

Drainage Report

BEAUMONT STATION

Oak Valley Village Parkway & Golf Club Dr.

Beaumont, CA

APN #: 400-530-006, & 400-530-007

Prepared: November 05, 2018

Revised: December 17, 2018

PREPARED FOR:

OAK VALLEY EXPRESS

102 Heather Mist

Irvine, CA 92618

(714) 719-8100

PREPARED BY:

Gil Zulueta Mendoza Associates, Inc.

6185 Magnolia Avenue, #129

Riverside, CA 92506

(951) 286-9520

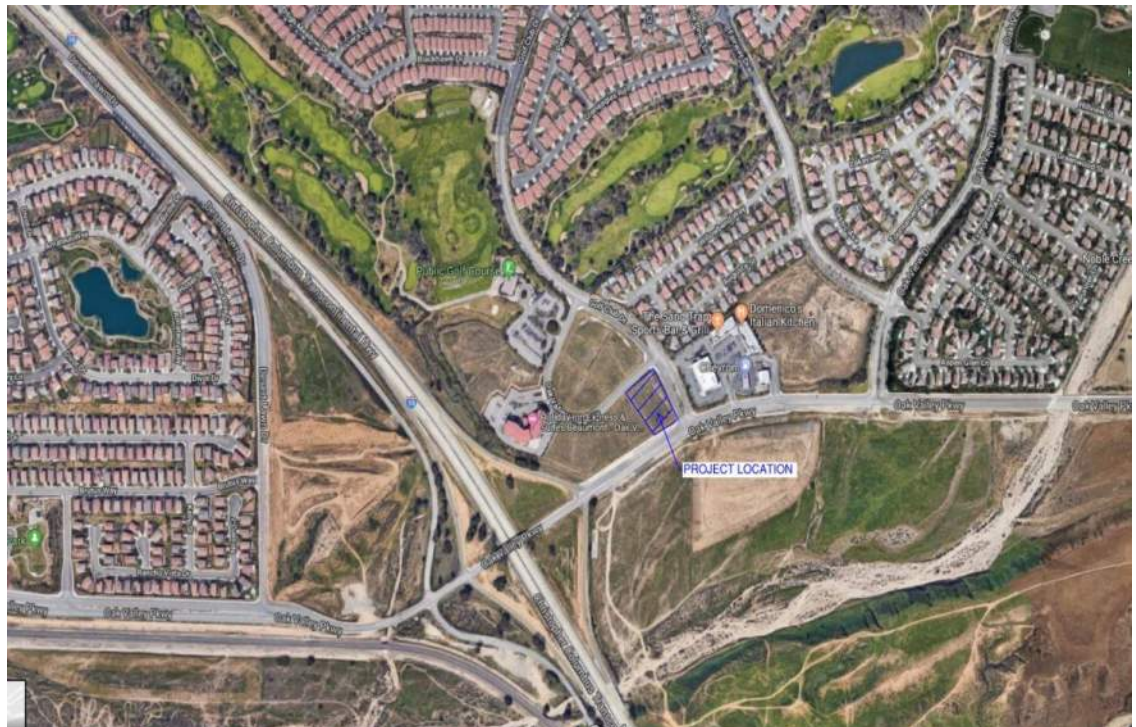
Contact : Gil Mendoza

Contents

I.	PROJECT DESCRIPTION.....	3
II.	PURPOSE.....	4
III.	EXISTING DRAINAGE.....	4
IV.	PROPOSED DRAINAGE.....	5
V.	SOIL CHARACTERISTICS.....	6
VI.	CALCULATION METHOD DISCUSSION.....	6
VII.	RESULTS/CONCLUSION.....	6-7
APPENDIX A.....		8-13
	Hydrology Analysis.....	8
APPENDIX B.....		14
	Hydraulics.....	14
APPENDIX C.....		15
	Hydrology Maps.....	15

I. PROJECT DESCRIPTION

The project is located northwest of Oak Valley Parkway and Golf Club Drive intersection. It is bounded by Oak Valley Parkway in the south, Golf Club Drive on the east, and Oak Valley Village Drive to the north. West of the site is a vacant and undeveloped area. The proposed development is a commercial consisting of a retail building, restaurant building, and a gas station with a convenient. A parking lot is also included. Total site area is approximately 2.28 acres.



II. PURPOSE

Per County of San Bernardino Flood Control Department, any new development requires a storm water detention system if it produces more volume (based on a 100-year storm) than the existing condition. The purpose of this drainage study is to determine through hydrology analysis whether the site requires a storm water

detention system or not. Volume for both pre and post condition will be calculated and compared.

III. EXISTING DRAINAGE

The project site is currently vacant and undeveloped covered with annual grass. The site is observed to have been previously rough graded consisting of two flat areas separated with a 2:1 slope with a 4 foot elevation difference. Drainage is observed to be naturally flowing from west to east of the site.

There is no existing storm drain system found in the site. Storm water runoff naturally flows from the northwest to the southeast corner and into Cactus Channel.

For hydrology calculation, the entire site is analyzed as two tributary areas. See attached "Hydrology Map - Existing Condition" in Appendix B for more information.

Unit Hydrograph Results:

Node	Area (ac)	10-Yr Storm		100 Yr-Storm	
		Q ₁₀ (cfs)	V ₁₀ (cf)	Q ₁₀₀ (cfs)	V ₁₀₀ (cf)
1 to 2	1.28	2.0	3,413	3.54	9,236
3 to 4	1.00	1.19	2,666	2.19	7,216
Total	2.28	3.19	6,079	5.73	16,452

IV. PROPOSED DRAINAGE

Drainage for the proposed development consists of directing runoffs into storm drain inlets that discharge into an underground infiltration chamber. Overflow from said infiltration chamber is discharged onto Oak Valley Parkway.

For hydrology calculation, the entire site will be analyzed as one tributary area. See attached "Hydrology Map - Proposed Condition" in Appendix B for more information.

Below is a summary table of the hydrology results for each of the tributary area.

Unit Hydrograph Results:

Node	Area (ac)	10-Yr Storm		100 Yr-Storm	
		Q_{10} (cfs)	V_{10} (cf)	Q_{100} (cfs)	V_{100} (cf)
1 to 2	2.28	5.39	29,528	8.22	46,469
Total	2.28	5.39	29,528	8.22	46,469

V. SOIL CHARACTERISTICS

The site is currently undeveloped with a soils group A. For calculation purposes, an AMC II and AMC III were used for 10 year and 100 year storm, respectively. A rainfall intensity curve of 0.6 was used for the analyses.

VI. CALCULATION METHOD

CivilDesign Software was used to calculate the hydrology analysis. Unit Hydrograph method was used to calculate the flowrates (Q) and volumes (V). The analysis includes a 10 and 100-yr storm events. See CivilDesign printouts in Appendix A.

VII. RESULTS/CONCLUSION

Below are data and results of the analyses. See Appendix A for a printout of the analyses.

Data:

Storm Year 24-hr Rainfall (inch) = 2.73 (2-yr), 6.67 (100-yr)
Slope Intensity Curve = 0.60
Soil Antecedent Moisture Condition (AMC) = 2 (10-yr), 3 (100-yr)

Comparison Table:

	10-Yr Storm		100 Yr-Storm	
	Total Q ₁₀ (cfs)	Total V ₁₀ (ac-ft)	Total Q ₁₀₀ (cfs)	Total V ₁₀₀ (ac-ft)
Existing Condition	3.19	6,079	5.73	16,452
Propose Condition	5.39	29,528	8.22	46,469
Difference (Proposed - Existing)	2.20	23,449	2.49	30,017

County states that a detention basin is required when the 100-yr volume of the proposed condition exceeds the existing. Tabulated results above show the proposed condition exceeding the existing condition by 30,017 cf. To mitigate said volume difference, the project is proposing an underground infiltration chamber. Said system is design to retain runoff through infiltration. See WQMP for more information on the proposed infiltration chamber.

Hydraulics:

Refer to Hydrology map for more information.

PIPE SIZE CALCULATIONS				
LOCATION	Q ₁₀₀	Slope	Req'd Diameter	Designed Diameter
	(cfs)	(%)	(inch)	(inch)
OVERFLOW	8.22	1.0	14.88	18

APPENDIX A

Hydrology Analysis

Appendix A - Hydrology Analysis

-Existing Condition

-Proposed Condition



WQMP Project Report

County of Riverside Stormwater Program

Santa Ana River Watershed Geodatabase

Monday, November 05, 2018

Note: The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	400530006, 400530007, 400530014
Latitude/Longitude:	33.947, -117.0002
Thomas Brothers Page:	720
Project Site Acreage:	1.35
Watershed(s):	SANTA ANA, SANTA ANA
This Project Site Resides in the following Hydrologic Unit (s) (HUC):	HUC Name - HUC Number Little San Geronio Creek - 180702030401
The HUCs Contribute stormwater to the following 303d listed water bodies and TMDLs which may include drainage from your proposed Project Site:	WBID Name - WBID Number Santa Ana River, Reach 3 - CAR8012100019990211140353 Santa Ana River, Reach 4 - CAR8012700019990211142130
These 303d listed Water bodies and TMDLs have the following Pollutants of Concern (POC):	Bacterial Indicators - Pathogens Metals/Metalloids - Copper, Lead
Limitations on Infiltration:	Project Site Onsite Soils Group(s) - A, D Known Groundwater Contamination Plumes within 1000' - No Adjacent Water Supply Wells(s) - No information available please contact your local water agency for more information. Your local contact agency is BEAUMONT-CHERRY VALLEY W.D.. Your local wholesaler contact agency is SAN GORGONIO PASS WATER AGENCY.
Environmentally Sensitive Areas within 200'(Fish and Wildlife Habitat/Species):	None
Environmentally Sensitive Areas within 200'(CVMSHCP):	None
Environmentally Sensitive Areas within 200'(WRMSHCP):	Burrowing Owl Survey Required Area, Narrow Endemic Plants Survey Req. - Area 8
Groundwater elevation from Mean Sea Level:	2309
85th Percentile Design Storm Depth (in):	0.799
Groundwater Basin:	Beaumont
MSHCP/CVMSHCP Criteria Cell(s):	Click here for detailed MSHCP report
Retention Ordinance Information:	No Data
Studies and Reports Related to Project Site:	IBI Scores - Southern Cal bulletin118_4-sc water_fact_3_7.11 8039-SAR-Hydromodification BCVWD Urban Management Plan 2006-Report-on-Water-Supply-Issues-LAFCO 2010 Urban Water Management Plan SGPWA-B-W ByerlyReport2005Dec5 RiversideCountyOrdinance859.2 sir_2006-5026 v2-ReportOnWaterConditions-2010-200dpi Beaumont MDP 2012 Annual Report of Santa Ana River IBI Scores - Southern Cal bulletin118_4-sc water_fact_3_7.11 8039-SAR-Hydromodification BCVWD Urban Management Plan 2006-Report-on-Water-Supply-Issues-LAFCO 2010 Urban Water Management Plan SGPWA-B-W ByerlyReport2005Dec5 RiversideCountyOrdinance859.2 sir_2006-5026 v2-ReportOnWaterConditions-2010-200dpi Beaumont MDP 2012 Annual Report of Santa Ana River



NOAA Atlas 14, Volume 6, Version 2
Location name: **Beaumont, California, USA***
Latitude: **33.9472°**, Longitude: **-117.0001°**
Elevation: **2519.19 ft****

