
79	0.0043	0.0010	0.0033
80	0.0043	0.0010	0.0033
81	0.0043	0.0010	0.0033
82	0.0044	0.0010	0.0033
83	0.0044	0.0011	0.0033
84	0.0044	0.0011	0.0033
85	0.0044	0.0011	0.0034
86	0.0045	0.0011	0.0034
87	0.0045	0.0011	0.0034
88	0.0045	0.0011	0.0034
89	0.0045	0.0011	0.0034
90	0.0046	0.0011	0.0035
91	0.0046	0.0011	0.0035
92	0.0046	0.0011	0.0035
93	0.0046	0.0011	0.0035
94	0.0047	0.0011	0.0035
95	0.0047	0.0011	0.0036
96	0.0047	0.0011	0.0036
97	0.0048	0.0011	0.0036
98	0.0048	0.0011	0.0036
99	0.0048	0.0012	0.0037
100	0.0048	0.0012	0.0037
101	0.0049	0.0012	0.0037
102	0.0049	0.0012	0.0037
103	0.0049	0.0012	0.0038

104	0.0050	0.0012	0.0038
105	0.0050	0.0012	0.0038
106	0.0050	0.0012	0.0038
107	0.0051	0.0012	0.0039
108	0.0051	0.0012	0.0039
109	0.0052	0.0012	0.0039
110	0.0052	0.0012	0.0039
111	0.0052	0.0013	0.0040
112	0.0053	0.0013	0.0040
113	0.0053	0.0013	0.0040
114	0.0053	0.0013	0.0040
115	0.0054	0.0013	0.0041
116	0.0054	0.0013	0.0041
117	0.0055	0.0013	0.0042
118	0.0055	0.0013	0.0042
119	0.0056	0.0013	0.0042
120	0.0056	0.0013	0.0042
121	0.0056	0.0014	0.0043
122	0.0057	0.0014	0.0043
123	0.0057	0.0014	0.0044
124	0.0058	0.0014	0.0044
125	0.0058	0.0014	0.0044
126	0.0059	0.0014	0.0045
127	0.0059	0.0014	0.0045
128	0.0060	0.0014	0.0045
129	0.0061	0.0015	0.0046
130	0.0061	0.0015	0.0046
131	0.0062	0.0015	0.0047
132	0.0062	0.0015	0.0047
133	0.0063	0.0015	0.0048
134	0.0063	0.0015	0.0048
135	0.0064	0.0015	0.0049
136	0.0065	0.0016	0.0049
137	0.0066	0.0016	0.0050
138	0.0066	0.0016	0.0050
139	0.0067	0.0016	0.0051
140	0.0068	0.0016	0.0051
141	0.0069	0.0016	0.0052
142	0.0069	0.0017	0.0053
143	0.0070	0.0017	0.0053
144	0.0071	0.0017	0.0054
145	0.0071	0.0017	0.0054
146	0.0072	0.0017	0.0055
147	0.0073	0.0018	0.0056
148	0.0074	0.0018	0.0056
149	0.0075	0.0018	0.0057
150	0.0076	0.0018	0.0058
151	0.0077	0.0019	0.0059
152	0.0078	0.0019	0.0059
153	0.0079	0.0019	0.0060

154	0.0080	0.0019	0.0061
155	0.0082	0.0020	0.0062
156	0.0083	0.0020	0.0063
157	0.0085	0.0020	0.0064
158	0.0086	0.0021	0.0065
159	0.0088	0.0021	0.0067
160	0.0089	0.0021	0.0067
161	0.0091	0.0022	0.0069
162	0.0092	0.0022	0.0070
163	0.0095	0.0023	0.0072
164	0.0096	0.0023	0.0073
165	0.0099	0.0024	0.0075
166	0.0100	0.0024	0.0076
167	0.0103	0.0025	0.0078
168	0.0105	0.0025	0.0080
169	0.0109	0.0026	0.0082
170	0.0110	0.0027	0.0084
171	0.0114	0.0027	0.0087
172	0.0117	0.0028	0.0089
173	0.0121	0.0029	0.0092
174	0.0124	0.0030	0.0094
175	0.0129	0.0031	0.0098
176	0.0132	0.0032	0.0100
177	0.0139	0.0033	0.0105
178	0.0142	0.0034	0.0108
179	0.0151	0.0036	0.0114
180	0.0155	0.0037	0.0118
181	0.0166	0.0040	0.0126
182	0.0171	0.0041	0.0130
183	0.0185	0.0044	0.0141
184	0.0193	0.0046	0.0147
185	0.0159	0.0038	0.0121
186	0.0169	0.0041	0.0129
187	0.0197	0.0047	0.0149
188	0.0215	0.0052	0.0163
189	0.0267	0.0064	0.0203
190	0.0307	0.0074	0.0233
191	0.0466	0.0094	0.0372
192	0.0677	0.0094	0.0583
193	0.2928	0.0094	0.2834
194	0.0367	0.0088	0.0279
195	0.0237	0.0057	0.0180
196	0.0182	0.0044	0.0138
197	0.0202	0.0049	0.0154
198	0.0178	0.0043	0.0135
199	0.0160	0.0038	0.0122
200	0.0146	0.0035	0.0111
201	0.0135	0.0033	0.0103
202	0.0126	0.0030	0.0096
203	0.0119	0.0029	0.0090

204	0.0112	0.0027	0.0085
205	0.0106	0.0026	0.0081
206	0.0102	0.0024	0.0077
207	0.0097	0.0023	0.0074
208	0.0093	0.0022	0.0071
209	0.0090	0.0022	0.0068
210	0.0087	0.0021	0.0066
211	0.0084	0.0020	0.0064
212	0.0081	0.0019	0.0062
213	0.0079	0.0019	0.0060
214	0.0076	0.0018	0.0058
215	0.0074	0.0018	0.0057
216	0.0072	0.0017	0.0055
217	0.0071	0.0017	0.0054
218	0.0070	0.0017	0.0053
219	0.0068	0.0016	0.0052
220	0.0067	0.0016	0.0051
221	0.0065	0.0016	0.0049
222	0.0064	0.0015	0.0048
223	0.0063	0.0015	0.0048
224	0.0061	0.0015	0.0047
225	0.0060	0.0014	0.0046
226	0.0059	0.0014	0.0045
227	0.0058	0.0014	0.0044
228	0.0057	0.0014	0.0043
229	0.0056	0.0013	0.0043
230	0.0055	0.0013	0.0042
231	0.0054	0.0013	0.0041
232	0.0054	0.0013	0.0041
233	0.0053	0.0013	0.0040
234	0.0052	0.0012	0.0040
235	0.0051	0.0012	0.0039
236	0.0051	0.0012	0.0038
237	0.0050	0.0012	0.0038
238	0.0049	0.0012	0.0037
239	0.0049	0.0012	0.0037
240	0.0048	0.0012	0.0036
241	0.0047	0.0011	0.0036
242	0.0047	0.0011	0.0036
243	0.0046	0.0011	0.0035
244	0.0046	0.0011	0.0035
245	0.0045	0.0011	0.0034
246	0.0045	0.0011	0.0034
247	0.0044	0.0011	0.0034
248	0.0044	0.0010	0.0033
249	0.0043	0.0010	0.0033
250	0.0043	0.0010	0.0033
251	0.0042	0.0010	0.0032
252	0.0042	0.0010	0.0032
253	0.0042	0.0010	0.0032

254	0.0041	0.0010	0.0031
255	0.0041	0.0010	0.0031
256	0.0040	0.0010	0.0031
257	0.0040	0.0010	0.0030
258	0.0040	0.0010	0.0030
259	0.0039	0.0009	0.0030
260	0.0039	0.0009	0.0030
261	0.0039	0.0009	0.0029
262	0.0038	0.0009	0.0029
263	0.0038	0.0009	0.0029
264	0.0038	0.0009	0.0029
265	0.0037	0.0009	0.0028
266	0.0037	0.0009	0.0028
267	0.0037	0.0009	0.0028
268	0.0036	0.0009	0.0028
269	0.0036	0.0009	0.0027
270	0.0036	0.0009	0.0027
271	0.0036	0.0009	0.0027
272	0.0035	0.0008	0.0027
273	0.0035	0.0008	0.0027
274	0.0035	0.0008	0.0026
275	0.0034	0.0008	0.0026
276	0.0034	0.0008	0.0026
277	0.0034	0.0008	0.0026
278	0.0034	0.0008	0.0026
279	0.0034	0.0008	0.0025
280	0.0033	0.0008	0.0025
281	0.0033	0.0008	0.0025
282	0.0033	0.0008	0.0025
283	0.0033	0.0008	0.0025
284	0.0032	0.0008	0.0025
285	0.0032	0.0008	0.0024
286	0.0032	0.0008	0.0024
287	0.0032	0.0008	0.0024
288	0.0032	0.0008	0.0024

Total soil rain loss = 0.47(In)
Total effective rainfall = 1.76(In)
Peak flow rate in flood hydrograph = 24.67(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0

0+ 5	0.0000	0.01	Q
0+10	0.0003	0.03	Q
0+15	0.0008	0.07	Q
0+20	0.0018	0.15	Q
0+25	0.0038	0.29	Q
0+30	0.0067	0.41	Q
0+35	0.0102	0.50	Q
0+40	0.0140	0.56	Q
0+45	0.0182	0.61	Q
0+50	0.0227	0.65	Q
0+55	0.0274	0.68	Q
1+ 0	0.0323	0.71	Q
1+ 5	0.0373	0.73	Q
1+10	0.0425	0.75	VQ
1+15	0.0478	0.77	VQ
1+20	0.0533	0.79	VQ
1+25	0.0588	0.81	VQ
1+30	0.0645	0.82	VQ
1+35	0.0702	0.83	VQ
1+40	0.0761	0.85	VQ
1+45	0.0820	0.86	VQ
1+50	0.0879	0.87	VQ
1+55	0.0940	0.88	VQ
2+ 0	0.1001	0.89	VQ
2+ 5	0.1062	0.90	VQ
2+10	0.1125	0.90	VQ
2+15	0.1187	0.91	Q
2+20	0.1251	0.92	Q
2+25	0.1314	0.93	Q
2+30	0.1379	0.93	Q
2+35	0.1443	0.94	Q
2+40	0.1508	0.94	Q
2+45	0.1574	0.95	Q
2+50	0.1640	0.96	Q
2+55	0.1706	0.96	Q
3+ 0	0.1772	0.97	Q
3+ 5	0.1839	0.97	Q
3+10	0.1906	0.98	Q
3+15	0.1974	0.98	Q
3+20	0.2042	0.99	Q
3+25	0.2110	0.99	Q
3+30	0.2179	1.00	Q
3+35	0.2248	1.00	Q
3+40	0.2317	1.01	QV
3+45	0.2387	1.01	QV
3+50	0.2457	1.02	QV
3+55	0.2527	1.02	QV
4+ 0	0.2598	1.02	QV
4+ 5	0.2669	1.03	QV
4+10	0.2740	1.03	QV

4+15	0.2811	1.04	QV
4+20	0.2883	1.04	QV
4+25	0.2955	1.04	QV
4+30	0.3027	1.05	QV
4+35	0.3100	1.05	QV
4+40	0.3172	1.06	QV
4+45	0.3245	1.06	QV
4+50	0.3319	1.07	QV
4+55	0.3393	1.07	QV
5+ 0	0.3467	1.08	Q V
5+ 5	0.3541	1.08	Q V
5+10	0.3616	1.08	Q V
5+15	0.3691	1.09	Q V
5+20	0.3766	1.09	Q V
5+25	0.3842	1.10	Q V
5+30	0.3918	1.10	Q V
5+35	0.3994	1.11	Q V
5+40	0.4071	1.11	Q V
5+45	0.4148	1.12	Q V
5+50	0.4225	1.12	Q V
5+55	0.4303	1.13	Q V
6+ 0	0.4381	1.13	Q V
6+ 5	0.4459	1.14	Q V
6+10	0.4538	1.14	Q V
6+15	0.4617	1.15	Q V
6+20	0.4697	1.15	Q V
6+25	0.4777	1.16	Q V
6+30	0.4857	1.17	Q V
6+35	0.4938	1.17	Q V
6+40	0.5019	1.18	Q V
6+45	0.5100	1.18	Q V
6+50	0.5182	1.19	Q V
6+55	0.5264	1.20	Q V
7+ 0	0.5347	1.20	Q V
7+ 5	0.5430	1.21	Q V
7+10	0.5514	1.21	Q V
7+15	0.5598	1.22	Q V
7+20	0.5682	1.23	Q V
7+25	0.5767	1.23	Q V
7+30	0.5852	1.24	Q V
7+35	0.5938	1.25	Q V
7+40	0.6025	1.25	Q V
7+45	0.6111	1.26	Q V
7+50	0.6199	1.27	Q V
7+55	0.6286	1.27	Q V
8+ 0	0.6375	1.28	Q V
8+ 5	0.6463	1.29	Q V
8+10	0.6552	1.30	Q V
8+15	0.6642	1.30	Q V
8+20	0.6733	1.31	Q V

8+25	0.6823	1.32	Q	V			
8+30	0.6915	1.33	Q	V			
8+35	0.7007	1.33	Q	V			
8+40	0.7099	1.34	Q	V			
8+45	0.7192	1.35	Q	V			
8+50	0.7286	1.36	Q	V			
8+55	0.7380	1.37	Q	V			
9+ 0	0.7475	1.38	Q	V			
9+ 5	0.7570	1.39	Q	V			
9+10	0.7666	1.39	Q	V			
9+15	0.7763	1.40	Q	V			
9+20	0.7861	1.41	Q	V			
9+25	0.7959	1.42	Q	V			
9+30	0.8057	1.43	Q	V			
9+35	0.8157	1.44	Q	V			
9+40	0.8257	1.45	Q	V			
9+45	0.8357	1.46	Q	V			
9+50	0.8459	1.47	Q	V			
9+55	0.8561	1.48	Q	V			
10+ 0	0.8664	1.50	Q	V			
10+ 5	0.8768	1.51	Q	V			
10+10	0.8872	1.52	Q	V			
10+15	0.8978	1.53	Q	V			
10+20	0.9084	1.54	Q	V			
10+25	0.9191	1.55	Q	V			
10+30	0.9299	1.57	Q	V			
10+35	0.9407	1.58	Q	V			
10+40	0.9517	1.59	Q	V			
10+45	0.9627	1.60	Q	V			
10+50	0.9739	1.62	Q	V			
10+55	0.9851	1.63	Q	V			
11+ 0	0.9965	1.65	Q	V			
11+ 5	1.0079	1.66	Q	V			
11+10	1.0194	1.67	Q	V			
11+15	1.0311	1.69	Q	V			
11+20	1.0428	1.71	Q	V			
11+25	1.0547	1.72	Q	V			
11+30	1.0666	1.74	Q	V			
11+35	1.0787	1.75	Q	V			
11+40	1.0909	1.77	Q	V			
11+45	1.1033	1.79	Q	V			
11+50	1.1157	1.81	Q	V			
11+55	1.1283	1.83	Q	V			
12+ 0	1.1410	1.85	Q	V			
12+ 5	1.1538	1.87	Q	V			
12+10	1.1668	1.88	Q	V			
12+15	1.1799	1.91	Q	V			
12+20	1.1932	1.92	Q	V			
12+25	1.2066	1.94	Q	V			
12+30	1.2201	1.96	Q	V			

12+35	1.2338	1.99	Q	V					
12+40	1.2476	2.01	Q	V					
12+45	1.2616	2.03	Q	V					
12+50	1.2758	2.06	Q	V					
12+55	1.2902	2.09	Q	V					
13+ 0	1.3047	2.11	Q	V					
13+ 5	1.3195	2.14	Q	V					
13+10	1.3344	2.17	Q	V					
13+15	1.3496	2.20	Q	V					
13+20	1.3650	2.23	Q	V					
13+25	1.3806	2.27	Q	V					
13+30	1.3965	2.30	Q	V					
13+35	1.4126	2.34	Q	V					
13+40	1.4290	2.38	Q	V					
13+45	1.4456	2.42	Q	V					
13+50	1.4626	2.46	Q	V					
13+55	1.4799	2.51	Q	V					
14+ 0	1.4974	2.55	Q	V					
14+ 5	1.5154	2.60	Q	V					
14+10	1.5337	2.66	Q	V					
14+15	1.5523	2.71	Q	V					
14+20	1.5714	2.77	Q	V					
14+25	1.5909	2.83	Q	V					
14+30	1.6109	2.90	Q	V					
14+35	1.6314	2.97	Q	V					
14+40	1.6523	3.05	Q	V					
14+45	1.6739	3.13	Q	V					
14+50	1.6960	3.22	Q	V					
14+55	1.7188	3.31	Q	V					
15+ 0	1.7423	3.41	Q	V					
15+ 5	1.7666	3.53	Q	V					
15+10	1.7918	3.65	Q	V					
15+15	1.8178	3.79	Q	V					
15+20	1.8449	3.94	Q	V					
15+25	1.8731	4.10	Q	V					
15+30	1.9024	4.25	Q	V					
15+35	1.9327	4.40	Q	V					
15+40	1.9638	4.52	Q	V					
15+45	1.9954	4.58	Q	V					
15+50	2.0280	4.74	Q	V					
15+55	2.0630	5.08	Q	V					
16+ 0	2.1021	5.68	Q	V					
16+ 5	2.1525	7.31	Q	V					
16+10	2.2224	10.16	Q	V					
16+15	2.3142	13.33	Q	V					
16+20	2.4428	18.67		V	Q				
16+25	2.6127	24.67		V		Q			Q
16+30	2.7641	21.98			V		Q		
16+35	2.8835	17.35			Q	V			
16+40	2.9793	13.91		Q		V			

16+45	3.0605	11.79				V	
16+50	3.1328	10.50				V	
16+55	3.1973	9.36				V	
17+ 0	3.2559	8.51				V	
17+ 5	3.3088	7.68				V	
17+10	3.3576	7.09				V	
17+15	3.4028	6.55				V	
17+20	3.4452	6.15				V	
17+25	3.4849	5.77				V	
17+30	3.5218	5.36				V	
17+35	3.5558	4.93				V	
17+40	3.5880	4.67				V	
17+45	3.6187	4.46				V	
17+50	3.6478	4.22				V	
17+55	3.6755	4.03				V	
18+ 0	3.7020	3.84				V	
18+ 5	3.7268	3.61				V	
18+10	3.7508	3.48				V	
18+15	3.7739	3.35				V	
18+20	3.7957	3.16				V	
18+25	3.8167	3.06				V	
18+30	3.8370	2.94				V	
18+35	3.8560	2.76				V	
18+40	3.8744	2.68				V	
18+45	3.8921	2.56				V	
18+50	3.9086	2.41				V	
18+55	3.9248	2.35				V	
19+ 0	3.9408	2.32				V	
19+ 5	3.9565	2.29				V	
19+10	3.9720	2.24				V	
19+15	3.9871	2.20				V	
19+20	4.0019	2.15				V	
19+25	4.0163	2.10				V	
19+30	4.0301	2.00				V	
19+35	4.0432	1.91				V	
19+40	4.0560	1.86				V	
19+45	4.0685	1.82				V	
19+50	4.0804	1.72				V	
19+55	4.0916	1.63				V	
20+ 0	4.1026	1.60				V	
20+ 5	4.1135	1.57				V	
20+10	4.1241	1.54				V	
20+15	4.1345	1.52				V	
20+20	4.1448	1.49				V	
20+25	4.1549	1.47				V	
20+30	4.1649	1.45				V	
20+35	4.1747	1.43				V	
20+40	4.1844	1.40				V	
20+45	4.1939	1.39				V	
20+50	4.2033	1.37				V	

20+55	4.2126	1.35	Q				V
21+ 0	4.2218	1.33	Q				V
21+ 5	4.2309	1.32	Q				V
21+10	4.2398	1.30	Q				V
21+15	4.2487	1.28	Q				V
21+20	4.2574	1.27	Q				V
21+25	4.2660	1.26	Q				V
21+30	4.2746	1.24	Q				V
21+35	4.2830	1.23	Q				V
21+40	4.2914	1.21	Q				V
21+45	4.2997	1.20	Q				V
21+50	4.3079	1.19	Q				V
21+55	4.3160	1.18	Q				V
22+ 0	4.3240	1.17	Q				V
22+ 5	4.3320	1.15	Q				V
22+10	4.3399	1.14	Q				V
22+15	4.3477	1.13	Q				V
22+20	4.3554	1.12	Q				V
22+25	4.3631	1.11	Q				V
22+30	4.3707	1.10	Q				V
22+35	4.3782	1.09	Q				V
22+40	4.3856	1.08	Q				V
22+45	4.3930	1.07	Q				V
22+50	4.4004	1.06	Q				V
22+55	4.4077	1.06	Q				V
23+ 0	4.4149	1.05	Q				V
23+ 5	4.4220	1.04	Q				V
23+10	4.4291	1.03	Q				V
23+15	4.4362	1.02	Q				V
23+20	4.4432	1.01	Q				V
23+25	4.4501	1.01	Q				V
23+30	4.4570	1.00	Q				V
23+35	4.4638	0.99	Q				V
23+40	4.4706	0.98	Q				V
23+45	4.4773	0.98	Q				V
23+50	4.4840	0.97	Q				V
23+55	4.4906	0.96	Q				V
24+ 0	4.4972	0.96	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 08/04/21

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

Program License Serial Number 6385

Space Center
Developed 100-year
Area E

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
20.90	1	1.09

Rainfall data for year 100		
20.90	6	2.09

Rainfall data for year 100		
20.90	24	3.64

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
65.0	65.0	20.90	1.000	0.608	0.160	0.097

Area-averaged adjusted loss rate Fm (In/Hr) = 0.097

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
3.34	0.160	65.0	65.0	5.38	0.227
17.56	0.840	98.0	98.0	0.20	0.936

Area-averaged catchment yield fraction, Y = 0.822

Area-averaged low loss fraction, Yb = 0.178

User entry of time of concentration = 0.192 (hours)

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Watershed area = 20.90(Ac.)

Catchment Lag time = 0.154 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 54.2535

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.097(In/Hr)

Average low loss rate fraction (Yb) = 0.178 (decimal)

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.517(In)

Computed peak 30-minute rainfall = 0.885(In)

Specified peak 1-hour rainfall = 1.090(In)

Computed peak 3-hour rainfall = 1.625(In)

Specified peak 6-hour rainfall = 2.090(In)

Specified peak 24-hour rainfall = 3.640(In)

Rainfall depth area reduction factors:

Using a total area of 20.90(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.517(In)

30-minute factor = 0.999 Adjusted rainfall = 0.884(In)

1-hour factor = 0.999 Adjusted rainfall = 1.089(In)

3-hour factor = 1.000 Adjusted rainfall = 1.625(In)

6-hour factor = 1.000 Adjusted rainfall = 2.090(In)

24-hour factor = 1.000 Adjusted rainfall = 3.640(In)

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

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))

	(K =	252.76 (CFS))
1	4.582	11.581
2	35.377	77.838
3	64.099	72.597
4	76.427	31.160
5	83.603	18.139
6	88.449	12.250
7	91.682	8.171
8	94.097	6.104
9	95.871	4.485
10	97.167	3.276
11	97.993	2.086
12	98.587	1.503
13	99.237	1.641
14	99.703	1.178
15	100.000	0.752

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

1	0.5167	0.5167
2	0.6361	0.1194
3	0.7184	0.0823
4	0.7832	0.0648
5	0.8374	0.0542
6	0.8845	0.0471
7	0.9264	0.0419
8	0.9642	0.0379
9	0.9989	0.0347
10	1.0310	0.0321
11	1.0609	0.0299
12	1.0889	0.0281
13	1.1211	0.0322
14	1.1518	0.0307
15	1.1811	0.0293
16	1.2092	0.0281
17	1.2362	0.0270
18	1.2622	0.0260
19	1.2873	0.0251
20	1.3115	0.0243
21	1.3350	0.0235
22	1.3578	0.0228
23	1.3800	0.0222
24	1.4015	0.0216
25	1.4225	0.0210
26	1.4430	0.0205
27	1.4630	0.0200

28	1.4825	0.0195
29	1.5015	0.0191
30	1.5202	0.0186
31	1.5384	0.0183
32	1.5563	0.0179
33	1.5738	0.0175
34	1.5910	0.0172
35	1.6079	0.0169
36	1.6245	0.0166
37	1.6408	0.0163
38	1.6567	0.0160
39	1.6725	0.0157
40	1.6879	0.0155
41	1.7031	0.0152
42	1.7181	0.0150
43	1.7329	0.0148
44	1.7474	0.0145
45	1.7617	0.0143
46	1.7759	0.0141
47	1.7898	0.0139
48	1.8035	0.0137
49	1.8171	0.0136
50	1.8305	0.0134
51	1.8437	0.0132
52	1.8568	0.0131
53	1.8697	0.0129
54	1.8824	0.0127
55	1.8950	0.0126
56	1.9075	0.0124
57	1.9198	0.0123
58	1.9319	0.0122
59	1.9440	0.0120
60	1.9559	0.0119
61	1.9677	0.0118
62	1.9793	0.0117
63	1.9909	0.0115
64	2.0023	0.0114
65	2.0136	0.0113
66	2.0248	0.0112
67	2.0359	0.0111
68	2.0469	0.0110
69	2.0578	0.0109
70	2.0686	0.0108
71	2.0793	0.0107
72	2.0899	0.0106
73	2.1014	0.0116
74	2.1129	0.0115
75	2.1243	0.0114
76	2.1356	0.0113
77	2.1468	0.0112

78	2.1579	0.0111
79	2.1689	0.0110
80	2.1799	0.0109
81	2.1907	0.0109
82	2.2015	0.0108
83	2.2122	0.0107
84	2.2229	0.0106
85	2.2334	0.0106
86	2.2439	0.0105
87	2.2543	0.0104
88	2.2646	0.0103
89	2.2749	0.0103
90	2.2851	0.0102
91	2.2952	0.0101
92	2.3053	0.0101
93	2.3153	0.0100
94	2.3252	0.0099
95	2.3351	0.0099
96	2.3449	0.0098
97	2.3546	0.0097
98	2.3643	0.0097
99	2.3740	0.0096
100	2.3835	0.0096
101	2.3930	0.0095
102	2.4025	0.0095
103	2.4119	0.0094
104	2.4212	0.0093
105	2.4305	0.0093
106	2.4398	0.0092
107	2.4490	0.0092
108	2.4581	0.0091
109	2.4672	0.0091
110	2.4762	0.0090
111	2.4852	0.0090
112	2.4941	0.0089
113	2.5030	0.0089
114	2.5119	0.0088
115	2.5207	0.0088
116	2.5294	0.0088
117	2.5381	0.0087
118	2.5468	0.0087
119	2.5554	0.0086
120	2.5640	0.0086
121	2.5725	0.0085
122	2.5810	0.0085
123	2.5894	0.0084
124	2.5978	0.0084
125	2.6062	0.0084
126	2.6145	0.0083
127	2.6228	0.0083

128	2.6311	0.0082
129	2.6393	0.0082
130	2.6474	0.0082
131	2.6556	0.0081
132	2.6637	0.0081
133	2.6717	0.0081
134	2.6797	0.0080
135	2.6877	0.0080
136	2.6957	0.0080
137	2.7036	0.0079
138	2.7115	0.0079
139	2.7193	0.0078
140	2.7271	0.0078
141	2.7349	0.0078
142	2.7427	0.0077
143	2.7504	0.0077
144	2.7581	0.0077
145	2.7657	0.0077
146	2.7733	0.0076
147	2.7809	0.0076
148	2.7885	0.0076
149	2.7960	0.0075
150	2.8035	0.0075
151	2.8110	0.0075
152	2.8184	0.0074
153	2.8258	0.0074
154	2.8332	0.0074
155	2.8405	0.0073
156	2.8479	0.0073
157	2.8551	0.0073
158	2.8624	0.0073
159	2.8696	0.0072
160	2.8769	0.0072
161	2.8840	0.0072
162	2.8912	0.0072
163	2.8983	0.0071
164	2.9054	0.0071
165	2.9125	0.0071
166	2.9196	0.0071
167	2.9266	0.0070
168	2.9336	0.0070
169	2.9406	0.0070
170	2.9475	0.0070
171	2.9544	0.0069
172	2.9613	0.0069
173	2.9682	0.0069
174	2.9751	0.0069
175	2.9819	0.0068
176	2.9887	0.0068
177	2.9955	0.0068

178	3.0023	0.0068
179	3.0090	0.0067
180	3.0157	0.0067
181	3.0224	0.0067
182	3.0291	0.0067
183	3.0357	0.0067
184	3.0424	0.0066
185	3.0490	0.0066
186	3.0556	0.0066
187	3.0621	0.0066
188	3.0687	0.0065
189	3.0752	0.0065
190	3.0817	0.0065
191	3.0882	0.0065
192	3.0946	0.0065
193	3.1011	0.0064
194	3.1075	0.0064
195	3.1139	0.0064
196	3.1203	0.0064
197	3.1266	0.0064
198	3.1330	0.0063
199	3.1393	0.0063
200	3.1456	0.0063
201	3.1519	0.0063
202	3.1582	0.0063
203	3.1644	0.0062
204	3.1706	0.0062
205	3.1769	0.0062
206	3.1831	0.0062
207	3.1892	0.0062
208	3.1954	0.0062
209	3.2015	0.0061
210	3.2077	0.0061
211	3.2138	0.0061
212	3.2198	0.0061
213	3.2259	0.0061
214	3.2320	0.0061
215	3.2380	0.0060
216	3.2440	0.0060
217	3.2500	0.0060
218	3.2560	0.0060
219	3.2620	0.0060
220	3.2679	0.0060
221	3.2739	0.0059
222	3.2798	0.0059
223	3.2857	0.0059
224	3.2916	0.0059
225	3.2975	0.0059
226	3.3033	0.0059
227	3.3092	0.0058

228	3.3150	0.0058
229	3.3208	0.0058
230	3.3266	0.0058
231	3.3324	0.0058
232	3.3381	0.0058
233	3.3439	0.0058
234	3.3496	0.0057
235	3.3554	0.0057
236	3.3611	0.0057
237	3.3668	0.0057
238	3.3724	0.0057
239	3.3781	0.0057
240	3.3837	0.0057
241	3.3894	0.0056
242	3.3950	0.0056
243	3.4006	0.0056
244	3.4062	0.0056
245	3.4118	0.0056
246	3.4174	0.0056
247	3.4229	0.0056
248	3.4284	0.0055
249	3.4340	0.0055
250	3.4395	0.0055
251	3.4450	0.0055
252	3.4505	0.0055
253	3.4559	0.0055
254	3.4614	0.0055
255	3.4669	0.0054
256	3.4723	0.0054
257	3.4777	0.0054
258	3.4831	0.0054
259	3.4885	0.0054
260	3.4939	0.0054
261	3.4993	0.0054
262	3.5046	0.0054
263	3.5100	0.0053
264	3.5153	0.0053
265	3.5206	0.0053
266	3.5260	0.0053
267	3.5313	0.0053
268	3.5365	0.0053
269	3.5418	0.0053
270	3.5471	0.0053
271	3.5523	0.0053
272	3.5576	0.0052
273	3.5628	0.0052
274	3.5680	0.0052
275	3.5732	0.0052
276	3.5784	0.0052
277	3.5836	0.0052

278	3.5888	0.0052
279	3.5939	0.0052
280	3.5991	0.0052
281	3.6042	0.0051
282	3.6094	0.0051
283	3.6145	0.0051
284	3.6196	0.0051
285	3.6247	0.0051
286	3.6298	0.0051
287	3.6348	0.0051
288	3.6399	0.0051

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0051	0.0009	0.0042
2	0.0051	0.0009	0.0042
3	0.0051	0.0009	0.0042
4	0.0051	0.0009	0.0042
5	0.0051	0.0009	0.0042
6	0.0051	0.0009	0.0042
7	0.0052	0.0009	0.0042
8	0.0052	0.0009	0.0043
9	0.0052	0.0009	0.0043
10	0.0052	0.0009	0.0043
11	0.0052	0.0009	0.0043
12	0.0052	0.0009	0.0043
13	0.0053	0.0009	0.0043
14	0.0053	0.0009	0.0043
15	0.0053	0.0009	0.0044
16	0.0053	0.0009	0.0044
17	0.0053	0.0009	0.0044
18	0.0053	0.0010	0.0044
19	0.0054	0.0010	0.0044
20	0.0054	0.0010	0.0044
21	0.0054	0.0010	0.0044
22	0.0054	0.0010	0.0045
23	0.0054	0.0010	0.0045
24	0.0055	0.0010	0.0045
25	0.0055	0.0010	0.0045
26	0.0055	0.0010	0.0045
27	0.0055	0.0010	0.0045
28	0.0055	0.0010	0.0046
29	0.0056	0.0010	0.0046
30	0.0056	0.0010	0.0046
31	0.0056	0.0010	0.0046
32	0.0056	0.0010	0.0046
33	0.0057	0.0010	0.0046
34	0.0057	0.0010	0.0047