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.124 (0.103-0.150)	0.159 (0.132-0.193)	0.212 (0.176-0.257)	0.260 (0.214-0.320)	0.337 (0.268-0.428)	0.406 (0.316-0.527)	0.485 (0.368-0.646)	0.579 (0.427-0.793)	0.728 (0.514-1.04)	0.863 (0.588-1.28)
10-min	0.177 (0.148-0.215)	0.228 (0.189-0.276)	0.303 (0.252-0.369)	0.373 (0.307-0.458)	0.483 (0.384-0.614)	0.582 (0.453-0.755)	0.696 (0.528-0.926)	0.830 (0.612-1.14)	1.04 (0.737-1.49)	1.24 (0.843-1.83)
15-min	0.215 (0.179-0.260)	0.275 (0.229-0.334)	0.367 (0.304-0.446)	0.451 (0.371-0.554)	0.585 (0.465-0.743)	0.704 (0.548-0.913)	0.841 (0.639-1.12)	1.00 (0.740-1.38)	1.26 (0.891-1.80)	1.50 (1.02-2.22)
30-min	0.313 (0.261-0.380)	0.402 (0.334-0.488)	0.535 (0.444-0.651)	0.658 (0.542-0.808)	0.853 (0.678-1.08)	1.03 (0.799-1.33)	1.23 (0.932-1.63)	1.46 (1.08-2.01)	1.84 (1.30-2.63)	2.18 (1.49-3.23)
60-min	0.459 (0.382-0.556)	0.589 (0.490-0.715)	0.784 (0.651-0.954)	0.965 (0.794-1.18)	1.25 (0.994-1.59)	1.50 (1.17-1.95)	1.80 (1.37-2.40)	2.15 (1.58-2.94)	2.70 (1.91-3.86)	3.20 (2.18-4.74)
2-hr	0.653 (0.544-0.792)	0.812 (0.676-0.986)	1.05 (0.868-1.27)	1.26 (1.03-1.54)	1.58 (1.26-2.01)	1.86 (1.45-2.41)	2.17 (1.65-2.89)	2.53 (1.87-3.47)	3.08 (2.18-4.41)	3.57 (2.43-5.29)
3-hr	0.799 (0.666-0.969)	0.985 (0.820-1.20)	1.25 (1.04-1.52)	1.49 (1.23-1.83)	1.85 (1.47-2.35)	2.15 (1.68-2.80)	2.49 (1.89-3.32)	2.87 (2.12-3.93)	3.44 (2.43-4.92)	3.94 (2.68-5.83)
6-hr	1.16 (0.966-1.41)	1.42 (1.18-1.73)	1.79 (1.49-2.18)	2.11 (1.74-2.59)	2.58 (2.05-3.28)	2.97 (2.31-3.85)	3.39 (2.57-4.51)	3.84 (2.83-5.27)	4.51 (3.19-6.45)	5.07 (3.46-7.51)
12-hr	1.58 (1.31-1.91)	1.98 (1.65-2.40)	2.52 (2.09-3.07)	2.98 (2.45-3.66)	3.62 (2.88-4.60)	4.13 (3.22-5.36)	4.67 (3.54-6.21)	5.23 (3.86-7.17)	6.02 (4.26-8.61)	6.66 (4.54-9.86)
24-hr	2.11 (1.86-2.43)	2.73 (2.42-3.15)	3.56 (3.14-4.12)	4.25 (3.72-4.95)	5.19 (4.39-6.25)	5.92 (4.91-7.28)	6.67 (5.41-8.40)	7.45 (5.88-9.64)	8.53 (6.46-11.5)	9.37 (6.86-13.1)
2-day	2.56 (2.27-2.96)	3.40 (3.01-3.93)	4.55 (4.01-5.27)	5.52 (4.83-6.44)	6.90 (5.85-8.31)	8.01 (6.64-9.85)	9.17 (7.43-11.5)	10.4 (8.22-13.5)	12.2 (9.22-16.4)	13.6 (9.97-19.0)
3-day	2.79 (2.47-3.21)	3.74 (3.31-4.31)	5.07 (4.47-5.87)	6.23 (5.45-7.27)	7.92 (6.71-9.54)	9.31 (7.73-11.4)	10.8 (8.76-13.6)	12.4 (9.82-16.1)	14.8 (11.2-20.0)	16.8 (12.3-23.4)
4-day	3.03 (2.68-3.50)	4.09 (3.62-4.72)	5.58 (4.92-6.46)	6.89 (6.02-8.03)	8.80 (7.45-10.6)	10.4 (8.61-12.8)	12.1 (9.80-15.2)	14.0 (11.0-18.1)	16.7 (12.7-22.5)	19.0 (13.9-26.5)
7-day	3.51 (3.11-4.04)	4.73 (4.18-5.46)	6.44 (5.68-7.45)	7.91 (6.92-9.23)	10.1 (8.52-12.1)	11.8 (9.81-14.5)	13.7 (11.1-17.3)	15.8 (12.4-20.4)	18.8 (14.2-25.3)	21.2 (15.6-29.6)
10-day	3.85 (3.41-4.44)	5.19 (4.59-5.99)	7.05 (6.22-8.16)	8.65 (7.57-10.1)	11.0 (9.28-13.2)	12.8 (10.7-15.8)	14.8 (12.0-18.7)	17.0 (13.4-22.0)	20.1 (15.2-27.1)	22.7 (16.6-31.6)
20-day	4.78 (4.23-5.51)	6.51 (5.75-7.51)	8.86 (7.81-10.3)	10.9 (9.50-12.7)	13.7 (11.6-16.5)	16.0 (13.2-19.6)	18.3 (14.9-23.1)	20.9 (16.5-27.0)	24.5 (18.5-33.0)	27.4 (20.1-38.2)
30-day	5.62 (4.97-6.48)	7.68 (6.79-8.86)	10.5 (9.23-12.1)	12.8 (11.2-14.9)	16.1 (13.6-19.4)	18.7 (15.5-23.0)	21.4 (17.4-27.0)	24.3 (19.2-31.5)	28.3 (21.5-38.2)	31.6 (23.1-44.0)
45-day	6.75 (5.97-7.78)	9.24 (8.17-10.7)	12.6 (11.1-14.6)	15.3 (13.4-17.9)	19.2 (16.3-23.1)	22.2 (18.4-27.3)	25.4 (20.5-31.9)	28.6 (22.6-37.1)	33.2 (25.1-44.7)	36.8 (26.9-51.3)
60-day	7.89 (6.98-9.09)	10.8 (9.52-12.4)	14.6 (12.9-16.9)	17.7 (15.5-20.7)	22.1 (18.7-26.6)	25.5 (21.1-31.3)	29.0 (23.5-36.5)	32.6 (25.7-42.2)	37.6 (28.5-50.7)	41.6 (30.4-57.9)
¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.										

[Back to Top](#)

Appendix A - Existing Condition
-10 Yr Storm

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 11/05/18 File:RATEX1012.out

RATIONAL METHOD FOR EXISTING CONDITIION - 10 YR STORM NODE 1 TO 2

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

English (in-lb) Units used in input data file

Program License Serial Number 6389

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Beaumont] area used.

10 year storm 10 minute intensity = 2.300(In/Hr)

10 year storm 60 minute intensity = 0.890(In/Hr)

100 year storm 10 minute intensity = 3.410(In/Hr)

100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 10.0

Calculated rainfall intensity data:

1 hour intensity = 0.890(In/Hr)

Slope of intensity duration curve = 0.5300

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 145.000(Ft.)
Top (of initial area) elevation = 2504.000(Ft.)
Bottom (of initial area) elevation = 2503.000(Ft.)
Difference in elevation = 1.000(Ft.)
Slope = 0.00690 s(percent)= 0.69
 $TC = k(0.530)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 10.498 min.
Rainfall intensity = 2.242(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.696
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 67.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 1.998(CFS)
Total initial stream area = 1.280(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 1.28 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 1.000
Area averaged RI index number = 67.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 11/05/18 File:RATEX1034.out

RATIONAL METHOD FOR EXISTING CONDITION - 10 YR STORM NODE 3 TO 4

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

English (in-lb) Units used in input data file

Program License Serial Number 6389

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Beaumont] area used.

10 year storm 10 minute intensity = 2.300(In/Hr)

10 year storm 60 minute intensity = 0.890(In/Hr)

100 year storm 10 minute intensity = 3.410(In/Hr)

100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 10.0

Calculated rainfall intensity data:

1 hour intensity = 0.890(In/Hr)

Slope of intensity duration curve = 0.5300

+++++
Process from Point/Station 3.000 to Point/Station 4.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 286.000(Ft.)
Top (of initial area) elevation = 2499.000(Ft.)
Bottom (of initial area) elevation = 2498.000(Ft.)
Difference in elevation = 1.000(Ft.)
Slope = 0.00350 s(percent)= 0.35
 $TC = k(0.530)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 15.780 min.
Rainfall intensity = 1.806(In/Hr) for a 10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.660
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 67.00
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 1.192(CFS)
Total initial stream area = 1.000(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 1.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 1.000
Area averaged RI index number = 67.0

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
Study date 11/05/18 File: UNEX10122410.out

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

Program License Serial Number 6389

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

English Units used in output format

UNIT HYDROGRAPH FOR EXISTING CONDITION - 20 YR STORM NODE 1 TO 2

Drainage Area = 1.28(Ac.) = 0.002 Sq. Mi.
Sq. Mi. Drainage Area for Depth-Area Areal Adjustment = 1.28(Ac.) = 0.002

USER Entry of lag time in hours
Lag time = 0.175 Hr.
Lag time = 10.50 Min.
25% of lag time = 2.63 Min.
40% of lag time = 4.20 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
1.28	2.73	3.49

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
1.28	6.67	8.54

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.730(In)
Area Averaged 100-Year Rainfall = 6.670(In)

Point rain (area averaged) = 4.351(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.351(In)

Sub-Area Data:

Area (Ac.)	Runoff Index	Impervious %
1.280	67.00	0.000
Total Area Entered = 1.28 (Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394
Sum (F) =						0.394

Area averaged mean soil loss (F) (In/Hr) = 0.394
Minimum soil loss rate ((In/Hr)) = 0.197
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	47.619	5.684	0.073
2	0.167	95.238	24.124	0.311
3	0.250	142.857	28.922	0.373
4	0.333	190.476	13.876	0.179
5	0.417	238.095	7.046	0.091
6	0.500	285.714	4.859	0.063
7	0.583	333.333	3.535	0.046
8	0.667	380.952	2.722	0.035
9	0.750	428.571	2.039	0.026
10	0.833	476.190	1.555	0.020
11	0.917	523.810	1.391	0.018
12	1.000	571.429	1.076	0.014
13	1.083	619.048	0.871	0.011
14	1.167	666.667	0.689	0.009
15	1.250	714.286	0.516	0.007
16	1.333	761.905	0.476	0.006
17	1.417	809.524	0.619	0.008
		Sum = 100.000	Sum=	1.290

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.035	(0.699)	0.031	0.003
2	0.17	0.07	0.035	(0.696)	0.031	0.003
3	0.25	0.07	0.035	(0.694)	0.031	0.003
4	0.33	0.10	0.052	(0.691)	0.047	0.005
5	0.42	0.10	0.052	(0.688)	0.047	0.005
6	0.50	0.10	0.052	(0.686)	0.047	0.005
7	0.58	0.10	0.052	(0.683)	0.047	0.005
8	0.67	0.10	0.052	(0.680)	0.047	0.005
9	0.75	0.10	0.052	(0.678)	0.047	0.005
10	0.83	0.13	0.070	(0.675)	0.063	0.007
11	0.92	0.13	0.070	(0.672)	0.063	0.007
12	1.00	0.13	0.070	(0.670)	0.063	0.007
13	1.08	0.10	0.052	(0.667)	0.047	0.005
14	1.17	0.10	0.052	(0.664)	0.047	0.005

15	1.25	0.10	0.052	(0.662)	0.047	0.005
16	1.33	0.10	0.052	(0.659)	0.047	0.005
17	1.42	0.10	0.052	(0.657)	0.047	0.005
18	1.50	0.10	0.052	(0.654)	0.047	0.005
19	1.58	0.10	0.052	(0.651)	0.047	0.005
20	1.67	0.10	0.052	(0.649)	0.047	0.005
21	1.75	0.10	0.052	(0.646)	0.047	0.005
22	1.83	0.13	0.070	(0.643)	0.063	0.007
23	1.92	0.13	0.070	(0.641)	0.063	0.007
24	2.00	0.13	0.070	(0.638)	0.063	0.007
25	2.08	0.13	0.070	(0.636)	0.063	0.007
26	2.17	0.13	0.070	(0.633)	0.063	0.007
27	2.25	0.13	0.070	(0.631)	0.063	0.007
28	2.33	0.13	0.070	(0.628)	0.063	0.007
29	2.42	0.13	0.070	(0.625)	0.063	0.007
30	2.50	0.13	0.070	(0.623)	0.063	0.007
31	2.58	0.17	0.087	(0.620)	0.078	0.009
32	2.67	0.17	0.087	(0.618)	0.078	0.009
33	2.75	0.17	0.087	(0.615)	0.078	0.009
34	2.83	0.17	0.087	(0.613)	0.078	0.009
35	2.92	0.17	0.087	(0.610)	0.078	0.009
36	3.00	0.17	0.087	(0.608)	0.078	0.009
37	3.08	0.17	0.087	(0.605)	0.078	0.009
38	3.17	0.17	0.087	(0.603)	0.078	0.009
39	3.25	0.17	0.087	(0.600)	0.078	0.009
40	3.33	0.17	0.087	(0.598)	0.078	0.009
41	3.42	0.17	0.087	(0.595)	0.078	0.009
42	3.50	0.17	0.087	(0.593)	0.078	0.009
43	3.58	0.17	0.087	(0.590)	0.078	0.009
44	3.67	0.17	0.087	(0.588)	0.078	0.009
45	3.75	0.17	0.087	(0.585)	0.078	0.009
46	3.83	0.20	0.104	(0.583)	0.094	0.010
47	3.92	0.20	0.104	(0.580)	0.094	0.010
48	4.00	0.20	0.104	(0.578)	0.094	0.010
49	4.08	0.20	0.104	(0.575)	0.094	0.010
50	4.17	0.20	0.104	(0.573)	0.094	0.010
51	4.25	0.20	0.104	(0.571)	0.094	0.010
52	4.33	0.23	0.122	(0.568)	0.110	0.012
53	4.42	0.23	0.122	(0.566)	0.110	0.012
54	4.50	0.23	0.122	(0.563)	0.110	0.012
55	4.58	0.23	0.122	(0.561)	0.110	0.012
56	4.67	0.23	0.122	(0.558)	0.110	0.012
57	4.75	0.23	0.122	(0.556)	0.110	0.012
58	4.83	0.27	0.139	(0.554)	0.125	0.014
59	4.92	0.27	0.139	(0.551)	0.125	0.014
60	5.00	0.27	0.139	(0.549)	0.125	0.014
61	5.08	0.20	0.104	(0.546)	0.094	0.010
62	5.17	0.20	0.104	(0.544)	0.094	0.010
63	5.25	0.20	0.104	(0.542)	0.094	0.010
64	5.33	0.23	0.122	(0.539)	0.110	0.012
65	5.42	0.23	0.122	(0.537)	0.110	0.012
66	5.50	0.23	0.122	(0.535)	0.110	0.012
67	5.58	0.27	0.139	(0.532)	0.125	0.014
68	5.67	0.27	0.139	(0.530)	0.125	0.014
69	5.75	0.27	0.139	(0.528)	0.125	0.014
70	5.83	0.27	0.139	(0.525)	0.125	0.014
71	5.92	0.27	0.139	(0.523)	0.125	0.014
72	6.00	0.27	0.139	(0.521)	0.125	0.014
73	6.08	0.30	0.157	(0.518)	0.141	0.016
74	6.17	0.30	0.157	(0.516)	0.141	0.016
75	6.25	0.30	0.157	(0.514)	0.141	0.016
76	6.33	0.30	0.157	(0.511)	0.141	0.016
77	6.42	0.30	0.157	(0.509)	0.141	0.016

78	6.50	0.30	0.157	(0.507)	0.141	0.016
79	6.58	0.33	0.174	(0.505)	0.157	0.017
80	6.67	0.33	0.174	(0.502)	0.157	0.017
81	6.75	0.33	0.174	(0.500)	0.157	0.017
82	6.83	0.33	0.174	(0.498)	0.157	0.017
83	6.92	0.33	0.174	(0.495)	0.157	0.017
84	7.00	0.33	0.174	(0.493)	0.157	0.017
85	7.08	0.33	0.174	(0.491)	0.157	0.017
86	7.17	0.33	0.174	(0.489)	0.157	0.017
87	7.25	0.33	0.174	(0.487)	0.157	0.017
88	7.33	0.37	0.191	(0.484)	0.172	0.019
89	7.42	0.37	0.191	(0.482)	0.172	0.019
90	7.50	0.37	0.191	(0.480)	0.172	0.019
91	7.58	0.40	0.209	(0.478)	0.188	0.021
92	7.67	0.40	0.209	(0.475)	0.188	0.021
93	7.75	0.40	0.209	(0.473)	0.188	0.021
94	7.83	0.43	0.226	(0.471)	0.204	0.023
95	7.92	0.43	0.226	(0.469)	0.204	0.023
96	8.00	0.43	0.226	(0.467)	0.204	0.023
97	8.08	0.50	0.261	(0.465)	0.235	0.026
98	8.17	0.50	0.261	(0.462)	0.235	0.026
99	8.25	0.50	0.261	(0.460)	0.235	0.026
100	8.33	0.50	0.261	(0.458)	0.235	0.026
101	8.42	0.50	0.261	(0.456)	0.235	0.026
102	8.50	0.50	0.261	(0.454)	0.235	0.026
103	8.58	0.53	0.278	(0.452)	0.251	0.028
104	8.67	0.53	0.278	(0.450)	0.251	0.028
105	8.75	0.53	0.278	(0.447)	0.251	0.028
106	8.83	0.57	0.296	(0.445)	0.266	0.030
107	8.92	0.57	0.296	(0.443)	0.266	0.030
108	9.00	0.57	0.296	(0.441)	0.266	0.030
109	9.08	0.63	0.331	(0.439)	0.298	0.033
110	9.17	0.63	0.331	(0.437)	0.298	0.033
111	9.25	0.63	0.331	(0.435)	0.298	0.033
112	9.33	0.67	0.348	(0.433)	0.313	0.035
113	9.42	0.67	0.348	(0.431)	0.313	0.035
114	9.50	0.67	0.348	(0.429)	0.313	0.035
115	9.58	0.70	0.365	(0.427)	0.329	0.037
116	9.67	0.70	0.365	(0.425)	0.329	0.037
117	9.75	0.70	0.365	(0.423)	0.329	0.037
118	9.83	0.73	0.383	(0.421)	0.345	0.038
119	9.92	0.73	0.383	(0.419)	0.345	0.038
120	10.00	0.73	0.383	(0.416)	0.345	0.038
121	10.08	0.50	0.261	(0.414)	0.235	0.026
122	10.17	0.50	0.261	(0.412)	0.235	0.026
123	10.25	0.50	0.261	(0.410)	0.235	0.026
124	10.33	0.50	0.261	(0.408)	0.235	0.026
125	10.42	0.50	0.261	(0.406)	0.235	0.026
126	10.50	0.50	0.261	(0.405)	0.235	0.026
127	10.58	0.67	0.348	(0.403)	0.313	0.035
128	10.67	0.67	0.348	(0.401)	0.313	0.035
129	10.75	0.67	0.348	(0.399)	0.313	0.035
130	10.83	0.67	0.348	(0.397)	0.313	0.035
131	10.92	0.67	0.348	(0.395)	0.313	0.035
132	11.00	0.67	0.348	(0.393)	0.313	0.035
133	11.08	0.63	0.331	(0.391)	0.298	0.033
134	11.17	0.63	0.331	(0.389)	0.298	0.033
135	11.25	0.63	0.331	(0.387)	0.298	0.033
136	11.33	0.63	0.331	(0.385)	0.298	0.033
137	11.42	0.63	0.331	(0.383)	0.298	0.033
138	11.50	0.63	0.331	(0.381)	0.298	0.033
139	11.58	0.57	0.296	(0.379)	0.266	0.030
140	11.67	0.57	0.296	(0.377)	0.266	0.030

141	11.75	0.57	0.296	(0.376)	0.266	0.030
142	11.83	0.60	0.313	(0.374)	0.282	0.031
143	11.92	0.60	0.313	(0.372)	0.282	0.031
144	12.00	0.60	0.313	(0.370)	0.282	0.031
145	12.08	0.83	0.435	0.368	(0.392)	0.067
146	12.17	0.83	0.435	0.366	(0.392)	0.069
147	12.25	0.83	0.435	0.364	(0.392)	0.071
148	12.33	0.87	0.452	0.363	(0.407)	0.090
149	12.42	0.87	0.452	0.361	(0.407)	0.092
150	12.50	0.87	0.452	0.359	(0.407)	0.093
151	12.58	0.93	0.487	0.357	(0.439)	0.130
152	12.67	0.93	0.487	0.355	(0.439)	0.132
153	12.75	0.93	0.487	0.354	(0.439)	0.134
154	12.83	0.97	0.505	0.352	(0.454)	0.153
155	12.92	0.97	0.505	0.350	(0.454)	0.155
156	13.00	0.97	0.505	0.348	(0.454)	0.156
157	13.08	1.13	0.592	0.347	(0.533)	0.245
158	13.17	1.13	0.592	0.345	(0.533)	0.247
159	13.25	1.13	0.592	0.343	(0.533)	0.249
160	13.33	1.13	0.592	0.341	(0.533)	0.250
161	13.42	1.13	0.592	0.340	(0.533)	0.252
162	13.50	1.13	0.592	0.338	(0.533)	0.254
163	13.58	0.77	0.400	0.336	(0.360)	0.064
164	13.67	0.77	0.400	0.334	(0.360)	0.066
165	13.75	0.77	0.400	0.333	(0.360)	0.068
166	13.83	0.77	0.400	0.331	(0.360)	0.069
167	13.92	0.77	0.400	0.329	(0.360)	0.071
168	14.00	0.77	0.400	0.328	(0.360)	0.073
169	14.08	0.90	0.470	0.326	(0.423)	0.144
170	14.17	0.90	0.470	0.324	(0.423)	0.146
171	14.25	0.90	0.470	0.323	(0.423)	0.147
172	14.33	0.87	0.452	0.321	(0.407)	0.132
173	14.42	0.87	0.452	0.319	(0.407)	0.133
174	14.50	0.87	0.452	0.318	(0.407)	0.135
175	14.58	0.87	0.452	0.316	(0.407)	0.136
176	14.67	0.87	0.452	0.314	(0.407)	0.138
177	14.75	0.87	0.452	0.313	(0.407)	0.140
178	14.83	0.83	0.435	0.311	(0.392)	0.124
179	14.92	0.83	0.435	0.310	(0.392)	0.125
180	15.00	0.83	0.435	0.308	(0.392)	0.127
181	15.08	0.80	0.418	0.306	(0.376)	0.111
182	15.17	0.80	0.418	0.305	(0.376)	0.113
183	15.25	0.80	0.418	0.303	(0.376)	0.114
184	15.33	0.77	0.400	0.302	(0.360)	0.099
185	15.42	0.77	0.400	0.300	(0.360)	0.100
186	15.50	0.77	0.400	0.299	(0.360)	0.102
187	15.58	0.63	0.331	0.297	(0.298)	0.034
188	15.67	0.63	0.331	0.296	(0.298)	0.035
189	15.75	0.63	0.331	0.294	(0.298)	0.037
190	15.83	0.63	0.331	0.293	(0.298)	0.038
191	15.92	0.63	0.331	0.291	(0.298)	0.040
192	16.00	0.63	0.331	0.290	(0.298)	0.041
193	16.08	0.13	0.070	(0.288)	0.063	0.007
194	16.17	0.13	0.070	(0.287)	0.063	0.007
195	16.25	0.13	0.070	(0.285)	0.063	0.007
196	16.33	0.13	0.070	(0.284)	0.063	0.007
197	16.42	0.13	0.070	(0.282)	0.063	0.007
198	16.50	0.13	0.070	(0.281)	0.063	0.007
199	16.58	0.10	0.052	(0.279)	0.047	0.005
200	16.67	0.10	0.052	(0.278)	0.047	0.005
201	16.75	0.10	0.052	(0.277)	0.047	0.005
202	16.83	0.10	0.052	(0.275)	0.047	0.005
203	16.92	0.10	0.052	(0.274)	0.047	0.005

204	17.00	0.10	0.052	(0.272)	0.047	0.005
205	17.08	0.17	0.087	(0.271)	0.078	0.009
206	17.17	0.17	0.087	(0.270)	0.078	0.009
207	17.25	0.17	0.087	(0.268)	0.078	0.009
208	17.33	0.17	0.087	(0.267)	0.078	0.009
209	17.42	0.17	0.087	(0.266)	0.078	0.009
210	17.50	0.17	0.087	(0.264)	0.078	0.009
211	17.58	0.17	0.087	(0.263)	0.078	0.009
212	17.67	0.17	0.087	(0.262)	0.078	0.009
213	17.75	0.17	0.087	(0.260)	0.078	0.009
214	17.83	0.13	0.070	(0.259)	0.063	0.007
215	17.92	0.13	0.070	(0.258)	0.063	0.007
216	18.00	0.13	0.070	(0.257)	0.063	0.007
217	18.08	0.13	0.070	(0.255)	0.063	0.007
218	18.17	0.13	0.070	(0.254)	0.063	0.007
219	18.25	0.13	0.070	(0.253)	0.063	0.007
220	18.33	0.13	0.070	(0.252)	0.063	0.007
221	18.42	0.13	0.070	(0.250)	0.063	0.007
222	18.50	0.13	0.070	(0.249)	0.063	0.007
223	18.58	0.10	0.052	(0.248)	0.047	0.005
224	18.67	0.10	0.052	(0.247)	0.047	0.005
225	18.75	0.10	0.052	(0.246)	0.047	0.005
226	18.83	0.07	0.035	(0.244)	0.031	0.003
227	18.92	0.07	0.035	(0.243)	0.031	0.003
228	19.00	0.07	0.035	(0.242)	0.031	0.003
229	19.08	0.10	0.052	(0.241)	0.047	0.005
230	19.17	0.10	0.052	(0.240)	0.047	0.005
231	19.25	0.10	0.052	(0.239)	0.047	0.005
232	19.33	0.13	0.070	(0.238)	0.063	0.007
233	19.42	0.13	0.070	(0.236)	0.063	0.007
234	19.50	0.13	0.070	(0.235)	0.063	0.007
235	19.58	0.10	0.052	(0.234)	0.047	0.005
236	19.67	0.10	0.052	(0.233)	0.047	0.005
237	19.75	0.10	0.052	(0.232)	0.047	0.005
238	19.83	0.07	0.035	(0.231)	0.031	0.003
239	19.92	0.07	0.035	(0.230)	0.031	0.003
240	20.00	0.07	0.035	(0.229)	0.031	0.003
241	20.08	0.10	0.052	(0.228)	0.047	0.005
242	20.17	0.10	0.052	(0.227)	0.047	0.005
243	20.25	0.10	0.052	(0.226)	0.047	0.005
244	20.33	0.10	0.052	(0.225)	0.047	0.005
245	20.42	0.10	0.052	(0.224)	0.047	0.005
246	20.50	0.10	0.052	(0.223)	0.047	0.005
247	20.58	0.10	0.052	(0.222)	0.047	0.005
248	20.67	0.10	0.052	(0.221)	0.047	0.005
249	20.75	0.10	0.052	(0.220)	0.047	0.005
250	20.83	0.07	0.035	(0.219)	0.031	0.003
251	20.92	0.07	0.035	(0.219)	0.031	0.003
252	21.00	0.07	0.035	(0.218)	0.031	0.003
253	21.08	0.10	0.052	(0.217)	0.047	0.005
254	21.17	0.10	0.052	(0.216)	0.047	0.005
255	21.25	0.10	0.052	(0.215)	0.047	0.005
256	21.33	0.07	0.035	(0.214)	0.031	0.003
257	21.42	0.07	0.035	(0.213)	0.031	0.003
258	21.50	0.07	0.035	(0.213)	0.031	0.003
259	21.58	0.10	0.052	(0.212)	0.047	0.005
260	21.67	0.10	0.052	(0.211)	0.047	0.005
261	21.75	0.10	0.052	(0.210)	0.047	0.005
262	21.83	0.07	0.035	(0.210)	0.031	0.003
263	21.92	0.07	0.035	(0.209)	0.031	0.003
264	22.00	0.07	0.035	(0.208)	0.031	0.003
265	22.08	0.10	0.052	(0.208)	0.047	0.005
266	22.17	0.10	0.052	(0.207)	0.047	0.005