35	0.0057	0.0010	0.0047
36	0.0057	0.0010	0.0047
37	0.0057	0.0010	0.0047
38	0.0058	0.0010	0.0047
39	0.0058	0.0010	0.0048
40	0.0058	0.0010	0.0048
41	0.0058	0.0010	0.0048
42	0.0058	0.0010	0.0048
43	0.0059	0.0010	0.0048
44	0.0059	0.0010	0.0048
45	0.0059	0.0011	0.0049
46	0.0059	0.0011	0.0049
47	0.0060	0.0011	0.0049
48	0.0060	0.0011	0.0049
49	0.0060	0.0011	0.0050
50	0.0060	0.0011	0.0050
51	0.0061	0.0011	0.0050
52	0.0061	0.0011	0.0050
53	0.0061	0.0011	0.0050
54	0.0061	0.0011	0.0050
55	0.0062	0.0011	0.0051
56	0.0062	0.0011	0.0051
57	0.0062	0.0011	0.0051
58	0.0062	0.0011	0.0051
59	0.0063	0.0011	0.0052
60	0.0063	0.0011	0.0052
61	0.0063	0.0011	0.0052
62	0.0064	0.0011	0.0052
63	0.0064	0.0011	0.0053
64	0.0064	0.0011	0.0053
65	0.0065	0.0011	0.0053
66	0.0065	0.0012	0.0053
67	0.0065	0.0012	0.0054
68	0.0065	0.0012	0.0054
69	0.0066	0.0012	0.0054
70	0.0066	0.0012	0.0054
71	0.0067	0.0012	0.0055
72	0.0067	0.0012	0.0055
73	0.0067	0.0012	0.0055
74	0.0067	0.0012	0.0055
75	0.0068	0.0012	0.0056
76	0.0068	0.0012	0.0056
77	0.0069	0.0012	0.0056
78	0.0069	0.0012	0.0057
79	0.0069	0.0012	0.0057
80	0.0070	0.0012	0.0057
81	0.0070	0.0012	0.0058
82	0.0070	0.0012	0.0058
83	0.0071	0.0013	0.0058
84	0.0071	0.0013	0.0058

85	0.0072	0.0013	0.0059
86	0.0072	0.0013	0.0059
87	0.0072	0.0013	0.0060
88	0.0073	0.0013	0.0060
89	0.0073	0.0013	0.0060
90	0.0073	0.0013	0.0060
91	0.0074	0.0013	0.0061
92	0.0074	0.0013	0.0061
93	0.0075	0.0013	0.0062
94	0.0075	0.0013	0.0062
95	0.0076	0.0013	0.0062
96	0.0076	0.0014	0.0063
97	0.0077	0.0014	0.0063
98	0.0077	0.0014	0.0063
99	0.0078	0.0014	0.0064
100	0.0078	0.0014	0.0064
101	0.0079	0.0014	0.0065
102	0.0079	0.0014	0.0065
103	0.0080	0.0014	0.0066
104	0.0080	0.0014	0.0066
105	0.0081	0.0014	0.0067
106	0.0081	0.0014	0.0067
107	0.0082	0.0015	0.0067
108	0.0082	0.0015	0.0068
109	0.0083	0.0015	0.0068
110	0.0084	0.0015	0.0069
111	0.0084	0.0015	0.0069
112	0.0085	0.0015	0.0070
113	0.0086	0.0015	0.0071
114	0.0086	0.0015	0.0071
115	0.0087	0.0015	0.0072
116	0.0088	0.0016	0.0072
117	0.0088	0.0016	0.0073
118	0.0089	0.0016	0.0073
119	0.0090	0.0016	0.0074
120	0.0090	0.0016	0.0074
121	0.0091	0.0016	0.0075
122	0.0092	0.0016	0.0076
123	0.0093	0.0017	0.0076
124	0.0093	0.0017	0.0077
125	0.0095	0.0017	0.0078
126	0.0095	0.0017	0.0078
127	0.0096	0.0017	0.0079
128	0.0097	0.0017	0.0080
129	0.0098	0.0017	0.0081
130	0.0099	0.0018	0.0081
131	0.0100	0.0018	0.0082
132	0.0101	0.0018	0.0083
133	0.0102	0.0018	0.0084
134	0.0103	0.0018	0.0084

135	0.0104	0.0018	0.0086
136	0.0105	0.0019	0.0086
137	0.0106	0.0019	0.0087
138	0.0107	0.0019	0.0088
139	0.0109	0.0019	0.0089
140	0.0109	0.0019	0.0090
141	0.0111	0.0020	0.0091
142	0.0112	0.0020	0.0092
143	0.0114	0.0020	0.0094
144	0.0115	0.0020	0.0094
145	0.0106	0.0019	0.0087
146	0.0107	0.0019	0.0088
147	0.0109	0.0019	0.0090
148	0.0110	0.0020	0.0090
149	0.0112	0.0020	0.0092
150	0.0113	0.0020	0.0093
151	0.0115	0.0021	0.0095
152	0.0117	0.0021	0.0096
153	0.0119	0.0021	0.0098
154	0.0120	0.0021	0.0099
155	0.0123	0.0022	0.0101
156	0.0124	0.0022	0.0102
157	0.0127	0.0023	0.0105
158	0.0129	0.0023	0.0106
159	0.0132	0.0023	0.0109
160	0.0134	0.0024	0.0110
161	0.0137	0.0024	0.0113
162	0.0139	0.0025	0.0115
163	0.0143	0.0025	0.0118
164	0.0145	0.0026	0.0120
165	0.0150	0.0027	0.0123
166	0.0152	0.0027	0.0125
167	0.0157	0.0028	0.0129
168	0.0160	0.0028	0.0131
169	0.0166	0.0029	0.0136
170	0.0169	0.0030	0.0139
171	0.0175	0.0031	0.0144
172	0.0179	0.0032	0.0147
173	0.0186	0.0033	0.0153
174	0.0191	0.0034	0.0157
175	0.0200	0.0035	0.0164
176	0.0205	0.0036	0.0168
177	0.0216	0.0038	0.0177
178	0.0222	0.0039	0.0182
179	0.0235	0.0042	0.0193
180	0.0243	0.0043	0.0200
181	0.0260	0.0046	0.0214
182	0.0270	0.0048	0.0222
183	0.0293	0.0052	0.0241
184	0.0307	0.0054	0.0252

185	0.0281	0.0050	0.0231
186	0.0299	0.0053	0.0246
187	0.0347	0.0062	0.0285
188	0.0379	0.0067	0.0311
189	0.0471	0.0081	0.0390
190	0.0542	0.0081	0.0461
191	0.0823	0.0081	0.0742
192	0.1194	0.0081	0.1113
193	0.5167	0.0081	0.5086
194	0.0648	0.0081	0.0566
195	0.0419	0.0074	0.0344
196	0.0321	0.0057	0.0264
197	0.0322	0.0057	0.0265
198	0.0281	0.0050	0.0231
199	0.0251	0.0045	0.0206
200	0.0228	0.0041	0.0188
201	0.0210	0.0037	0.0173
202	0.0195	0.0035	0.0160
203	0.0183	0.0032	0.0150
204	0.0172	0.0031	0.0141
205	0.0163	0.0029	0.0134
206	0.0155	0.0027	0.0127
207	0.0148	0.0026	0.0121
208	0.0141	0.0025	0.0116
209	0.0136	0.0024	0.0112
210	0.0131	0.0023	0.0107
211	0.0126	0.0022	0.0104
212	0.0122	0.0022	0.0100
213	0.0118	0.0021	0.0097
214	0.0114	0.0020	0.0094
215	0.0111	0.0020	0.0091
216	0.0108	0.0019	0.0089
217	0.0116	0.0021	0.0095
218	0.0113	0.0020	0.0093
219	0.0110	0.0020	0.0091
220	0.0108	0.0019	0.0089
221	0.0106	0.0019	0.0087
222	0.0103	0.0018	0.0085
223	0.0101	0.0018	0.0083
224	0.0099	0.0018	0.0082
225	0.0097	0.0017	0.0080
226	0.0096	0.0017	0.0079
227	0.0094	0.0017	0.0077
228	0.0092	0.0016	0.0076
229	0.0091	0.0016	0.0075
230	0.0089	0.0016	0.0073
231	0.0088	0.0016	0.0072
232	0.0087	0.0015	0.0071
233	0.0085	0.0015	0.0070
234	0.0084	0.0015	0.0069

235	0.0083	0.0015	0.0068
236	0.0082	0.0015	0.0067
237	0.0081	0.0014	0.0066
238	0.0080	0.0014	0.0065
239	0.0078	0.0014	0.0065
240	0.0077	0.0014	0.0064
241	0.0077	0.0014	0.0063
242	0.0076	0.0013	0.0062
243	0.0075	0.0013	0.0061
244	0.0074	0.0013	0.0061
245	0.0073	0.0013	0.0060
246	0.0072	0.0013	0.0059
247	0.0071	0.0013	0.0059
248	0.0071	0.0013	0.0058
249	0.0070	0.0012	0.0057
250	0.0069	0.0012	0.0057
251	0.0068	0.0012	0.0056
252	0.0068	0.0012	0.0056
253	0.0067	0.0012	0.0055
254	0.0066	0.0012	0.0055
255	0.0066	0.0012	0.0054
256	0.0065	0.0012	0.0053
257	0.0064	0.0011	0.0053
258	0.0064	0.0011	0.0052
259	0.0063	0.0011	0.0052
260	0.0063	0.0011	0.0052
261	0.0062	0.0011	0.0051
262	0.0062	0.0011	0.0051
263	0.0061	0.0011	0.0050
264	0.0061	0.0011	0.0050
265	0.0060	0.0011	0.0049
266	0.0060	0.0011	0.0049
267	0.0059	0.0010	0.0049
268	0.0059	0.0010	0.0048
269	0.0058	0.0010	0.0048
270	0.0058	0.0010	0.0047
271	0.0057	0.0010	0.0047
272	0.0057	0.0010	0.0047
273	0.0056	0.0010	0.0046
274	0.0056	0.0010	0.0046
275	0.0056	0.0010	0.0046
276	0.0055	0.0010	0.0045
277	0.0055	0.0010	0.0045
278	0.0054	0.0010	0.0045
279	0.0054	0.0010	0.0044
280	0.0054	0.0010	0.0044
281	0.0053	0.0009	0.0044
282	0.0053	0.0009	0.0043
283	0.0053	0.0009	0.0043
284	0.0052	0.0009	0.0043

285	0.0052	0.0009	0.0043
286	0.0052	0.0009	0.0042
287	0.0051	0.0009	0.0042
288	0.0051	0.0009	0.0042

Total soil rain loss = 0.54(In)
Total effective rainfall = 3.10(In)
Peak flow rate in flood hydrograph = 52.73(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	15.0	30.0	45.0	60.0
0+ 5	0.0003		0.05	Q				
0+10	0.0029		0.37	Q				
0+15	0.0076		0.68	Q				
0+20	0.0131		0.81	Q				
0+25	0.0192		0.89	Q				
0+30	0.0257		0.94	Q				
0+35	0.0324		0.98	Q				
0+40	0.0393		1.00	Q				
0+45	0.0464		1.03	Q				
0+50	0.0536		1.04	Q				
0+55	0.0609		1.06	Q				
1+ 0	0.0682		1.07	Q				
1+ 5	0.0756		1.08	Q				
1+10	0.0831		1.08	Q				
1+15	0.0906		1.09	Q				
1+20	0.0981		1.09	Q				
1+25	0.1057		1.10	Q				
1+30	0.1133		1.10	Q				
1+35	0.1209		1.11	Q				
1+40	0.1285		1.11	Q				
1+45	0.1362		1.11	QV				
1+50	0.1439		1.12	QV				
1+55	0.1516		1.12	QV				
2+ 0	0.1594		1.13	QV				
2+ 5	0.1671		1.13	QV				
2+10	0.1749		1.13	QV				
2+15	0.1828		1.14	QV				
2+20	0.1906		1.14	QV				
2+25	0.1985		1.15	QV				
2+30	0.2064		1.15	QV				
2+35	0.2144		1.15	QV				

2+40	0.2223	1.16	QV
2+45	0.2303	1.16	QV
2+50	0.2384	1.17	QV
2+55	0.2464	1.17	QV
3+ 0	0.2545	1.18	QV
3+ 5	0.2627	1.18	QV
3+10	0.2708	1.18	Q V
3+15	0.2790	1.19	Q V
3+20	0.2872	1.19	Q V
3+25	0.2955	1.20	Q V
3+30	0.3037	1.20	Q V
3+35	0.3121	1.21	Q V
3+40	0.3204	1.21	Q V
3+45	0.3288	1.22	Q V
3+50	0.3372	1.22	Q V
3+55	0.3456	1.23	Q V
4+ 0	0.3541	1.23	Q V
4+ 5	0.3626	1.24	Q V
4+10	0.3712	1.24	Q V
4+15	0.3798	1.25	Q V
4+20	0.3884	1.25	Q V
4+25	0.3970	1.26	Q V
4+30	0.4057	1.26	Q V
4+35	0.4145	1.27	Q V
4+40	0.4232	1.27	Q V
4+45	0.4321	1.28	Q V
4+50	0.4409	1.28	Q V
4+55	0.4498	1.29	Q V
5+ 0	0.4587	1.30	Q V
5+ 5	0.4677	1.30	Q V
5+10	0.4767	1.31	Q V
5+15	0.4857	1.31	Q V
5+20	0.4948	1.32	Q V
5+25	0.5039	1.33	Q V
5+30	0.5131	1.33	Q V
5+35	0.5223	1.34	Q V
5+40	0.5316	1.34	Q V
5+45	0.5409	1.35	Q V
5+50	0.5502	1.36	Q V
5+55	0.5596	1.36	Q V
6+ 0	0.5690	1.37	Q V
6+ 5	0.5785	1.38	Q V
6+10	0.5880	1.38	Q V
6+15	0.5976	1.39	Q V
6+20	0.6072	1.40	Q V
6+25	0.6169	1.40	Q V
6+30	0.6266	1.41	Q V
6+35	0.6364	1.42	Q V
6+40	0.6462	1.43	Q V
6+45	0.6561	1.43	Q V

6+50	0.6660	1.44	Q	V				
6+55	0.6760	1.45	Q	V				
7+ 0	0.6860	1.46	Q	V				
7+ 5	0.6961	1.46	Q	V				
7+10	0.7062	1.47	Q	V				
7+15	0.7164	1.48	Q	V				
7+20	0.7267	1.49	Q	V				
7+25	0.7370	1.50	Q	V				
7+30	0.7474	1.51	Q	V				
7+35	0.7578	1.51	Q	V				
7+40	0.7683	1.52	Q	V				
7+45	0.7788	1.53	Q	V				
7+50	0.7895	1.54	Q	V				
7+55	0.8001	1.55	Q	V				
8+ 0	0.8109	1.56	Q	V				
8+ 5	0.8217	1.57	Q	V				
8+10	0.8325	1.58	Q	V				
8+15	0.8435	1.59	Q	V				
8+20	0.8545	1.60	Q	V				
8+25	0.8656	1.61	Q	V				
8+30	0.8767	1.62	Q	V				
8+35	0.8879	1.63	Q	V				
8+40	0.8992	1.64	Q	V				
8+45	0.9106	1.65	Q	V				
8+50	0.9220	1.66	Q	V				
8+55	0.9336	1.67	Q	V				
9+ 0	0.9452	1.68	Q	V				
9+ 5	0.9568	1.70	Q	V				
9+10	0.9686	1.71	Q	V				
9+15	0.9804	1.72	Q	V				
9+20	0.9924	1.73	Q	V				
9+25	1.0044	1.74	Q	V				
9+30	1.0165	1.76	Q	V				
9+35	1.0287	1.77	Q	V				
9+40	1.0410	1.78	Q	V				
9+45	1.0534	1.80	Q	V				
9+50	1.0658	1.81	Q	V				
9+55	1.0784	1.83	Q	V				
10+ 0	1.0911	1.84	Q	V				
10+ 5	1.1039	1.85	Q	V				
10+10	1.1167	1.87	Q	V				
10+15	1.1297	1.89	Q	V				
10+20	1.1428	1.90	Q	V				
10+25	1.1560	1.92	Q	V				
10+30	1.1694	1.93	Q	V				
10+35	1.1828	1.95	Q	V				
10+40	1.1963	1.97	Q	V				
10+45	1.2100	1.99	Q	V				
10+50	1.2238	2.00	Q	V				
10+55	1.2378	2.02	Q	V				

11+ 0	1.2518	2.04	Q	V			
11+ 5	1.2660	2.06	Q	V			
11+10	1.2803	2.08	Q	V			
11+15	1.2948	2.10	Q	V			
11+20	1.3094	2.12	Q	V			
11+25	1.3242	2.14	Q	V			
11+30	1.3391	2.17	Q	V			
11+35	1.3542	2.19	Q	V			
11+40	1.3695	2.21	Q	V			
11+45	1.3849	2.24	Q	V			
11+50	1.4005	2.26	Q	V			
11+55	1.4162	2.29	Q	V			
12+ 0	1.4322	2.32	Q	V			
12+ 5	1.4482	2.33	Q	V			
12+10	1.4640	2.29	Q	V			
12+15	1.4796	2.26	Q	V			
12+20	1.4952	2.26	Q	V			
12+25	1.5108	2.27	Q	V			
12+30	1.5266	2.30	Q	V			
12+35	1.5426	2.32	Q	V			
12+40	1.5588	2.35	Q	V			
12+45	1.5752	2.38	Q	V			
12+50	1.5918	2.41	Q	V			
12+55	1.6086	2.45	Q	V			
13+ 0	1.6258	2.49	Q	V			
13+ 5	1.6432	2.53	Q	V			
13+10	1.6609	2.57	Q	V			
13+15	1.6789	2.61	Q	V			
13+20	1.6972	2.66	Q	V			
13+25	1.7158	2.71	Q	V			
13+30	1.7348	2.76	Q	V			
13+35	1.7542	2.81	Q	V			
13+40	1.7740	2.87	Q	V			
13+45	1.7942	2.93	Q	V			
13+50	1.8148	2.99	Q	V			
13+55	1.8359	3.06	Q	V			
14+ 0	1.8575	3.13	Q	V			
14+ 5	1.8795	3.21	Q	V			
14+10	1.9022	3.29	Q	V			
14+15	1.9255	3.38	Q	V			
14+20	1.9494	3.47	Q	V			
14+25	1.9739	3.57	Q	V			
14+30	1.9993	3.68	Q	V			
14+35	2.0254	3.79	Q	V			
14+40	2.0523	3.92	Q	V			
14+45	2.0802	4.05	Q	V			
14+50	2.1092	4.20	Q	V			
14+55	2.1392	4.36	Q	V			
15+ 0	2.1705	4.55	Q	V			
15+ 5	2.2032	4.74	Q	V			

15+10	2.2375	4.98	Q		V			
15+15	2.2735	5.23	Q		V			
15+20	2.3116	5.54	Q		V			
15+25	2.3517	5.82	Q		V			
15+30	2.3921	5.86	Q		V			
15+35	2.4332	5.98	Q		V			
15+40	2.4775	6.43	Q		V			
15+45	2.5261	7.06	Q		V			
15+50	2.5819	8.10	Q		V			
15+55	2.6489	9.73	Q		V			
16+ 0	2.7400	13.22	Q		V			
16+ 5	2.8997	23.19		Q	V			
16+10	3.2629	52.73				V		Q
16+15	3.5934	47.99				V		Q
16+20	3.7786	26.89		Q		V		
16+25	3.9065	18.56		Q		V		
16+30	4.0061	14.47		Q		V		
16+35	4.0862	11.64		Q		V		
16+40	4.1537	9.79		Q		V		
16+45	4.2109	8.30		Q		V		
16+50	4.2598	7.11		Q		V		
16+55	4.3016	6.07		Q		V		
17+ 0	4.3388	5.40	Q				V	
17+ 5	4.3738	5.08	Q				V	
17+10	4.4050	4.54	Q				V	
17+15	4.4328	4.03	Q				V	
17+20	4.4566	3.46	Q				V	
17+25	4.4791	3.26	Q				V	
17+30	4.5005	3.10	Q				V	
17+35	4.5209	2.96	Q				V	
17+40	4.5405	2.84	Q				V	
17+45	4.5592	2.73	Q				V	
17+50	4.5773	2.63	Q				V	
17+55	4.5948	2.54	Q				V	
18+ 0	4.6117	2.45	Q				V	
18+ 5	4.6281	2.39	Q				V	
18+10	4.6445	2.39	Q				V	
18+15	4.6610	2.38	Q				V	
18+20	4.6771	2.35	Q				V	
18+25	4.6930	2.31	Q				V	
18+30	4.7086	2.26	Q				V	
18+35	4.7239	2.22	Q				V	
18+40	4.7389	2.18	Q				V	
18+45	4.7536	2.14	Q				V	
18+50	4.7680	2.10	Q				V	
18+55	4.7822	2.06	Q				V	
19+ 0	4.7961	2.02	Q				V	
19+ 5	4.8097	1.98	Q				V	
19+10	4.8232	1.95	Q				V	
19+15	4.8364	1.92	Q				V	

19+20	4.8494	1.88	Q				V
19+25	4.8621	1.85	Q				V
19+30	4.8747	1.82	Q				V
19+35	4.8871	1.80	Q				V
19+40	4.8992	1.77	Q				V
19+45	4.9113	1.74	Q				V
19+50	4.9231	1.72	Q				V
19+55	4.9348	1.69	Q				V
20+ 0	4.9463	1.67	Q				V
20+ 5	4.9576	1.65	Q				V
20+10	4.9688	1.63	Q				V
20+15	4.9799	1.61	Q				V
20+20	4.9908	1.59	Q				V
20+25	5.0016	1.57	Q				V
20+30	5.0123	1.55	Q				V
20+35	5.0228	1.53	Q				V
20+40	5.0333	1.51	Q				V
20+45	5.0436	1.50	Q				V
20+50	5.0537	1.48	Q				V
20+55	5.0638	1.46	Q				V
21+ 0	5.0738	1.45	Q				V
21+ 5	5.0837	1.43	Q				V
21+10	5.0934	1.42	Q				V
21+15	5.1031	1.40	Q				V
21+20	5.1126	1.39	Q				V
21+25	5.1221	1.38	Q				V
21+30	5.1315	1.36	Q				V
21+35	5.1408	1.35	Q				V
21+40	5.1500	1.34	Q				V
21+45	5.1591	1.32	Q				V
21+50	5.1681	1.31	Q				V
21+55	5.1771	1.30	Q				V
22+ 0	5.1860	1.29	Q				V
22+ 5	5.1948	1.28	Q				V
22+10	5.2035	1.27	Q				V
22+15	5.2122	1.26	Q				V
22+20	5.2207	1.25	Q				V
22+25	5.2292	1.24	Q				V
22+30	5.2377	1.23	Q				V
22+35	5.2461	1.22	Q				V
22+40	5.2544	1.21	Q				V
22+45	5.2626	1.20	Q				V
22+50	5.2708	1.19	Q				V
22+55	5.2789	1.18	Q				V
23+ 0	5.2869	1.17	Q				V
23+ 5	5.2949	1.16	Q				V
23+10	5.3029	1.15	Q				V
23+15	5.3108	1.14	Q				V
23+20	5.3186	1.14	Q				V
23+25	5.3264	1.13	Q				V

23+30	5.3341	1.12	Q				V
23+35	5.3417	1.11	Q				V
23+40	5.3493	1.10	Q				V
23+45	5.3569	1.10	Q				V
23+50	5.3644	1.09	Q				V
23+55	5.3719	1.08	Q				V
24+ 0	5.3793	1.08	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 08/04/21

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

Program License Serial Number 6385

Space Center
Developed 100-year
Area F

Storm Event Year = 100

Antecedent Moisture Condition = 2

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 100		
31.02	1	1.09

Rainfall data for year 100
31.02 6 2.09

Rainfall data for year 100
31.02 24 3.64

+++++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 2)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
58.0	58.0	31.02	1.000	0.707	0.160	0.113

Area-averaged adjusted loss rate Fm (In/Hr) = 0.113

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC2)	S	Pervious Yield Fr
4.96	0.160	58.0	58.0	7.24	0.140
26.06	0.840	98.0	98.0	0.20	0.936

Area-averaged catchment yield fraction, Y = 0.808

Area-averaged low loss fraction, Yb = 0.192

User entry of time of concentration = 0.610 (hours)

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Watershed area = 31.02(Ac.)

Catchment Lag time = 0.488 hours

Unit interval = 5.000 minutes

Unit interval percentage of lag time = 17.0765

Hydrograph baseflow = 0.00(CFS)

Average maximum watershed loss rate(Fm) = 0.113(In/Hr)

Average low loss rate fraction (Yb) = 0.192 (decimal)

DESERT S-Graph Selected

Computed peak 5-minute rainfall = 0.517(In)

Computed peak 30-minute rainfall = 0.885(In)

Specified peak 1-hour rainfall = 1.090(In)

Computed peak 3-hour rainfall = 1.625(In)

Specified peak 6-hour rainfall = 2.090(In)

Specified peak 24-hour rainfall = 3.640(In)

Rainfall depth area reduction factors:

Using a total area of 31.02(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.516(In)

30-minute factor = 0.999 Adjusted rainfall = 0.884(In)

1-hour factor = 0.999 Adjusted rainfall = 1.088(In)

3-hour factor = 1.000 Adjusted rainfall = 1.624(In)

6-hour factor = 1.000 Adjusted rainfall = 2.090(In)

24-hour factor = 1.000 Adjusted rainfall = 3.640(In)

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

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Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))

	(K =	375.15 (CFS))
1	0.800	3.003
2	3.500	10.126
3	8.087	17.208
4	17.130	33.928
5	32.658	58.253
6	46.060	50.275
7	55.521	35.496
8	62.196	25.040
9	67.209	18.806
10	71.354	15.551
11	74.745	12.719
12	77.666	10.960
13	80.076	9.041
14	82.191	7.934
15	84.029	6.893
16	85.710	6.307
17	87.240	5.739
18	88.575	5.011
19	89.655	4.050
20	90.648	3.724
21	91.586	3.523
22	92.423	3.138
23	93.206	2.937
24	93.929	2.712
25	94.525	2.236
26	95.105	2.178
27	95.657	2.071
28	96.110	1.697
29	96.554	1.666
30	96.962	1.533
31	97.275	1.173
32	97.582	1.153
33	97.847	0.992
34	98.021	0.652
35	98.191	0.641
36	98.375	0.688
37	98.580	0.768
38	98.784	0.769
39	98.989	0.769
40	99.194	0.769
41	99.399	0.769
42	99.554	0.582
43	99.661	0.400
44	99.768	0.400
45	99.874	0.400

46

100.000

0.200

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5165	0.5165
2	0.6358	0.1194
3	0.7181	0.0822
4	0.7828	0.0647
5	0.8370	0.0542
6	0.8841	0.0471
7	0.9259	0.0418
8	0.9638	0.0378
9	0.9984	0.0347
10	1.0305	0.0321
11	1.0604	0.0299
12	1.0884	0.0280
13	1.1206	0.0322
14	1.1513	0.0307
15	1.1806	0.0293
16	1.2087	0.0281
17	1.2357	0.0270
18	1.2618	0.0260
19	1.2869	0.0251
20	1.3112	0.0243
21	1.3347	0.0235
22	1.3575	0.0228
23	1.3797	0.0222
24	1.4012	0.0216
25	1.4222	0.0210
26	1.4427	0.0205
27	1.4627	0.0200
28	1.4822	0.0195
29	1.5013	0.0191
30	1.5200	0.0187
31	1.5382	0.0183
32	1.5561	0.0179
33	1.5737	0.0176
34	1.5909	0.0172
35	1.6078	0.0169
36	1.6244	0.0166
37	1.6407	0.0163
38	1.6566	0.0160
39	1.6724	0.0157
40	1.6878	0.0155
41	1.7030	0.0152
42	1.7180	0.0150
43	1.7328	0.0148
44	1.7473	0.0145
45	1.7616	0.0143
46	1.7758	0.0141

47	1.7897	0.0139
48	1.8035	0.0137
49	1.8170	0.0136
50	1.8304	0.0134
51	1.8436	0.0132
52	1.8567	0.0131
53	1.8696	0.0129
54	1.8823	0.0127
55	1.8949	0.0126
56	1.9074	0.0125
57	1.9197	0.0123
58	1.9319	0.0122
59	1.9439	0.0120
60	1.9558	0.0119
61	1.9676	0.0118
62	1.9793	0.0117
63	1.9908	0.0115
64	2.0022	0.0114
65	2.0135	0.0113
66	2.0247	0.0112
67	2.0358	0.0111
68	2.0468	0.0110
69	2.0577	0.0109
70	2.0685	0.0108
71	2.0792	0.0107
72	2.0898	0.0106
73	2.1014	0.0116
74	2.1128	0.0115
75	2.1242	0.0114
76	2.1355	0.0113
77	2.1467	0.0112
78	2.1578	0.0111
79	2.1689	0.0110
80	2.1798	0.0109
81	2.1907	0.0109
82	2.2015	0.0108
83	2.2122	0.0107
84	2.2228	0.0106
85	2.2334	0.0106
86	2.2438	0.0105
87	2.2542	0.0104
88	2.2646	0.0103
89	2.2748	0.0103
90	2.2850	0.0102
91	2.2952	0.0101
92	2.3052	0.0101
93	2.3152	0.0100
94	2.3252	0.0099
95	2.3350	0.0099
96	2.3448	0.0098

97	2.3546	0.0097
98	2.3643	0.0097
99	2.3739	0.0096
100	2.3835	0.0096
101	2.3930	0.0095
102	2.4024	0.0095
103	2.4118	0.0094
104	2.4212	0.0093
105	2.4305	0.0093
106	2.4397	0.0092
107	2.4489	0.0092
108	2.4580	0.0091
109	2.4671	0.0091
110	2.4761	0.0090
111	2.4851	0.0090
112	2.4941	0.0089
113	2.5030	0.0089
114	2.5118	0.0088
115	2.5206	0.0088
116	2.5293	0.0088
117	2.5381	0.0087
118	2.5467	0.0087
119	2.5553	0.0086
120	2.5639	0.0086
121	2.5724	0.0085
122	2.5809	0.0085
123	2.5894	0.0084
124	2.5978	0.0084
125	2.6061	0.0084
126	2.6145	0.0083
127	2.6227	0.0083
128	2.6310	0.0082
129	2.6392	0.0082
130	2.6474	0.0082
131	2.6555	0.0081
132	2.6636	0.0081
133	2.6717	0.0081
134	2.6797	0.0080
135	2.6877	0.0080
136	2.6956	0.0080
137	2.7035	0.0079
138	2.7114	0.0079
139	2.7193	0.0078
140	2.7271	0.0078
141	2.7349	0.0078
142	2.7426	0.0077
143	2.7503	0.0077
144	2.7580	0.0077
145	2.7657	0.0077
146	2.7733	0.0076

147	2.7809	0.0076
148	2.7884	0.0076
149	2.7959	0.0075
150	2.8034	0.0075
151	2.8109	0.0075
152	2.8183	0.0074
153	2.8257	0.0074
154	2.8331	0.0074
155	2.8405	0.0073
156	2.8478	0.0073
157	2.8551	0.0073
158	2.8623	0.0073
159	2.8696	0.0072
160	2.8768	0.0072
161	2.8840	0.0072
162	2.8911	0.0072
163	2.8983	0.0071
164	2.9054	0.0071
165	2.9124	0.0071
166	2.9195	0.0071
167	2.9265	0.0070
168	2.9335	0.0070
169	2.9405	0.0070
170	2.9475	0.0070
171	2.9544	0.0069
172	2.9613	0.0069
173	2.9682	0.0069
174	2.9750	0.0069
175	2.9819	0.0068
176	2.9887	0.0068
177	2.9954	0.0068
178	3.0022	0.0068
179	3.0090	0.0067
180	3.0157	0.0067
181	3.0224	0.0067
182	3.0290	0.0067
183	3.0357	0.0067
184	3.0423	0.0066
185	3.0489	0.0066
186	3.0555	0.0066
187	3.0621	0.0066
188	3.0686	0.0065
189	3.0751	0.0065
190	3.0816	0.0065
191	3.0881	0.0065
192	3.0946	0.0065
193	3.1010	0.0064
194	3.1074	0.0064
195	3.1138	0.0064
196	3.1202	0.0064