(Loss Rate Not Used)

Sum = 100.0 Sum = 8.8

$$\text{Flood volume} = \frac{\text{Effective rainfall} \times \text{times area}}{1.3(\text{Ac.}) / [(\text{In}) / (\text{Ft.})]} = \frac{0.73(\text{In})}{0.1(\text{Ac. Ft})}$$

Total soil loss = 3.62(In)
Total soil loss = 0.386(Ac.Ft)
Total rainfall = 4.35(In)
Flood volume = 3412.6 Cubic Feet
Total soil loss = 16803.6 Cubic Feet

Peak flow rate of this hydrograph = 0.300 (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
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0+ 5	0.0000	0.00	Q			
0+10	0.0000	0.00	Q			
0+15	0.0000	0.00	Q			
0+20	0.0001	0.00	Q			
0+25	0.0001	0.00	Q			
0+30	0.0001	0.01	Q			
0+35	0.0002	0.01	Q			
0+40	0.0002	0.01	Q			
0+45	0.0002	0.01	Q			
0+50	0.0003	0.01	Q			
0+55	0.0003	0.01	Q			
1+ 0	0.0004	0.01	Q			
1+ 5	0.0004	0.01	Q			
1+10	0.0005	0.01	Q			
1+15	0.0005	0.01	Q			
1+20	0.0006	0.01	Q			
1+25	0.0006	0.01	Q			
1+30	0.0007	0.01	Q			
1+35	0.0007	0.01	Q			
1+40	0.0008	0.01	Q			

1+45	0.0008	0.01	Q				
1+50	0.0009	0.01	Q				
1+55	0.0009	0.01	Q				
2+ 0	0.0010	0.01	Q				
2+ 5	0.0010	0.01	Q				
2+10	0.0011	0.01	Q				
2+15	0.0012	0.01	Q				
2+20	0.0012	0.01	Q				
2+25	0.0013	0.01	Q				
2+30	0.0013	0.01	Q				
2+35	0.0014	0.01	Q				
2+40	0.0015	0.01	Q				
2+45	0.0015	0.01	Q				
2+50	0.0016	0.01	Q				
2+55	0.0017	0.01	Q				
3+ 0	0.0018	0.01	Q				
3+ 5	0.0018	0.01	Q				
3+10	0.0019	0.01	Q				
3+15	0.0020	0.01	QV				
3+20	0.0021	0.01	QV				
3+25	0.0021	0.01	QV				
3+30	0.0022	0.01	QV				
3+35	0.0023	0.01	QV				
3+40	0.0024	0.01	QV				
3+45	0.0024	0.01	QV				
3+50	0.0025	0.01	QV				
3+55	0.0026	0.01	QV				
4+ 0	0.0027	0.01	QV				
4+ 5	0.0028	0.01	QV				
4+10	0.0029	0.01	QV				
4+15	0.0030	0.01	QV				
4+20	0.0031	0.01	QV				
4+25	0.0032	0.01	QV				
4+30	0.0033	0.01	QV				
4+35	0.0034	0.01	QV				
4+40	0.0035	0.02	QV				
4+45	0.0036	0.02	QV				
4+50	0.0037	0.02	QV				
4+55	0.0038	0.02	QV				
5+ 0	0.0039	0.02	QV				
5+ 5	0.0040	0.02	Q V				
5+10	0.0041	0.02	Q V				
5+15	0.0042	0.01	Q V				
5+20	0.0043	0.01	Q V				
5+25	0.0044	0.01	Q V				
5+30	0.0045	0.02	Q V				
5+35	0.0046	0.02	Q V				
5+40	0.0048	0.02	Q V				
5+45	0.0049	0.02	Q V				
5+50	0.0050	0.02	Q V				
5+55	0.0051	0.02	Q V				
6+ 0	0.0052	0.02	Q V				
6+ 5	0.0054	0.02	Q V				
6+10	0.0055	0.02	Q V				
6+15	0.0056	0.02	Q V				
6+20	0.0057	0.02	Q V				
6+25	0.0059	0.02	Q V				
6+30	0.0060	0.02	Q V				
6+35	0.0062	0.02	Q V				
6+40	0.0063	0.02	Q V				
6+45	0.0064	0.02	Q V				
6+50	0.0066	0.02	Q V				
6+55	0.0067	0.02	Q V				

7+ 0	0.0069	0.02	Q	V				
7+ 5	0.0071	0.02	Q	V				
7+10	0.0072	0.02	Q	V				
7+15	0.0074	0.02	Q	V				
7+20	0.0075	0.02	Q	V				
7+25	0.0077	0.02	Q	V				
7+30	0.0078	0.02	Q	V				
7+35	0.0080	0.02	Q	V				
7+40	0.0082	0.02	Q	V				
7+45	0.0083	0.03	Q	V				
7+50	0.0085	0.03	Q	V				
7+55	0.0087	0.03	Q	V				
8+ 0	0.0089	0.03	Q	V				
8+ 5	0.0091	0.03	Q	V				
8+10	0.0093	0.03	Q	V				
8+15	0.0095	0.03	Q	V				
8+20	0.0097	0.03	Q	V				
8+25	0.0100	0.03	Q	V				
8+30	0.0102	0.03	Q	V				
8+35	0.0104	0.03	Q	V				
8+40	0.0107	0.03	Q	V				
8+45	0.0109	0.03	Q	V				
8+50	0.0111	0.04	Q	V				
8+55	0.0114	0.04	Q	V				
9+ 0	0.0116	0.04	Q	V				
9+ 5	0.0119	0.04	Q	V				
9+10	0.0122	0.04	Q	V				
9+15	0.0124	0.04	Q	V				
9+20	0.0127	0.04	Q	V				
9+25	0.0130	0.04	Q	V				
9+30	0.0133	0.04	Q	V				
9+35	0.0136	0.04	Q	V				
9+40	0.0139	0.04	Q	V				
9+45	0.0142	0.05	Q	V				
9+50	0.0145	0.05	Q	V				
9+55	0.0149	0.05	Q	V				
10+ 0	0.0152	0.05	Q	V				
10+ 5	0.0155	0.05	Q	V				
10+10	0.0158	0.04	Q	V				
10+15	0.0161	0.04	Q	V				
10+20	0.0164	0.04	Q	V				
10+25	0.0166	0.04	Q	V				
10+30	0.0169	0.04	Q	V				
10+35	0.0171	0.04	Q	V				
10+40	0.0174	0.04	Q	V				
10+45	0.0177	0.04	Q	V				
10+50	0.0179	0.04	Q	V				
10+55	0.0182	0.04	Q	V				
11+ 0	0.0185	0.04	Q	V				
11+ 5	0.0188	0.04	Q	V				
11+10	0.0191	0.04	Q	V				
11+15	0.0194	0.04	Q	V				
11+20	0.0197	0.04	Q	V				
11+25	0.0200	0.04	Q	V				
11+30	0.0203	0.04	Q	V				
11+35	0.0206	0.04	Q	V				
11+40	0.0209	0.04	Q	V				
11+45	0.0212	0.04	Q	V				
11+50	0.0214	0.04	Q	V				
11+55	0.0217	0.04	Q	V				
12+ 0	0.0220	0.04	Q	V				
12+ 5	0.0223	0.04	Q	V				
12+10	0.0227	0.05	Q	V				

12+15	0.0231	0.07	Q	V			
12+20	0.0237	0.08	Q	V			
12+25	0.0243	0.09	Q	V			
12+30	0.0250	0.10	Q	V			
12+35	0.0257	0.11	Q	V			
12+40	0.0265	0.12	Q	V			
12+45	0.0275	0.14	Q	V			
12+50	0.0286	0.15	Q	V			
12+55	0.0297	0.16	Q	V			
13+ 0	0.0309	0.18	Q	V			
13+ 5	0.0322	0.19	Q	V			
13+10	0.0337	0.22	Q	V			
13+15	0.0355	0.26	Q	V			
13+20	0.0374	0.28	Q	V			
13+25	0.0394	0.29	Q	V			
13+30	0.0415	0.30	Q	V			
13+35	0.0435	0.29	Q	V			
13+40	0.0452	0.24	Q	V			
13+45	0.0464	0.17	Q	V			
13+50	0.0474	0.14	Q	V			
13+55	0.0482	0.13	Q	V			
14+ 0	0.0491	0.12	Q	V			
14+ 5	0.0499	0.12	Q	V			
14+10	0.0509	0.14	Q	V			
14+15	0.0520	0.16	Q	V			
14+20	0.0532	0.17	Q	V			
14+25	0.0544	0.17	Q	V			
14+30	0.0555	0.17	Q	V			
14+35	0.0567	0.17	Q	V			
14+40	0.0579	0.17	Q	V			
14+45	0.0591	0.17	Q	V			
14+50	0.0603	0.17	Q	V			
14+55	0.0615	0.17	Q	V			
15+ 0	0.0626	0.17	Q	V			
15+ 5	0.0637	0.16	Q	V			
15+10	0.0648	0.16	Q	V			
15+15	0.0659	0.15	Q	V			
15+20	0.0669	0.15	Q	V			
15+25	0.0679	0.15	Q	V			
15+30	0.0689	0.14	Q	V			
15+35	0.0698	0.13	Q	V			
15+40	0.0705	0.11	Q	V			
15+45	0.0711	0.08	Q	V			
15+50	0.0716	0.07	Q	V			
15+55	0.0721	0.07	Q	V			
16+ 0	0.0725	0.06	Q	V			
16+ 5	0.0729	0.06	Q	V			
16+10	0.0732	0.05	Q	V			
16+15	0.0735	0.03	Q	V			
16+20	0.0736	0.03	Q	V			
16+25	0.0738	0.02	Q	V			
16+30	0.0739	0.02	Q	V			
16+35	0.0740	0.02	Q	V			
16+40	0.0741	0.01	Q	V			
16+45	0.0742	0.01	Q	V			
16+50	0.0742	0.01	Q	V			
16+55	0.0743	0.01	Q	V			
17+ 0	0.0744	0.01	Q	V			
17+ 5	0.0744	0.01	Q	V			
17+10	0.0745	0.01	Q	V			
17+15	0.0746	0.01	Q	V			
17+20	0.0746	0.01	Q	V			
17+25	0.0747	0.01	Q	V			

17+30	0.0748	0.01	Q				V	
17+35	0.0748	0.01	Q				V	
17+40	0.0749	0.01	Q				V	
17+45	0.0750	0.01	Q				V	
17+50	0.0751	0.01	Q				V	
17+55	0.0751	0.01	Q				V	
18+ 0	0.0752	0.01	Q				V	
18+ 5	0.0753	0.01	Q				V	
18+10	0.0753	0.01	Q				V	
18+15	0.0754	0.01	Q				V	
18+20	0.0755	0.01	Q				V	
18+25	0.0755	0.01	Q				V	
18+30	0.0756	0.01	Q				V	
18+35	0.0757	0.01	Q				V	
18+40	0.0757	0.01	Q				V	
18+45	0.0758	0.01	Q				V	
18+50	0.0758	0.01	Q				V	
18+55	0.0759	0.01	Q				V	
19+ 0	0.0759	0.01	Q				V	
19+ 5	0.0759	0.01	Q				V	
19+10	0.0760	0.01	Q				V	
19+15	0.0760	0.01	Q				V	
19+20	0.0761	0.01	Q				V	
19+25	0.0761	0.01	Q				V	
19+30	0.0762	0.01	Q				V	
19+35	0.0762	0.01	Q				V	
19+40	0.0763	0.01	Q				V	
19+45	0.0763	0.01	Q				V	
19+50	0.0764	0.01	Q				V	
19+55	0.0764	0.01	Q				V	
20+ 0	0.0765	0.01	Q				V	
20+ 5	0.0765	0.01	Q				V	
20+10	0.0765	0.01	Q				V	
20+15	0.0766	0.01	Q				V	
20+20	0.0766	0.01	Q				V	
20+25	0.0767	0.01	Q				V	
20+30	0.0767	0.01	Q				V	
20+35	0.0768	0.01	Q				V	
20+40	0.0768	0.01	Q				V	
20+45	0.0769	0.01	Q				V	
20+50	0.0769	0.01	Q				V	
20+55	0.0769	0.01	Q				V	
21+ 0	0.0770	0.01	Q				V	
21+ 5	0.0770	0.01	Q				V	
21+10	0.0771	0.01	Q				V	
21+15	0.0771	0.01	Q				V	
21+20	0.0771	0.01	Q				V	
21+25	0.0772	0.01	Q				V	
21+30	0.0772	0.01	Q				V	
21+35	0.0772	0.01	Q				V	
21+40	0.0773	0.01	Q				V	
21+45	0.0773	0.01	Q				V	
21+50	0.0774	0.01	Q				V	
21+55	0.0774	0.01	Q				V	
22+ 0	0.0774	0.01	Q				V	
22+ 5	0.0775	0.01	Q				V	
22+10	0.0775	0.01	Q				V	
22+15	0.0776	0.01	Q				V	
22+20	0.0776	0.01	Q				V	
22+25	0.0776	0.01	Q				V	
22+30	0.0777	0.01	Q				V	
22+35	0.0777	0.00	Q				V	
22+40	0.0777	0.00	Q				V	