197	3.1266	0.0064
198	3.1329	0.0063
199	3.1393	0.0063
200	3.1456	0.0063
201	3.1518	0.0063
202	3.1581	0.0063
203	3.1644	0.0062
204	3.1706	0.0062
205	3.1768	0.0062
206	3.1830	0.0062
207	3.1892	0.0062
208	3.1953	0.0062
209	3.2015	0.0061
210	3.2076	0.0061
211	3.2137	0.0061
212	3.2198	0.0061
213	3.2259	0.0061
214	3.2319	0.0061
215	3.2379	0.0060
216	3.2440	0.0060
217	3.2500	0.0060
218	3.2560	0.0060
219	3.2619	0.0060
220	3.2679	0.0060
221	3.2738	0.0059
222	3.2797	0.0059
223	3.2856	0.0059
224	3.2915	0.0059
225	3.2974	0.0059
226	3.3033	0.0059
227	3.3091	0.0058
228	3.3149	0.0058
229	3.3207	0.0058
230	3.3265	0.0058
231	3.3323	0.0058
232	3.3381	0.0058
233	3.3438	0.0058
234	3.3496	0.0057
235	3.3553	0.0057
236	3.3610	0.0057
237	3.3667	0.0057
238	3.3724	0.0057
239	3.3780	0.0057
240	3.3837	0.0057
241	3.3893	0.0056
242	3.3950	0.0056
243	3.4006	0.0056
244	3.4062	0.0056
245	3.4117	0.0056
246	3.4173	0.0056

247	3.4229	0.0056
248	3.4284	0.0055
249	3.4339	0.0055
250	3.4394	0.0055
251	3.4449	0.0055
252	3.4504	0.0055
253	3.4559	0.0055
254	3.4614	0.0055
255	3.4668	0.0054
256	3.4722	0.0054
257	3.4777	0.0054
258	3.4831	0.0054
259	3.4885	0.0054
260	3.4939	0.0054
261	3.4992	0.0054
262	3.5046	0.0054
263	3.5099	0.0053
264	3.5153	0.0053
265	3.5206	0.0053
266	3.5259	0.0053
267	3.5312	0.0053
268	3.5365	0.0053
269	3.5418	0.0053
270	3.5470	0.0053
271	3.5523	0.0053
272	3.5575	0.0052
273	3.5628	0.0052
274	3.5680	0.0052
275	3.5732	0.0052
276	3.5784	0.0052
277	3.5836	0.0052
278	3.5887	0.0052
279	3.5939	0.0052
280	3.5990	0.0052
281	3.6042	0.0051
282	3.6093	0.0051
283	3.6144	0.0051
284	3.6195	0.0051
285	3.6246	0.0051
286	3.6297	0.0051
287	3.6348	0.0051
288	3.6399	0.0051

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0051	0.0010	0.0041
2	0.0051	0.0010	0.0041
3	0.0051	0.0010	0.0041

4	0.0051	0.0010	0.0041
5	0.0051	0.0010	0.0041
6	0.0051	0.0010	0.0042
7	0.0052	0.0010	0.0042
8	0.0052	0.0010	0.0042
9	0.0052	0.0010	0.0042
10	0.0052	0.0010	0.0042
11	0.0052	0.0010	0.0042
12	0.0052	0.0010	0.0042
13	0.0053	0.0010	0.0043
14	0.0053	0.0010	0.0043
15	0.0053	0.0010	0.0043
16	0.0053	0.0010	0.0043
17	0.0053	0.0010	0.0043
18	0.0053	0.0010	0.0043
19	0.0054	0.0010	0.0043
20	0.0054	0.0010	0.0044
21	0.0054	0.0010	0.0044
22	0.0054	0.0010	0.0044
23	0.0054	0.0010	0.0044
24	0.0055	0.0010	0.0044
25	0.0055	0.0011	0.0044
26	0.0055	0.0011	0.0044
27	0.0055	0.0011	0.0045
28	0.0055	0.0011	0.0045
29	0.0056	0.0011	0.0045
30	0.0056	0.0011	0.0045
31	0.0056	0.0011	0.0045
32	0.0056	0.0011	0.0045
33	0.0057	0.0011	0.0046
34	0.0057	0.0011	0.0046
35	0.0057	0.0011	0.0046
36	0.0057	0.0011	0.0046
37	0.0057	0.0011	0.0046
38	0.0058	0.0011	0.0046
39	0.0058	0.0011	0.0047
40	0.0058	0.0011	0.0047
41	0.0058	0.0011	0.0047
42	0.0058	0.0011	0.0047
43	0.0059	0.0011	0.0047
44	0.0059	0.0011	0.0048
45	0.0059	0.0011	0.0048
46	0.0059	0.0011	0.0048
47	0.0060	0.0011	0.0048
48	0.0060	0.0011	0.0048
49	0.0060	0.0012	0.0049
50	0.0060	0.0012	0.0049
51	0.0061	0.0012	0.0049
52	0.0061	0.0012	0.0049
53	0.0061	0.0012	0.0049

54	0.0061	0.0012	0.0050
55	0.0062	0.0012	0.0050
56	0.0062	0.0012	0.0050
57	0.0062	0.0012	0.0050
58	0.0062	0.0012	0.0051
59	0.0063	0.0012	0.0051
60	0.0063	0.0012	0.0051
61	0.0063	0.0012	0.0051
62	0.0064	0.0012	0.0051
63	0.0064	0.0012	0.0052
64	0.0064	0.0012	0.0052
65	0.0065	0.0012	0.0052
66	0.0065	0.0012	0.0052
67	0.0065	0.0012	0.0053
68	0.0065	0.0013	0.0053
69	0.0066	0.0013	0.0053
70	0.0066	0.0013	0.0053
71	0.0067	0.0013	0.0054
72	0.0067	0.0013	0.0054
73	0.0067	0.0013	0.0054
74	0.0067	0.0013	0.0054
75	0.0068	0.0013	0.0055
76	0.0068	0.0013	0.0055
77	0.0069	0.0013	0.0055
78	0.0069	0.0013	0.0056
79	0.0069	0.0013	0.0056
80	0.0070	0.0013	0.0056
81	0.0070	0.0013	0.0057
82	0.0070	0.0013	0.0057
83	0.0071	0.0014	0.0057
84	0.0071	0.0014	0.0057
85	0.0072	0.0014	0.0058
86	0.0072	0.0014	0.0058
87	0.0072	0.0014	0.0059
88	0.0073	0.0014	0.0059
89	0.0073	0.0014	0.0059
90	0.0073	0.0014	0.0059
91	0.0074	0.0014	0.0060
92	0.0074	0.0014	0.0060
93	0.0075	0.0014	0.0061
94	0.0075	0.0014	0.0061
95	0.0076	0.0015	0.0061
96	0.0076	0.0015	0.0062
97	0.0077	0.0015	0.0062
98	0.0077	0.0015	0.0062
99	0.0078	0.0015	0.0063
100	0.0078	0.0015	0.0063
101	0.0079	0.0015	0.0064
102	0.0079	0.0015	0.0064
103	0.0080	0.0015	0.0065

104	0.0080	0.0015	0.0065
105	0.0081	0.0016	0.0065
106	0.0081	0.0016	0.0066
107	0.0082	0.0016	0.0066
108	0.0082	0.0016	0.0067
109	0.0083	0.0016	0.0067
110	0.0084	0.0016	0.0068
111	0.0084	0.0016	0.0068
112	0.0085	0.0016	0.0069
113	0.0086	0.0016	0.0069
114	0.0086	0.0017	0.0070
115	0.0087	0.0017	0.0070
116	0.0088	0.0017	0.0071
117	0.0088	0.0017	0.0071
118	0.0089	0.0017	0.0072
119	0.0090	0.0017	0.0073
120	0.0090	0.0017	0.0073
121	0.0091	0.0018	0.0074
122	0.0092	0.0018	0.0074
123	0.0093	0.0018	0.0075
124	0.0093	0.0018	0.0076
125	0.0095	0.0018	0.0076
126	0.0095	0.0018	0.0077
127	0.0096	0.0018	0.0078
128	0.0097	0.0019	0.0078
129	0.0098	0.0019	0.0079
130	0.0099	0.0019	0.0080
131	0.0100	0.0019	0.0081
132	0.0101	0.0019	0.0081
133	0.0102	0.0020	0.0082
134	0.0103	0.0020	0.0083
135	0.0104	0.0020	0.0084
136	0.0105	0.0020	0.0085
137	0.0106	0.0020	0.0086
138	0.0107	0.0021	0.0087
139	0.0109	0.0021	0.0088
140	0.0109	0.0021	0.0088
141	0.0111	0.0021	0.0090
142	0.0112	0.0021	0.0091
143	0.0114	0.0022	0.0092
144	0.0115	0.0022	0.0093
145	0.0106	0.0020	0.0086
146	0.0107	0.0020	0.0086
147	0.0109	0.0021	0.0088
148	0.0110	0.0021	0.0089
149	0.0112	0.0021	0.0091
150	0.0113	0.0022	0.0091
151	0.0115	0.0022	0.0093
152	0.0117	0.0022	0.0094
153	0.0119	0.0023	0.0096

154	0.0120	0.0023	0.0097
155	0.0123	0.0024	0.0100
156	0.0125	0.0024	0.0101
157	0.0127	0.0024	0.0103
158	0.0129	0.0025	0.0104
159	0.0132	0.0025	0.0107
160	0.0134	0.0026	0.0108
161	0.0137	0.0026	0.0111
162	0.0139	0.0027	0.0113
163	0.0143	0.0027	0.0116
164	0.0145	0.0028	0.0118
165	0.0150	0.0029	0.0121
166	0.0152	0.0029	0.0123
167	0.0157	0.0030	0.0127
168	0.0160	0.0031	0.0129
169	0.0166	0.0032	0.0134
170	0.0169	0.0032	0.0137
171	0.0176	0.0034	0.0142
172	0.0179	0.0034	0.0145
173	0.0187	0.0036	0.0151
174	0.0191	0.0037	0.0154
175	0.0200	0.0038	0.0162
176	0.0205	0.0039	0.0166
177	0.0216	0.0041	0.0174
178	0.0222	0.0042	0.0179
179	0.0235	0.0045	0.0190
180	0.0243	0.0047	0.0196
181	0.0260	0.0050	0.0210
182	0.0270	0.0052	0.0218
183	0.0293	0.0056	0.0237
184	0.0307	0.0059	0.0248
185	0.0280	0.0054	0.0227
186	0.0299	0.0057	0.0242
187	0.0347	0.0066	0.0280
188	0.0378	0.0073	0.0306
189	0.0471	0.0090	0.0380
190	0.0542	0.0094	0.0448
191	0.0822	0.0094	0.0728
192	0.1194	0.0094	0.1099
193	0.5165	0.0094	0.5070
194	0.0647	0.0094	0.0553
195	0.0418	0.0080	0.0338
196	0.0321	0.0061	0.0259
197	0.0322	0.0062	0.0260
198	0.0281	0.0054	0.0227
199	0.0251	0.0048	0.0203
200	0.0228	0.0044	0.0185
201	0.0210	0.0040	0.0170
202	0.0195	0.0037	0.0158
203	0.0183	0.0035	0.0148

204	0.0172	0.0033	0.0139
205	0.0163	0.0031	0.0131
206	0.0155	0.0030	0.0125
207	0.0148	0.0028	0.0119
208	0.0141	0.0027	0.0114
209	0.0136	0.0026	0.0110
210	0.0131	0.0025	0.0106
211	0.0126	0.0024	0.0102
212	0.0122	0.0023	0.0098
213	0.0118	0.0023	0.0095
214	0.0114	0.0022	0.0092
215	0.0111	0.0021	0.0090
216	0.0108	0.0021	0.0087
217	0.0116	0.0022	0.0094
218	0.0113	0.0022	0.0091
219	0.0110	0.0021	0.0089
220	0.0108	0.0021	0.0087
221	0.0106	0.0020	0.0085
222	0.0103	0.0020	0.0084
223	0.0101	0.0019	0.0082
224	0.0099	0.0019	0.0080
225	0.0097	0.0019	0.0079
226	0.0096	0.0018	0.0077
227	0.0094	0.0018	0.0076
228	0.0092	0.0018	0.0075
229	0.0091	0.0017	0.0073
230	0.0089	0.0017	0.0072
231	0.0088	0.0017	0.0071
232	0.0087	0.0017	0.0070
233	0.0085	0.0016	0.0069
234	0.0084	0.0016	0.0068
235	0.0083	0.0016	0.0067
236	0.0082	0.0016	0.0066
237	0.0081	0.0015	0.0065
238	0.0080	0.0015	0.0064
239	0.0078	0.0015	0.0063
240	0.0077	0.0015	0.0063
241	0.0077	0.0015	0.0062
242	0.0076	0.0014	0.0061
243	0.0075	0.0014	0.0060
244	0.0074	0.0014	0.0060
245	0.0073	0.0014	0.0059
246	0.0072	0.0014	0.0058
247	0.0071	0.0014	0.0058
248	0.0071	0.0014	0.0057
249	0.0070	0.0013	0.0056
250	0.0069	0.0013	0.0056
251	0.0068	0.0013	0.0055
252	0.0068	0.0013	0.0055
253	0.0067	0.0013	0.0054

254	0.0066	0.0013	0.0054
255	0.0066	0.0013	0.0053
256	0.0065	0.0012	0.0053
257	0.0064	0.0012	0.0052
258	0.0064	0.0012	0.0052
259	0.0063	0.0012	0.0051
260	0.0063	0.0012	0.0051
261	0.0062	0.0012	0.0050
262	0.0062	0.0012	0.0050
263	0.0061	0.0012	0.0049
264	0.0061	0.0012	0.0049
265	0.0060	0.0012	0.0049
266	0.0060	0.0011	0.0048
267	0.0059	0.0011	0.0048
268	0.0059	0.0011	0.0047
269	0.0058	0.0011	0.0047
270	0.0058	0.0011	0.0047
271	0.0057	0.0011	0.0046
272	0.0057	0.0011	0.0046
273	0.0056	0.0011	0.0046
274	0.0056	0.0011	0.0045
275	0.0056	0.0011	0.0045
276	0.0055	0.0011	0.0045
277	0.0055	0.0010	0.0044
278	0.0054	0.0010	0.0044
279	0.0054	0.0010	0.0044
280	0.0054	0.0010	0.0043
281	0.0053	0.0010	0.0043
282	0.0053	0.0010	0.0043
283	0.0053	0.0010	0.0042
284	0.0052	0.0010	0.0042
285	0.0052	0.0010	0.0042
286	0.0052	0.0010	0.0042
287	0.0051	0.0010	0.0041
288	0.0051	0.0010	0.0041

Total soil rain loss = 0.58(In)
Total effective rainfall = 3.06(In)
Peak flow rate in flood hydrograph = 44.93(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 12.5 25.0 37.5 50.0

0+ 5	0.0001	0.01	Q
0+10	0.0005	0.05	Q
0+15	0.0013	0.12	Q
0+20	0.0031	0.26	Q
0+25	0.0066	0.50	Q
0+30	0.0115	0.71	Q
0+35	0.0174	0.86	Q
0+40	0.0240	0.96	Q
0+45	0.0312	1.04	Q
0+50	0.0388	1.11	Q
0+55	0.0469	1.17	Q
1+ 0	0.0552	1.21	Q
1+ 5	0.0639	1.25	VQ
1+10	0.0728	1.29	VQ
1+15	0.0819	1.32	VQ
1+20	0.0912	1.35	VQ
1+25	0.1007	1.38	VQ
1+30	0.1104	1.41	VQ
1+35	0.1202	1.43	VQ
1+40	0.1302	1.45	VQ
1+45	0.1403	1.47	VQ
1+50	0.1505	1.49	VQ
1+55	0.1609	1.50	VQ
2+ 0	0.1714	1.52	VQ
2+ 5	0.1819	1.53	VQ
2+10	0.1926	1.55	VQ
2+15	0.2033	1.56	Q
2+20	0.2141	1.57	Q
2+25	0.2251	1.59	Q
2+30	0.2361	1.60	Q
2+35	0.2471	1.61	Q
2+40	0.2583	1.62	Q
2+45	0.2695	1.63	Q
2+50	0.2808	1.64	Q
2+55	0.2921	1.65	Q
3+ 0	0.3035	1.65	Q
3+ 5	0.3149	1.66	Q
3+10	0.3265	1.67	Q
3+15	0.3380	1.68	Q
3+20	0.3497	1.69	Q
3+25	0.3614	1.70	Q
3+30	0.3732	1.71	Q
3+35	0.3850	1.72	Q
3+40	0.3969	1.73	QV
3+45	0.4088	1.73	QV
3+50	0.4208	1.74	QV
3+55	0.4329	1.75	QV
4+ 0	0.4450	1.76	QV
4+ 5	0.4571	1.76	QV
4+10	0.4693	1.77	QV

4+15	0.4815	1.78	QV
4+20	0.4938	1.78	QV
4+25	0.5061	1.79	QV
4+30	0.5185	1.80	QV
4+35	0.5309	1.81	QV
4+40	0.5434	1.81	QV
4+45	0.5560	1.82	QV
4+50	0.5685	1.83	QV
4+55	0.5812	1.84	QV
5+ 0	0.5939	1.84	Q V
5+ 5	0.6066	1.85	Q V
5+10	0.6194	1.86	Q V
5+15	0.6323	1.87	Q V
5+20	0.6452	1.88	Q V
5+25	0.6582	1.88	Q V
5+30	0.6712	1.89	Q V
5+35	0.6843	1.90	Q V
5+40	0.6975	1.91	Q V
5+45	0.7107	1.92	Q V
5+50	0.7239	1.93	Q V
5+55	0.7373	1.94	Q V
6+ 0	0.7507	1.94	Q V
6+ 5	0.7641	1.95	Q V
6+10	0.7776	1.96	Q V
6+15	0.7912	1.97	Q V
6+20	0.8049	1.98	Q V
6+25	0.8186	1.99	Q V
6+30	0.8323	2.00	Q V
6+35	0.8462	2.01	Q V
6+40	0.8601	2.02	Q V
6+45	0.8741	2.03	Q V
6+50	0.8882	2.04	Q V
6+55	0.9023	2.05	Q V
7+ 0	0.9165	2.06	Q V
7+ 5	0.9308	2.07	Q V
7+10	0.9451	2.08	Q V
7+15	0.9595	2.09	Q V
7+20	0.9740	2.11	Q V
7+25	0.9886	2.12	Q V
7+30	1.0033	2.13	Q V
7+35	1.0180	2.14	Q V
7+40	1.0328	2.15	Q V
7+45	1.0477	2.16	Q V
7+50	1.0627	2.18	Q V
7+55	1.0778	2.19	Q V
8+ 0	1.0929	2.20	Q V
8+ 5	1.1082	2.21	Q V
8+10	1.1235	2.23	Q V
8+15	1.1389	2.24	Q V
8+20	1.1544	2.25	Q V

8+25	1.1700	2.27	Q	V				
8+30	1.1857	2.28	Q	V				
8+35	1.2015	2.29	Q	V				
8+40	1.2174	2.31	Q	V				
8+45	1.2334	2.32	Q	V				
8+50	1.2495	2.34	Q	V				
8+55	1.2657	2.35	Q	V				
9+ 0	1.2820	2.37	Q	V				
9+ 5	1.2984	2.38	Q	V				
9+10	1.3149	2.40	Q	V				
9+15	1.3316	2.41	Q	V				
9+20	1.3483	2.43	Q	V				
9+25	1.3652	2.45	Q	V				
9+30	1.3821	2.46	Q	V				
9+35	1.3992	2.48	Q	V				
9+40	1.4164	2.50	Q	V				
9+45	1.4337	2.52	Q	V				
9+50	1.4512	2.53	Q	V				
9+55	1.4688	2.55	Q	V				
10+ 0	1.4865	2.57	Q	V				
10+ 5	1.5044	2.59	Q	V				
10+10	1.5223	2.61	Q	V				
10+15	1.5405	2.63	Q	V				
10+20	1.5587	2.65	Q	V				
10+25	1.5771	2.67	Q	V				
10+30	1.5957	2.69	Q	V				
10+35	1.6144	2.72	Q	V				
10+40	1.6333	2.74	Q	V				
10+45	1.6523	2.76	Q	V				
10+50	1.6715	2.79	Q	V				
10+55	1.6908	2.81	Q	V				
11+ 0	1.7103	2.83	Q	V				
11+ 5	1.7300	2.86	Q	V				
11+10	1.7499	2.88	Q	V				
11+15	1.7700	2.91	Q	V				
11+20	1.7902	2.94	Q	V				
11+25	1.8106	2.97	Q	V				
11+30	1.8312	2.99	Q	V				
11+35	1.8521	3.02	Q	V				
11+40	1.8731	3.05	Q	V				
11+45	1.8943	3.08	Q	V				
11+50	1.9158	3.12	Q	V				
11+55	1.9375	3.15	Q	V				
12+ 0	1.9594	3.18	Q	V				
12+ 5	1.9815	3.21	Q	V				
12+10	2.0038	3.24	Q	V				
12+15	2.0263	3.26	Q	V				
12+20	2.0488	3.27	Q	V				
12+25	2.0712	3.26	Q	V				
12+30	2.0937	3.25	Q	V				

12+35	2.1161	3.26	Q	V					
12+40	2.1388	3.28	Q	V					
12+45	2.1616	3.31	Q	V					
12+50	2.1846	3.34	Q	V					
12+55	2.2078	3.38	Q	V					
13+ 0	2.2314	3.42	Q	V					
13+ 5	2.2552	3.46	Q	V					
13+10	2.2793	3.50	Q	V					
13+15	2.3037	3.55	Q	V					
13+20	2.3285	3.60	Q	V					
13+25	2.3537	3.65	Q	V					
13+30	2.3793	3.71	Q	V					
13+35	2.4052	3.77	Q	V					
13+40	2.4316	3.83	Q	V					
13+45	2.4585	3.90	Q	V					
13+50	2.4858	3.97	Q	V					
13+55	2.5136	4.04	Q	V					
14+ 0	2.5420	4.12	Q	V					
14+ 5	2.5710	4.20	Q	V					
14+10	2.6006	4.29	Q	V					
14+15	2.6308	4.39	Q	V					
14+20	2.6617	4.49	Q	V					
14+25	2.6933	4.59	Q	V					
14+30	2.7257	4.71	Q	V					
14+35	2.7590	4.83	Q	V					
14+40	2.7932	4.96	Q	V					
14+45	2.8283	5.10	Q	V					
14+50	2.8645	5.25	Q	V					
14+55	2.9018	5.42	Q	V					
15+ 0	2.9404	5.60	Q	V					
15+ 5	2.9803	5.80	Q	V					
15+10	3.0217	6.01	Q	V					
15+15	3.0648	6.25	Q	V					
15+20	3.1096	6.52	Q	V					
15+25	3.1565	6.81	Q	V					
15+30	3.2054	7.10	Q	V					
15+35	3.2565	7.41	Q	V					
15+40	3.3095	7.71	Q	V					
15+45	3.3645	7.98	Q	V					
15+50	3.4225	8.41	Q	V					
15+55	3.4854	9.14	Q	V					
16+ 0	3.5568	10.37	Q	V					
16+ 5	3.6494	13.45	Q	V					
16+10	3.7785	18.74	Q	V					
16+15	3.9482	24.64	Q	V					
16+20	4.1841	34.26	Q	V					
16+25	4.4936	44.93	Q	V					
16+30	4.7697	40.10	Q	V					
16+35	4.9879	31.69	Q	V					
16+40	5.1626	25.36	Q	V					

16+45	5.3096	21.35			Q	V	
16+50	5.4396	18.86			Q	V	
16+55	5.5546	16.71			Q	V	
17+ 0	5.6588	15.12			Q	V	
17+ 5	5.7522	13.57			Q	V	
17+10	5.8381	12.47			Q	V	
17+15	5.9172	11.48			Q	V	
17+20	5.9911	10.74			Q	V	
17+25	6.0602	10.03			Q	V	
17+30	6.1240	9.28			Q	V	
17+35	6.1825	8.49			Q	V	
17+40	6.2377	8.02			Q	V	
17+45	6.2903	7.63			Q	V	
17+50	6.3399	7.20			Q	V	
17+55	6.3871	6.85			Q	V	
18+ 0	6.4319	6.51			Q	V	
18+ 5	6.4738	6.09			Q	V	
18+10	6.5142	5.87			Q	V	
18+15	6.5530	5.64			Q	V	
18+20	6.5897	5.33			Q	V	
18+25	6.6254	5.19			Q	V	
18+30	6.6598	5.00			Q	V	
18+35	6.6923	4.72			Q	V	
18+40	6.7239	4.58			Q	V	
18+45	6.7540	4.38			Q	V	
18+50	6.7825	4.13			Q	V	
18+55	6.8103	4.03			Q	V	
19+ 0	6.8377	3.98			Q	V	
19+ 5	6.8648	3.94			Q	V	
19+10	6.8914	3.86			Q	V	
19+15	6.9174	3.78			Q	V	
19+20	6.9429	3.70			Q	V	
19+25	6.9678	3.61			Q	V	
19+30	6.9915	3.44			Q	V	
19+35	7.0141	3.28			Q	V	
19+40	7.0362	3.20			Q	V	
19+45	7.0577	3.12			Q	V	
19+50	7.0780	2.95			Q	V	
19+55	7.0972	2.79			Q	V	
20+ 0	7.1161	2.74			Q	V	
20+ 5	7.1346	2.69			Q	V	
20+10	7.1527	2.64			Q	V	
20+15	7.1706	2.60			Q	V	
20+20	7.1882	2.55			Q	V	
20+25	7.2055	2.52			Q	V	
20+30	7.2226	2.48			Q	V	
20+35	7.2394	2.44			Q	V	
20+40	7.2560	2.41			Q	V	
20+45	7.2724	2.38			Q	V	
20+50	7.2885	2.34			Q	V	

20+55	7.3045	2.31	Q				V
21+ 0	7.3202	2.28	Q				V
21+ 5	7.3357	2.26	Q				V
21+10	7.3511	2.23	Q				V
21+15	7.3663	2.20	Q				V
21+20	7.3813	2.18	Q				V
21+25	7.3961	2.15	Q				V
21+30	7.4108	2.13	Q				V
21+35	7.4253	2.11	Q				V
21+40	7.4397	2.09	Q				V
21+45	7.4539	2.06	Q				V
21+50	7.4679	2.04	Q				V
21+55	7.4819	2.02	Q				V
22+ 0	7.4957	2.00	Q				V
22+ 5	7.5093	1.98	Q				V
22+10	7.5228	1.96	Q				V
22+15	7.5362	1.94	Q				V
22+20	7.5495	1.93	Q				V
22+25	7.5626	1.91	Q				V
22+30	7.5756	1.89	Q				V
22+35	7.5885	1.87	Q				V
22+40	7.6013	1.86	Q				V
22+45	7.6140	1.84	Q				V
22+50	7.6266	1.83	Q				V
22+55	7.6391	1.81	Q				V
23+ 0	7.6514	1.80	Q				V
23+ 5	7.6637	1.78	Q				V
23+10	7.6759	1.77	Q				V
23+15	7.6879	1.75	Q				V
23+20	7.6999	1.74	Q				V
23+25	7.7118	1.73	Q				V
23+30	7.7236	1.71	Q				V
23+35	7.7353	1.70	Q				V
23+40	7.7469	1.69	Q				V
23+45	7.7584	1.67	Q				V
23+50	7.7699	1.66	Q				V
23+55	7.7813	1.65	Q				V
24+ 0	7.7925	1.64	Q				V

APPENDIX 'E'

Hydraulic Analysis

- Catch basin sizing
- Bioswale capacities
- Storm Tech retention vaults

Worksheet for Space Center Combination Inlet Catch Basin No.1

Project Description	
Solve For	Spread
Input Data	
Discharge	60.00 cfs
Gutter Width	2.00 ft
Gutter Cross Slope	0.020 ft/ft
Road Cross Slope	0.020 ft/ft
Local Depression	4.0 in
Local Depression Width	24.0 in
Grate Width	2.00 ft
Grate Length	28.0 ft
Grate Type	P-50 mm (P-1 -7/8")
Clogging	0.0 %
Curb Opening Length	28.0 ft
Opening Height	0.7 ft
Curb Throat Type	Horizontal
Throat Incline Angle	90.00 degrees
Options	
Calculation Option	Use Both
Results	
Spread	32.6 ft
Depth	7.8 in
Gutter Depression	0.0 in
Total Depression	4.0 in
Open Grate Area	50.4 ft ²
Active Grate Weir Length	32.0 ft

Worksheet for Space Center Combo CB and curb opening Catch Basin No. 2

Project Description	
Solve For	Spread
Input Data	
Discharge	6.40 cfs
Gutter Width	2.00 ft
Gutter Cross Slope	0.020 ft/ft
Road Cross Slope	0.020 ft/ft
Local Depression	2.0 in
Local Depression Width	24.0 in
Grate Width	2.00 ft
Grate Length	4.0 ft
Grate Type	P-50 mm (P-1 -7/8")
Clogging	0.0 %
Curb Opening Length	4.0 ft
Opening Height	0.7 ft
Curb Throat Type	Horizontal
Throat Incline Angle	90.00 degrees
Options	
Calculation Option	Use Both
Results	
Spread	17.9 ft
Depth	4.3 in
Gutter Depression	0.0 in
Total Depression	2.0 in
Open Grate Area	7.2 ft ²
Active Grate Weir Length	8.0 ft

Worksheet for Space Center Combo CB and curb opening Catch Basin No. 3

Project Description	
Solve For	Spread
Input Data	
Discharge	100.00 cfs
Gutter Width	2.00 ft
Gutter Cross Slope	0.020 ft/ft
Road Cross Slope	0.020 ft/ft
Local Depression	4.0 in
Local Depression Width	24.0 in
Grate Width	2.00 ft
Grate Length	45.0 ft
Grate Type	P-50 mm (P-1 -7/8")
Clogging	0.0 %
Curb Opening Length	45.0 ft
Opening Height	0.7 ft
Curb Throat Type	Horizontal
Throat Incline Angle	90.00 degrees
Options	
Calculation Option	Use Both
Results	
Spread	35.2 ft
Depth	8.5 in
Gutter Depression	0.0 in
Total Depression	4.0 in
Open Grate Area	81.0 ft ²
Active Grate Weir Length	49.0 ft

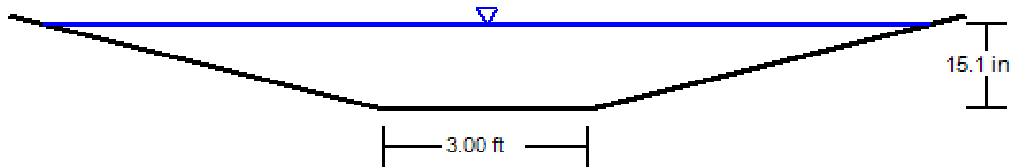
Worksheet for Bioswale No. 1 (west side)

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.035
Channel Slope	0.005 ft/ft
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Bottom Width	3.00 ft
Discharge	25.00 cfs
Results	
Normal Depth	15.1 in
Flow Area	10.1 ft ²
Wetted Perimeter	13.3 ft
Hydraulic Radius	9.0 in
Top Width	13.03 ft
Critical Depth	10.6 in
Critical Slope	0.022 ft/ft
Velocity	2.49 ft/s
Velocity Head	0.10 ft
Specific Energy	1.35 ft
Froude Number	0.499
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	(N/A) ft/s
Upstream Velocity	(N/A) ft/s
Normal Depth	15.1 in
Critical Depth	10.6 in
Channel Slope	0.005 ft/ft
Critical Slope	0.022 ft/ft

Cross Section for Bioswale No. 1 (west side)

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.005 ft/ft
Normal Depth	15.1 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Bottom Width	3.00 ft
Discharge	25.00 cfs



V: 1
H: 1

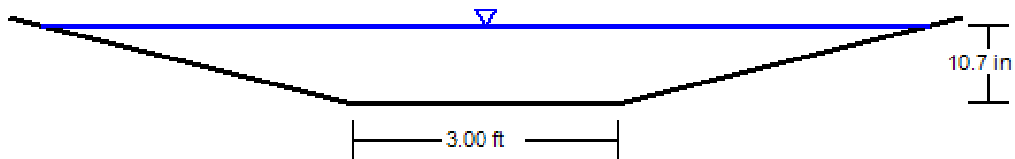
Worksheet for Bioswale No. 2 (east side)

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth
Input Data	
Roughness Coefficient	0.035
Channel Slope	0.005 ft/ft
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Bottom Width	3.00 ft
Discharge	12.00 cfs
Results	
Normal Depth	10.7 in
Flow Area	5.9 ft ²
Wetted Perimeter	10.3 ft
Hydraulic Radius	6.8 in
Top Width	10.13 ft
Critical Depth	7.3 in
Critical Slope	0.024 ft/ft
Velocity	2.05 ft/s
Velocity Head	0.07 ft
Specific Energy	0.96 ft
Froude Number	0.476
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	10.7 in
Critical Depth	7.3 in
Channel Slope	0.005 ft/ft
Critical Slope	0.024 ft/ft

Cross Section for Bioswale No. 2 (east side)

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.005 ft/ft
Normal Depth	10.7 in
Left Side Slope	4.000 H:V
Right Side Slope	4.000 H:V
Bottom Width	3.00 ft
Discharge	12.00 cfs



V: 1
H: 1

Worksheet for Basin 1 outlet

Project Description	
Friction Method	Manning Formula
Solve For	Discharge
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.010 ft/ft
Normal Depth	23.0 in
Diameter	24.0 in
Results	
Discharge	24.25 cfs
Flow Area	3.1 ft ²
Wetted Perimeter	5.5 ft
Hydraulic Radius	6.8 in
Top Width	0.80 ft
Critical Depth	20.9 in
Percent Full	95.8 %
Critical Slope	0.010 ft/ft
Velocity	7.83 ft/s
Velocity Head	0.95 ft
Specific Energy	2.87 ft
Froude Number	0.701
Maximum Discharge	24.33 cfs
Discharge Full	22.62 cfs
Slope Full	0.011 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	76.7 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	23.0 in
Critical Depth	20.9 in
Channel Slope	0.010 ft/ft
Critical Slope	0.010 ft/ft

Worksheet for Basin 2 outlet

Project Description	
Friction Method	Manning Formula
Solve For	Discharge
Input Data	
Roughness Coefficient	0.013
Channel Slope	0.010 ft/ft
Normal Depth	29.0 in
Diameter	30.0 in
Results	
Discharge	43.80 cfs
Flow Area	4.9 ft ²
Wetted Perimeter	6.9 ft
Hydraulic Radius	8.4 in
Top Width	0.90 ft
Critical Depth	26.5 in
Percent Full	96.7 %
Critical Slope	0.010 ft/ft
Velocity	9.02 ft/s
Velocity Head	1.26 ft
Specific Energy	3.68 ft
Froude Number	0.683
Maximum Discharge	44.12 cfs
Discharge Full	41.01 cfs
Slope Full	0.011 ft/ft
Flow Type	Subcritical
GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0
GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Average End Depth Over Rise	0.0 %
Normal Depth Over Rise	76.7 %
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	29.0 in
Critical Depth	26.5 in
Channel Slope	0.010 ft/ft
Critical Slope	0.010 ft/ft



Detention Basin No. 1

User Inputs

Results

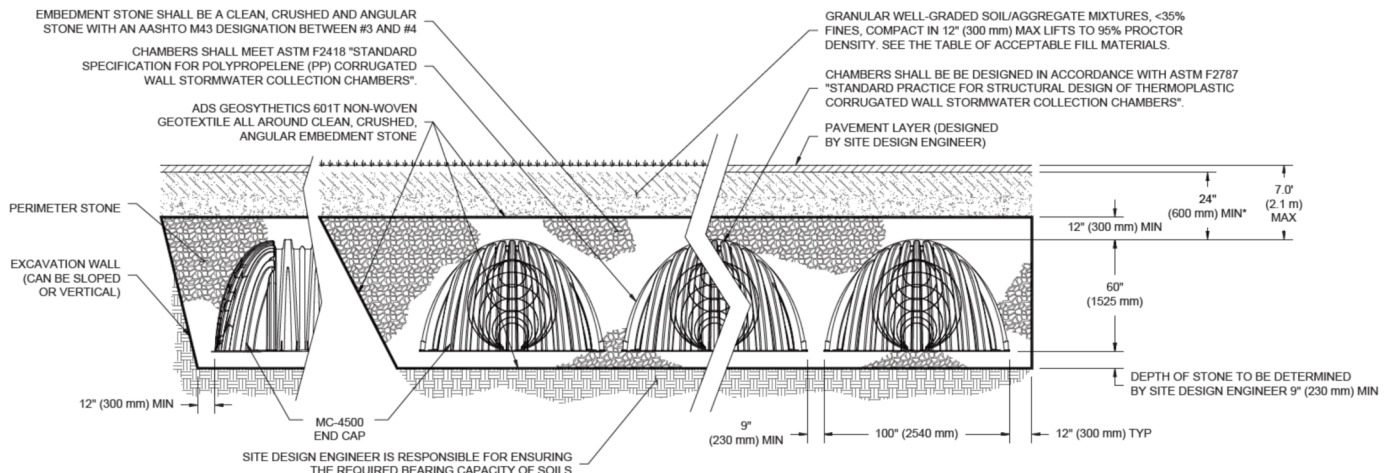
Chamber Model:	MC-4500
Outlet Control Structure:	No
Project Name:	
Engineer:	N/A
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	52162 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Average Cover Over Chambers:	24 in.
Design Constraint Dimensions:	(70 ft. x 190 ft.)