22+45	0.0778	0.00	Q				V
22+50	0.0778	0.00	Q				V
22+55	0.0778	0.00	Q				V
23+ 0	0.0779	0.00	Q				V
23+ 5	0.0779	0.00	Q				V
23+10	0.0779	0.00	Q				V
23+15	0.0780	0.00	Q				V
23+20	0.0780	0.00	Q				V
23+25	0.0780	0.00	Q				V
23+30	0.0781	0.00	Q				V
23+35	0.0781	0.00	Q				V
23+40	0.0781	0.00	Q				V
23+45	0.0782	0.00	Q				V
23+50	0.0782	0.00	Q				V
23+55	0.0782	0.00	Q				V
24+ 0	0.0782	0.00	Q				V
24+ 5	0.0783	0.00	Q				V
24+10	0.0783	0.00	Q				V
24+15	0.0783	0.00	Q				V
24+20	0.0783	0.00	Q				V
24+25	0.0783	0.00	Q				V
24+30	0.0783	0.00	Q				V
24+35	0.0783	0.00	Q				V
24+40	0.0783	0.00	Q				V
24+45	0.0783	0.00	Q				V
24+50	0.0783	0.00	Q				V
24+55	0.0783	0.00	Q				V
25+ 0	0.0783	0.00	Q				V
25+ 5	0.0783	0.00	Q				V
25+10	0.0783	0.00	Q				V
25+15	0.0783	0.00	Q				V
25+20	0.0783	0.00	Q				V

Unit Hydrograph Analysis

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Study date 11/05/18 File: UNEX10342410.out

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

Program License Serial Number 6389

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

English Units used in output format

UNIT HYDROGRAPH FOR EXISTING CONDITION - 10 YR STORM NODE 3 TO 4

Drainage Area = 1.00 (Ac.) = 0.002 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 1.00 (Ac.) = 0.002
Sq. Mi.

USER Entry of lag time in hours
Lag time = 0.263 Hr.
Lag time = 15.78 Min.
25% of lag time = 3.95 Min.
40% of lag time = 6.31 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00 (CFS)

2 YEAR Area rainfall data:

Area (Ac.) [1]	Rainfall (In) [2]	Weighting [1*2]
0.00	2.73	0.00
0.00	2.73	0.00
1.00	2.73	2.73

100 YEAR Area rainfall data:

Area (Ac.) [1]	Rainfall (In) [2]	Weighting [1*2]
1.00	6.67	6.67

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.730 (In)
Area Averaged 100-Year Rainfall = 6.670 (In)

Point rain (area averaged) = 4.351 (In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.351 (In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 1.000 67.00 0.000
 Total Area Entered = 1.00(Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394
						Sum (F) = 0.394

Area averaged mean soil loss (F) (In/Hr) = 0.394

Minimum soil loss rate ((In/Hr)) = 0.197

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.900

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	31.686	3.124
2	0.167	63.371	11.746
3	0.250	95.057	20.210
4	0.333	126.743	20.328
5	0.417	158.428	11.881
6	0.500	190.114	6.783
7	0.583	221.800	4.600
8	0.667	253.485	3.587
9	0.750	285.171	2.916
10	0.833	316.857	2.344
11	0.917	348.542	1.943
12	1.000	380.228	1.670
13	1.083	411.914	1.368
14	1.167	443.599	1.088
15	1.250	475.285	0.994
16	1.333	506.971	0.946
17	1.417	538.657	0.774
18	1.500	570.342	0.671
19	1.583	602.028	0.578
20	1.667	633.714	0.499
21	1.750	665.399	0.429
22	1.833	697.085	0.334
23	1.917	728.771	0.317
24	2.000	760.456	0.317
25	2.083	792.142	0.317
26	2.167	823.828	0.237
		Sum = 100.000	Sum= 1.008

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max Low	Effective (In/Hr)
1	0.08	0.035	(0.699)	0.031
2	0.17	0.035	(0.696)	0.031
3	0.25	0.035	(0.694)	0.031

4	0.33	0.10	0.052	(0.691)	0.047	0.005
5	0.42	0.10	0.052	(0.688)	0.047	0.005
6	0.50	0.10	0.052	(0.686)	0.047	0.005
7	0.58	0.10	0.052	(0.683)	0.047	0.005
8	0.67	0.10	0.052	(0.680)	0.047	0.005
9	0.75	0.10	0.052	(0.678)	0.047	0.005
10	0.83	0.13	0.070	(0.675)	0.063	0.007
11	0.92	0.13	0.070	(0.672)	0.063	0.007
12	1.00	0.13	0.070	(0.670)	0.063	0.007
13	1.08	0.10	0.052	(0.667)	0.047	0.005
14	1.17	0.10	0.052	(0.664)	0.047	0.005
15	1.25	0.10	0.052	(0.662)	0.047	0.005
16	1.33	0.10	0.052	(0.659)	0.047	0.005
17	1.42	0.10	0.052	(0.657)	0.047	0.005
18	1.50	0.10	0.052	(0.654)	0.047	0.005
19	1.58	0.10	0.052	(0.651)	0.047	0.005
20	1.67	0.10	0.052	(0.649)	0.047	0.005
21	1.75	0.10	0.052	(0.646)	0.047	0.005
22	1.83	0.13	0.070	(0.643)	0.063	0.007
23	1.92	0.13	0.070	(0.641)	0.063	0.007
24	2.00	0.13	0.070	(0.638)	0.063	0.007
25	2.08	0.13	0.070	(0.636)	0.063	0.007
26	2.17	0.13	0.070	(0.633)	0.063	0.007
27	2.25	0.13	0.070	(0.631)	0.063	0.007
28	2.33	0.13	0.070	(0.628)	0.063	0.007
29	2.42	0.13	0.070	(0.625)	0.063	0.007
30	2.50	0.13	0.070	(0.623)	0.063	0.007
31	2.58	0.17	0.087	(0.620)	0.078	0.009
32	2.67	0.17	0.087	(0.618)	0.078	0.009
33	2.75	0.17	0.087	(0.615)	0.078	0.009
34	2.83	0.17	0.087	(0.613)	0.078	0.009
35	2.92	0.17	0.087	(0.610)	0.078	0.009
36	3.00	0.17	0.087	(0.608)	0.078	0.009
37	3.08	0.17	0.087	(0.605)	0.078	0.009
38	3.17	0.17	0.087	(0.603)	0.078	0.009
39	3.25	0.17	0.087	(0.600)	0.078	0.009
40	3.33	0.17	0.087	(0.598)	0.078	0.009
41	3.42	0.17	0.087	(0.595)	0.078	0.009
42	3.50	0.17	0.087	(0.593)	0.078	0.009
43	3.58	0.17	0.087	(0.590)	0.078	0.009
44	3.67	0.17	0.087	(0.588)	0.078	0.009
45	3.75	0.17	0.087	(0.585)	0.078	0.009
46	3.83	0.20	0.104	(0.583)	0.094	0.010
47	3.92	0.20	0.104	(0.580)	0.094	0.010
48	4.00	0.20	0.104	(0.578)	0.094	0.010
49	4.08	0.20	0.104	(0.575)	0.094	0.010
50	4.17	0.20	0.104	(0.573)	0.094	0.010
51	4.25	0.20	0.104	(0.571)	0.094	0.010
52	4.33	0.23	0.122	(0.568)	0.110	0.012
53	4.42	0.23	0.122	(0.566)	0.110	0.012
54	4.50	0.23	0.122	(0.563)	0.110	0.012
55	4.58	0.23	0.122	(0.561)	0.110	0.012
56	4.67	0.23	0.122	(0.558)	0.110	0.012
57	4.75	0.23	0.122	(0.556)	0.110	0.012
58	4.83	0.27	0.139	(0.554)	0.125	0.014
59	4.92	0.27	0.139	(0.551)	0.125	0.014
60	5.00	0.27	0.139	(0.549)	0.125	0.014
61	5.08	0.20	0.104	(0.546)	0.094	0.010
62	5.17	0.20	0.104	(0.544)	0.094	0.010
63	5.25	0.20	0.104	(0.542)	0.094	0.010
64	5.33	0.23	0.122	(0.539)	0.110	0.012
65	5.42	0.23	0.122	(0.537)	0.110	0.012
66	5.50	0.23	0.122	(0.535)	0.110	0.012

67	5.58	0.27	0.139	(0.532)	0.125	0.014
68	5.67	0.27	0.139	(0.530)	0.125	0.014
69	5.75	0.27	0.139	(0.528)	0.125	0.014
70	5.83	0.27	0.139	(0.525)	0.125	0.014
71	5.92	0.27	0.139	(0.523)	0.125	0.014
72	6.00	0.27	0.139	(0.521)	0.125	0.014
73	6.08	0.30	0.157	(0.518)	0.141	0.016
74	6.17	0.30	0.157	(0.516)	0.141	0.016
75	6.25	0.30	0.157	(0.514)	0.141	0.016
76	6.33	0.30	0.157	(0.511)	0.141	0.016
77	6.42	0.30	0.157	(0.509)	0.141	0.016
78	6.50	0.30	0.157	(0.507)	0.141	0.016
79	6.58	0.33	0.174	(0.505)	0.157	0.017
80	6.67	0.33	0.174	(0.502)	0.157	0.017
81	6.75	0.33	0.174	(0.500)	0.157	0.017
82	6.83	0.33	0.174	(0.498)	0.157	0.017
83	6.92	0.33	0.174	(0.495)	0.157	0.017
84	7.00	0.33	0.174	(0.493)	0.157	0.017
85	7.08	0.33	0.174	(0.491)	0.157	0.017
86	7.17	0.33	0.174	(0.489)	0.157	0.017
87	7.25	0.33	0.174	(0.487)	0.157	0.017
88	7.33	0.37	0.191	(0.484)	0.172	0.019
89	7.42	0.37	0.191	(0.482)	0.172	0.019
90	7.50	0.37	0.191	(0.480)	0.172	0.019
91	7.58	0.40	0.209	(0.478)	0.188	0.021
92	7.67	0.40	0.209	(0.475)	0.188	0.021
93	7.75	0.40	0.209	(0.473)	0.188	0.021
94	7.83	0.43	0.226	(0.471)	0.204	0.023
95	7.92	0.43	0.226	(0.469)	0.204	0.023
96	8.00	0.43	0.226	(0.467)	0.204	0.023
97	8.08	0.50	0.261	(0.465)	0.235	0.026
98	8.17	0.50	0.261	(0.462)	0.235	0.026
99	8.25	0.50	0.261	(0.460)	0.235	0.026
100	8.33	0.50	0.261	(0.458)	0.235	0.026
101	8.42	0.50	0.261	(0.456)	0.235	0.026
102	8.50	0.50	0.261	(0.454)	0.235	0.026
103	8.58	0.53	0.278	(0.452)	0.251	0.028
104	8.67	0.53	0.278	(0.450)	0.251	0.028
105	8.75	0.53	0.278	(0.447)	0.251	0.028
106	8.83	0.57	0.296	(0.445)	0.266	0.030
107	8.92	0.57	0.296	(0.443)	0.266	0.030
108	9.00	0.57	0.296	(0.441)	0.266	0.030
109	9.08	0.63	0.331	(0.439)	0.298	0.033
110	9.17	0.63	0.331	(0.437)	0.298	0.033
111	9.25	0.63	0.331	(0.435)	0.298	0.033
112	9.33	0.67	0.348	(0.433)	0.313	0.035
113	9.42	0.67	0.348	(0.431)	0.313	0.035
114	9.50	0.67	0.348	(0.429)	0.313	0.035
115	9.58	0.70	0.365	(0.427)	0.329	0.037
116	9.67	0.70	0.365	(0.425)	0.329	0.037
117	9.75	0.70	0.365	(0.423)	0.329	0.037
118	9.83	0.73	0.383	(0.421)	0.345	0.038
119	9.92	0.73	0.383	(0.419)	0.345	0.038
120	10.00	0.73	0.383	(0.416)	0.345	0.038
121	10.08	0.50	0.261	(0.414)	0.235	0.026
122	10.17	0.50	0.261	(0.412)	0.235	0.026
123	10.25	0.50	0.261	(0.410)	0.235	0.026
124	10.33	0.50	0.261	(0.408)	0.235	0.026
125	10.42	0.50	0.261	(0.406)	0.235	0.026
126	10.50	0.50	0.261	(0.405)	0.235	0.026
127	10.58	0.67	0.348	(0.403)	0.313	0.035
128	10.67	0.67	0.348	(0.401)	0.313	0.035
129	10.75	0.67	0.348	(0.399)	0.313	0.035

130	10.83	0.67	0.348	(0.397)	0.313	0.035
131	10.92	0.67	0.348	(0.395)	0.313	0.035
132	11.00	0.67	0.348	(0.393)	0.313	0.035
133	11.08	0.63	0.331	(0.391)	0.298	0.033
134	11.17	0.63	0.331	(0.389)	0.298	0.033
135	11.25	0.63	0.331	(0.387)	0.298	0.033
136	11.33	0.63	0.331	(0.385)	0.298	0.033
137	11.42	0.63	0.331	(0.383)	0.298	0.033
138	11.50	0.63	0.331	(0.381)	0.298	0.033
139	11.58	0.57	0.296	(0.379)	0.266	0.030
140	11.67	0.57	0.296	(0.377)	0.266	0.030
141	11.75	0.57	0.296	(0.376)	0.266	0.030
142	11.83	0.60	0.313	(0.374)	0.282	0.031
143	11.92	0.60	0.313	(0.372)	0.282	0.031
144	12.00	0.60	0.313	(0.370)	0.282	0.031
145	12.08	0.83	0.435	0.368	(0.392)	0.067
146	12.17	0.83	0.435	0.366	(0.392)	0.069
147	12.25	0.83	0.435	0.364	(0.392)	0.071
148	12.33	0.87	0.452	0.363	(0.407)	0.090
149	12.42	0.87	0.452	0.361	(0.407)	0.092
150	12.50	0.87	0.452	0.359	(0.407)	0.093
151	12.58	0.93	0.487	0.357	(0.439)	0.130
152	12.67	0.93	0.487	0.355	(0.439)	0.132
153	12.75	0.93	0.487	0.354	(0.439)	0.134
154	12.83	0.97	0.505	0.352	(0.454)	0.153
155	12.92	0.97	0.505	0.350	(0.454)	0.155
156	13.00	0.97	0.505	0.348	(0.454)	0.156
157	13.08	1.13	0.592	0.347	(0.533)	0.245
158	13.17	1.13	0.592	0.345	(0.533)	0.247
159	13.25	1.13	0.592	0.343	(0.533)	0.249
160	13.33	1.13	0.592	0.341	(0.533)	0.250
161	13.42	1.13	0.592	0.340	(0.533)	0.252
162	13.50	1.13	0.592	0.338	(0.533)	0.254
163	13.58	0.77	0.400	0.336	(0.360)	0.064
164	13.67	0.77	0.400	0.334	(0.360)	0.066
165	13.75	0.77	0.400	0.333	(0.360)	0.068
166	13.83	0.77	0.400	0.331	(0.360)	0.069
167	13.92	0.77	0.400	0.329	(0.360)	0.071
168	14.00	0.77	0.400	0.328	(0.360)	0.073
169	14.08	0.90	0.470	0.326	(0.423)	0.144
170	14.17	0.90	0.470	0.324	(0.423)	0.146
171	14.25	0.90	0.470	0.323	(0.423)	0.147
172	14.33	0.87	0.452	0.321	(0.407)	0.132
173	14.42	0.87	0.452	0.319	(0.407)	0.133
174	14.50	0.87	0.452	0.318	(0.407)	0.135
175	14.58	0.87	0.452	0.316	(0.407)	0.136
176	14.67	0.87	0.452	0.314	(0.407)	0.138
177	14.75	0.87	0.452	0.313	(0.407)	0.140
178	14.83	0.83	0.435	0.311	(0.392)	0.124
179	14.92	0.83	0.435	0.310	(0.392)	0.125
180	15.00	0.83	0.435	0.308	(0.392)	0.127
181	15.08	0.80	0.418	0.306	(0.376)	0.111
182	15.17	0.80	0.418	0.305	(0.376)	0.113
183	15.25	0.80	0.418	0.303	(0.376)	0.114
184	15.33	0.77	0.400	0.302	(0.360)	0.099
185	15.42	0.77	0.400	0.300	(0.360)	0.100
186	15.50	0.77	0.400	0.299	(0.360)	0.102
187	15.58	0.63	0.331	0.297	(0.298)	0.034
188	15.67	0.63	0.331	0.296	(0.298)	0.035
189	15.75	0.63	0.331	0.294	(0.298)	0.037
190	15.83	0.63	0.331	0.293	(0.298)	0.038
191	15.92	0.63	0.331	0.291	(0.298)	0.040
192	16.00	0.63	0.331	0.290	(0.298)	0.041

193	16.08	0.13	0.070	(0.288)	0.063	0.007
194	16.17	0.13	0.070	(0.287)	0.063	0.007
195	16.25	0.13	0.070	(0.285)	0.063	0.007
196	16.33	0.13	0.070	(0.284)	0.063	0.007
197	16.42	0.13	0.070	(0.282)	0.063	0.007
198	16.50	0.13	0.070	(0.281)	0.063	0.007
199	16.58	0.10	0.052	(0.279)	0.047	0.005
200	16.67	0.10	0.052	(0.278)	0.047	0.005
201	16.75	0.10	0.052	(0.277)	0.047	0.005
202	16.83	0.10	0.052	(0.275)	0.047	0.005
203	16.92	0.10	0.052	(0.274)	0.047	0.005
204	17.00	0.10	0.052	(0.272)	0.047	0.005
205	17.08	0.17	0.087	(0.271)	0.078	0.009
206	17.17	0.17	0.087	(0.270)	0.078	0.009
207	17.25	0.17	0.087	(0.268)	0.078	0.009
208	17.33	0.17	0.087	(0.267)	0.078	0.009
209	17.42	0.17	0.087	(0.266)	0.078	0.009
210	17.50	0.17	0.087	(0.264)	0.078	0.009
211	17.58	0.17	0.087	(0.263)	0.078	0.009
212	17.67	0.17	0.087	(0.262)	0.078	0.009
213	17.75	0.17	0.087	(0.260)	0.078	0.009
214	17.83	0.13	0.070	(0.259)	0.063	0.007
215	17.92	0.13	0.070	(0.258)	0.063	0.007
216	18.00	0.13	0.070	(0.257)	0.063	0.007
217	18.08	0.13	0.070	(0.255)	0.063	0.007
218	18.17	0.13	0.070	(0.254)	0.063	0.007
219	18.25	0.13	0.070	(0.253)	0.063	0.007
220	18.33	0.13	0.070	(0.252)	0.063	0.007
221	18.42	0.13	0.070	(0.250)	0.063	0.007
222	18.50	0.13	0.070	(0.249)	0.063	0.007
223	18.58	0.10	0.052	(0.248)	0.047	0.005
224	18.67	0.10	0.052	(0.247)	0.047	0.005
225	18.75	0.10	0.052	(0.246)	0.047	0.005
226	18.83	0.07	0.035	(0.244)	0.031	0.003
227	18.92	0.07	0.035	(0.243)	0.031	0.003
228	19.00	0.07	0.035	(0.242)	0.031	0.003
229	19.08	0.10	0.052	(0.241)	0.047	0.005
230	19.17	0.10	0.052	(0.240)	0.047	0.005
231	19.25	0.10	0.052	(0.239)	0.047	0.005
232	19.33	0.13	0.070	(0.238)	0.063	0.007
233	19.42	0.13	0.070	(0.236)	0.063	0.007
234	19.50	0.13	0.070	(0.235)	0.063	0.007
235	19.58	0.10	0.052	(0.234)	0.047	0.005
236	19.67	0.10	0.052	(0.233)	0.047	0.005
237	19.75	0.10	0.052	(0.232)	0.047	0.005
238	19.83	0.07	0.035	(0.231)	0.031	0.003
239	19.92	0.07	0.035	(0.230)	0.031	0.003
240	20.00	0.07	0.035	(0.229)	0.031	0.003
241	20.08	0.10	0.052	(0.228)	0.047	0.005
242	20.17	0.10	0.052	(0.227)	0.047	0.005
243	20.25	0.10	0.052	(0.226)	0.047	0.005
244	20.33	0.10	0.052	(0.225)	0.047	0.005
245	20.42	0.10	0.052	(0.224)	0.047	0.005
246	20.50	0.10	0.052	(0.223)	0.047	0.005
247	20.58	0.10	0.052	(0.222)	0.047	0.005
248	20.67	0.10	0.052	(0.221)	0.047	0.005
249	20.75	0.10	0.052	(0.220)	0.047	0.005
250	20.83	0.07	0.035	(0.219)	0.031	0.003
251	20.92	0.07	0.035	(0.219)	0.031	0.003
252	21.00	0.07	0.035	(0.218)	0.031	0.003
253	21.08	0.10	0.052	(0.217)	0.047	0.005
254	21.17	0.10	0.052	(0.216)	0.047	0.005
255	21.25	0.10	0.052	(0.215)	0.047	0.005

256	21.33	0.07	0.035	(0.214)	0.031	0.003
257	21.42	0.07	0.035	(0.213)	0.031	0.003
258	21.50	0.07	0.035	(0.213)	0.031	0.003
259	21.58	0.10	0.052	(0.212)	0.047	0.005
260	21.67	0.10	0.052	(0.211)	0.047	0.005
261	21.75	0.10	0.052	(0.210)	0.047	0.005
262	21.83	0.07	0.035	(0.210)	0.031	0.003
263	21.92	0.07	0.035	(0.209)	0.031	0.003
264	22.00	0.07	0.035	(0.208)	0.031	0.003
265	22.08	0.10	0.052	(0.208)	0.047	0.005
266	22.17	0.10	0.052	(0.207)	0.047	0.005
267	22.25	0.10	0.052	(0.206)	0.047	0.005
268	22.33	0.07	0.035	(0.206)	0.031	0.003
269	22.42	0.07	0.035	(0.205)	0.031	0.003
270	22.50	0.07	0.035	(0.204)	0.031	0.003
271	22.58	0.07	0.035	(0.204)	0.031	0.003
272	22.67	0.07	0.035	(0.203)	0.031	0.003
273	22.75	0.07	0.035	(0.203)	0.031	0.003
274	22.83	0.07	0.035	(0.202)	0.031	0.003
275	22.92	0.07	0.035	(0.202)	0.031	0.003
276	23.00	0.07	0.035	(0.201)	0.031	0.003
277	23.08	0.07	0.035	(0.201)	0.031	0.003
278	23.17	0.07	0.035	(0.200)	0.031	0.003
279	23.25	0.07	0.035	(0.200)	0.031	0.003
280	23.33	0.07	0.035	(0.199)	0.031	0.003
281	23.42	0.07	0.035	(0.199)	0.031	0.003
282	23.50	0.07	0.035	(0.199)	0.031	0.003
283	23.58	0.07	0.035	(0.198)	0.031	0.003
284	23.67	0.07	0.035	(0.198)	0.031	0.003
285	23.75	0.07	0.035	(0.198)	0.031	0.003
286	23.83	0.07	0.035	(0.198)	0.031	0.003
287	23.92	0.07	0.035	(0.197)	0.031	0.003
288	24.00	0.07	0.035	(0.197)	0.031	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 8.8

Flood volume = Effective rainfall 0.73(In)
times area 1.0(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 3.62(In)
Total soil loss = 0.301(Ac.Ft)
Total rainfall = 4.35(In)
Flood volume = 2666.1 Cubic Feet
Total soil loss = 13127.8 Cubic Feet

Peak flow rate of this hydrograph = 0.218(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	0.0000	0.00	Q				
0+15	0.0000	0.00	Q				
0+20	0.0000	0.00	Q				
0+25	0.0000	0.00	Q				
0+30	0.0001	0.00	Q				
0+35	0.0001	0.00	Q				
0+40	0.0001	0.00	Q				
0+45	0.0002	0.00	Q				

0+50	0.0002	0.00	Q				
0+55	0.0002	0.00	Q				
1+ 0	0.0003	0.01	Q				
1+ 5	0.0003	0.01	Q				
1+10	0.0003	0.01	Q				
1+15	0.0004	0.01	Q				
1+20	0.0004	0.01	Q				
1+25	0.0004	0.01	Q				
1+30	0.0005	0.01	Q				
1+35	0.0005	0.01	Q				
1+40	0.0006	0.01	Q				
1+45	0.0006	0.01	Q				
1+50	0.0006	0.01	Q				
1+55	0.0007	0.01	Q				
2+ 0	0.0007	0.01	Q				
2+ 5	0.0007	0.01	Q				
2+10	0.0008	0.01	Q				
2+15	0.0008	0.01	Q				
2+20	0.0009	0.01	Q				
2+25	0.0009	0.01	Q				
2+30	0.0010	0.01	Q				
2+35	0.0010	0.01	Q				
2+40	0.0011	0.01	Q				
2+45	0.0011	0.01	Q				
2+50	0.0012	0.01	Q				
2+55	0.0012	0.01	Q				
3+ 0	0.0013	0.01	Q				
3+ 5	0.0013	0.01	Q				
3+10	0.0014	0.01	Q				
3+15	0.0015	0.01	Q				
3+20	0.0015	0.01	Q				
3+25	0.0016	0.01	QV				
3+30	0.0016	0.01	QV				
3+35	0.0017	0.01	QV				
3+40	0.0018	0.01	QV				
3+45	0.0018	0.01	QV				
3+50	0.0019	0.01	QV				
3+55	0.0019	0.01	QV				
4+ 0	0.0020	0.01	QV				
4+ 5	0.0021	0.01	QV				
4+10	0.0021	0.01	QV				
4+15	0.0022	0.01	QV				
4+20	0.0023	0.01	QV				
4+25	0.0024	0.01	QV				
4+30	0.0024	0.01	QV				
4+35	0.0025	0.01	QV				
4+40	0.0026	0.01	QV				
4+45	0.0027	0.01	QV				
4+50	0.0027	0.01	QV				
4+55	0.0028	0.01	QV				
5+ 0	0.0029	0.01	QV				
5+ 5	0.0030	0.01	QV				
5+10	0.0031	0.01	Q V				
5+15	0.0032	0.01	Q V				
5+20	0.0033	0.01	Q V				
5+25	0.0033	0.01	Q V				
5+30	0.0034	0.01	Q V				
5+35	0.0035	0.01	Q V				
5+40	0.0036	0.01	Q V				
5+45	0.0037	0.01	Q V				
5+50	0.0038	0.01	Q V				
5+55	0.0039	0.01	Q V				
6+ 0	0.0039	0.01	Q V				