System Volume and Bed Size

Installed Storage Volume:	52958.26 cubic ft.
Storage Volume Per Chamber:	106.50 cubic ft.
Number Of Chambers Required:	308
Number Of End Caps Required:	14
Chamber Rows:	7
Maximum Length:	189.05 ft.
Maximum Width:	64.83 ft.
Approx. Bed Size Required:	12201.95 square ft.

System Components

Amount Of Stone Required:	1815.12 cubic yards
Volume Of Excavation (Not Including Fill):	3050.49 cubic yards
Total Non-woven Geotextile Required:	3710.85 square yards
Woven Geotextile Required (excluding Isolator Row):	106.17 square yards
Woven Geotextile Required (Isolator Row):	425.99 square yards
Total Woven Geotextile Required:	532.16 square yards



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).



Detention Basin No.2

User Inputs

Results

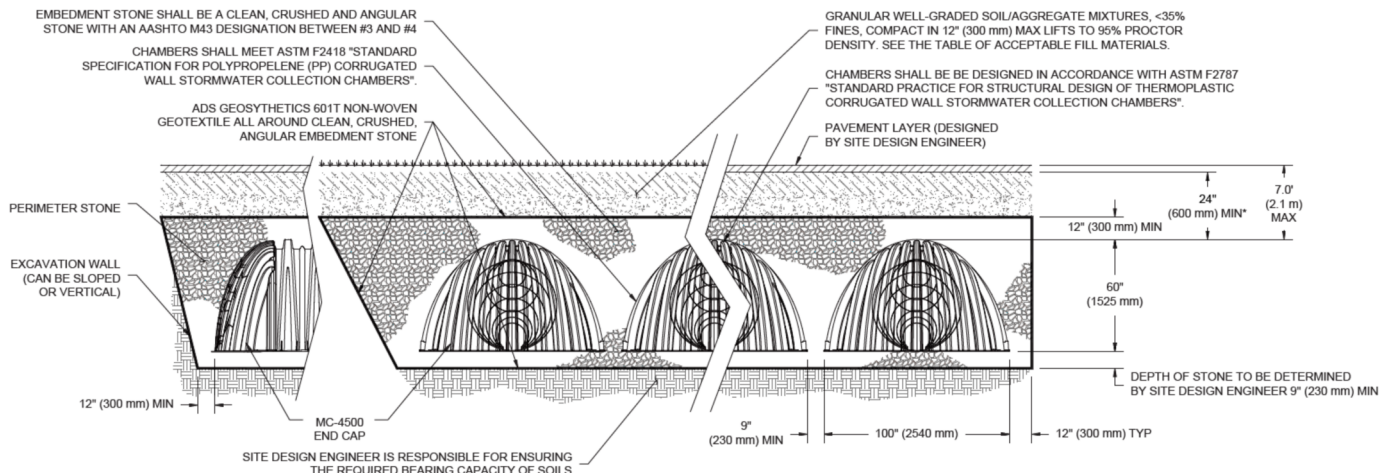
Chamber Model:	MC-4500
Outlet Control Structure:	No
Project Name:	
Engineer:	N/A
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	77400 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Average Cover Over Chambers:	24 in.
Design Constraint Dimensions:	(70 ft. x 300 ft.)

System Volume and Bed Size

Installed Storage Volume:	78136.92 cubic ft.
Storage Volume Per Chamber:	106.50 cubic ft.
Number Of Chambers Required:	461
Number Of End Caps Required:	14
Chamber Rows:	7
Maximum Length:	277.60 ft.
Maximum Width:	64.83 ft.
Approx. Bed Size Required:	17906.38 square ft.

System Components

Amount Of Stone Required:	2637.72 cubic yards
Volume Of Excavation (Not Including Fill):	4476.59 cubic yards
Total Non-woven Geotextile Required:	5391.42 square yards
Woven Geotextile Required (excluding Isolator Row):	106.17 square yards
Woven Geotextile Required (Isolator Row):	632.61 square yards
Total Woven Geotextile Required:	738.77 square yards



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

APPENDIX 'F'

Reference Documents

NOAA Point Precipitation chart
NRCS Soils Survey
Figure C-3, Curve Number (SBC Hydrology Manual)
TC Nomograph
City of Hesperia Master Plan of Drain Map
Existing Storm Drain Outlet Line J-03 (Plan No. P-000602)





NOAA Atlas 14, Volume 6, Version 2
 Location name: Victorville, California, USA*
 Latitude: 34.4942°, Longitude: -117.2867°
 Elevation: 2881.99 ft**



* source: ESRI Maps
 ** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

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

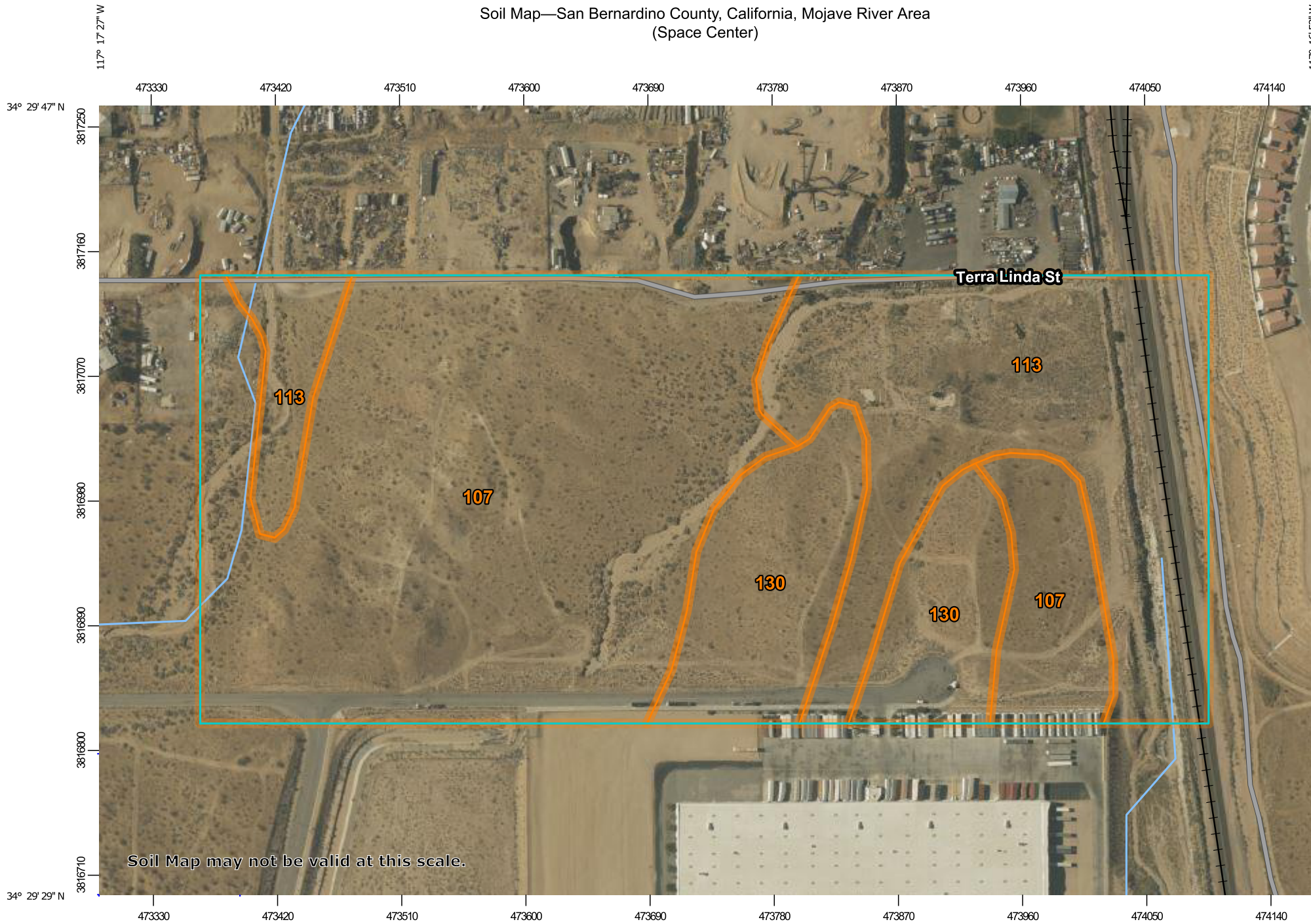
NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps & aeriels](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.090 (0.075-0.111)	0.126 (0.104-0.154)	0.176 (0.144-0.216)	0.218 (0.178-0.270)	0.279 (0.220-0.357)	0.329 (0.255-0.430)	0.383 (0.289-0.512)	0.440 (0.323-0.606)	0.523 (0.369-0.751)	0.592 (0.403-0.878)
10-min	0.130 (0.107-0.159)	0.181 (0.149-0.221)	0.252 (0.207-0.309)	0.313 (0.255-0.387)	0.400 (0.316-0.512)	0.472 (0.365-0.616)	0.548 (0.414-0.734)	0.631 (0.463-0.869)	0.750 (0.528-1.08)	0.848 (0.577-1.26)
15-min	0.157 (0.130-0.192)	0.219 (0.180-0.268)	0.304 (0.250-0.374)	0.378 (0.308-0.468)	0.484 (0.382-0.619)	0.571 (0.441-0.746)	0.663 (0.501-0.888)	0.763 (0.560-1.05)	0.907 (0.639-1.30)	1.03 (0.698-1.52)
30-min	0.213 (0.176-0.260)	0.296 (0.245-0.363)	0.413 (0.340-0.507)	0.513 (0.418-0.635)	0.657 (0.518-0.840)	0.774 (0.599-1.01)	0.900 (0.679-1.20)	1.03 (0.760-1.43)	1.23 (0.867-1.77)	1.39 (0.947-2.07)
60-min	0.257 (0.212-0.314)	0.358 (0.295-0.438)	0.498 (0.410-0.612)	0.618 (0.505-0.766)	0.792 (0.625-1.01)	0.934 (0.722-1.22)	1.09 (0.819-1.45)	1.25 (0.917-1.72)	1.49 (1.05-2.13)	1.68 (1.14-2.49)
2-hr	0.362 (0.299-0.443)	0.488 (0.402-0.597)	0.661 (0.544-0.812)	0.809 (0.660-1.00)	1.02 (0.806-1.31)	1.19 (0.922-1.56)	1.37 (1.04-1.84)	1.57 (1.15-2.16)	1.85 (1.30-2.65)	2.07 (1.41-3.08)
3-hr	0.437 (0.361-0.535)	0.582 (0.480-0.713)	0.781 (0.643-0.959)	0.951 (0.776-1.18)	1.19 (0.941-1.53)	1.39 (1.07-1.81)	1.59 (1.20-2.13)	1.81 (1.33-2.49)	2.12 (1.50-3.05)	2.37 (1.62-3.52)
6-hr	0.596 (0.492-0.729)	0.788 (0.650-0.965)	1.05 (0.863-1.29)	1.27 (1.03-1.57)	1.58 (1.25-2.02)	1.83 (1.41-2.39)	2.09 (1.58-2.80)	2.37 (1.74-3.25)	2.75 (1.94-3.95)	3.07 (2.09-4.55)
12-hr	0.766 (0.632-0.936)	1.02 (0.843-1.25)	1.37 (1.13-1.68)	1.66 (1.35-2.05)	2.06 (1.62-2.63)	2.37 (1.84-3.10)	2.70 (2.04-3.62)	3.05 (2.24-4.20)	3.53 (2.49-5.06)	3.91 (2.66-5.81)
24-hr	1.00 (0.887-1.15)	1.36 (1.20-1.57)	1.84 (1.62-2.12)	2.23 (1.95-2.60)	2.77 (2.35-3.34)	3.20 (2.66-3.93)	3.64 (2.95-4.58)	4.10 (3.23-5.31)	4.73 (3.58-6.38)	5.23 (3.82-7.31)
2-day	1.16 (1.03-1.33)	1.60 (1.41-1.84)	2.18 (1.93-2.52)	2.66 (2.33-3.10)	3.33 (2.82-4.01)	3.85 (3.19-4.73)	4.39 (3.55-5.52)	4.95 (3.90-6.41)	5.72 (4.33-7.72)	6.34 (4.63-8.85)
3-day	1.26 (1.12-1.45)	1.75 (1.55-2.01)	2.40 (2.12-2.78)	2.94 (2.58-3.43)	3.69 (3.13-4.44)	4.27 (3.55-5.25)	4.88 (3.95-6.14)	5.51 (4.34-7.14)	6.38 (4.83-8.62)	7.08 (5.17-9.89)
4-day	1.34 (1.19-1.54)	1.86 (1.65-2.15)	2.57 (2.27-2.96)	3.14 (2.75-3.66)	3.94 (3.34-4.74)	4.56 (3.79-5.61)	5.21 (4.22-6.56)	5.88 (4.63-7.61)	6.81 (5.15-9.19)	7.55 (5.51-10.5)
7-day	1.45 (1.29-1.67)	2.00 (1.77-2.31)	2.74 (2.42-3.17)	3.35 (2.94-3.91)	4.19 (3.55-5.05)	4.85 (4.02-5.96)	5.52 (4.47-6.95)	6.22 (4.90-8.06)	7.19 (5.43-9.70)	7.95 (5.80-11.1)
10-day	1.53 (1.36-1.77)	2.11 (1.87-2.43)	2.88 (2.54-3.33)	3.52 (3.08-4.10)	4.39 (3.72-5.29)	5.08 (4.21-6.24)	5.78 (4.68-7.28)	6.51 (5.13-8.43)	7.51 (5.68-10.1)	8.30 (6.07-11.6)

Soil Map—San Bernardino County, California, Mojave River Area
(Space Center)




Map Scale: 1:4,020 if printed on A landscape (11" x 8.5") sheet.



Soil Map—San Bernardino County, California, Mojave River Area
(Space Center)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

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

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: San Bernardino County, California, Mojave River Area

Survey Area Data: Version 12, May 27, 2020

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

Date(s) aerial images were photographed: Jun 26, 2019—Jul 8, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
107	BRYMAN LOAMY FINE SAND, 5 TO 9 PERCENT SLOPES	31.9	54.4%
113	CAJON SAND, 2 TO 9 PERCENT SLOPES	17.8	30.3%
130	HAPLARGIDS-CALCIORTHIDS COMPLEX, 15 TO 50 PERCENT SLOPES	9.0	15.3%
Totals for Area of Interest		58.7	100.0%

San Bernardino County, California, Mojave River Area

130—HAPLARGIDS-CALCIORTHIDS COMPLEX, 15 TO 50 PERCENT SLOPES

Map Unit Setting

National map unit symbol: hks3

Elevation: 2,600 to 4,100 feet

Mean annual precipitation: 3 to 6 inches

Mean annual air temperature: 59 to 63 degrees F

Frost-free period: 180 to 280 days

Farmland classification: Not prime farmland

Map Unit Composition

Haplargids and similar soils: 50 percent

Minor components: 50 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haplargids

Setting

Landform: Fan remnants

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Across-slope shape: Concave

Parent material: Alluvium derived from granite sources

Properties and qualities

Slope: 15 to 50 percent

Depth to restrictive feature: More than 80 inches

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydric soil rating: No

Minor Components

Calciorthids

Percent of map unit: 25 percent

Landform: Hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: No

Unnamed soils

Percent of map unit: 10 percent

Hydric soil rating: No

Badland

Percent of map unit: 5 percent

Hydric soil rating: No

Cajon

Percent of map unit: 5 percent

Hydric soil rating: No

Bryman

Percent of map unit: 3 percent

Hydric soil rating: No

Mohave variant, s

Percent of map unit: 2 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: San Bernardino County, California, Mojave River Area

Survey Area Data: Version 12, May 27, 2020

San Bernardino County, California, Mojave River Area

107—BRYMAN LOAMY FINE SAND, 5 TO 9 PERCENT SLOPES

Map Unit Setting

National map unit symbol: hkrc

Elevation: 3,000 to 3,200 feet

Mean annual precipitation: 3 to 6 inches

Mean annual air temperature: 59 to 63 degrees F

Frost-free period: 180 to 280 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Bryman and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bryman

Setting

Landform: Fan remnants

Landform position (two-dimensional): Backslope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from granite sources

Typical profile

H1 - 0 to 9 inches: loamy fine sand

H2 - 9 to 39 inches: sandy clay loam

H3 - 39 to 60 inches: loamy sand

Properties and qualities

Slope: 5 to 9 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water capacity: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Ecological site: R030XE012CA - Sandy

Hydric soil rating: No

Minor Components

Helendale

Percent of map unit: 5 percent

Hydric soil rating: No

Bryman, sloping

Percent of map unit: 5 percent

Hydric soil rating: No

Cajon

Percent of map unit: 5 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: San Bernardino County, California, Mojave River Area

Survey Area Data: Version 12, May 27, 2020

San Bernardino County, California, Mojave River Area

113—CAJON SAND, 2 TO 9 PERCENT SLOPES

Map Unit Setting

National map unit symbol: hkrk

Elevation: 1,800 to 3,500 feet

Mean annual precipitation: 3 to 6 inches

Mean annual air temperature: 59 to 68 degrees F

Frost-free period: 180 to 290 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Cajon and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cajon

Setting

Landform: Alluvial fans

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from mixed sources

Typical profile

A - 0 to 6 inches: sand

C1 - 6 to 25 inches: sand

C2 - 25 to 60 inches: gravelly sand, stratified gravelly sand to sand

C2 - 25 to 60 inches:

Properties and qualities

Slope: 0 to 4 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 1 percent

Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: R030XF012CA - Sandy

Hydric soil rating: No

Minor Components

Helendale

Percent of map unit: 5 percent

Landform: Alluvial fans

Hydric soil rating: No

Cajon, gravelly surface

Percent of map unit: 5 percent

Landform: Alluvial fans

Kimberlina

Percent of map unit: 5 percent

Landform: Alluvial fans

Hydric soil rating: No

Data Source Information

Soil Survey Area: San Bernardino County, California, Mojave River Area

Survey Area Data: Version 12, May 27, 2020

Curve (I) Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II

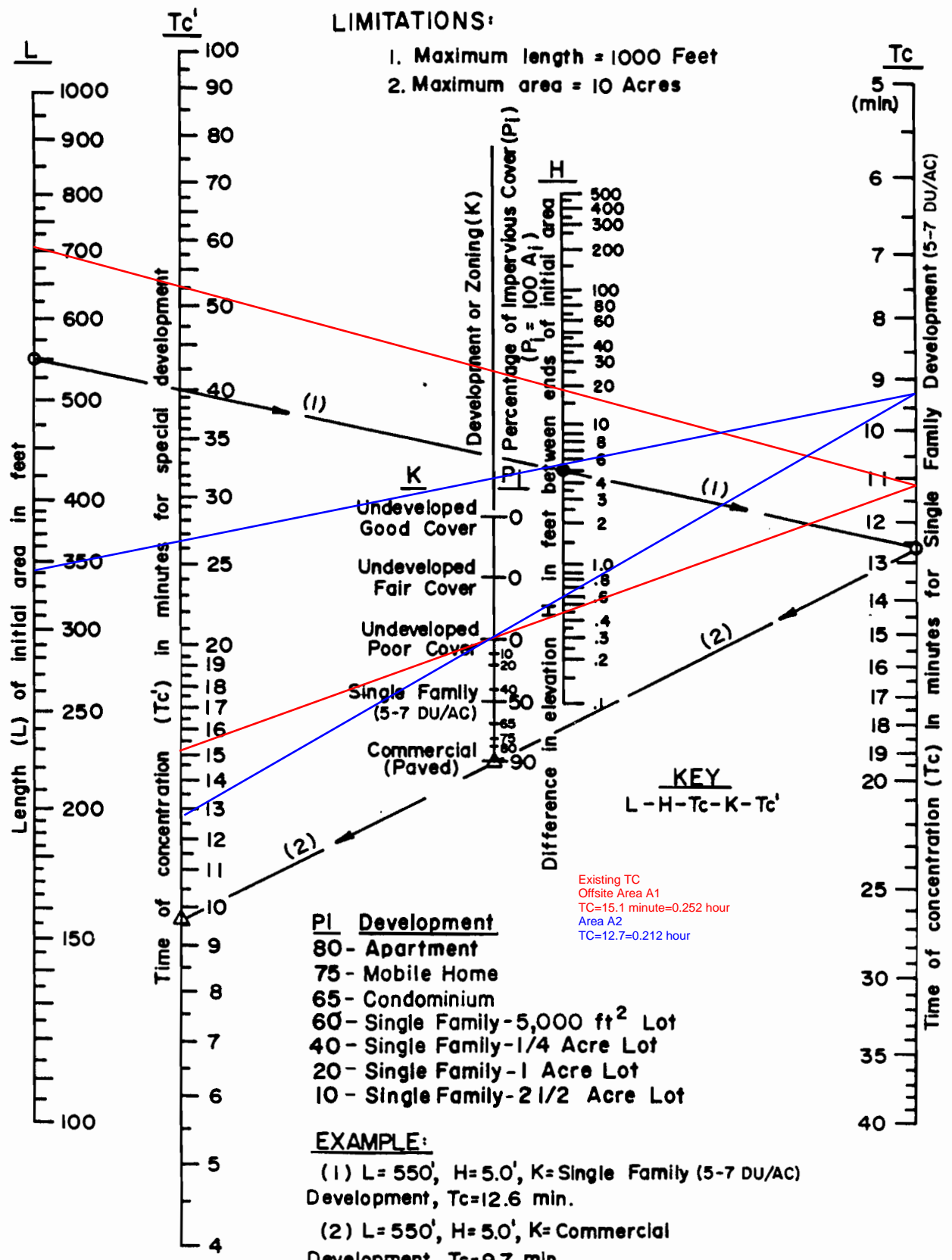
Cover Type (3)	Quality of Cover (2)	Soil Group			
		A	B	C	D
<u>NATURAL COVERS -</u>					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparral, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparral, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	71	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent.)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	25	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
<u>URBAN COVERS -</u>					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
<u>AGRICULTURAL COVERS -</u>					
Fallow (Land plowed but not tilled or seeded)		77	86	91	94

SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

**CURVE NUMBERS
FOR
PERVIOUS AREAS**

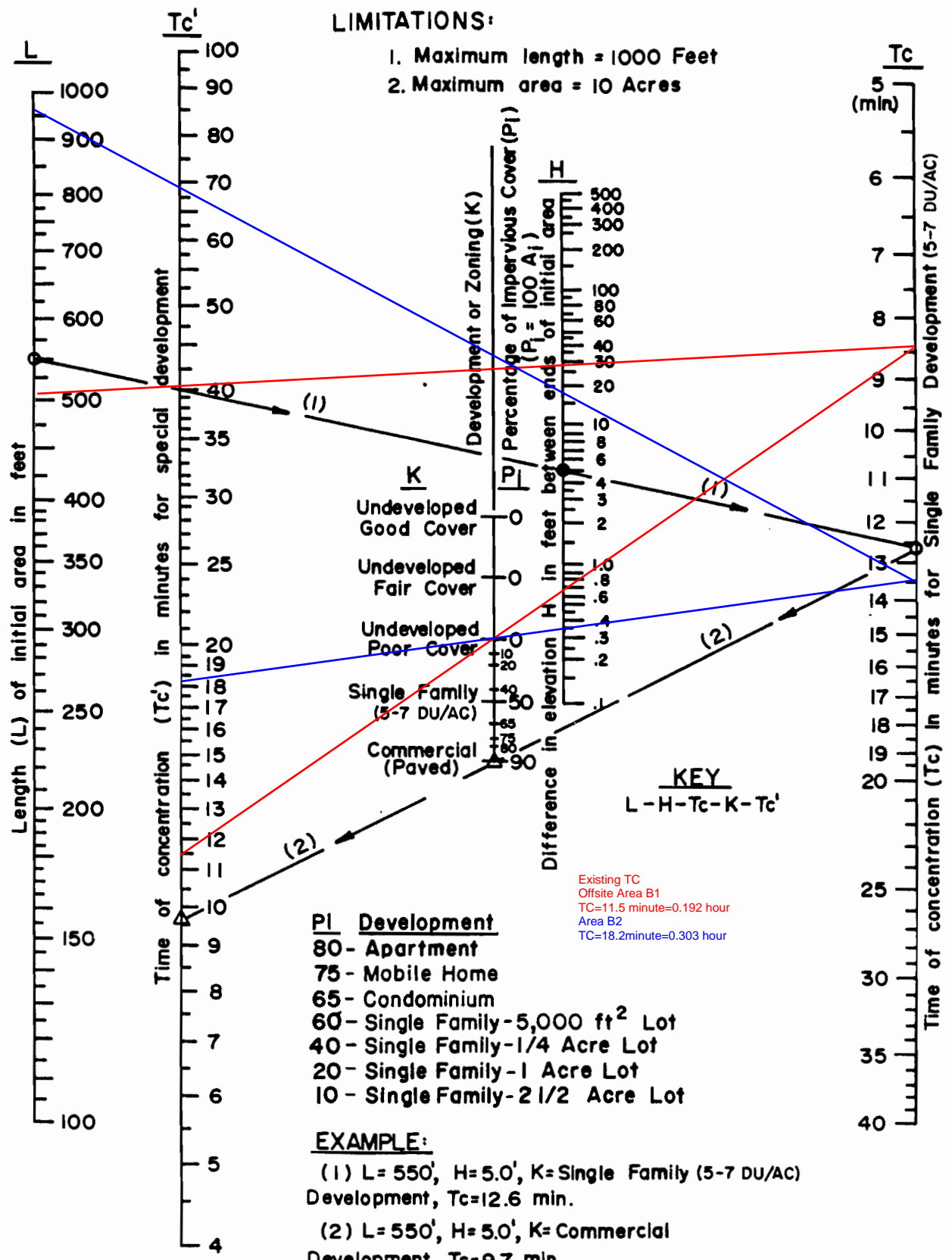
LIMITATIONS:

1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres



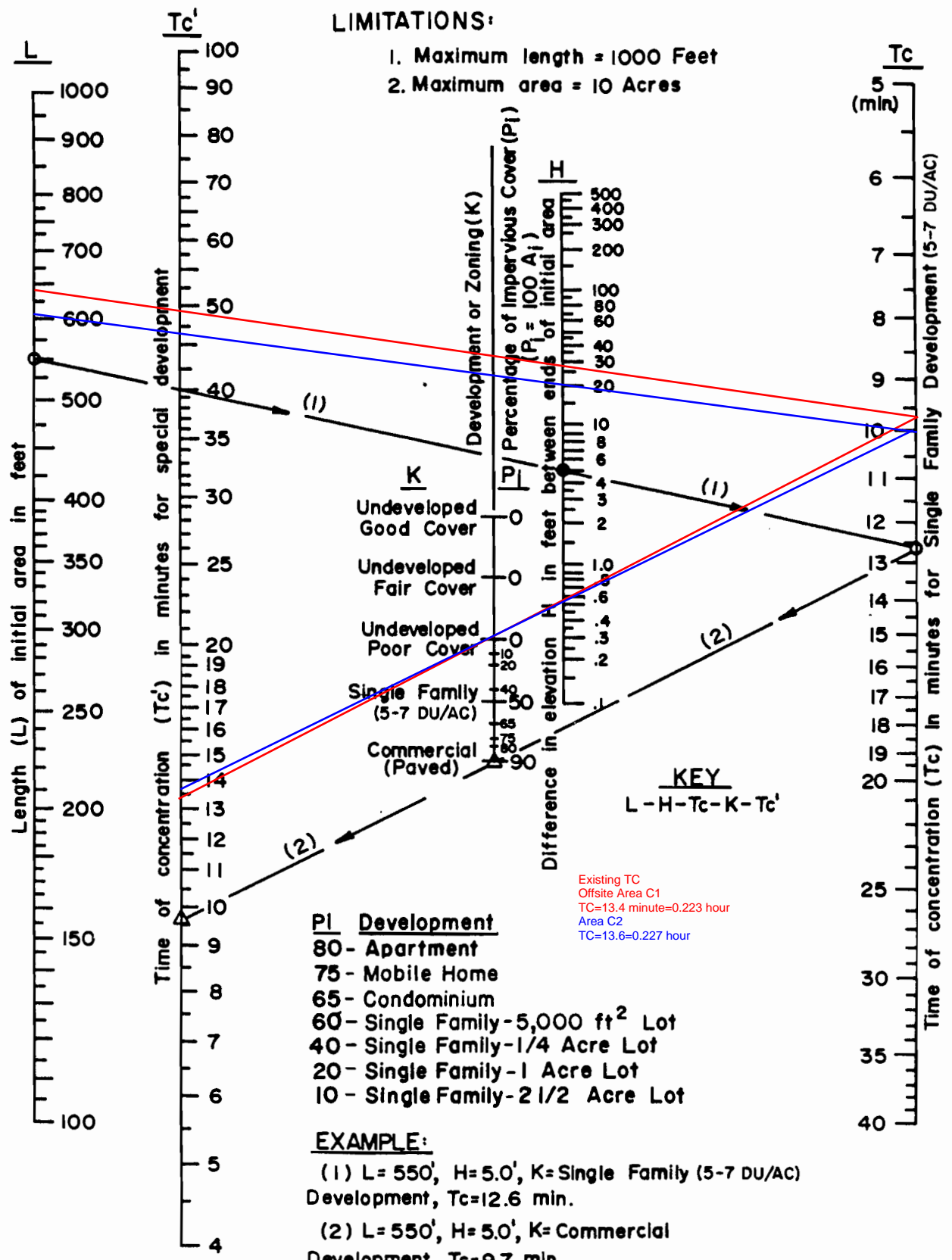
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1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres



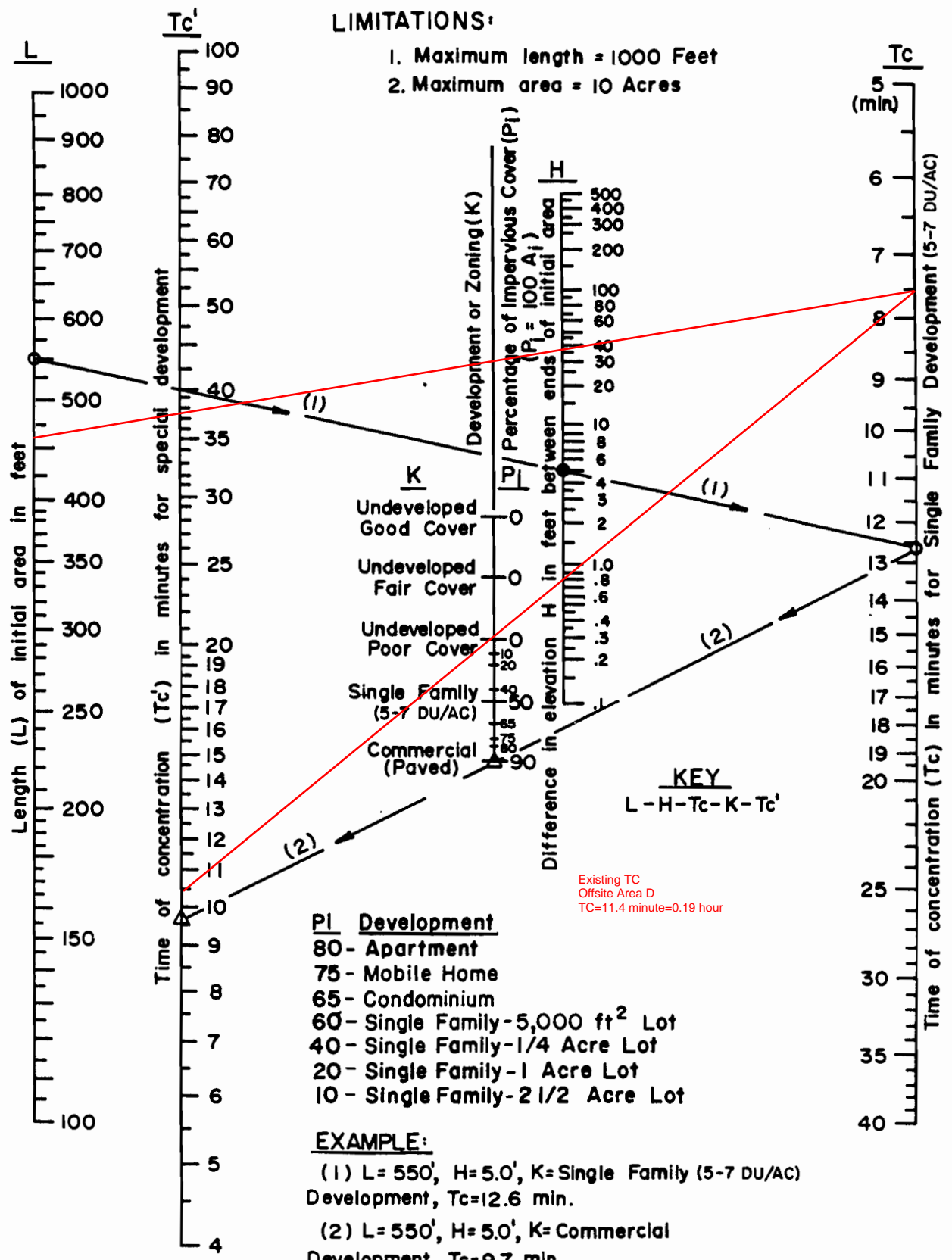
LIMITATIONS:

1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres



LIMITATIONS:

1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres



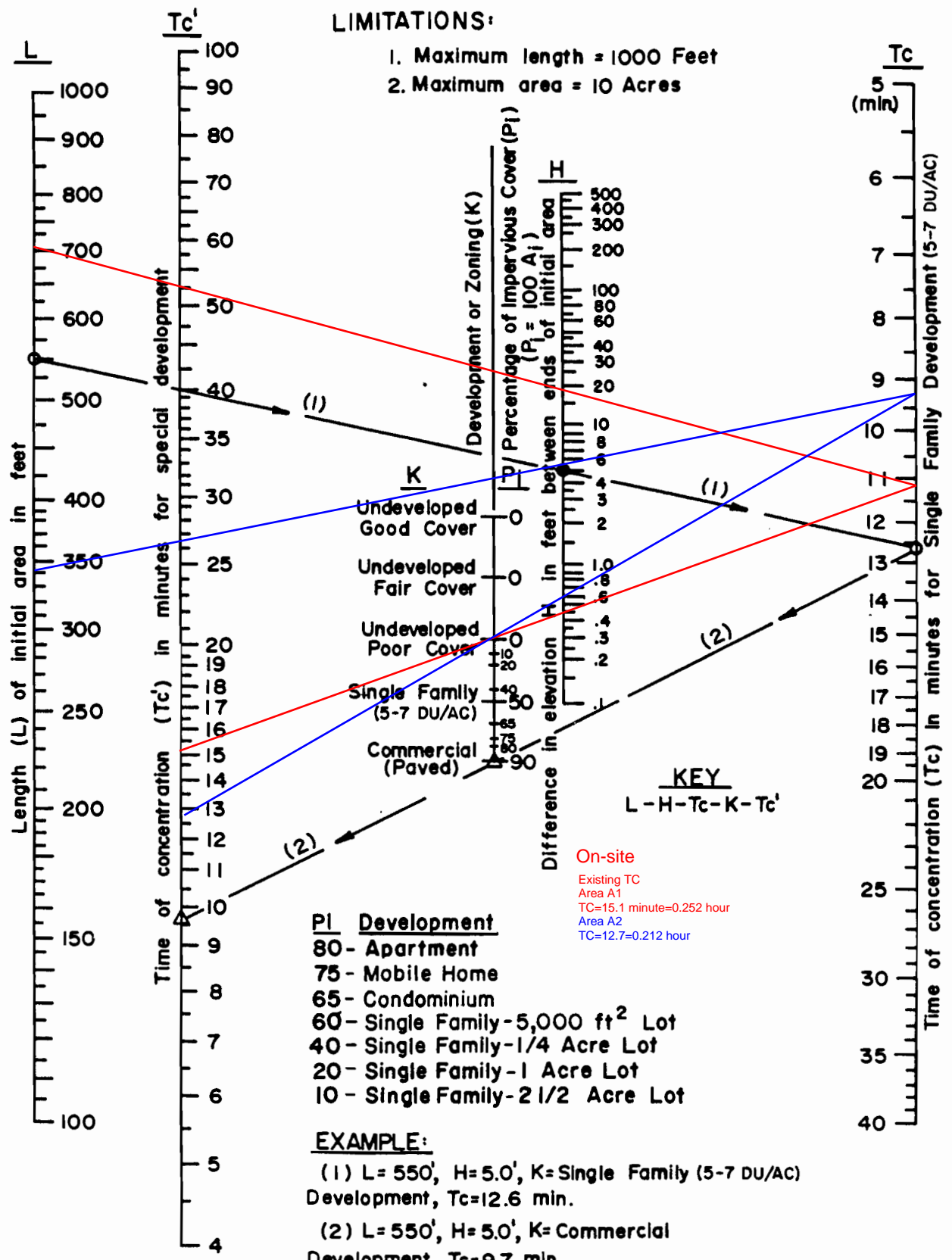
SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

TIME OF CONCENTRATION
NOMOGRAPH
FOR INITIAL SUBAREA

Figure D-1

LIMITATIONS:

1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres



SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

TIME OF CONCENTRATION
NOMOGRAPH
FOR INITIAL SUBAREA

Figure D-1

LIMITATIONS:

1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres

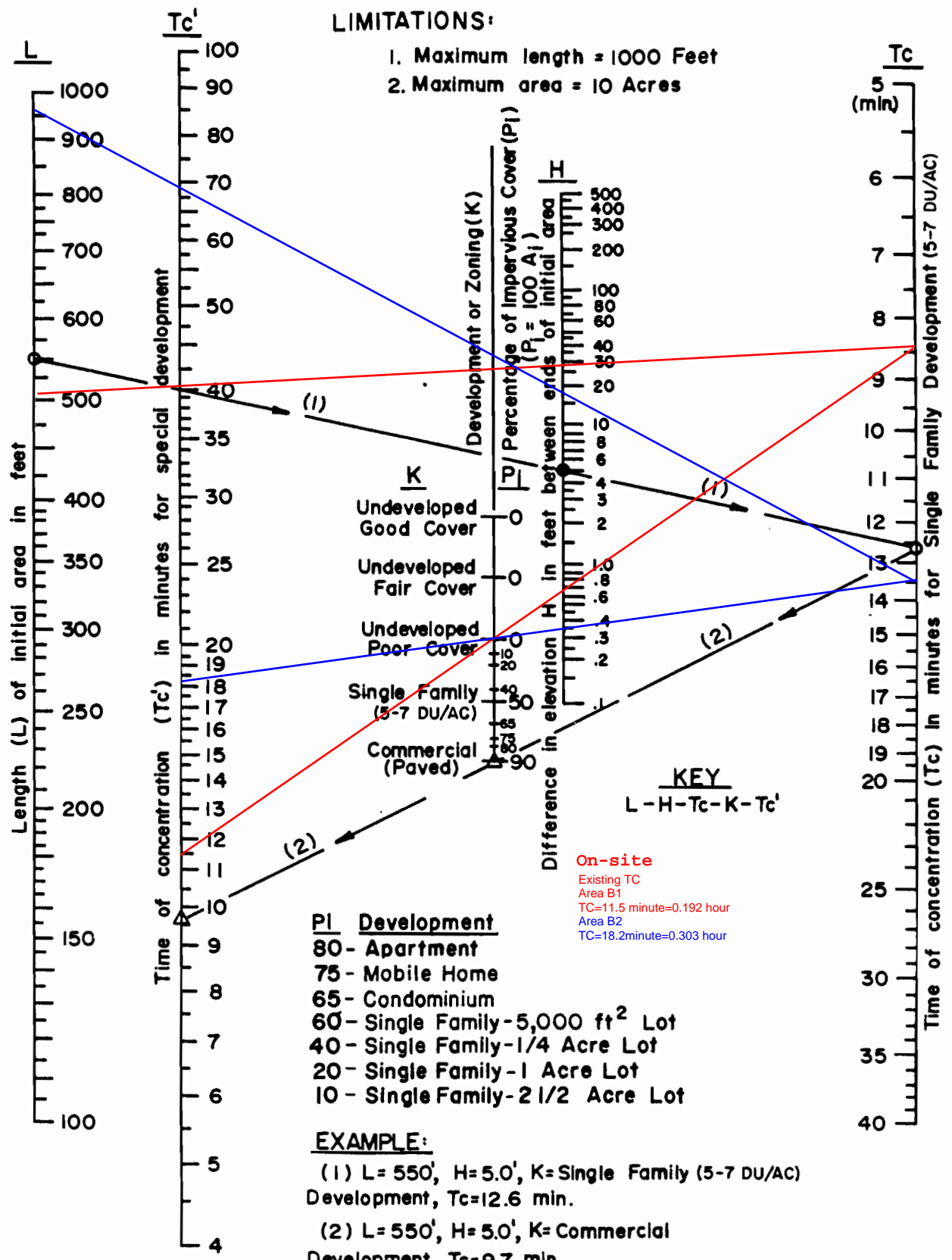


Figure D-1

LIMITATIONS:

1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres

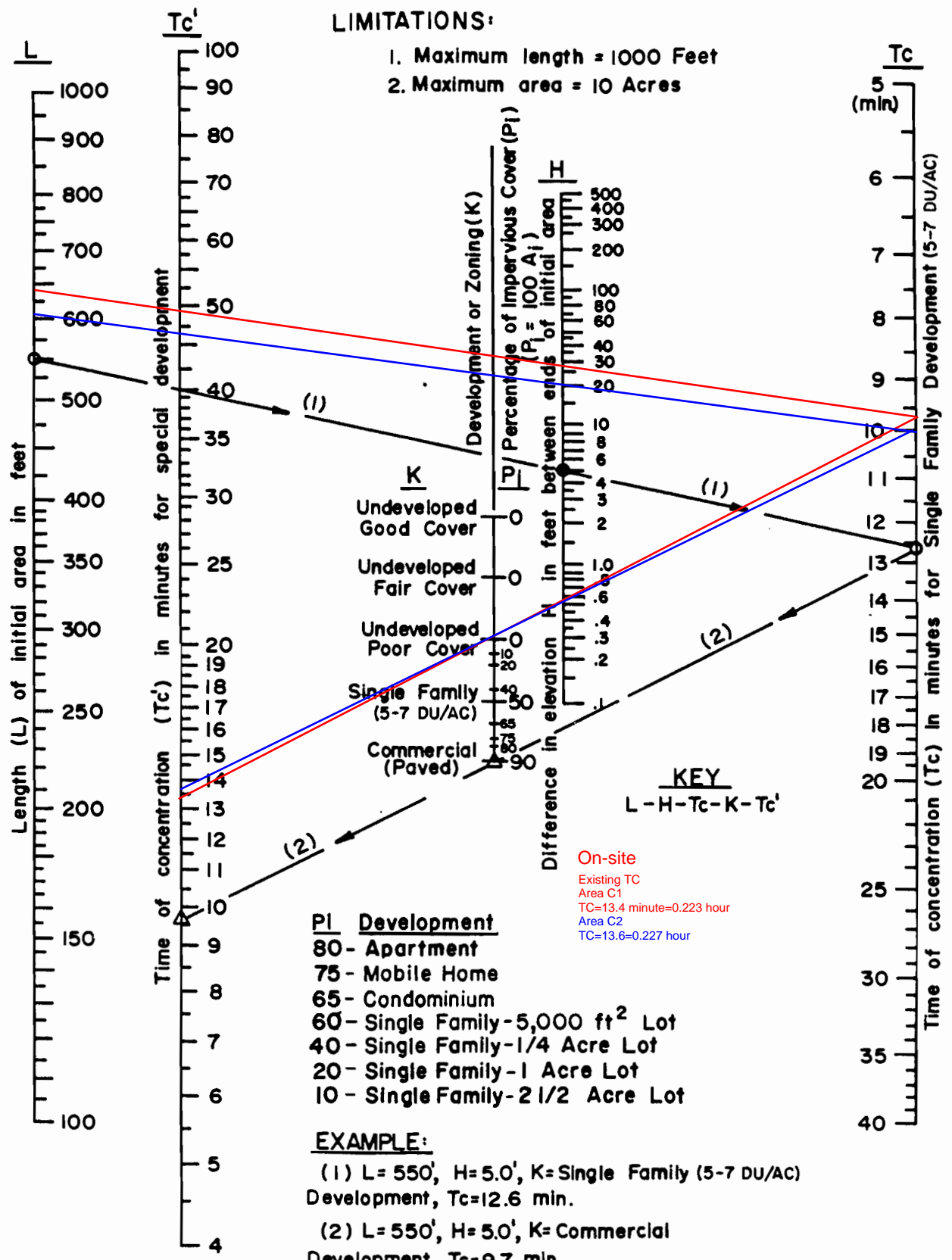
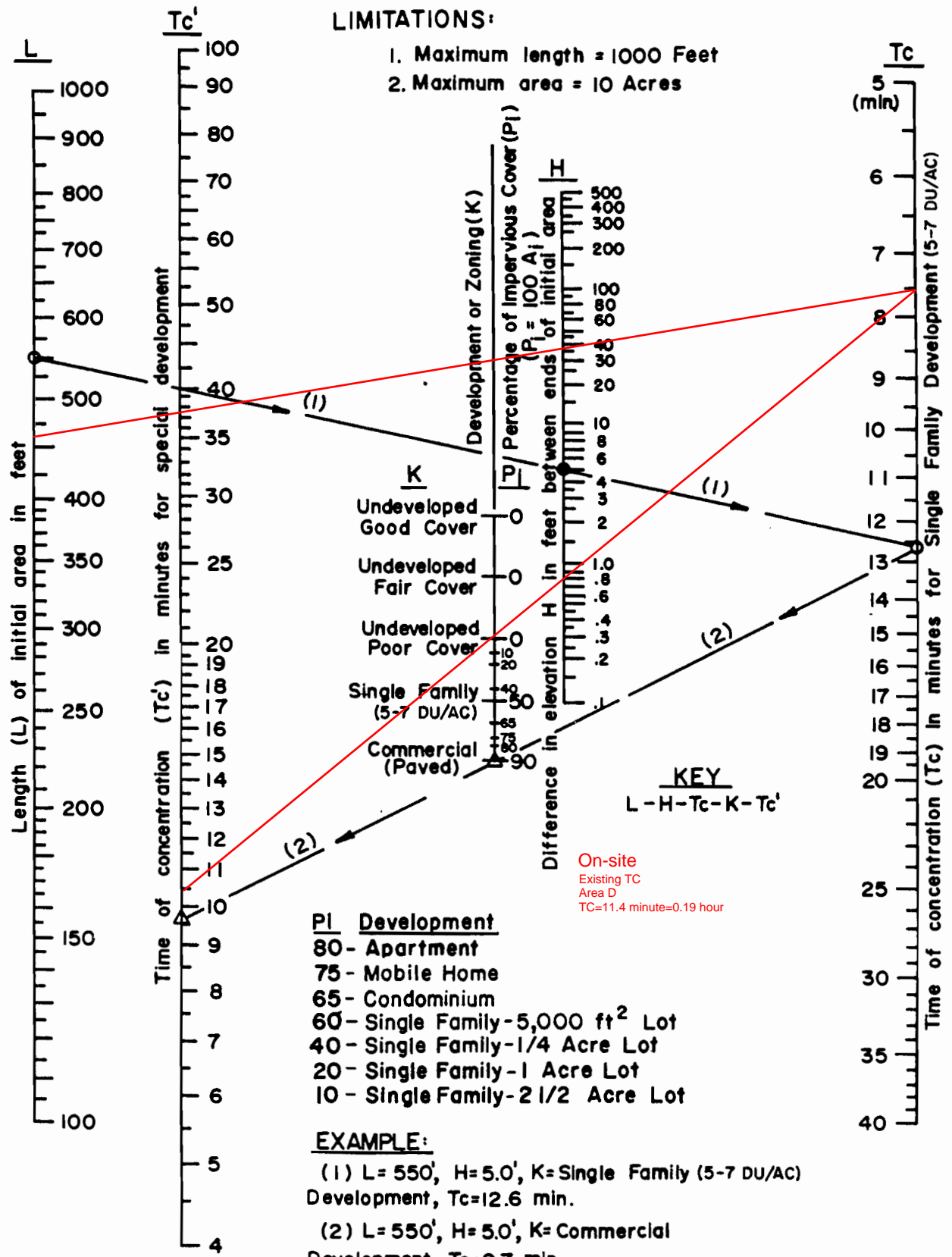


Figure D-1

LIMITATIONS:

1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres



LIMITATIONS:

1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres

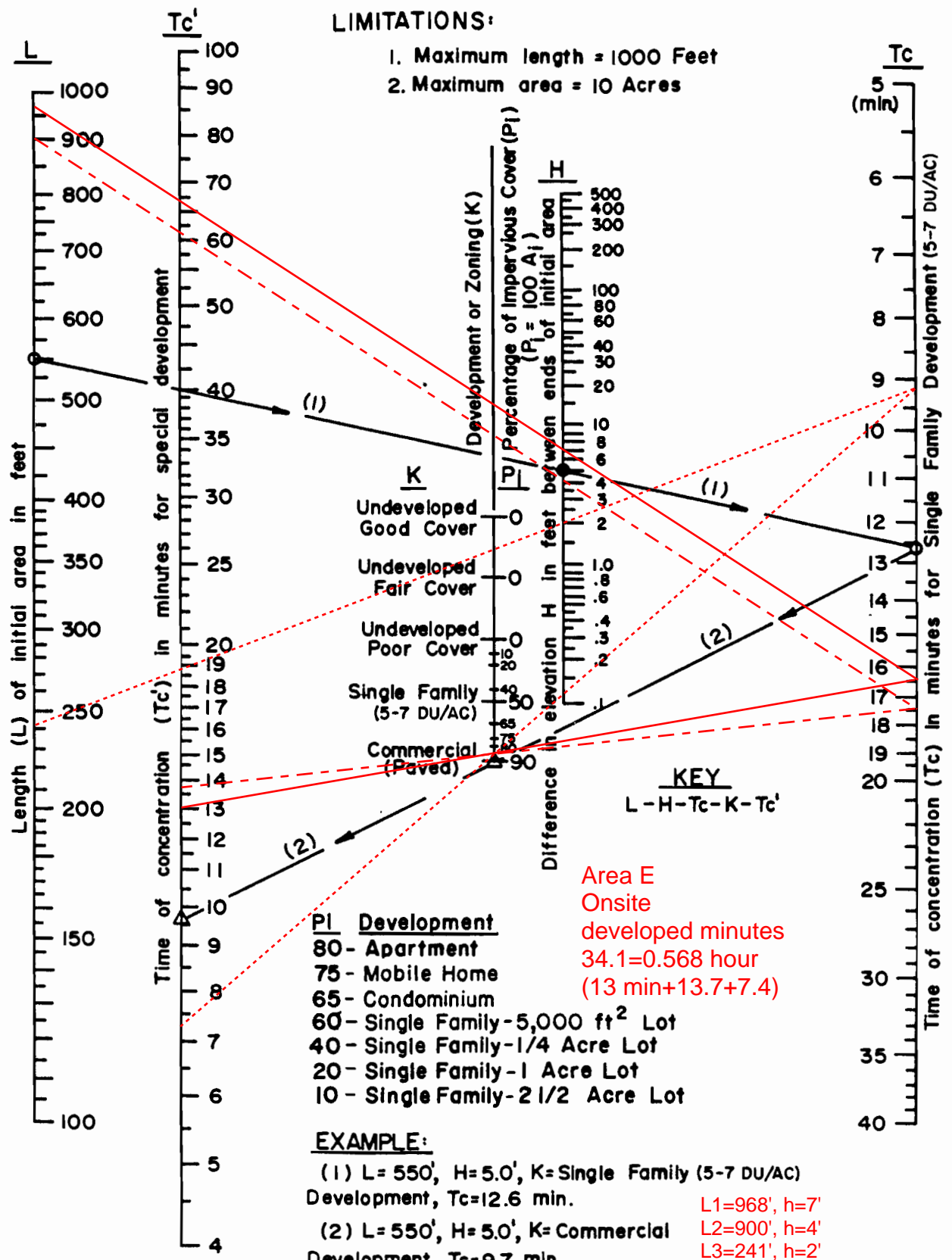
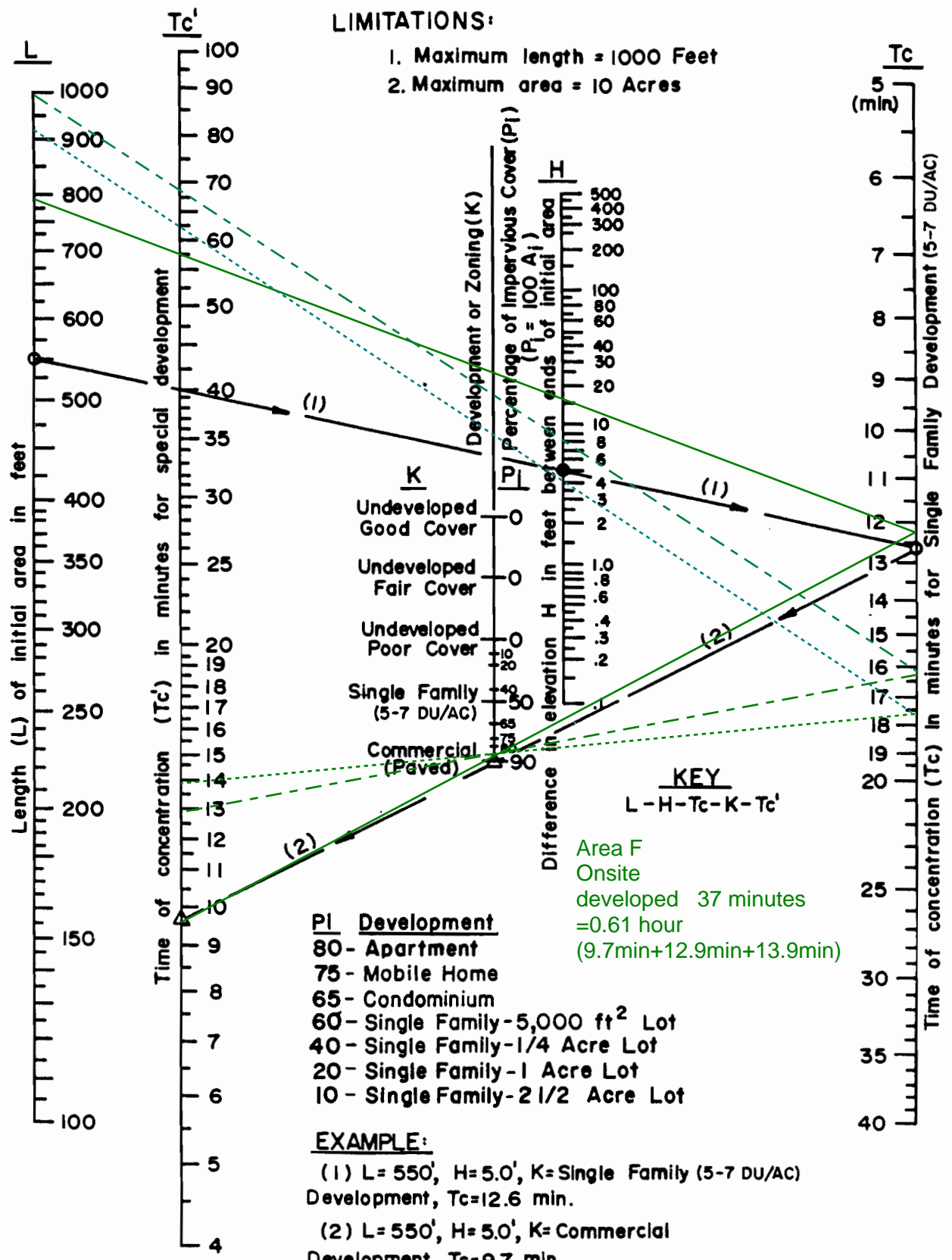
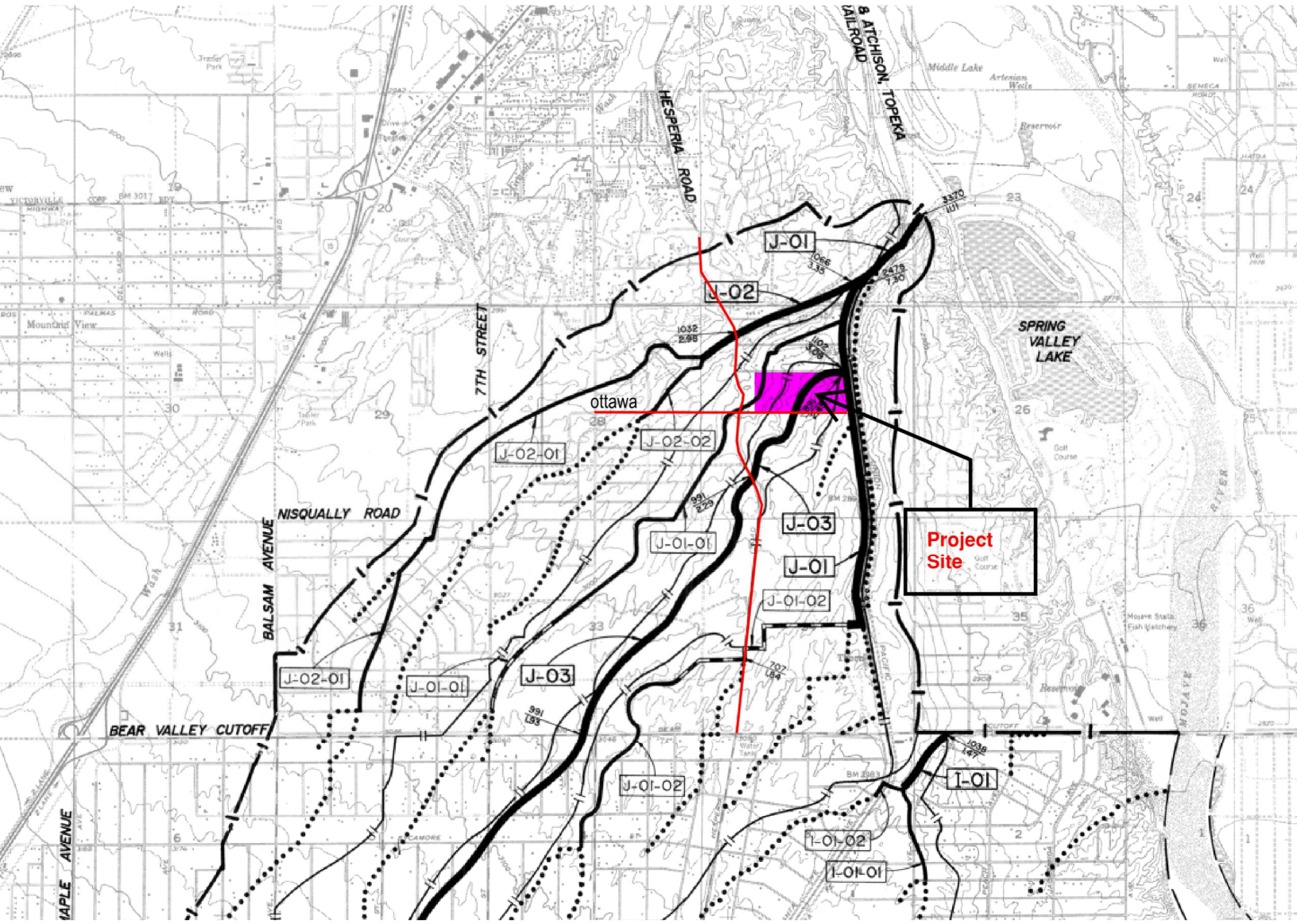


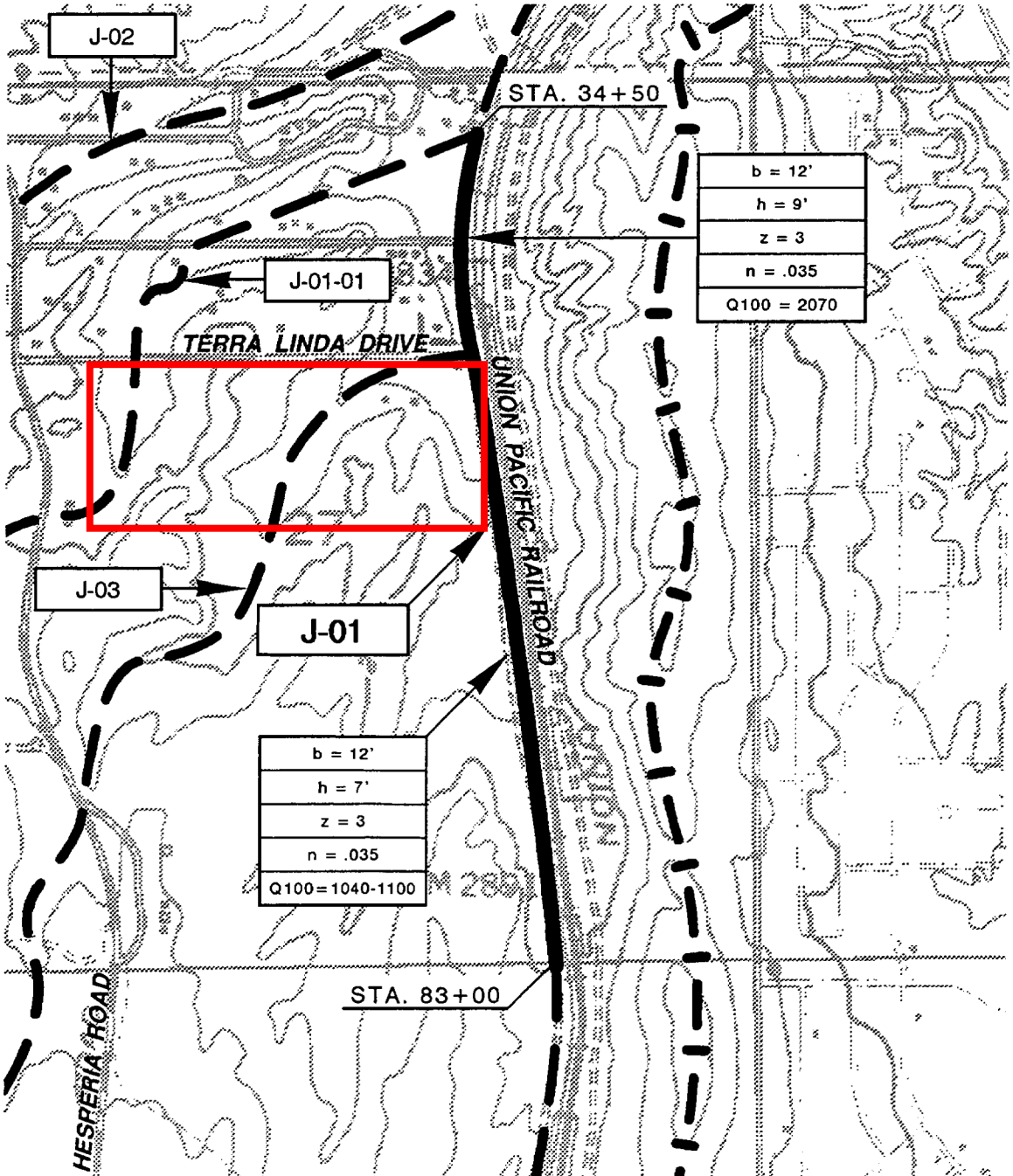
Figure D-1

LIMITATIONS:

1. Maximum length = 1000 Feet
2. Maximum area = 10 Acres







J-02

STA. 34+50

b = 12'
h = 9'
z = 3
n = .035
Q100 = 2070

J-01-01

TERRA LINDA DRIVE



UNION PACIFIC RAILROAD

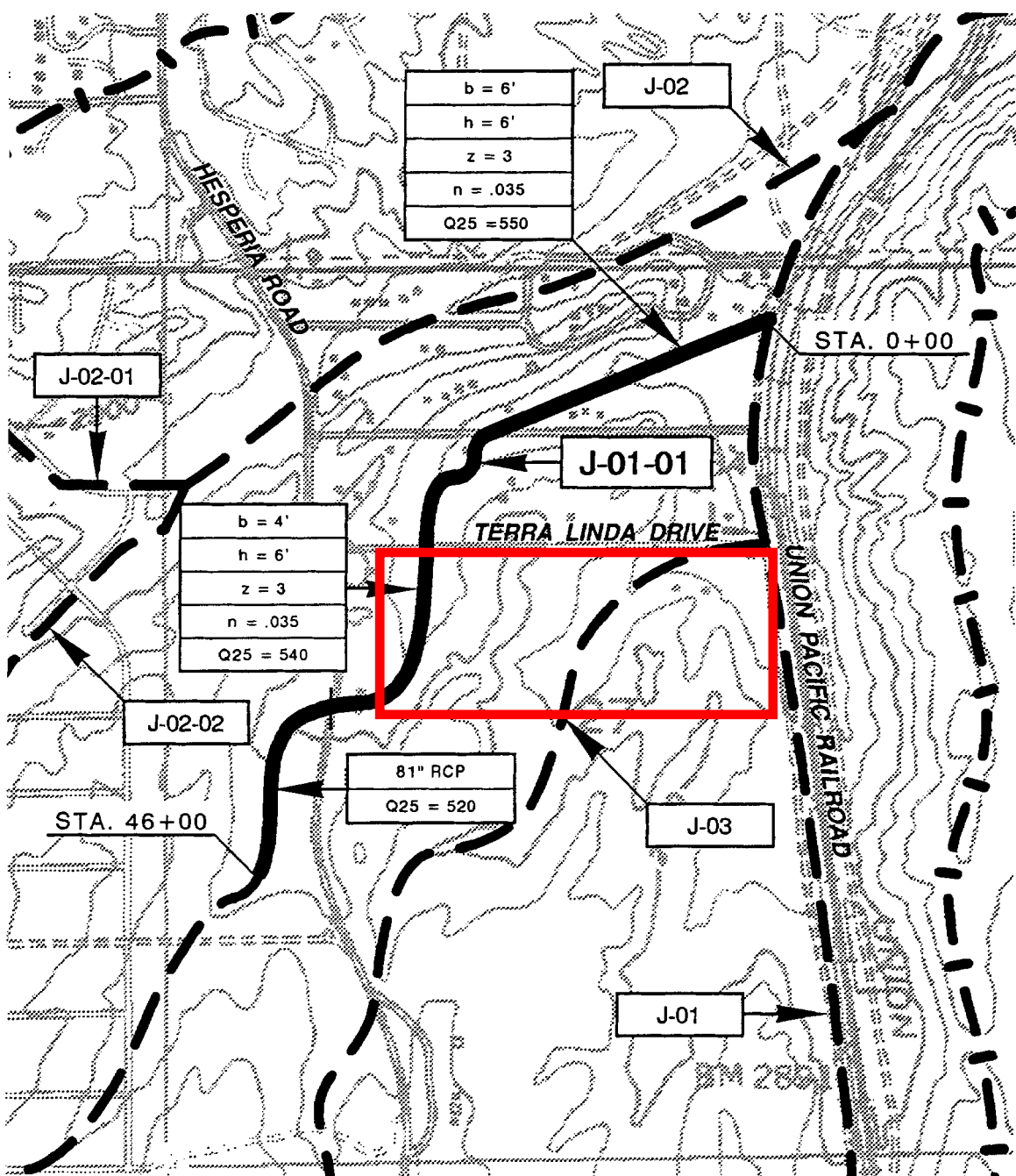
J-03

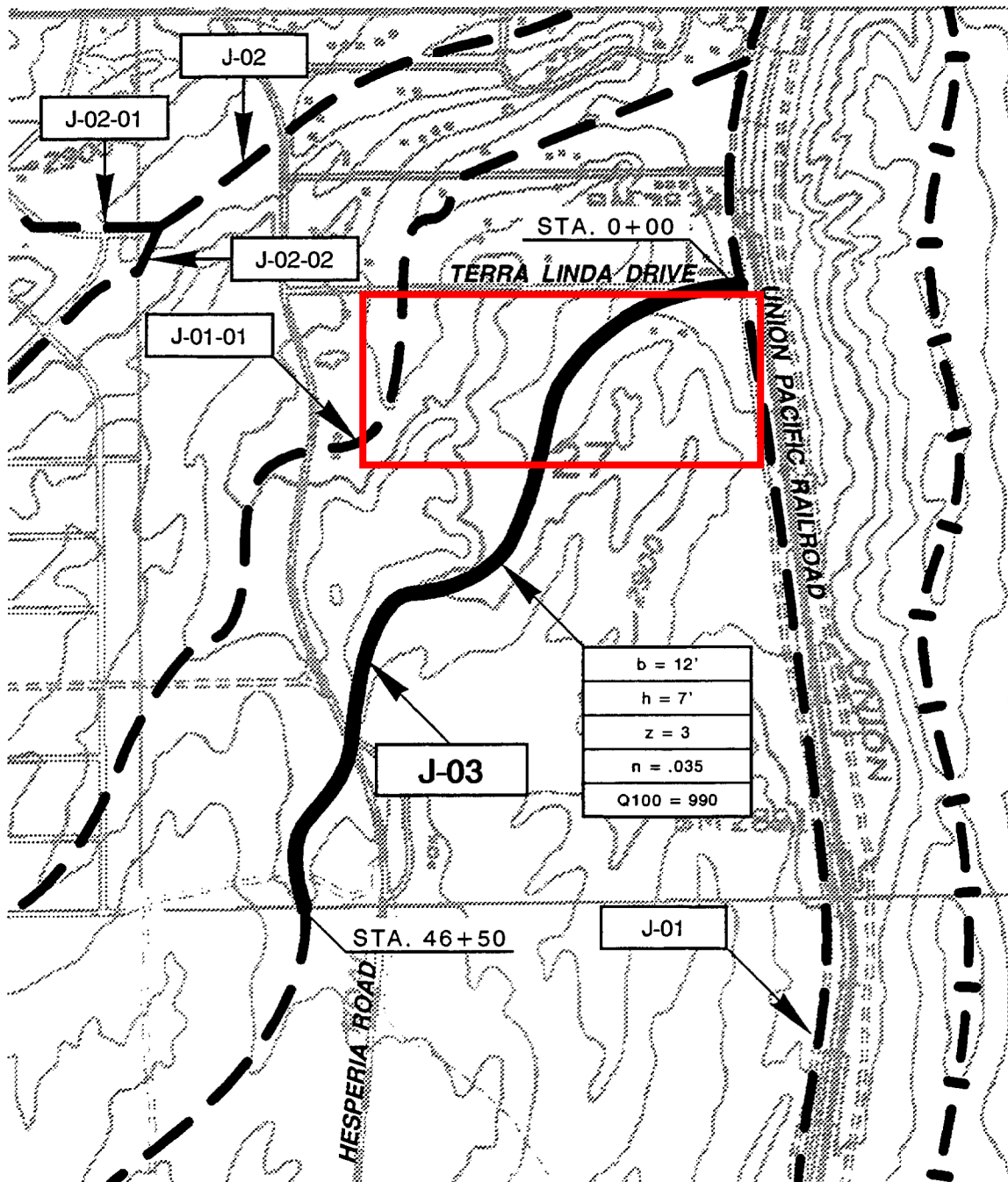
J-01

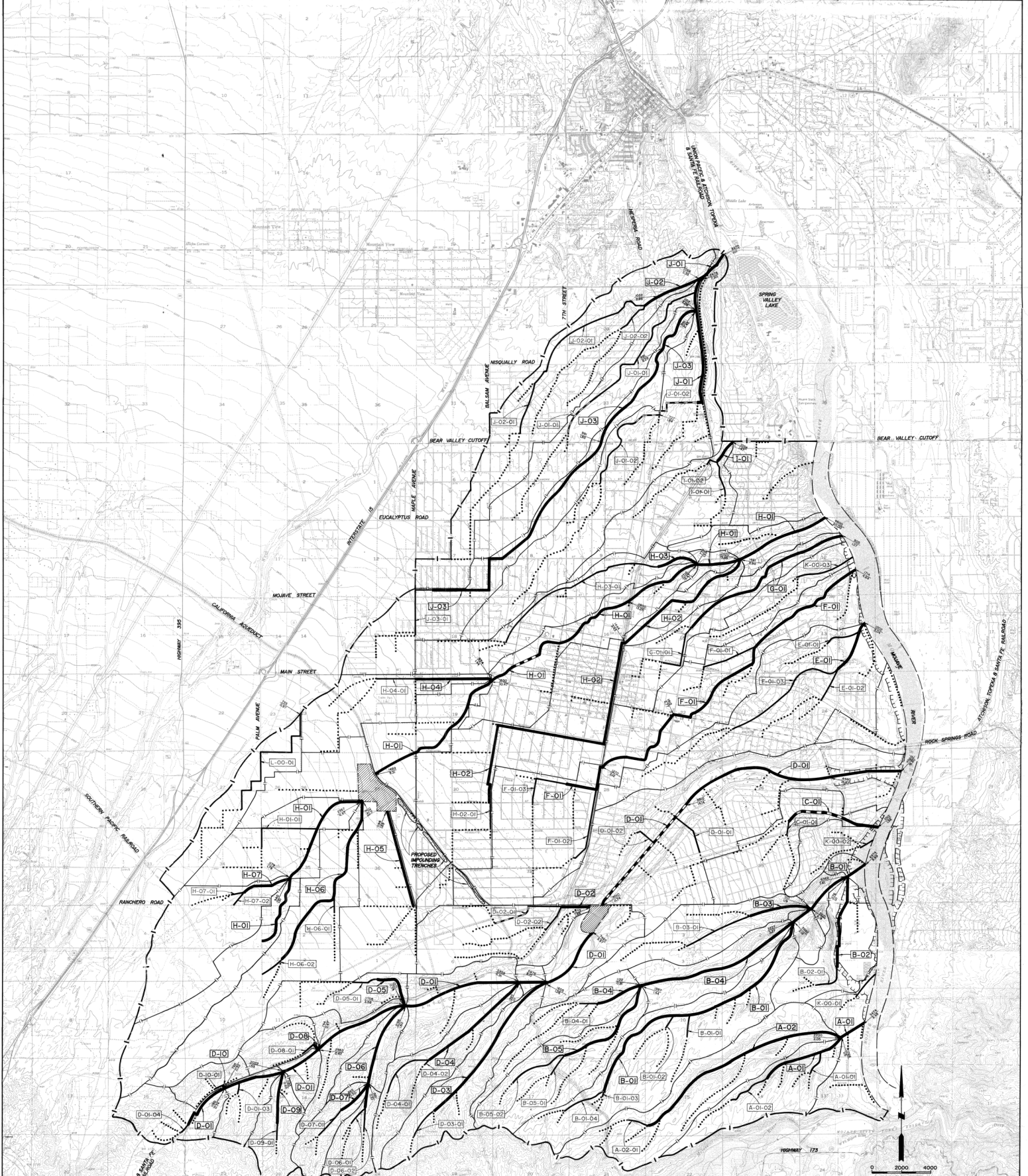
b = 12'
h = 7'
z = 3
n = .035
Q100 = 1040-1100

HESPERIA ROAD

STA. 83+00







**HESPERIA
MASTER PLAN OF DRAINAGE
RECOMMENDED ALTERNATIVE
MAJOR ALIGNMENTS & DRAINAGE DIVIDES**

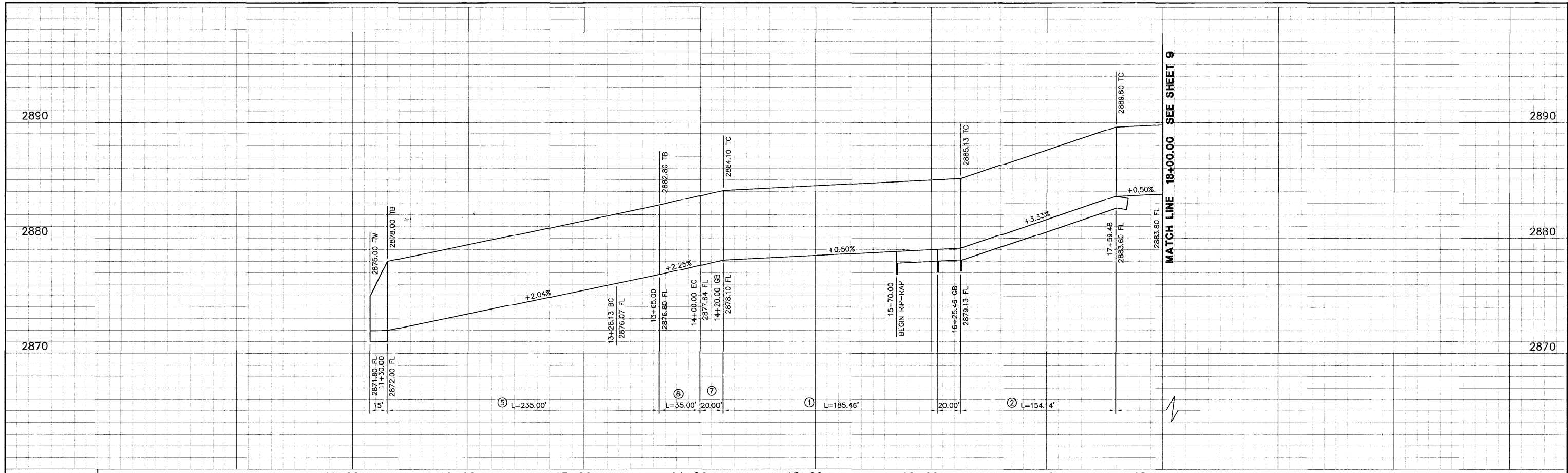
LEGEND

[A-01]	PROPOSED REGIONAL FACILITY	[Hatched Box]	DETENTION BASIN
[A-01-01]	PROPOSED SECONDARY FACILITY	[Dashed Line]	PROJECT BOUNDARY
[Dotted Line]	PROPOSED LOCAL FACILITY	[Dashed Line]	Q100 DISCHARGE (C.F.S.)
[Solid Line]	EXISTING REGIONAL FACILITY-IMPROVEMENT REQUIRED	[Dotted Line]	ACCUMULATED WATERSHED (SQ. MI.)
[Dashed Line]	EXISTING SECONDARY FACILITY-IMPROVEMENT REQUIRED	[Dotted Line]	
[Dotted Line]	MOJAVE RIVER FLOODPLAIN	[Dotted Line]	
[Dotted Line]	MOJAVE RIVER FLOODPLAIN	[Dotted Line]	
[Dotted Line]	REGIONAL FACILITY DRAINAGE DIVIDE	[Dotted Line]	

WILLIAMSON & SCHMID
CONSULTING ENGINEERS AND ARCHITECTS
2000 WEST 10TH AVENUE, SUITE 200, HESPERIA, CALIFORNIA 92345

DESIGNED BY	DATE
DRAWN BY	DATE
CHECKED BY	DATE
FIELD BOOK	DATE

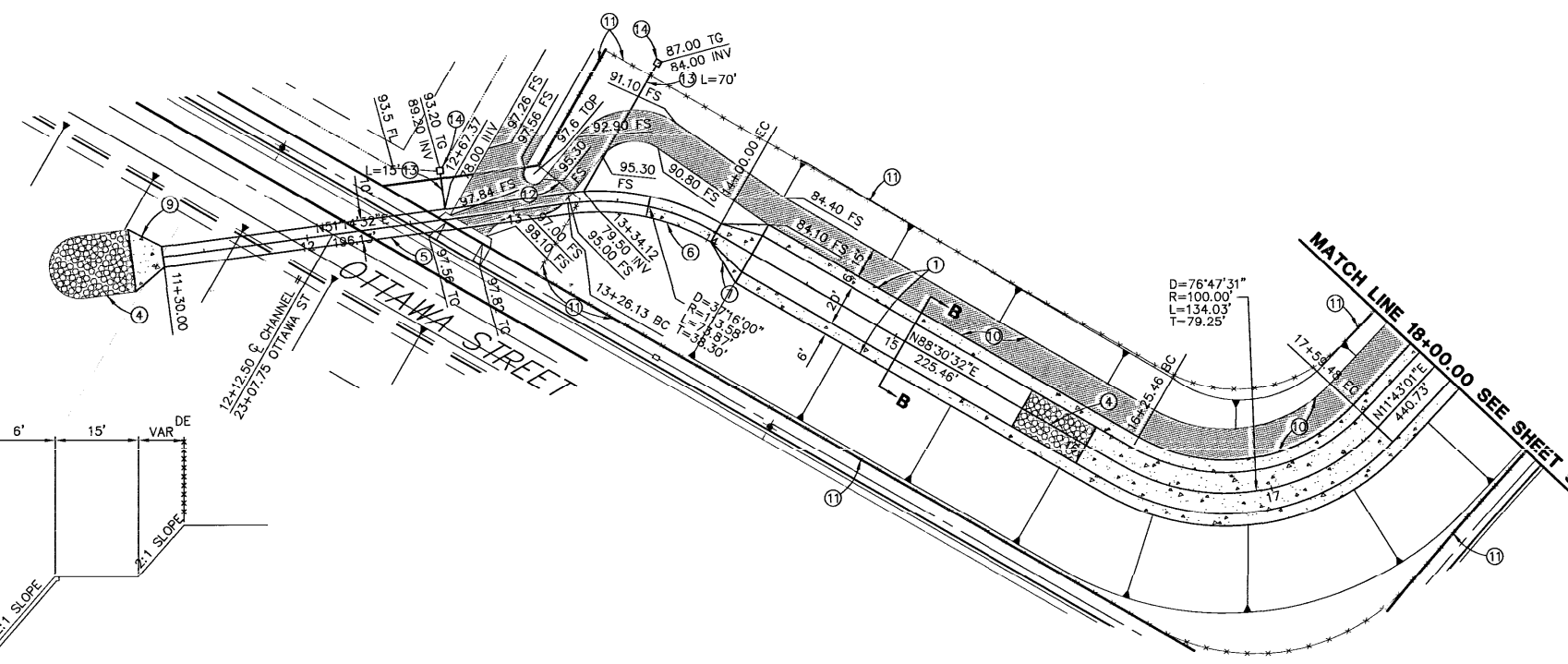
APPROVED BY: [Signature] K.C.L. EXPIRES: [Blank] DATE: [Blank] SHEET: [Blank] OF: [Blank] 87913



PROFILE SCALE
 HORIZ 1" = 40'
 VERT 1" = 4'

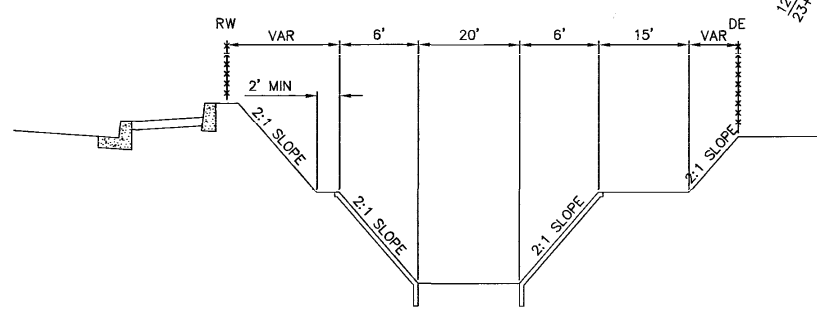
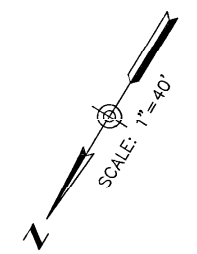
11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00

MATCH LINE 18+00.00 SEE SHEET 9



CONSTRUCTION NOTES

- ① CONSTRUCT CONCRETE SIDE CHANNEL PER DETAIL ON SHEET 9
- ④ CONSTRUCT 12" GROUTED RIP-RAP WITH MINIMUM 12" DIA ROCK
- ⑤ CONSTRUCT 6'X10' RCB PER CALTRANS STD D-80
- ⑥ CONSTRUCT 6'X10' RECTANGULAR CONCRETE CHANNEL PER DETAIL ON SHEET 9
- ⑦ CONSTRUCT TRAPEZOIDAL CHANNEL TO RECTANGULAR CHANNEL TRANSITION STRUCTURE PER DETAIL ON SHEET 9
- ⑧ CONSTRUCT WING-WALL PER CALTRANS STD D-84
- ⑩ CONSTRUCT 3" AC ON COMPACTED NATIVE SOIL
- ⑪ CONSTRUCT 6' CHAIN LINK FENCE PER SBC ROAD DEPT STD DWG 300
- ⑫ CONSTRUCT 15' WIDE CHAIN LINK GATE PER SBCFCO STD PLAN S.P. 222
- ⑬ CONSTRUCT 18" RCP (15000)
- ⑭ CONSTRUCT 2 GRATE GRATING CATCH BASIN (4'-3-1/2") PER APWA STD PLAN 305-2
 CONSTRUCT ONE GRATE GRATING CATCH BASIN PER APWA 304-2



TYPICAL SECTION

BENCH MARK:
 CITY OF VICTORVILLE BENCH MARK V-209
 LOCATED AT THE SOUTHWEST CORNER OF HESPERIA ROAD AND NISQUALLI ROAD.
 ELEVATION = 2949.940

APPROVED

CITY OF VICTORVILLE

John A. McGlade 7/8/04

JOHN A. MCGLADE DATE
 CITY ENGINEER R.C.E. 40935

REV	DATE	BY	DESCRIPTION	APPR
6/11/04			PLAN CHANGE NO. 1	



WVCE, Inc.
 14297 Cajon St., Suite 101
 Victorville, CA 92392
 (760)241-0595

THESE PLANS WERE PREPARED UNDER MY SUPERVISION:
Robert A. Kilpatrick
 ROBERT A. KILPATRICK R.C.E. #42386 DATE 12/10/03

CHANNEL IMPROVEMENT PLAN				JOB NO. 103.0055
11+46.50 - 18+00.00				SHEET 8
CITY OF VICTORVILLE				OF 27
SCALE 1" = 40'	DATE 12/10/03	DRAWN BY CAD	DESIGNED BY KK	FILE NO. 2627

DIGALERT

 1-800-422-4133

P-602

APPENDIX 'G'

Basin Routing

Basin no. 1, 10-year and 100-year storm events

Basin no. 2, 10-year and 100-year storm events.

Detention Basin Table: Space Center Basin No. 1

Elevation (ft.)	Depth (ft.)	Basin Volume (cft)	Basin Volume (ac-ft)	24" Pipe Outlet Flow (cfs)	24" Pipe Outlet Flow (cfs)	Total Outlet Flow (cfs)
2862.7	-	-	-	0.00	0.00	0.00
2864	1.30	15,861	0.36	0.00	0.00	0.00
2865	2.30	28,062	0.64	0.00	0.00	0.00
2866	3.30	40,263	0.92	0.00	0.00	0.00
2867	4.30	52464	1.20	28.00	0.00	28.00
2867.7	5.00	61005	1.40	28.00	27.00	55.00

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 01/05/22

Basin No. 1
10-year
Basin Routing

Program License Serial Number 6385

***** HYDROGRAPH INFORMATION *****

From study/file name: SCdev10E.rte
*****HYDROGRAPH DATA*****
Number of intervals = 330
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 17.830 (CFS)
Total volume = 3.274 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

++++
Process from Point/Station 500.000 to Point/Station 502.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 330
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

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

Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.300	0.360	0.001	0.360	0.360
2.300	0.640	0.005	0.640	0.640
3.300	0.920	0.003	0.920	0.920
4.300	1.200	28.000	1.104	1.296
5.000	1.220	55.000	1.031	1.409

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	4.5	8.91	13.37	17.83	Depth (Ft.)
0.083	0.01	0.00	0.000	0					0.00
0.167	0.03	0.00	0.000	0					0.00
0.250	0.06	0.00	0.000	0					0.00
0.333	0.14	0.00	0.001	0					0.00
0.417	0.25	0.00	0.002	0					0.01
0.500	0.33	0.00	0.004	0					0.02
0.583	0.39	0.00	0.007	0					0.02
0.667	0.43	0.00	0.010	0					0.04
0.750	0.46	0.00	0.013	0					0.05
0.833	0.49	0.00	0.016	0					0.06
0.917	0.51	0.00	0.019	0					0.07
1.000	0.53	0.00	0.023	0					0.08
1.083	0.55	0.00	0.027	0					0.10
1.167	0.56	0.00	0.031	OI					0.11
1.250	0.58	0.00	0.035	OI					0.12
1.333	0.59	0.00	0.039	OI					0.14
1.417	0.60	0.00	0.043	OI					0.15
1.500	0.61	0.00	0.047	OI					0.17
1.583	0.62	0.00	0.051	OI					0.18
1.667	0.63	0.00	0.055	OI					0.20
1.750	0.63	0.00	0.060	OI					0.22
1.833	0.64	0.00	0.064	OI					0.23
1.917	0.65	0.00	0.068	OI					0.25
2.000	0.65	0.00	0.073	OI					0.26
2.083	0.66	0.00	0.078	OI					0.28
2.167	0.67	0.00	0.082	OI					0.30
2.250	0.67	0.00	0.087	OI					0.31
2.333	0.68	0.00	0.091	OI					0.33
2.417	0.68	0.00	0.096	OI					0.35

2.500	0.69	0.00	0.101	OI				0.36
2.583	0.69	0.00	0.105	OI				0.38
2.667	0.69	0.00	0.110	OI				0.40
2.750	0.70	0.00	0.115	OI				0.42
2.833	0.70	0.00	0.120	OI				0.43
2.917	0.70	0.00	0.125	OI				0.45
3.000	0.71	0.00	0.129	OI				0.47
3.083	0.71	0.00	0.134	OI				0.49
3.167	0.72	0.00	0.139	OI				0.50
3.250	0.72	0.00	0.144	OI				0.52
3.333	0.72	0.00	0.149	OI				0.54
3.417	0.73	0.00	0.154	OI				0.56
3.500	0.73	0.00	0.159	OI				0.58
3.583	0.73	0.00	0.164	OI				0.59
3.667	0.74	0.00	0.169	OI				0.61
3.750	0.74	0.00	0.174	OI				0.63
3.833	0.74	0.00	0.180	OI				0.65
3.917	0.75	0.00	0.185	OI				0.67
4.000	0.75	0.00	0.190	OI				0.69
4.083	0.75	0.00	0.195	OI				0.70
4.167	0.75	0.00	0.200	OI				0.72
4.250	0.76	0.00	0.205	OI				0.74
4.333	0.76	0.00	0.211	OI				0.76
4.417	0.76	0.00	0.216	OI				0.78
4.500	0.77	0.00	0.221	OI				0.80
4.583	0.77	0.00	0.226	OI				0.82
4.667	0.77	0.00	0.232	OI				0.84
4.750	0.78	0.00	0.237	OI				0.86
4.833	0.78	0.00	0.242	OI				0.88
4.917	0.78	0.00	0.248	OI				0.89
5.000	0.79	0.00	0.253	OI				0.91
5.083	0.79	0.00	0.259	OI				0.93
5.167	0.79	0.00	0.264	OI				0.95
5.250	0.80	0.00	0.269	OI				0.97
5.333	0.80	0.00	0.275	OI				0.99
5.417	0.80	0.00	0.280	OI				1.01
5.500	0.81	0.00	0.286	OI				1.03
5.583	0.81	0.00	0.292	OI				1.05
5.667	0.81	0.00	0.297	OI				1.07
5.750	0.82	0.00	0.303	OI				1.09
5.833	0.82	0.00	0.308	OI				1.11
5.917	0.82	0.00	0.314	OI				1.13
6.000	0.83	0.00	0.320	OI				1.15
6.083	0.83	0.00	0.325	OI				1.18
6.167	0.84	0.00	0.331	OI				1.20
6.250	0.84	0.00	0.337	OI				1.22
6.333	0.84	0.00	0.343	OI				1.24
6.417	0.85	0.00	0.349	OI				1.26
6.500	0.85	0.00	0.354	OI				1.28
6.583	0.86	0.00	0.360	OI				1.30

6.667	0.86	0.00	0.366	OI					1.32
6.750	0.87	0.00	0.372	OI					1.34
6.833	0.87	0.00	0.378	OI					1.36
6.917	0.87	0.00	0.384	OI					1.39
7.000	0.88	0.00	0.390	OI					1.41
7.083	0.88	0.00	0.396	OI					1.43
7.167	0.89	0.00	0.402	OI					1.45
7.250	0.89	0.00	0.408	OI					1.47
7.333	0.90	0.00	0.415	OI					1.49
7.417	0.90	0.00	0.421	OI					1.52
7.500	0.91	0.00	0.427	OI					1.54
7.583	0.91	0.00	0.433	OI					1.56
7.667	0.92	0.00	0.439	OI					1.58
7.750	0.92	0.00	0.446	OI					1.61
7.833	0.93	0.00	0.452	OI					1.63
7.917	0.93	0.00	0.459	OI					1.65
8.000	0.94	0.00	0.465	OI					1.67
8.083	0.94	0.00	0.471	OI					1.70
8.167	0.95	0.00	0.478	OI					1.72
8.250	0.95	0.00	0.484	OI					1.74
8.333	0.96	0.00	0.491	OI					1.77
8.417	0.96	0.00	0.498	OI					1.79
8.500	0.97	0.00	0.504	OI					1.82
8.583	0.98	0.00	0.511	OI					1.84
8.667	0.98	0.00	0.518	OI					1.86
8.750	0.99	0.00	0.524	OI					1.89
8.833	1.00	0.00	0.531	OI					1.91
8.917	1.00	0.00	0.538	OI					1.94
9.000	1.01	0.00	0.545	OI					1.96
9.083	1.01	0.00	0.552	OI					1.99
9.167	1.02	0.00	0.559	OI					2.01
9.250	1.03	0.00	0.566	OI					2.04
9.333	1.03	0.00	0.573	OI					2.06
9.417	1.04	0.00	0.580	OI					2.09
9.500	1.05	0.00	0.587	OI					2.11
9.583	1.06	0.00	0.595	OI					2.14
9.667	1.06	0.00	0.602	OI					2.16
9.750	1.07	0.00	0.609	OI					2.19
9.833	1.08	0.00	0.616	OI					2.22
9.917	1.09	0.00	0.624	OI					2.24
10.000	1.09	0.00	0.631	OI					2.27
10.083	1.10	0.00	0.639	OI					2.30
10.167	1.11	0.00	0.646	OI					2.32
10.250	1.12	0.00	0.654	O I					2.35
10.333	1.13	0.00	0.662	O I					2.38
10.417	1.14	0.00	0.670	O I					2.41
10.500	1.15	0.00	0.677	O I					2.43
10.583	1.16	0.00	0.685	O I					2.46
10.667	1.17	0.00	0.693	O I					2.49
10.750	1.18	0.00	0.701	O I					2.52