6+ 5	0.0040	0.01	Q V				
6+10	0.0041	0.01	Q V				
6+15	0.0042	0.01	Q V				
6+20	0.0043	0.01	Q V				
6+25	0.0044	0.02	Q V				
6+30	0.0045	0.02	Q V				
6+35	0.0046	0.02	Q V				
6+40	0.0048	0.02	Q V				
6+45	0.0049	0.02	Q V				
6+50	0.0050	0.02	Q V				
6+55	0.0051	0.02	Q V				
7+ 0	0.0052	0.02	Q V				
7+ 5	0.0053	0.02	Q V				
7+10	0.0054	0.02	Q V				
7+15	0.0056	0.02	Q V				
7+20	0.0057	0.02	Q V				
7+25	0.0058	0.02	Q V				
7+30	0.0059	0.02	Q V				
7+35	0.0061	0.02	Q V				
7+40	0.0062	0.02	Q V				
7+45	0.0063	0.02	Q V				
7+50	0.0065	0.02	Q V				
7+55	0.0066	0.02	Q V				
8+ 0	0.0067	0.02	Q V				
8+ 5	0.0069	0.02	Q V				
8+10	0.0070	0.02	Q V				
8+15	0.0072	0.02	Q V				
8+20	0.0074	0.02	Q V				
8+25	0.0075	0.02	Q V				
8+30	0.0077	0.02	Q V				
8+35	0.0079	0.03	Q V				
8+40	0.0081	0.03	Q V				
8+45	0.0082	0.03	Q V				
8+50	0.0084	0.03	Q V				
8+55	0.0086	0.03	Q V				
9+ 0	0.0088	0.03	Q V				
9+ 5	0.0090	0.03	Q V				
9+10	0.0092	0.03	Q V				
9+15	0.0094	0.03	Q V				
9+20	0.0096	0.03	Q V				
9+25	0.0098	0.03	Q V				
9+30	0.0101	0.03	Q V				
9+35	0.0103	0.03	Q V				
9+40	0.0105	0.03	Q V				
9+45	0.0108	0.03	Q V				
9+50	0.0110	0.04	Q V				
9+55	0.0112	0.04	Q V				
10+ 0	0.0115	0.04	Q V				
10+ 5	0.0117	0.04	Q V				
10+10	0.0120	0.04	Q V				
10+15	0.0122	0.03	Q V				
10+20	0.0124	0.03	Q V				
10+25	0.0126	0.03	Q V				
10+30	0.0128	0.03	Q V				
10+35	0.0130	0.03	Q V				
10+40	0.0132	0.03	Q V				
10+45	0.0134	0.03	Q V				
10+50	0.0137	0.03	Q V				
10+55	0.0139	0.03	Q V				
11+ 0	0.0141	0.03	Q V				
11+ 5	0.0144	0.03	Q V				
11+10	0.0146	0.03	Q V				
11+15	0.0148	0.03	Q V				

11+20	0.0151	0.03	Q	V			
11+25	0.0153	0.03	Q	V			
11+30	0.0155	0.03	Q	V			
11+35	0.0157	0.03	Q	V			
11+40	0.0160	0.03	Q	V			
11+45	0.0162	0.03	Q	V			
11+50	0.0164	0.03	Q	V			
11+55	0.0166	0.03	Q	V			
12+ 0	0.0168	0.03	Q	V			
12+ 5	0.0171	0.03	Q	V			
12+10	0.0173	0.04	Q	V			
12+15	0.0176	0.04	Q	V			
12+20	0.0180	0.05	Q	V			
12+25	0.0184	0.06	Q	V			
12+30	0.0189	0.07	Q	V			
12+35	0.0194	0.08	Q	V			
12+40	0.0200	0.08	Q	V			
12+45	0.0206	0.10	Q	V			
12+50	0.0214	0.11	Q	V			
12+55	0.0221	0.12	Q	V			
13+ 0	0.0230	0.12	Q	V			
13+ 5	0.0239	0.13	Q	V			
13+10	0.0250	0.15	Q	V			
13+15	0.0261	0.17	Q	V			
13+20	0.0275	0.19	Q	V			
13+25	0.0289	0.21	Q	V			
13+30	0.0304	0.22	Q	V			
13+35	0.0319	0.22	Q	V			
13+40	0.0333	0.20	Q	V			
13+45	0.0345	0.17	Q	V			
13+50	0.0354	0.13	Q	V			
13+55	0.0362	0.11	Q	V			
14+ 0	0.0369	0.10	Q	V			
14+ 5	0.0376	0.10	Q	V			
14+10	0.0383	0.11	Q	V			
14+15	0.0391	0.12	Q	V			
14+20	0.0400	0.13	Q	V			
14+25	0.0409	0.13	Q	V			
14+30	0.0419	0.14	Q	V			
14+35	0.0428	0.13	Q	V			
14+40	0.0437	0.14	Q	V			
14+45	0.0447	0.14	Q	V			
14+50	0.0456	0.14	Q	V			
14+55	0.0466	0.14	Q	V			
15+ 0	0.0475	0.13	Q	V			
15+ 5	0.0484	0.13	Q	V			
15+10	0.0493	0.13	Q	V			
15+15	0.0501	0.12	Q	V			
15+20	0.0509	0.12	Q	V			
15+25	0.0517	0.12	Q	V			
15+30	0.0525	0.11	Q	V			
15+35	0.0533	0.11	Q	V			
15+40	0.0539	0.10	Q	V			
15+45	0.0545	0.08	Q	V			
15+50	0.0550	0.07	Q	V			
15+55	0.0554	0.06	Q	V			
16+ 0	0.0558	0.06	Q	V			
16+ 5	0.0562	0.05	Q	V			
16+10	0.0565	0.05	Q	V			
16+15	0.0568	0.04	Q	V			
16+20	0.0570	0.03	Q	V			
16+25	0.0572	0.03	Q	V			
16+30	0.0573	0.02	Q	V			

16+35	0.0575	0.02	Q				V	
16+40	0.0576	0.02	Q				V	
16+45	0.0577	0.02	Q				V	
16+50	0.0578	0.01	Q				V	
16+55	0.0578	0.01	Q				V	
17+ 0	0.0579	0.01	Q				V	
17+ 5	0.0580	0.01	Q				V	
17+10	0.0581	0.01	Q				V	
17+15	0.0581	0.01	Q				V	
17+20	0.0582	0.01	Q				V	
17+25	0.0582	0.01	Q				V	
17+30	0.0583	0.01	Q				V	
17+35	0.0584	0.01	Q				V	
17+40	0.0584	0.01	Q				V	
17+45	0.0585	0.01	Q				V	
17+50	0.0586	0.01	Q				V	
17+55	0.0586	0.01	Q				V	
18+ 0	0.0587	0.01	Q				V	
18+ 5	0.0587	0.01	Q				V	
18+10	0.0588	0.01	Q				V	
18+15	0.0588	0.01	Q				V	
18+20	0.0589	0.01	Q				V	
18+25	0.0589	0.01	Q				V	
18+30	0.0590	0.01	Q				V	
18+35	0.0590	0.01	Q				V	
18+40	0.0591	0.01	Q				V	
18+45	0.0591	0.01	Q				V	
18+50	0.0592	0.01	Q				V	
18+55	0.0592	0.01	Q				V	
19+ 0	0.0592	0.01	Q				V	
19+ 5	0.0593	0.00	Q				V	
19+10	0.0593	0.00	Q				V	
19+15	0.0593	0.00	Q				V	
19+20	0.0594	0.01	Q				V	
19+25	0.0594	0.01	Q				V	
19+30	0.0594	0.01	Q				V	
19+35	0.0595	0.01	Q				V	
19+40	0.0595	0.01	Q				V	
19+45	0.0596	0.01	Q				V	
19+50	0.0596	0.01	Q				V	
19+55	0.0596	0.01	Q				V	
20+ 0	0.0597	0.00	Q				V	
20+ 5	0.0597	0.00	Q				V	
20+10	0.0597	0.00	Q				V	
20+15	0.0598	0.00	Q				V	
20+20	0.0598	0.00	Q				V	
20+25	0.0598	0.01	Q				V	
20+30	0.0599	0.01	Q				V	
20+35	0.0599	0.01	Q				V	
20+40	0.0599	0.01	Q				V	
20+45	0.0600	0.01	Q				V	
20+50	0.0600	0.01	Q				V	
20+55	0.0601	0.00	Q				V	
21+ 0	0.0601	0.00	Q				V	
21+ 5	0.0601	0.00	Q				V	
21+10	0.0601	0.00	Q				V	
21+15	0.0602	0.00	Q				V	
21+20	0.0602	0.00	Q				V	
21+25	0.0602	0.00	Q				V	
21+30	0.0603	0.00	Q				V	
21+35	0.0603	0.00	Q				V	
21+40	0.0603	0.00	Q				V	
21+45	0.0604	0.00	Q				V	

21+50	0.0604	0.00	Q				V
21+55	0.0604	0.00	Q				V
22+ 0	0.0605	0.00	Q				V
22+ 5	0.0605	0.00	Q				V
22+10	0.0605	0.00	Q				V
22+15	0.0605	0.00	Q				V
22+20	0.0606	0.00	Q				V
22+25	0.0606	0.00	Q				V
22+30	0.0606	0.00	Q				V
22+35	0.0607	0.00	Q				V
22+40	0.0607	0.00	Q				V
22+45	0.0607	0.00	Q				V
22+50	0.0607	0.00	Q				V
22+55	0.0608	0.00	Q				V
23+ 0	0.0608	0.00	Q				V
23+ 5	0.0608	0.00	Q				V
23+10	0.0608	0.00	Q				V
23+15	0.0609	0.00	Q				V
23+20	0.0609	0.00	Q				V
23+25	0.0609	0.00	Q				V
23+30	0.0609	0.00	Q				V
23+35	0.0610	0.00	Q				V
23+40	0.0610	0.00	Q				V
23+45	0.0610	0.00	Q				V
23+50	0.0610	0.00	Q				V
23+55	0.0611	0.00	Q				V
24+ 0	0.0611	0.00	Q				V
24+ 5	0.0611	0.00	Q				V
24+10	0.0611	0.00	Q				V
24+15	0.0612	0.00	Q				V
24+20	0.0612	0.00	Q				V
24+25	0.0612	0.00	Q				V
24+30	0.0612	0.00	Q				V
24+35	0.0612	0.00	Q				V
24+40	0.0612	0.00	Q				V
24+45	0.0612	0.00	Q				V
24+50	0.0612	0.00	Q				V
24+55	0.0612	0.00	Q				V
25+ 0	0.0612	0.00	Q				V
25+ 5	0.0612	0.00	Q				V
25+10	0.0612	0.00	Q				V
25+15	0.0612	0.00	Q				V
25+20	0.0612	0.00	Q				V
25+25	0.0612	0.00	Q				V
25+30	0.0612	0.00	Q				V
25+35	0.0612	0.00	Q				V
25+40	0.0612	0.00	Q				V
25+45	0.0612	0.00	Q				V
25+50	0.0612	0.00	Q				V
25+55	0.0612	0.00	Q				V
26+ 0	0.0612	0.00	Q				V
26+ 5	0.0612	0.00	Q				V

Appendix A - Existing Condition
-100 Yr Storm

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 11/05/18 File:RATEX10012.out

RATIONAL METHOD FOR EXISTING CONDITION - 100 YR STORM NODE 1 TO 2

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

English (in-lb) Units used in input data file

Program License Serial Number 6389

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)

For the [Beaumont] area used.

10 year storm 10 minute intensity = 2.300(In/Hr)

10 year storm 60 minute intensity = 0.890(In/Hr)

100 year storm 10 minute intensity = 3.410(In/Hr)

100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 100.0

Calculated rainfall intensity data:

1 hour intensity = 1.320(In/Hr)

Slope of intensity duration curve = 0.5300

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 145.000(Ft.)
Top (of initial area) elevation = 2504.000(Ft.)
Bottom (of initial area) elevation = 2503.000(Ft.)
Difference in elevation = 1.000(Ft.)
Slope = 0.00690 s(percent)= 0.69
 $TC = k(0.530)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 10.498 min.
Rainfall intensity = 3.325(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.833
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 83.20
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 3.544(CFS)
Total initial stream area = 1.280(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 1.28 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 1.000
Area averaged RI index number = 67.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 11/05/18 File:RATEX10034.out

RATIONAL METHOD FOR EXISTING CONDITION - 100 YR STORM NODE 3 TO 4

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

English (in-lb) Units used in input data file

Program License Serial Number 6389

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)

For the [Beaumont] area used.