10.833	1.19	0.00	0.709	0 I					2.55
10.917	1.20	0.00	0.718	0 I					2.58
11.000	1.21	0.00	0.726	0 I					2.61
11.083	1.22	0.00	0.734	0 I					2.64
11.167	1.23	0.00	0.743	0 I					2.67
11.250	1.24	0.00	0.751	0 I					2.70
11.333	1.25	0.00	0.760	0 I					2.73
11.417	1.26	0.00	0.768	0 I					2.76
11.500	1.27	0.00	0.777	0 I					2.79
11.583	1.29	0.00	0.786	0 I					2.82
11.667	1.30	0.00	0.795	0 I					2.85
11.750	1.31	0.00	0.803	0 I					2.88
11.833	1.33	0.00	0.813	0 I					2.92
11.917	1.34	0.00	0.822	0 I					2.95
12.000	1.35	0.00	0.831	0 I					2.98
12.083	1.37	0.00	0.840	0 I					3.02
12.167	1.38	0.00	0.850	0 I					3.05
12.250	1.40	0.00	0.859	0 I					3.08
12.333	1.41	0.00	0.869	0 I					3.12
12.417	1.43	0.00	0.879	0 I					3.15
12.500	1.44	0.00	0.889	0 I					3.19
12.583	1.46	0.00	0.898	0 I					3.22
12.667	1.47	0.00	0.909	0 I					3.26
12.750	1.49	0.00	0.919	0 I					3.30
12.833	1.51	0.68	0.927	0I					3.32
12.917	1.53	1.11	0.931	0I					3.34
13.000	1.55	1.33	0.933	0					3.35
13.083	1.57	1.45	0.934	0					3.35
13.167	1.59	1.52	0.935	0					3.35
13.250	1.62	1.56	0.936	0					3.36
13.333	1.64	1.60	0.936	0					3.36
13.417	1.67	1.63	0.936	0					3.36
13.500	1.69	1.65	0.937	0I					3.36
13.583	1.72	1.68	0.937	0					3.36
13.667	1.75	1.71	0.937	0					3.36
13.750	1.78	1.74	0.937	0					3.36
13.833	1.81	1.77	0.938	0					3.36
13.917	1.84	1.80	0.938	0					3.36
14.000	1.88	1.83	0.938	0					3.37
14.083	1.92	1.86	0.939	0					3.37
14.167	1.95	1.90	0.939	0					3.37
14.250	2.00	1.94	0.939	0					3.37
14.333	2.04	1.98	0.940	0					3.37
14.417	2.09	2.02	0.940	0					3.37
14.500	2.14	2.07	0.941	0					3.37
14.583	2.19	2.12	0.941	0					3.38
14.667	2.25	2.17	0.942	0I					3.38
14.750	2.31	2.22	0.942	0I					3.38
14.833	2.37	2.28	0.943	0					3.38
14.917	2.44	2.35	0.943	0					3.38

15.000	2.52	2.42	0.944	0						3.39
15.083	2.61	2.49	0.945	0						3.39
15.167	2.70	2.57	0.946	0						3.39
15.250	2.80	2.67	0.947	OI						3.40
15.333	2.92	2.77	0.948	OI						3.40
15.417	3.04	2.87	0.949	0						3.40
15.500	3.15	2.99	0.950	0						3.41
15.583	3.26	3.10	0.951	0						3.41
15.667	3.33	3.20	0.952	0						3.41
15.750	3.37	3.28	0.953	OI						3.42
15.833	3.52	3.36	0.954	0						3.42
15.917	3.79	3.51	0.955	0						3.43
16.000	4.26	3.77	0.958	OI						3.43
16.083	5.50	4.34	0.963	0	I					3.45
16.167	7.70	5.50	0.975	0	I					3.50
16.250	10.23	7.27	0.993		0	I				3.56
16.333	14.72	9.94	1.019			0		I		3.65
16.417	17.83	13.18	1.052				0		I	3.77
16.500	14.61	14.74	1.067					0		3.83
16.583	11.52	13.88	1.059				I	0		3.80
16.667	9.25	12.09	1.041			I	0			3.73
16.750	8.06	10.33	1.023			I	0			3.67
16.833	7.16	8.94	1.009		I	0				3.62
16.917	6.43	7.84	0.998		I	0				3.58
17.000	5.80	6.96	0.990		I	0				3.55
17.083	5.30	6.24	0.982		I	0				3.52
17.167	4.88	5.65	0.976		I	0				3.50
17.250	4.57	5.17	0.972		IO					3.48
17.333	4.26	4.78	0.968		IO					3.47
17.417	3.94	4.43	0.964		0					3.46
17.500	3.62	4.10	0.961		IO					3.45
17.583	3.44	3.81	0.958		0					3.44
17.667	3.26	3.57	0.956		IO					3.43
17.750	3.09	3.37	0.954		IO					3.42
17.833	2.94	3.19	0.952		0					3.41
17.917	2.76	3.02	0.950		IO					3.41
18.000	2.64	2.85	0.949		IO					3.40
18.083	2.54	2.72	0.947		0					3.40
18.167	2.39	2.59	0.946		0					3.39
18.250	2.30	2.46	0.945		0					3.39
18.333	2.20	2.36	0.944		IO					3.38
18.417	2.07	2.24	0.942		IO					3.38
18.500	2.01	2.14	0.941		0					3.38
18.583	1.90	2.04	0.940		0					3.37
18.667	1.81	1.95	0.939		0					3.37
18.750	1.76	1.86	0.939		0					3.37
18.833	1.74	1.81	0.938		0					3.36
18.917	1.71	1.76	0.938		0					3.36
19.000	1.67	1.73	0.937		IO					3.36
19.083	1.63	1.69	0.937		IO					3.36

19.167	1.59	1.65	0.936	0					3.36
19.250	1.53	1.60	0.936	0					3.36
19.333	1.45	1.55	0.935	0					3.36
19.417	1.41	1.49	0.935	0					3.35
19.500	1.37	1.44	0.934	0					3.35
19.583	1.30	1.39	0.934	0					3.35
19.667	1.24	1.33	0.933	0					3.35
19.750	1.21	1.27	0.933	0					3.35
19.833	1.19	1.24	0.932	0					3.34
19.917	1.17	1.21	0.932	0					3.34
20.000	1.14	1.18	0.932	0					3.34
20.083	1.13	1.16	0.932	0					3.34
20.167	1.11	1.14	0.931	IO					3.34
20.250	1.09	1.12	0.931	IO					3.34
20.333	1.07	1.10	0.931	0					3.34
20.417	1.06	1.08	0.931	0					3.34
20.500	1.04	1.06	0.931	0					3.34
20.583	1.03	1.05	0.930	0					3.34
20.667	1.01	1.03	0.930	0					3.34
20.750	1.00	1.02	0.930	0					3.34
20.833	0.99	1.01	0.930	0					3.34
20.917	0.97	0.99	0.930	0					3.34
21.000	0.96	0.98	0.930	0					3.33
21.083	0.95	0.97	0.930	0					3.33
21.167	0.94	0.96	0.930	0					3.33
21.250	0.93	0.94	0.929	0					3.33
21.333	0.92	0.93	0.929	0					3.33
21.417	0.91	0.92	0.929	0					3.33
21.500	0.90	0.91	0.929	0					3.33
21.583	0.89	0.90	0.929	0					3.33
21.667	0.88	0.89	0.929	0					3.33
21.750	0.87	0.88	0.929	0					3.33
21.833	0.86	0.87	0.929	0					3.33
21.917	0.85	0.87	0.929	0					3.33
22.000	0.84	0.86	0.929	0					3.33
22.083	0.84	0.85	0.928	0					3.33
22.167	0.83	0.84	0.928	0					3.33
22.250	0.82	0.83	0.928	0					3.33
22.333	0.81	0.82	0.928	0					3.33
22.417	0.81	0.82	0.928	0					3.33
22.500	0.80	0.81	0.928	0					3.33
22.583	0.79	0.80	0.928	0					3.33
22.667	0.79	0.80	0.928	0					3.33
22.750	0.78	0.79	0.928	0					3.33
22.833	0.77	0.78	0.928	0					3.33
22.917	0.77	0.78	0.928	0					3.33
23.000	0.76	0.77	0.928	0					3.33
23.083	0.75	0.76	0.928	0					3.33
23.167	0.75	0.76	0.928	0					3.33
23.250	0.74	0.75	0.927	0					3.33

415.000	0.00	0.00	0.812	0					2.91
415.083	0.00	0.00	0.812	0					2.91
415.167	0.00	0.00	0.812	0					2.91
415.250	0.00	0.00	0.812	0					2.91
415.333	0.00	0.00	0.812	0					2.91
415.417	0.00	0.00	0.812	0					2.91
415.500	0.00	0.00	0.812	0					2.91
415.583	0.00	0.00	0.812	0					2.91
415.667	0.00	0.00	0.812	0					2.91
415.750	0.00	0.00	0.812	0					2.91
415.833	0.00	0.00	0.812	0					2.91
415.917	0.00	0.00	0.812	0					2.91
416.000	0.00	0.00	0.812	0					2.91
416.083	0.00	0.00	0.812	0					2.91
416.167	0.00	0.00	0.812	0					2.91
416.250	0.00	0.00	0.812	0					2.91
416.333	0.00	0.00	0.812	0					2.91
416.417	0.00	0.00	0.812	0					2.91
416.500	0.00	0.00	0.812	0					2.91
416.583	0.00	0.00	0.812	0					2.91
416.667	0.00	0.00	0.812	0					2.91

Remaining water in basin = 0.81 (Ac.Ft)

```
*****HYDROGRAPH DATA*****
      Number of intervals = 5001
      Time interval = 5.0 (Min.)
      Maximum/Peak flow rate = 14.739 (CFS)
      Total volume = 2.462 (Ac.Ft)
      Status of hydrographs being held in storage
      Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
      Peak (CFS) 0.000 0.000 0.000 0.000 0.000
      Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
*****
```

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 01/05/22

Basin No. 1
100-year
Basin Routing

Program License Serial Number 6385

***** HYDROGRAPH INFORMATION *****

From study/file name: SCdev100E.rte
*****HYDROGRAPH DATA*****
Number of intervals = 330
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 32.055 (CFS)
Total volume = 5.396 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

++++
Process from Point/Station 500.000 to Point/Station 502.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 330
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

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

Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.300	0.360	0.001	0.360	0.360
2.300	0.640	0.001	0.640	0.640
3.300	0.920	0.000	0.920	0.920
4.300	1.200	28.000	1.104	1.296
5.000	1.220	55.000	1.031	1.409

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	8.0	16.03	24.04	32.05	Depth (Ft.)
0.083	0.01	0.00	0.000	0					0.00
0.167	0.04	0.00	0.000	0					0.00
0.250	0.10	0.00	0.001	0					0.00
0.333	0.22	0.00	0.002	0					0.01
0.417	0.40	0.00	0.004	0					0.01
0.500	0.53	0.00	0.007	0					0.03
0.583	0.63	0.00	0.011	0					0.04
0.667	0.69	0.00	0.016	0					0.06
0.750	0.74	0.00	0.021	0					0.07
0.833	0.79	0.00	0.026	0					0.09
0.917	0.82	0.00	0.031	0					0.11
1.000	0.85	0.00	0.037	0					0.13
1.083	0.88	0.00	0.043	0					0.16
1.167	0.91	0.00	0.049	0					0.18
1.250	0.93	0.00	0.056	0					0.20
1.333	0.95	0.00	0.062	0					0.22
1.417	0.97	0.00	0.069	0					0.25
1.500	0.98	0.00	0.075	0					0.27
1.583	0.99	0.00	0.082	0					0.30
1.667	1.01	0.00	0.089	OI					0.32
1.750	1.02	0.00	0.096	OI					0.35
1.833	1.03	0.00	0.103	OI					0.37
1.917	1.04	0.00	0.110	OI					0.40
2.000	1.05	0.00	0.117	OI					0.42
2.083	1.06	0.00	0.125	OI					0.45
2.167	1.07	0.00	0.132	OI					0.48
2.250	1.08	0.00	0.139	OI					0.50
2.333	1.09	0.00	0.147	OI					0.53
2.417	1.10	0.00	0.154	OI					0.56

2.500	1.10	0.00	0.162	OI					0.59
2.583	1.11	0.00	0.170	OI					0.61
2.667	1.12	0.00	0.177	OI					0.64
2.750	1.12	0.00	0.185	OI					0.67
2.833	1.13	0.00	0.193	OI					0.70
2.917	1.14	0.00	0.201	OI					0.72
3.000	1.14	0.00	0.208	OI					0.75
3.083	1.15	0.00	0.216	OI					0.78
3.167	1.15	0.00	0.224	OI					0.81
3.250	1.16	0.00	0.232	OI					0.84
3.333	1.17	0.00	0.240	OI					0.87
3.417	1.17	0.00	0.248	OI					0.90
3.500	1.18	0.00	0.256	OI					0.93
3.583	1.18	0.00	0.264	OI					0.95
3.667	1.19	0.00	0.273	OI					0.98
3.750	1.19	0.00	0.281	OI					1.01
3.833	1.20	0.00	0.289	OI					1.04
3.917	1.20	0.00	0.297	OI					1.07
4.000	1.21	0.00	0.306	OI					1.10
4.083	1.21	0.00	0.314	OI					1.13
4.167	1.22	0.00	0.322	OI					1.16
4.250	1.22	0.00	0.331	OI					1.19
4.333	1.23	0.00	0.339	OI					1.22
4.417	1.23	0.00	0.347	OI					1.25
4.500	1.24	0.00	0.356	OI					1.29
4.583	1.24	0.00	0.364	OI					1.32
4.667	1.25	0.00	0.373	OI					1.35
4.750	1.25	0.00	0.382	OI					1.38
4.833	1.26	0.00	0.390	OI					1.41
4.917	1.26	0.00	0.399	OI					1.44
5.000	1.27	0.00	0.408	OI					1.47
5.083	1.27	0.00	0.416	OI					1.50
5.167	1.28	0.00	0.425	OI					1.53
5.250	1.28	0.00	0.434	OI					1.56
5.333	1.29	0.00	0.443	OI					1.60
5.417	1.29	0.00	0.452	OI					1.63
5.500	1.30	0.00	0.461	OI					1.66
5.583	1.31	0.00	0.470	OI					1.69
5.667	1.31	0.00	0.479	OI					1.72
5.750	1.32	0.00	0.488	OI					1.76
5.833	1.32	0.00	0.497	OI					1.79
5.917	1.33	0.00	0.506	OI					1.82
6.000	1.34	0.00	0.515	OI					1.85
6.083	1.34	0.00	0.524	OI					1.89
6.167	1.35	0.00	0.533	OI					1.92
6.250	1.36	0.00	0.543	OI					1.95
6.333	1.36	0.00	0.552	OI					1.99
6.417	1.37	0.00	0.561	OI					2.02
6.500	1.38	0.00	0.571	OI					2.05
6.583	1.38	0.00	0.580	OI					2.09

6.667	1.39	0.00	0.590	OI					2.12
6.750	1.40	0.00	0.600	OI					2.16
6.833	1.40	0.00	0.609	OI					2.19
6.917	1.41	0.00	0.619	OI					2.22
7.000	1.42	0.00	0.629	OI					2.26
7.083	1.42	0.00	0.638	OI					2.29
7.167	1.43	0.00	0.648	OI					2.33
7.250	1.44	0.00	0.658	OI					2.36
7.333	1.45	0.00	0.668	OI					2.40
7.417	1.46	0.00	0.678	OI					2.44
7.500	1.46	0.00	0.688	OI					2.47
7.583	1.47	0.00	0.698	OI					2.51
7.667	1.48	0.00	0.708	OI					2.54
7.750	1.49	0.00	0.718	OI					2.58
7.833	1.50	0.00	0.729	OI					2.62
7.917	1.50	0.00	0.739	OI					2.65
8.000	1.51	0.00	0.749	OI					2.69
8.083	1.52	0.00	0.760	OI					2.73
8.167	1.53	0.00	0.770	OI					2.77
8.250	1.54	0.00	0.781	OI					2.80
8.333	1.55	0.00	0.792	OI					2.84
8.417	1.56	0.00	0.802	OI					2.88
8.500	1.57	0.00	0.813	OI					2.92
8.583	1.58	0.00	0.824	OI					2.96
8.667	1.59	0.00	0.835	OI					3.00
8.750	1.60	0.00	0.846	OI					3.03
8.833	1.61	0.00	0.857	OI					3.07
8.917	1.62	0.00	0.868	OI					3.11
9.000	1.63	0.00	0.879	OI					3.15
9.083	1.64	0.00	0.890	OI					3.19
9.167	1.65	0.00	0.902	OI					3.23
9.250	1.66	0.00	0.913	OI					3.28
9.333	1.67	0.34	0.923	OI					3.31
9.417	1.68	1.02	0.930	0					3.34
9.500	1.70	1.37	0.934	0					3.35
9.583	1.71	1.54	0.935	0					3.35
9.667	1.72	1.63	0.936	0					3.36
9.750	1.73	1.68	0.937	0					3.36
9.833	1.74	1.71	0.937	0					3.36
9.917	1.76	1.73	0.937	0					3.36
10.000	1.77	1.75	0.937	0					3.36
10.083	1.78	1.76	0.938	0					3.36
10.167	1.80	1.78	0.938	0					3.36
10.250	1.81	1.79	0.938	0					3.36
10.333	1.83	1.81	0.938	0					3.36
10.417	1.84	1.82	0.938	0					3.36
10.500	1.85	1.83	0.938	0					3.37
10.583	1.87	1.85	0.938	0					3.37
10.667	1.89	1.86	0.939	0					3.37
10.750	1.90	1.88	0.939	0					3.37

10.833	1.92	1.89	0.939	0					3.37
10.917	1.93	1.91	0.939	0					3.37
11.000	1.95	1.93	0.939	0					3.37
11.083	1.97	1.94	0.939	0					3.37
11.167	1.99	1.96	0.940	0					3.37
11.250	2.01	1.98	0.940	OI					3.37
11.333	2.02	2.00	0.940	OI					3.37
11.417	2.04	2.02	0.940	0					3.37
11.500	2.06	2.03	0.940	0					3.37
11.583	2.08	2.05	0.941	0					3.37
11.667	2.10	2.07	0.941	0					3.37
11.750	2.13	2.09	0.941	0					3.37
11.833	2.15	2.12	0.941	0					3.38
11.917	2.17	2.14	0.941	0					3.38
12.000	2.19	2.16	0.942	0					3.38
12.083	2.21	2.18	0.942	0					3.38
12.167	2.23	2.20	0.942	0					3.38
12.250	2.25	2.22	0.942	0					3.38
12.333	2.25	2.23	0.942	0					3.38
12.417	2.24	2.24	0.942	0					3.38
12.500	2.24	2.24	0.942	0					3.38
12.583	2.24	2.24	0.942	0					3.38
12.667	2.26	2.25	0.942	0					3.38
12.750	2.28	2.26	0.943	0					3.38
12.833	2.30	2.27	0.943	0					3.38
12.917	2.33	2.29	0.943	0					3.38
13.000	2.35	2.32	0.943	0					3.38
13.083	2.38	2.34	0.943	0					3.38
13.167	2.41	2.37	0.944	0					3.38
13.250	2.45	2.40	0.944	0					3.39
13.333	2.48	2.43	0.944	0					3.39
13.417	2.52	2.47	0.945	0					3.39
13.500	2.56	2.51	0.945	0					3.39
13.583	2.60	2.54	0.945	0					3.39
13.667	2.65	2.59	0.946	0					3.39
13.750	2.69	2.63	0.946	0					3.39
13.833	2.74	2.67	0.947	0					3.40
13.917	2.79	2.72	0.947	0					3.40
14.000	2.85	2.77	0.948	0					3.40
14.083	2.91	2.83	0.948	0					3.40
14.167	2.97	2.88	0.949	0					3.40
14.250	3.04	2.95	0.949	OI					3.41
14.333	3.11	3.01	0.950	0					3.41
14.417	3.18	3.08	0.951	0					3.41
14.500	3.26	3.15	0.952	0					3.41
14.583	3.35	3.23	0.952	0					3.42
14.667	3.44	3.31	0.953	0					3.42
14.750	3.54	3.40	0.954	0					3.42
14.833	3.65	3.50	0.955	0					3.43
14.917	3.76	3.61	0.956	0					3.43

15.000	3.89	3.72	0.957	0						3.43
15.083	4.03	3.84	0.958	OI						3.44
15.167	4.18	3.98	0.960	OI						3.44
15.250	4.35	4.13	0.961	0						3.45
15.333	4.54	4.29	0.963	0						3.45
15.417	4.75	4.47	0.965	0						3.46
15.500	4.96	4.67	0.967	0						3.47
15.583	5.18	4.87	0.969	OI						3.47
15.667	5.37	5.08	0.971	0						3.48
15.750	5.56	5.27	0.973	0						3.49
15.833	5.89	5.51	0.975	0						3.50
15.917	6.45	5.85	0.978	OI						3.51
16.000	7.39	6.40	0.984	OI						3.53
16.083	9.72	7.50	0.995	0	I					3.57
16.167	13.81	9.68	1.017	0	I					3.65
16.250	18.51	13.00	1.050		0	I				3.76
16.333	26.57	17.89	1.099			0		I		3.94
16.417	32.05	23.74	1.157				0		I	4.15
16.500	26.24	26.51	1.185					0		4.25
16.583	20.59	24.92	1.169				I	0		4.19
16.667	16.41	21.63	1.136			I	0			4.07
16.750	14.14	18.38	1.104			I	0			3.96
16.833	12.43	15.77	1.078		I	0				3.86
16.917	11.07	13.71	1.057		I	0				3.79
17.000	9.91	12.06	1.041		I	0				3.73
17.083	9.00	10.73	1.027		I	0				3.68
17.167	8.23	9.65	1.016		IO					3.64
17.250	7.67	8.78	1.008		IO					3.61
17.333	7.11	8.06	1.001		IO					3.59
17.417	6.54	7.43	0.994		IO					3.57
17.500	5.97	6.83	0.988		IO					3.54
17.583	5.65	6.31	0.983		IO					3.53
17.667	5.34	5.89	0.979		0					3.51
17.750	5.03	5.53	0.975		0					3.50
17.833	4.77	5.21	0.972		IO					3.49
17.917	4.46	4.91	0.969		0					3.48
18.000	4.24	4.62	0.966		0					3.46
18.083	4.07	4.38	0.964		0					3.46
18.167	3.82	4.16	0.962		IO					3.45
18.250	3.67	3.94	0.959		0					3.44
18.333	3.52	3.77	0.958		0					3.43
18.417	3.33	3.59	0.956		0					3.43
18.500	3.23	3.43	0.954		0					3.42
18.583	3.07	3.29	0.953		0					3.42
18.667	2.92	3.14	0.951		IO					3.41
18.750	2.86	3.01	0.950		IO					3.41
18.833	2.83	2.92	0.949		0					3.40
18.917	2.78	2.86	0.949		0					3.40
19.000	2.72	2.81	0.948		0					3.40
19.083	2.66	2.75	0.947		0					3.40

19.167	2.60	2.69	0.947	0					3.40
19.250	2.49	2.61	0.946	0					3.39
19.333	2.35	2.51	0.945	0					3.39
19.417	2.29	2.42	0.944	0					3.39
19.500	2.23	2.34	0.943	0					3.38
19.583	2.10	2.25	0.942	0					3.38
19.667	1.99	2.14	0.941	IO					3.38
19.750	1.95	2.05	0.941	IO					3.37
19.833	1.91	1.99	0.940	0					3.37
19.917	1.87	1.94	0.939	0					3.37
20.000	1.84	1.90	0.939	0					3.37
20.083	1.81	1.86	0.939	0					3.37
20.167	1.78	1.83	0.938	0					3.37
20.250	1.75	1.80	0.938	0					3.36
20.333	1.73	1.77	0.938	0					3.36
20.417	1.70	1.74	0.937	0					3.36
20.500	1.68	1.71	0.937	0					3.36
20.583	1.65	1.69	0.937	0					3.36
20.667	1.63	1.67	0.937	0					3.36
20.750	1.61	1.64	0.936	0					3.36
20.833	1.59	1.62	0.936	0					3.36
20.917	1.57	1.60	0.936	0					3.36
21.000	1.55	1.58	0.936	0					3.36
21.083	1.53	1.56	0.936	0					3.36
21.167	1.52	1.54	0.935	0					3.36
21.250	1.50	1.52	0.935	0					3.35
21.333	1.48	1.51	0.935	0					3.35
21.417	1.46	1.49	0.935	0					3.35
21.500	1.45	1.47	0.935	0					3.35
21.583	1.43	1.46	0.935	0					3.35
21.667	1.42	1.44	0.934	0					3.35
21.750	1.40	1.43	0.934	0					3.35
21.833	1.39	1.41	0.934	0					3.35
21.917	1.38	1.40	0.934	0					3.35
22.000	1.36	1.38	0.934	0					3.35
22.083	1.35	1.37	0.934	0					3.35
22.167	1.34	1.36	0.934	0					3.35
22.250	1.32	1.34	0.933	0					3.35
22.333	1.31	1.33	0.933	0					3.35
22.417	1.30	1.32	0.933	0					3.35
22.500	1.29	1.31	0.933	0					3.35
22.583	1.28	1.29	0.933	0					3.35
22.667	1.27	1.28	0.933	0					3.35
22.750	1.25	1.27	0.933	0					3.35
22.833	1.24	1.26	0.933	0					3.34
22.917	1.23	1.25	0.932	0					3.34
23.000	1.22	1.24	0.932	0					3.34
23.083	1.21	1.23	0.932	0					3.34
23.167	1.20	1.22	0.932	0					3.34
23.250	1.19	1.21	0.932	0					3.34

23.333	1.19	1.20	0.932	0					3.34
23.417	1.18	1.19	0.932	0					3.34
23.500	1.17	1.18	0.932	0					3.34
23.583	1.16	1.17	0.932	0					3.34
23.667	1.15	1.16	0.932	0					3.34
23.750	1.14	1.15	0.932	0					3.34
23.833	1.13	1.15	0.931	0					3.34
23.917	1.13	1.14	0.931	0					3.34
24.000	1.12	1.13	0.931	0					3.34
24.083	1.10	1.12	0.931	0					3.34
24.167	1.06	1.10	0.931	0					3.34
24.250	1.00	1.06	0.931	IO					3.34
24.333	0.87	1.00	0.930	0					3.34
24.417	0.69	0.89	0.929	0					3.33
24.500	0.55	0.75	0.927	0					3.33
24.583	0.45	0.62	0.926	0					3.32
24.667	0.39	0.52	0.925	0					3.32
24.750	0.33	0.44	0.924	0					3.32
24.833	0.29	0.37	0.924	0					3.31
24.917	0.26	0.32	0.923	0					3.31
25.000	0.23	0.28	0.923	0					3.31
25.083	0.20	0.25	0.922	0					3.31
25.167	0.18	0.22	0.922	0					3.31
25.250	0.16	0.19	0.922	0					3.31
25.333	0.14	0.17	0.922	0					3.31
25.417	0.12	0.15	0.921	0					3.31
25.500	0.11	0.13	0.921	0					3.30
25.583	0.10	0.12	0.921	0					3.30
25.667	0.09	0.11	0.921	0					3.30
25.750	0.08	0.09	0.921	0					3.30
25.833	0.07	0.08	0.921	0					3.30
25.917	0.06	0.07	0.921	0					3.30
26.000	0.05	0.07	0.921	0					3.30
26.083	0.05	0.06	0.921	0					3.30
26.167	0.04	0.05	0.921	0					3.30
26.250	0.04	0.05	0.920	0					3.30
26.333	0.03	0.04	0.920	0					3.30
26.417	0.03	0.04	0.920	0					3.30
26.500	0.03	0.03	0.920	0					3.30
26.583	0.02	0.03	0.920	0					3.30
26.667	0.02	0.02	0.920	0					3.30
26.750	0.02	0.02	0.920	0					3.30
26.833	0.02	0.02	0.920	0					3.30
26.917	0.01	0.02	0.920	0					3.30
27.000	0.01	0.01	0.920	0					3.30
27.083	0.01	0.01	0.920	0					3.30
27.167	0.01	0.01	0.920	0					3.30
27.250	0.00	0.01	0.920	0					3.30
27.333	0.00	0.01	0.920	0					3.30
27.417	0.00	0.00	0.920	0					3.30

27.500	0.00	0.00	0.920	0					3.30
27.583	0.00	0.00	0.920	0					3.30
27.667	0.00	0.00	0.920	0					3.30

Remaining water in basin = 0.92 (Ac.Ft)

*****HYDROGRAPH DATA*****

Number of intervals = 332

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 26.509 (CFS)

Total volume = 4.476 (Ac.Ft)

Status of hydrographs being held in storage

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

Detention Basin Table: Space Center Basin No. 2

Elevation (ft.)	Depth (ft.)	Basin Volume (cft)	Basin Volume (ac-ft)	30" Pipe Outlet Flow (cfs)	30" Pipe Outlet Flow (cfs)	Total Outlet Flow (cfs)
2861	-	-	-	0.00	0.00	0.00
2863	2.00	35,812	0.82	0.00	0.00	0.00
2864	3.00	53,718	1.23	0.00	0.00	0.00
2865	4.00	71,624	1.64	42.00	0.00	42.00
2865.5	4.50	80577	1.85	42.00	40.00	82.00
2866	5.00	89530	2.06	42.00	40.00	82.00

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 01/05/22

Basin No.2
10-year storm
Basin Routing

Program License Serial Number 6385

***** HYDROGRAPH INFORMATION *****

From study/file name: SCdev10F.rte
*****HYDROGRAPH DATA*****
Number of intervals = 333
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 24.671 (CFS)
Total volume = 4.554 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

++++
Process from Point/Station 600.000 to Point/Station 608.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 333
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

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

Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
2.000	0.820	0.001	0.820	0.820
3.000	1.230	0.001	1.230	1.230
4.000	1.640	42.000	1.495	1.785
4.500	1.850	82.000	1.568	2.132
5.000	2.060	82.000	1.778	2.342

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	6.2	12.34	18.50	24.67	Depth (Ft.)
0.083	0.01	0.00	0.000	0					0.00
0.167	0.03	0.00	0.000	0					0.00
0.250	0.07	0.00	0.001	0					0.00
0.333	0.15	0.00	0.001	0					0.00
0.417	0.29	0.00	0.003	0					0.01
0.500	0.41	0.00	0.005	0					0.01
0.583	0.50	0.00	0.008	0					0.02
0.667	0.56	0.00	0.012	0					0.03
0.750	0.61	0.00	0.016	0					0.04
0.833	0.65	0.00	0.020	0					0.05
0.917	0.68	0.00	0.025	0					0.06
1.000	0.71	0.00	0.030	0					0.07
1.083	0.73	0.00	0.035	0					0.08
1.167	0.75	0.00	0.040	0					0.10
1.250	0.77	0.00	0.045	OI					0.11
1.333	0.79	0.00	0.051	OI					0.12
1.417	0.81	0.00	0.056	OI					0.14
1.500	0.82	0.00	0.062	OI					0.15
1.583	0.83	0.00	0.067	OI					0.16
1.667	0.85	0.00	0.073	OI					0.18
1.750	0.86	0.00	0.079	OI					0.19
1.833	0.87	0.00	0.085	OI					0.21
1.917	0.88	0.00	0.091	OI					0.22
2.000	0.89	0.00	0.097	OI					0.24
2.083	0.90	0.00	0.103	OI					0.25
2.167	0.90	0.00	0.109	OI					0.27
2.250	0.91	0.00	0.116	OI					0.28
2.333	0.92	0.00	0.122	OI					0.30
2.417	0.93	0.00	0.128	OI					0.31

2.500	0.93	0.00	0.135	OI					0.33
2.583	0.94	0.00	0.141	OI					0.34
2.667	0.94	0.00	0.148	OI					0.36
2.750	0.95	0.00	0.154	OI					0.38
2.833	0.96	0.00	0.161	OI					0.39
2.917	0.96	0.00	0.167	OI					0.41
3.000	0.97	0.00	0.174	OI					0.42
3.083	0.97	0.00	0.181	OI					0.44
3.167	0.98	0.00	0.187	OI					0.46
3.250	0.98	0.00	0.194	OI					0.47
3.333	0.99	0.00	0.201	OI					0.49
3.417	0.99	0.00	0.208	OI					0.51
3.500	1.00	0.00	0.214	OI					0.52
3.583	1.00	0.00	0.221	OI					0.54
3.667	1.01	0.00	0.228	OI					0.56
3.750	1.01	0.00	0.235	OI					0.57
3.833	1.02	0.00	0.242	OI					0.59
3.917	1.02	0.00	0.249	OI					0.61
4.000	1.02	0.00	0.256	OI					0.62
4.083	1.03	0.00	0.263	OI					0.64
4.167	1.03	0.00	0.270	OI					0.66
4.250	1.04	0.00	0.278	OI					0.68
4.333	1.04	0.00	0.285	OI					0.69
4.417	1.04	0.00	0.292	OI					0.71
4.500	1.05	0.00	0.299	OI					0.73
4.583	1.05	0.00	0.306	OI					0.75
4.667	1.06	0.00	0.314	OI					0.76
4.750	1.06	0.00	0.321	OI					0.78
4.833	1.07	0.00	0.328	OI					0.80
4.917	1.07	0.00	0.336	OI					0.82
5.000	1.08	0.00	0.343	OI					0.84
5.083	1.08	0.00	0.350	OI					0.85
5.167	1.08	0.00	0.358	OI					0.87
5.250	1.09	0.00	0.365	OI					0.89
5.333	1.09	0.00	0.373	OI					0.91
5.417	1.10	0.00	0.380	OI					0.93
5.500	1.10	0.00	0.388	OI					0.95
5.583	1.11	0.00	0.395	OI					0.96
5.667	1.11	0.00	0.403	OI					0.98
5.750	1.12	0.00	0.411	OI					1.00
5.833	1.12	0.00	0.419	OI					1.02
5.917	1.13	0.00	0.426	OI					1.04
6.000	1.13	0.00	0.434	OI					1.06
6.083	1.14	0.00	0.442	OI					1.08
6.167	1.14	0.00	0.450	OI					1.10
6.250	1.15	0.00	0.458	OI					1.12
6.333	1.15	0.00	0.466	OI					1.14
6.417	1.16	0.00	0.474	OI					1.15
6.500	1.17	0.00	0.482	OI					1.17
6.583	1.17	0.00	0.490	OI					1.19

6.667	1.18	0.00	0.498	OI					1.21
6.750	1.18	0.00	0.506	OI					1.23
6.833	1.19	0.00	0.514	OI					1.25
6.917	1.20	0.00	0.522	OI					1.27
7.000	1.20	0.00	0.530	OI					1.29
7.083	1.21	0.00	0.539	OI					1.31
7.167	1.21	0.00	0.547	OI					1.33
7.250	1.22	0.00	0.555	OI					1.35
7.333	1.23	0.00	0.564	OI					1.38
7.417	1.23	0.00	0.572	OI					1.40
7.500	1.24	0.00	0.581	OI					1.42
7.583	1.25	0.00	0.589	OI					1.44
7.667	1.25	0.00	0.598	OI					1.46
7.750	1.26	0.00	0.607	OI					1.48
7.833	1.27	0.00	0.615	OI					1.50
7.917	1.27	0.00	0.624	OI					1.52
8.000	1.28	0.00	0.633	OI					1.54
8.083	1.29	0.00	0.642	OI					1.57
8.167	1.30	0.00	0.651	OI					1.59
8.250	1.30	0.00	0.660	OI					1.61
8.333	1.31	0.00	0.668	OI					1.63
8.417	1.32	0.00	0.678	OI					1.65
8.500	1.33	0.00	0.687	OI					1.67
8.583	1.33	0.00	0.696	OI					1.70
8.667	1.34	0.00	0.705	OI					1.72
8.750	1.35	0.00	0.714	OI					1.74
8.833	1.36	0.00	0.724	OI					1.76
8.917	1.37	0.00	0.733	OI					1.79
9.000	1.38	0.00	0.742	OI					1.81
9.083	1.39	0.00	0.752	OI					1.83
9.167	1.39	0.00	0.762	OI					1.86
9.250	1.40	0.00	0.771	OI					1.88
9.333	1.41	0.00	0.781	OI					1.90
9.417	1.42	0.00	0.791	OI					1.93
9.500	1.43	0.00	0.800	OI					1.95
9.583	1.44	0.00	0.810	OI					1.98
9.667	1.45	0.00	0.820	OI					2.00
9.750	1.46	0.00	0.830	OI					2.03
9.833	1.47	0.00	0.840	OI					2.05
9.917	1.48	0.00	0.851	OI					2.07
10.000	1.50	0.00	0.861	OI					2.10
10.083	1.51	0.00	0.871	OI					2.12
10.167	1.52	0.00	0.882	OI					2.15
10.250	1.53	0.00	0.892	OI					2.18
10.333	1.54	0.00	0.903	OI					2.20
10.417	1.55	0.00	0.913	O I					2.23
10.500	1.57	0.00	0.924	O I					2.25
10.583	1.58	0.00	0.935	O I					2.28
10.667	1.59	0.00	0.946	O I					2.31
10.750	1.60	0.00	0.957	O I					2.33

10.833	1.62	0.00	0.968	0 I					2.36
10.917	1.63	0.00	0.979	0 I					2.39
11.000	1.65	0.00	0.990	0 I					2.42
11.083	1.66	0.00	1.002	0 I					2.44
11.167	1.67	0.00	1.013	0 I					2.47
11.250	1.69	0.00	1.025	0 I					2.50
11.333	1.71	0.00	1.036	0 I					2.53
11.417	1.72	0.00	1.048	0 I					2.56
11.500	1.74	0.00	1.060	0 I					2.59
11.583	1.75	0.00	1.072	0 I					2.62
11.667	1.77	0.00	1.084	0 I					2.64
11.750	1.79	0.00	1.097	0 I					2.67
11.833	1.81	0.00	1.109	0 I					2.70
11.917	1.83	0.00	1.121	0 I					2.74
12.000	1.85	0.00	1.134	0 I					2.77
12.083	1.87	0.00	1.147	0 I					2.80
12.167	1.88	0.00	1.160	0 I					2.83
12.250	1.91	0.00	1.173	0 I					2.86
12.333	1.92	0.00	1.186	0 I					2.89
12.417	1.94	0.00	1.199	0 I					2.93
12.500	1.96	0.00	1.213	0 I					2.96
12.583	1.99	0.00	1.226	0 I					2.99
12.667	2.01	0.77	1.237	0 I					3.02
12.750	2.03	1.42	1.244	0 I					3.03
12.833	2.06	1.75	1.247	0					3.04
12.917	2.09	1.92	1.249	0					3.05
13.000	2.11	2.01	1.250	0					3.05
13.083	2.14	2.07	1.250	0					3.05
13.167	2.17	2.12	1.251	0					3.05
13.250	2.20	2.15	1.251	0					3.05
13.333	2.23	2.19	1.251	0					3.05
13.417	2.27	2.22	1.252	0					3.05
13.500	2.30	2.25	1.252	0					3.05
13.583	2.34	2.29	1.252	0 I					3.05
13.667	2.38	2.33	1.253	0					3.06
13.750	2.42	2.36	1.253	0					3.06
13.833	2.46	2.40	1.253	0					3.06
13.917	2.51	2.45	1.254	0					3.06
14.000	2.55	2.49	1.254	0					3.06
14.083	2.60	2.54	1.255	0					3.06
14.167	2.66	2.58	1.255	0					3.06
14.250	2.71	2.64	1.256	0					3.06
14.333	2.77	2.69	1.256	0					3.06
14.417	2.83	2.75	1.257	0					3.07
14.500	2.90	2.81	1.257	0					3.07
14.583	2.97	2.88	1.258	0					3.07
14.667	3.05	2.95	1.259	0					3.07
14.750	3.13	3.02	1.259	0 I					3.07
14.833	3.22	3.10	1.260	0					3.07
14.917	3.31	3.18	1.261	0					3.08

15.000	3.41	3.28	1.262	0						3.08
15.083	3.53	3.38	1.263	0						3.08
15.167	3.65	3.49	1.264	0						3.08
15.250	3.79	3.61	1.265	0						3.09
15.333	3.94	3.74	1.266	OI						3.09
15.417	4.10	3.88	1.268	0						3.09
15.500	4.25	4.03	1.269	0						3.10
15.583	4.40	4.19	1.271	0						3.10
15.667	4.52	4.33	1.272	0						3.10
15.750	4.58	4.44	1.273	0						3.11
15.833	4.74	4.56	1.274	OI						3.11
15.917	5.08	4.74	1.276	0						3.11
16.000	5.68	5.07	1.280	OI						3.12
16.083	7.31	5.82	1.287	0	I					3.14
16.167	10.16	7.34	1.302	0	I					3.17
16.250	13.33	9.64	1.324		0	I				3.23
16.333	18.67	12.95	1.356			0	I			3.31
16.417	24.67	17.50	1.401				0	I	I	3.42
16.500	21.98	20.54	1.430					0	I	3.49
16.583	17.35	20.08	1.426				I	0		3.48
16.667	13.91	17.76	1.403				I	0		3.42
16.750	11.79	15.20	1.378			I	0			3.36
16.833	10.50	13.08	1.358			I	0			3.31
16.917	9.36	11.44	1.342			I	0			3.27
17.000	8.51	10.13	1.329			I	0			3.24
17.083	7.68	9.07	1.319		I	0				3.22
17.167	7.09	8.19	1.310		I	0				3.20
17.250	6.55	7.48	1.303		I	0				3.18
17.333	6.15	6.89	1.297		I	0				3.16
17.417	5.77	6.41	1.293		I	0				3.15
17.500	5.36	5.97	1.288		I	0				3.14
17.583	4.93	5.54	1.284		I	0				3.13
17.667	4.67	5.15	1.280		0					3.12
17.750	4.46	4.85	1.277		I	0				3.12
17.833	4.22	4.58	1.275		0					3.11
17.917	4.03	4.35	1.272		0					3.10
18.000	3.84	4.13	1.270		I	0				3.10
18.083	3.61	3.92	1.268		I	0				3.09
18.167	3.48	3.72	1.266		0					3.09
18.250	3.35	3.56	1.265		0					3.08
18.333	3.16	3.40	1.263		0					3.08
18.417	3.06	3.25	1.262		I	0				3.08
18.500	2.94	3.12	1.260		I	0				3.07
18.583	2.76	2.98	1.259		0					3.07
18.667	2.68	2.84	1.258		0					3.07
18.750	2.56	2.73	1.257		0					3.06
18.833	2.41	2.60	1.255		0					3.06
18.917	2.35	2.49	1.254		0					3.06
19.000	2.32	2.41	1.253		0					3.06
19.083	2.29	2.35	1.253		I	0				3.06

19.167	2.24	2.31	1.253	0					3.05
19.250	2.20	2.26	1.252	0					3.05
19.333	2.15	2.21	1.252	0					3.05
19.417	2.10	2.17	1.251	0					3.05
19.500	2.00	2.10	1.251	0					3.05
19.583	1.91	2.02	1.250	0					3.05
19.667	1.86	1.95	1.249	0					3.05
19.750	1.82	1.89	1.248	0					3.05
19.833	1.72	1.83	1.248	0					3.04
19.917	1.63	1.75	1.247	0					3.04
20.000	1.60	1.68	1.246	0					3.04
20.083	1.57	1.63	1.246	0					3.04
20.167	1.54	1.59	1.246	0					3.04
20.250	1.52	1.56	1.245	IO					3.04
20.333	1.49	1.53	1.245	0					3.04
20.417	1.47	1.50	1.245	0					3.04
20.500	1.45	1.48	1.244	0					3.04
20.583	1.43	1.46	1.244	0					3.03
20.667	1.40	1.43	1.244	0					3.03
20.750	1.39	1.41	1.244	0					3.03
20.833	1.37	1.39	1.244	0					3.03
20.917	1.35	1.38	1.243	0					3.03
21.000	1.33	1.36	1.243	0					3.03
21.083	1.32	1.34	1.243	0					3.03
21.167	1.30	1.32	1.243	0					3.03
21.250	1.28	1.31	1.243	0					3.03
21.333	1.27	1.29	1.243	0					3.03
21.417	1.26	1.28	1.242	0					3.03
21.500	1.24	1.26	1.242	0					3.03
21.583	1.23	1.25	1.242	0					3.03
21.667	1.21	1.23	1.242	0					3.03
21.750	1.20	1.22	1.242	0					3.03
21.833	1.19	1.21	1.242	0					3.03
21.917	1.18	1.20	1.242	0					3.03
22.000	1.17	1.18	1.242	0					3.03
22.083	1.15	1.17	1.241	0					3.03
22.167	1.14	1.16	1.241	0					3.03
22.250	1.13	1.15	1.241	0					3.03
22.333	1.12	1.14	1.241	0					3.03
22.417	1.11	1.13	1.241	0					3.03
22.500	1.10	1.12	1.241	0					3.03
22.583	1.09	1.11	1.241	0					3.03
22.667	1.08	1.10	1.241	0					3.03
22.750	1.07	1.09	1.241	0					3.03
22.833	1.06	1.08	1.241	0					3.03
22.917	1.06	1.07	1.240	0					3.03
23.000	1.05	1.06	1.240	0					3.03
23.083	1.04	1.05	1.240	0					3.03
23.167	1.03	1.04	1.240	0					3.02
23.250	1.02	1.03	1.240	0					3.02

23.333	1.01	1.03	1.240	0					3.02
23.417	1.01	1.02	1.240	0					3.02
23.500	1.00	1.01	1.240	0					3.02
23.583	0.99	1.00	1.240	0					3.02
23.667	0.98	1.00	1.240	0					3.02
23.750	0.98	0.99	1.240	0					3.02
23.833	0.97	0.98	1.240	0					3.02
23.917	0.96	0.97	1.239	0					3.02
24.000	0.96	0.97	1.239	0					3.02
24.083	0.94	0.96	1.239	0					3.02
24.167	0.91	0.94	1.239	0					3.02
24.250	0.87	0.91	1.239	0					3.02
24.333	0.78	0.87	1.238	0					3.02
24.417	0.63	0.78	1.238	IO					3.02
24.500	0.51	0.67	1.237	0					3.02
24.583	0.42	0.56	1.236	0					3.01
24.667	0.36	0.47	1.235	0					3.01
24.750	0.31	0.40	1.234	0					3.01
24.833	0.27	0.34	1.233	0					3.01
24.917	0.24	0.30	1.233	0					3.01
25.000	0.21	0.26	1.233	0					3.01
25.083	0.19	0.23	1.232	0					3.01
25.167	0.17	0.20	1.232	0					3.00
25.250	0.15	0.18	1.232	0					3.00
25.333	0.14	0.16	1.232	0					3.00
25.417	0.12	0.14	1.231	0					3.00
25.500	0.11	0.13	1.231	0					3.00
25.583	0.10	0.12	1.231	0					3.00
25.667	0.09	0.10	1.231	0					3.00
25.750	0.08	0.09	1.231	0					3.00
25.833	0.07	0.08	1.231	0					3.00
25.917	0.06	0.08	1.231	0					3.00
26.000	0.06	0.07	1.231	0					3.00
26.083	0.05	0.06	1.231	0					3.00
26.167	0.05	0.05	1.231	0					3.00
26.250	0.04	0.05	1.230	0					3.00
26.333	0.04	0.04	1.230	0					3.00
26.417	0.03	0.04	1.230	0					3.00
26.500	0.03	0.03	1.230	0					3.00
26.583	0.02	0.03	1.230	0					3.00
26.667	0.02	0.03	1.230	0					3.00
26.750	0.02	0.02	1.230	0					3.00
26.833	0.02	0.02	1.230	0					3.00
26.917	0.02	0.02	1.230	0					3.00
27.000	0.01	0.02	1.230	0					3.00
27.083	0.01	0.02	1.230	0					3.00
27.167	0.01	0.01	1.230	0					3.00
27.250	0.01	0.01	1.230	0					3.00
27.333	0.01	0.01	1.230	0					3.00
27.417	0.00	0.01	1.230	0					3.00

27.500	0.00	0.01	1.230	0					3.00
27.583	0.00	0.00	1.230	0					3.00
27.667	0.00	0.00	1.230	0					3.00
27.750	0.00	0.00	1.230	0					3.00
27.833	0.00	0.00	1.230	0					3.00
27.917	0.00	0.00	1.230	0					3.00

Remaining water in basin = 1.23 (Ac.Ft)

*****HYDROGRAPH DATA*****

Number of intervals = 335
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 20.537 (CFS)
Total volume = 3.324 (Ac.Ft)

Status of hydrographs being held in storage

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

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 01/05/22

Basin No. 2
100-year Storm
Basin Routing

Program License Serial Number 6385

***** HYDROGRAPH INFORMATION *****

From study/file name: SCdev100F.rte
*****HYDROGRAPH DATA*****
Number of intervals = 333
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 44.933 (CFS)
Total volume = 7.889 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

+++++
Process from Point/Station 600.000 to Point/Station 608.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 333
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

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

Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-0*dt/2) (Ac.Ft)	(S+0*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
2.000	0.820	0.001	0.820	0.820
3.000	1.230	0.001	1.230	1.230
4.000	1.640	42.000	1.495	1.785
4.500	1.850	82.000	1.568	2.132
5.000	2.060	82.000	1.778	2.342

Hydrograph Detention Basin Routing

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

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0	11.2	22.47	33.70	44.93	Depth (Ft.)
0.083	0.01	0.00	0.000	0					0.00
0.167	0.05	0.00	0.000	0					0.00
0.250	0.12	0.00	0.001	0					0.00
0.333	0.26	0.00	0.002	0					0.01
0.417	0.50	0.00	0.005	0					0.01
0.500	0.71	0.00	0.009	0					0.02
0.583	0.86	0.00	0.014	0					0.04
0.667	0.96	0.00	0.021	0					0.05
0.750	1.04	0.00	0.028	0					0.07
0.833	1.11	0.00	0.035	0					0.09
0.917	1.17	0.00	0.043	0					0.10
1.000	1.21	0.00	0.051	0					0.12
1.083	1.25	0.00	0.060	0					0.15
1.167	1.29	0.00	0.068	0					0.17
1.250	1.32	0.00	0.077	0					0.19
1.333	1.35	0.00	0.087	0					0.21
1.417	1.38	0.00	0.096	0					0.23
1.500	1.41	0.00	0.106	OI					0.26
1.583	1.43	0.00	0.115	OI					0.28
1.667	1.45	0.00	0.125	OI					0.31
1.750	1.47	0.00	0.135	OI					0.33
1.833	1.49	0.00	0.145	OI					0.35
1.917	1.50	0.00	0.156	OI					0.38
2.000	1.52	0.00	0.166	OI					0.41
2.083	1.53	0.00	0.177	OI					0.43
2.167	1.55	0.00	0.187	OI					0.46
2.250	1.56	0.00	0.198	OI					0.48
2.333	1.57	0.00	0.209	OI					0.51
2.417	1.59	0.00	0.220	OI					0.54

2.500	1.60	0.00	0.231	OI					0.56
2.583	1.61	0.00	0.242	OI					0.59
2.667	1.62	0.00	0.253	OI					0.62
2.750	1.63	0.00	0.264	OI					0.64
2.833	1.64	0.00	0.275	OI					0.67
2.917	1.65	0.00	0.286	OI					0.70
3.000	1.65	0.00	0.298	OI					0.73
3.083	1.66	0.00	0.309	OI					0.75
3.167	1.67	0.00	0.321	OI					0.78
3.250	1.68	0.00	0.332	OI					0.81
3.333	1.69	0.00	0.344	OI					0.84
3.417	1.70	0.00	0.355	OI					0.87
3.500	1.71	0.00	0.367	OI					0.90
3.583	1.72	0.00	0.379	OI					0.92
3.667	1.73	0.00	0.391	OI					0.95
3.750	1.73	0.00	0.403	OI					0.98
3.833	1.74	0.00	0.415	OI					1.01
3.917	1.75	0.00	0.427	OI					1.04
4.000	1.76	0.00	0.439	OI					1.07
4.083	1.76	0.00	0.451	OI					1.10
4.167	1.77	0.00	0.463	OI					1.13
4.250	1.78	0.00	0.475	OI					1.16
4.333	1.78	0.00	0.488	OI					1.19
4.417	1.79	0.00	0.500	OI					1.22
4.500	1.80	0.00	0.512	OI					1.25
4.583	1.81	0.00	0.525	OI					1.28
4.667	1.81	0.00	0.537	OI					1.31
4.750	1.82	0.00	0.550	OI					1.34
4.833	1.83	0.00	0.562	OI					1.37
4.917	1.84	0.00	0.575	OI					1.40
5.000	1.84	0.00	0.587	OI					1.43
5.083	1.85	0.00	0.600	OI					1.46
5.167	1.86	0.00	0.613	OI					1.49
5.250	1.87	0.00	0.626	OI					1.53
5.333	1.88	0.00	0.639	OI					1.56
5.417	1.88	0.00	0.652	OI					1.59
5.500	1.89	0.00	0.665	OI					1.62
5.583	1.90	0.00	0.678	OI					1.65
5.667	1.91	0.00	0.691	OI					1.68
5.750	1.92	0.00	0.704	OI					1.72
5.833	1.93	0.00	0.717	OI					1.75
5.917	1.94	0.00	0.730	OI					1.78
6.000	1.94	0.00	0.744	OI					1.81
6.083	1.95	0.00	0.757	OI					1.85
6.167	1.96	0.00	0.771	OI					1.88
6.250	1.97	0.00	0.784	OI					1.91
6.333	1.98	0.00	0.798	OI					1.95
6.417	1.99	0.00	0.811	OI					1.98
6.500	2.00	0.00	0.825	OI					2.01
6.583	2.01	0.00	0.839	OI					2.05

6.667	2.02	0.00	0.853	OI					2.08
6.750	2.03	0.00	0.867	OI					2.11
6.833	2.04	0.00	0.881	OI					2.15
6.917	2.05	0.00	0.895	OI					2.18
7.000	2.06	0.00	0.909	OI					2.22
7.083	2.07	0.00	0.923	OI					2.25
7.167	2.08	0.00	0.938	OI					2.29
7.250	2.09	0.00	0.952	OI					2.32
7.333	2.11	0.00	0.966	OI					2.36
7.417	2.12	0.00	0.981	OI					2.39
7.500	2.13	0.00	0.996	OI					2.43
7.583	2.14	0.00	1.010	OI					2.46
7.667	2.15	0.00	1.025	OI					2.50
7.750	2.16	0.00	1.040	OI					2.54
7.833	2.18	0.00	1.055	OI					2.57
7.917	2.19	0.00	1.070	OI					2.61
8.000	2.20	0.00	1.085	OI					2.65
8.083	2.21	0.00	1.100	OI					2.68
8.167	2.23	0.00	1.115	OI					2.72
8.250	2.24	0.00	1.131	OI					2.76
8.333	2.25	0.00	1.146	OI					2.80
8.417	2.27	0.00	1.162	OI					2.83
8.500	2.28	0.00	1.177	OI					2.87
8.583	2.29	0.00	1.193	OI					2.91
8.667	2.31	0.00	1.209	OI					2.95
8.750	2.32	0.00	1.225	OI					2.99
8.833	2.34	0.84	1.238	OI					3.02
8.917	2.35	1.62	1.246	0					3.04
9.000	2.37	2.01	1.250	0					3.05
9.083	2.38	2.20	1.251	0					3.05
9.167	2.40	2.30	1.252	0					3.05
9.250	2.41	2.35	1.253	0					3.06
9.333	2.43	2.39	1.253	0					3.06
9.417	2.45	2.42	1.254	0					3.06
9.500	2.46	2.44	1.254	0					3.06
9.583	2.48	2.46	1.254	0					3.06
9.667	2.50	2.47	1.254	0					3.06
9.750	2.52	2.49	1.254	0					3.06
9.833	2.53	2.51	1.254	0					3.06
9.917	2.55	2.53	1.255	0					3.06
10.000	2.57	2.55	1.255	0					3.06
10.083	2.59	2.56	1.255	0					3.06
10.167	2.61	2.58	1.255	0					3.06
10.250	2.63	2.60	1.255	0					3.06
10.333	2.65	2.62	1.256	0					3.06
10.417	2.67	2.64	1.256	0					3.06
10.500	2.69	2.66	1.256	0					3.06
10.583	2.72	2.69	1.256	0					3.06
10.667	2.74	2.71	1.256	0					3.06
10.750	2.76	2.73	1.257	0					3.06

10.833	2.79	2.75	1.257	0					3.07
10.917	2.81	2.78	1.257	OI					3.07
11.000	2.83	2.80	1.257	OI					3.07
11.083	2.86	2.82	1.258	0					3.07
11.167	2.88	2.85	1.258	0					3.07
11.250	2.91	2.87	1.258	0					3.07
11.333	2.94	2.90	1.258	0					3.07
11.417	2.97	2.93	1.259	0					3.07
11.500	2.99	2.95	1.259	0					3.07
11.583	3.02	2.98	1.259	0					3.07
11.667	3.05	3.01	1.259	0					3.07
11.750	3.08	3.04	1.260	0					3.07
11.833	3.12	3.07	1.260	0					3.07
11.917	3.15	3.10	1.260	0					3.07
12.000	3.18	3.14	1.261	0					3.07
12.083	3.21	3.17	1.261	0					3.08
12.167	3.24	3.20	1.261	0					3.08
12.250	3.26	3.23	1.261	0					3.08
12.333	3.27	3.25	1.262	0					3.08
12.417	3.26	3.26	1.262	0					3.08
12.500	3.25	3.26	1.262	0					3.08
12.583	3.26	3.26	1.262	0					3.08
12.667	3.28	3.27	1.262	0					3.08
12.750	3.31	3.28	1.262	0					3.08
12.833	3.34	3.31	1.262	0					3.08
12.917	3.38	3.33	1.263	0					3.08
13.000	3.42	3.37	1.263	0					3.08
13.083	3.46	3.40	1.263	0					3.08
13.167	3.50	3.44	1.264	0					3.08
13.250	3.55	3.49	1.264	0					3.08
13.333	3.60	3.53	1.264	0					3.08
13.417	3.65	3.58	1.265	0					3.09
13.500	3.71	3.63	1.265	0					3.09
13.583	3.77	3.69	1.266	0					3.09
13.667	3.83	3.75	1.267	0					3.09
13.750	3.90	3.81	1.267	0					3.09
13.833	3.97	3.87	1.268	0					3.09
13.917	4.04	3.94	1.268	0					3.09
14.000	4.12	4.02	1.269	0					3.10
14.083	4.20	4.09	1.270	0					3.10
14.167	4.29	4.17	1.271	OI					3.10
14.250	4.39	4.26	1.272	0					3.10
14.333	4.49	4.35	1.272	0					3.10
14.417	4.59	4.45	1.273	0					3.11
14.500	4.71	4.56	1.274	0					3.11
14.583	4.83	4.67	1.276	0					3.11
14.667	4.96	4.79	1.277	0					3.11
14.750	5.10	4.92	1.278	0					3.12
14.833	5.25	5.05	1.279	0					3.12
14.917	5.42	5.20	1.281	0					3.12

19.167	3.86	3.97	1.269	0					3.09
19.250	3.78	3.89	1.268	0					3.09
19.333	3.70	3.81	1.267	0					3.09
19.417	3.61	3.73	1.266	0					3.09
19.500	3.44	3.63	1.265	0					3.09
19.583	3.28	3.49	1.264	0					3.08
19.667	3.20	3.36	1.263	0					3.08
19.750	3.12	3.26	1.262	0					3.08
19.833	2.95	3.14	1.261	0					3.07
19.917	2.79	3.00	1.259	IO					3.07
20.000	2.74	2.88	1.258	IO					3.07
20.083	2.69	2.79	1.257	0					3.07
20.167	2.64	2.72	1.257	0					3.06
20.250	2.60	2.67	1.256	0					3.06
20.333	2.55	2.62	1.256	0					3.06
20.417	2.52	2.58	1.255	0					3.06
20.500	2.48	2.53	1.255	0					3.06
20.583	2.44	2.50	1.254	0					3.06
20.667	2.41	2.46	1.254	0					3.06
20.750	2.38	2.42	1.254	0					3.06
20.833	2.34	2.39	1.253	0					3.06
20.917	2.31	2.36	1.253	0					3.06
21.000	2.28	2.33	1.253	0					3.06
21.083	2.26	2.30	1.252	0					3.05
21.167	2.23	2.27	1.252	0					3.05
21.250	2.20	2.24	1.252	0					3.05
21.333	2.18	2.22	1.252	0					3.05
21.417	2.15	2.19	1.251	0					3.05
21.500	2.13	2.17	1.251	0					3.05
21.583	2.11	2.14	1.251	0					3.05
21.667	2.09	2.12	1.251	0					3.05
21.750	2.06	2.10	1.250	0					3.05
21.833	2.04	2.07	1.250	0					3.05
21.917	2.02	2.05	1.250	0					3.05
22.000	2.00	2.03	1.250	0					3.05
22.083	1.98	2.01	1.250	0					3.05
22.167	1.96	1.99	1.249	0					3.05
22.250	1.94	1.97	1.249	0					3.05
22.333	1.93	1.95	1.249	0					3.05
22.417	1.91	1.93	1.249	0					3.05
22.500	1.89	1.92	1.249	0					3.05
22.583	1.87	1.90	1.249	0					3.05
22.667	1.86	1.88	1.248	0					3.04
22.750	1.84	1.86	1.248	0					3.04
22.833	1.83	1.85	1.248	0					3.04
22.917	1.81	1.83	1.248	0					3.04
23.000	1.80	1.82	1.248	0					3.04
23.083	1.78	1.80	1.248	0					3.04
23.167	1.77	1.79	1.247	0					3.04
23.250	1.75	1.77	1.247	0					3.04

23.333	1.74	1.76	1.247	0					3.04
23.417	1.73	1.74	1.247	0					3.04
23.500	1.71	1.73	1.247	0					3.04
23.583	1.70	1.72	1.247	0					3.04
23.667	1.69	1.71	1.247	0					3.04
23.750	1.67	1.69	1.247	0					3.04
23.833	1.66	1.68	1.246	0					3.04
23.917	1.65	1.67	1.246	0					3.04
24.000	1.64	1.66	1.246	0					3.04
24.083	1.62	1.64	1.246	0					3.04
24.167	1.56	1.61	1.246	0					3.04
24.250	1.48	1.57	1.245	0					3.04
24.333	1.33	1.48	1.244	IO					3.04
24.417	1.09	1.34	1.243	0					3.03
24.500	0.87	1.15	1.241	0					3.03
24.583	0.72	0.97	1.239	0					3.02
24.667	0.62	0.81	1.238	0					3.02
24.750	0.53	0.69	1.237	0					3.02
24.833	0.47	0.59	1.236	0					3.01
24.917	0.41	0.51	1.235	0					3.01
25.000	0.36	0.45	1.234	0					3.01
25.083	0.32	0.39	1.234	0					3.01
25.167	0.29	0.35	1.233	0					3.01
25.250	0.26	0.31	1.233	0					3.01
25.333	0.23	0.28	1.233	0					3.01
25.417	0.21	0.25	1.232	0					3.01
25.500	0.19	0.22	1.232	0					3.01
25.583	0.17	0.20	1.232	0					3.00
25.667	0.15	0.18	1.232	0					3.00
25.750	0.14	0.16	1.232	0					3.00
25.833	0.12	0.14	1.231	0					3.00
25.917	0.11	0.13	1.231	0					3.00
26.000	0.10	0.12	1.231	0					3.00
26.083	0.09	0.10	1.231	0					3.00
26.167	0.08	0.09	1.231	0					3.00
26.250	0.07	0.08	1.231	0					3.00
26.333	0.06	0.07	1.231	0					3.00
26.417	0.05	0.07	1.231	0					3.00
26.500	0.05	0.06	1.231	0					3.00
26.583	0.04	0.05	1.230	0					3.00
26.667	0.04	0.05	1.230	0					3.00
26.750	0.03	0.04	1.230	0					3.00
26.833	0.03	0.04	1.230	0					3.00
26.917	0.03	0.03	1.230	0					3.00
27.000	0.02	0.03	1.230	0					3.00
27.083	0.02	0.03	1.230	0					3.00
27.167	0.02	0.02	1.230	0					3.00
27.250	0.01	0.02	1.230	0					3.00
27.333	0.01	0.02	1.230	0					3.00
27.417	0.01	0.01	1.230	0					3.00

27.500	0.01	0.01	1.230	0					3.00
27.583	0.00	0.01	1.230	0					3.00
27.667	0.00	0.01	1.230	0					3.00
27.750	0.00	0.00	1.230	0					3.00
27.833	0.00	0.00	1.230	0					3.00
27.917	0.00	0.00	1.230	0					3.00

Remaining water in basin = 1.23 (Ac.Ft)

*****HYDROGRAPH DATA*****

Number of intervals = 335
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 37.513 (CFS)
Total volume = 6.659 (Ac.Ft)

Status of hydrographs being held in storage

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