10 year storm 10 minute intensity = 2.300(In/Hr)

10 year storm 60 minute intensity = 0.890(In/Hr)

100 year storm 10 minute intensity = 3.410(In/Hr)

100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 100.0

Calculated rainfall intensity data:

1 hour intensity = 1.320(In/Hr)

Slope of intensity duration curve = 0.5300

+++++
Process from Point/Station 3.000 to Point/Station 4.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 286.000(Ft.)
Top (of initial area) elevation = 2499.000(Ft.)
Bottom (of initial area) elevation = 2498.000(Ft.)
Difference in elevation = 1.000(Ft.)
Slope = 0.00350 s(percent)= 0.35
 $TC = k(0.530)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 15.780 min.
Rainfall intensity = 2.679(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.818
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 83.20
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 2.191(CFS)
Total initial stream area = 1.000(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 1.00 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 1.000
Area averaged RI index number = 67.0

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
Study date 11/05/18 File: UNEX101224100.out

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

Program License Serial Number 6389

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

English Units used in output format

UNIT HYDROGRAPH CONDITION FOR EXISTING CONDITION - 100 YR STORM NODE 1 TO 2

Drainage Area = 1.28(Ac.) = 0.002 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 1.28(Ac.) = 0.002
Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.175 Hr.
Lag time = 10.50 Min.
25% of lag time = 2.63 Min.
40% of lag time = 4.20 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00 (CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
1.28	2.73	3.49

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
1.28	6.67	8.54

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.730(In)
Area Averaged 100-Year Rainfall = 6.670(In)

Point rain (area averaged) = 6.670(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 6.670(In)

Sub-Area Data:

Area (Ac.)	Runoff Index	Impervious %
1.280	67.00	0.000
Total Area Entered = 1.28 (Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394
					Sum (F) =	0.394
Area averaged mean soil loss (F) (In/Hr) = 0.394						
Minimum soil loss rate ((In/Hr)) = 0.197						
(for 24 hour storm duration)						
Soil low loss rate (decimal) = 0.900						

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	47.619	5.684	0.073
2	0.167	95.238	24.124	0.311
3	0.250	142.857	28.922	0.373
4	0.333	190.476	13.876	0.179
5	0.417	238.095	7.046	0.091
6	0.500	285.714	4.859	0.063
7	0.583	333.333	3.535	0.046
8	0.667	380.952	2.722	0.035
9	0.750	428.571	2.039	0.026
10	0.833	476.190	1.555	0.020
11	0.917	523.810	1.391	0.018
12	1.000	571.429	1.076	0.014
13	1.083	619.048	0.871	0.011
14	1.167	666.667	0.689	0.009
15	1.250	714.286	0.516	0.007
16	1.333	761.905	0.476	0.006
17	1.417	809.524	0.619	0.008
Sum = 100.000			Sum=	1.290

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.053	(0.699)	0.048	0.005
2	0.17	0.07	0.053	(0.696)	0.048	0.005
3	0.25	0.07	0.053	(0.694)	0.048	0.005
4	0.33	0.10	0.080	(0.691)	0.072	0.008
5	0.42	0.10	0.080	(0.688)	0.072	0.008
6	0.50	0.10	0.080	(0.686)	0.072	0.008
7	0.58	0.10	0.080	(0.683)	0.072	0.008
8	0.67	0.10	0.080	(0.680)	0.072	0.008
9	0.75	0.10	0.080	(0.678)	0.072	0.008
10	0.83	0.13	0.107	(0.675)	0.096	0.011
11	0.92	0.13	0.107	(0.672)	0.096	0.011
12	1.00	0.13	0.107	(0.670)	0.096	0.011
13	1.08	0.10	0.080	(0.667)	0.072	0.008
14	1.17	0.10	0.080	(0.664)	0.072	0.008

15	1.25	0.10	0.080	(0.662)	0.072	0.008
16	1.33	0.10	0.080	(0.659)	0.072	0.008
17	1.42	0.10	0.080	(0.657)	0.072	0.008
18	1.50	0.10	0.080	(0.654)	0.072	0.008
19	1.58	0.10	0.080	(0.651)	0.072	0.008
20	1.67	0.10	0.080	(0.649)	0.072	0.008
21	1.75	0.10	0.080	(0.646)	0.072	0.008
22	1.83	0.13	0.107	(0.643)	0.096	0.011
23	1.92	0.13	0.107	(0.641)	0.096	0.011
24	2.00	0.13	0.107	(0.638)	0.096	0.011
25	2.08	0.13	0.107	(0.636)	0.096	0.011
26	2.17	0.13	0.107	(0.633)	0.096	0.011
27	2.25	0.13	0.107	(0.631)	0.096	0.011
28	2.33	0.13	0.107	(0.628)	0.096	0.011
29	2.42	0.13	0.107	(0.625)	0.096	0.011
30	2.50	0.13	0.107	(0.623)	0.096	0.011
31	2.58	0.17	0.133	(0.620)	0.120	0.013
32	2.67	0.17	0.133	(0.618)	0.120	0.013
33	2.75	0.17	0.133	(0.615)	0.120	0.013
34	2.83	0.17	0.133	(0.613)	0.120	0.013
35	2.92	0.17	0.133	(0.610)	0.120	0.013
36	3.00	0.17	0.133	(0.608)	0.120	0.013
37	3.08	0.17	0.133	(0.605)	0.120	0.013
38	3.17	0.17	0.133	(0.603)	0.120	0.013
39	3.25	0.17	0.133	(0.600)	0.120	0.013
40	3.33	0.17	0.133	(0.598)	0.120	0.013
41	3.42	0.17	0.133	(0.595)	0.120	0.013
42	3.50	0.17	0.133	(0.593)	0.120	0.013
43	3.58	0.17	0.133	(0.590)	0.120	0.013
44	3.67	0.17	0.133	(0.588)	0.120	0.013
45	3.75	0.17	0.133	(0.585)	0.120	0.013
46	3.83	0.20	0.160	(0.583)	0.144	0.016
47	3.92	0.20	0.160	(0.580)	0.144	0.016
48	4.00	0.20	0.160	(0.578)	0.144	0.016
49	4.08	0.20	0.160	(0.575)	0.144	0.016
50	4.17	0.20	0.160	(0.573)	0.144	0.016
51	4.25	0.20	0.160	(0.571)	0.144	0.016
52	4.33	0.23	0.187	(0.568)	0.168	0.019
53	4.42	0.23	0.187	(0.566)	0.168	0.019
54	4.50	0.23	0.187	(0.563)	0.168	0.019
55	4.58	0.23	0.187	(0.561)	0.168	0.019
56	4.67	0.23	0.187	(0.558)	0.168	0.019
57	4.75	0.23	0.187	(0.556)	0.168	0.019
58	4.83	0.27	0.213	(0.554)	0.192	0.021
59	4.92	0.27	0.213	(0.551)	0.192	0.021
60	5.00	0.27	0.213	(0.549)	0.192	0.021
61	5.08	0.20	0.160	(0.546)	0.144	0.016
62	5.17	0.20	0.160	(0.544)	0.144	0.016
63	5.25	0.20	0.160	(0.542)	0.144	0.016
64	5.33	0.23	0.187	(0.539)	0.168	0.019
65	5.42	0.23	0.187	(0.537)	0.168	0.019
66	5.50	0.23	0.187	(0.535)	0.168	0.019
67	5.58	0.27	0.213	(0.532)	0.192	0.021
68	5.67	0.27	0.213	(0.530)	0.192	0.021
69	5.75	0.27	0.213	(0.528)	0.192	0.021
70	5.83	0.27	0.213	(0.525)	0.192	0.021
71	5.92	0.27	0.213	(0.523)	0.192	0.021
72	6.00	0.27	0.213	(0.521)	0.192	0.021
73	6.08	0.30	0.240	(0.518)	0.216	0.024
74	6.17	0.30	0.240	(0.516)	0.216	0.024
75	6.25	0.30	0.240	(0.514)	0.216	0.024
76	6.33	0.30	0.240	(0.511)	0.216	0.024
77	6.42	0.30	0.240	(0.509)	0.216	0.024

78	6.50	0.30	0.240	(0.507)	0.216	0.024
79	6.58	0.33	0.267	(0.505)	0.240	0.027
80	6.67	0.33	0.267	(0.502)	0.240	0.027
81	6.75	0.33	0.267	(0.500)	0.240	0.027
82	6.83	0.33	0.267	(0.498)	0.240	0.027
83	6.92	0.33	0.267	(0.495)	0.240	0.027
84	7.00	0.33	0.267	(0.493)	0.240	0.027
85	7.08	0.33	0.267	(0.491)	0.240	0.027
86	7.17	0.33	0.267	(0.489)	0.240	0.027
87	7.25	0.33	0.267	(0.487)	0.240	0.027
88	7.33	0.37	0.293	(0.484)	0.264	0.029
89	7.42	0.37	0.293	(0.482)	0.264	0.029
90	7.50	0.37	0.293	(0.480)	0.264	0.029
91	7.58	0.40	0.320	(0.478)	0.288	0.032
92	7.67	0.40	0.320	(0.475)	0.288	0.032
93	7.75	0.40	0.320	(0.473)	0.288	0.032
94	7.83	0.43	0.347	(0.471)	0.312	0.035
95	7.92	0.43	0.347	(0.469)	0.312	0.035
96	8.00	0.43	0.347	(0.467)	0.312	0.035
97	8.08	0.50	0.400	(0.465)	0.360	0.040
98	8.17	0.50	0.400	(0.462)	0.360	0.040
99	8.25	0.50	0.400	(0.460)	0.360	0.040
100	8.33	0.50	0.400	(0.458)	0.360	0.040
101	8.42	0.50	0.400	(0.456)	0.360	0.040
102	8.50	0.50	0.400	(0.454)	0.360	0.040
103	8.58	0.53	0.427	(0.452)	0.384	0.043
104	8.67	0.53	0.427	(0.450)	0.384	0.043
105	8.75	0.53	0.427	(0.447)	0.384	0.043
106	8.83	0.57	0.454	(0.445)	0.408	0.045
107	8.92	0.57	0.454	(0.443)	0.408	0.045
108	9.00	0.57	0.454	(0.441)	0.408	0.045
109	9.08	0.63	0.507	0.439	(0.456)	0.068
110	9.17	0.63	0.507	0.437	(0.456)	0.070
111	9.25	0.63	0.507	0.435	(0.456)	0.072
112	9.33	0.67	0.534	0.433	(0.480)	0.101
113	9.42	0.67	0.534	0.431	(0.480)	0.103
114	9.50	0.67	0.534	0.429	(0.480)	0.105
115	9.58	0.70	0.560	0.427	(0.504)	0.134
116	9.67	0.70	0.560	0.425	(0.504)	0.136
117	9.75	0.70	0.560	0.423	(0.504)	0.138
118	9.83	0.73	0.587	0.421	(0.528)	0.166
119	9.92	0.73	0.587	0.419	(0.528)	0.168
120	10.00	0.73	0.587	0.416	(0.528)	0.170
121	10.08	0.50	0.400	(0.414)	0.360	0.040
122	10.17	0.50	0.400	(0.412)	0.360	0.040
123	10.25	0.50	0.400	(0.410)	0.360	0.040
124	10.33	0.50	0.400	(0.408)	0.360	0.040
125	10.42	0.50	0.400	(0.406)	0.360	0.040
126	10.50	0.50	0.400	(0.405)	0.360	0.040
127	10.58	0.67	0.534	0.403	(0.480)	0.131
128	10.67	0.67	0.534	0.401	(0.480)	0.133
129	10.75	0.67	0.534	0.399	(0.480)	0.135
130	10.83	0.67	0.534	0.397	(0.480)	0.137
131	10.92	0.67	0.534	0.395	(0.480)	0.139
132	11.00	0.67	0.534	0.393	(0.480)	0.141
133	11.08	0.63	0.507	0.391	(0.456)	0.116
134	11.17	0.63	0.507	0.389	(0.456)	0.118
135	11.25	0.63	0.507	0.387	(0.456)	0.120
136	11.33	0.63	0.507	0.385	(0.456)	0.122
137	11.42	0.63	0.507	0.383	(0.456)	0.124
138	11.50	0.63	0.507	0.381	(0.456)	0.126
139	11.58	0.57	0.454	0.379	(0.408)	0.074
140	11.67	0.57	0.454	0.377	(0.408)	0.076

141	11.75	0.57	0.454	0.376	(0.408)	0.078
142	11.83	0.60	0.480	0.374	(0.432)	0.107
143	11.92	0.60	0.480	0.372	(0.432)	0.108
144	12.00	0.60	0.480	0.370	(0.432)	0.110
145	12.08	0.83	0.667	0.368	(0.600)	0.299
146	12.17	0.83	0.667	0.366	(0.600)	0.301
147	12.25	0.83	0.667	0.364	(0.600)	0.303
148	12.33	0.87	0.694	0.363	(0.624)	0.331
149	12.42	0.87	0.694	0.361	(0.624)	0.333
150	12.50	0.87	0.694	0.359	(0.624)	0.335
151	12.58	0.93	0.747	0.357	(0.672)	0.390
152	12.67	0.93	0.747	0.355	(0.672)	0.392
153	12.75	0.93	0.747	0.354	(0.672)	0.393
154	12.83	0.97	0.774	0.352	(0.696)	0.422
155	12.92	0.97	0.774	0.350	(0.696)	0.424
156	13.00	0.97	0.774	0.348	(0.696)	0.425
157	13.08	1.13	0.907	0.347	(0.816)	0.561
158	13.17	1.13	0.907	0.345	(0.816)	0.562
159	13.25	1.13	0.907	0.343	(0.816)	0.564
160	13.33	1.13	0.907	0.341	(0.816)	0.566
161	13.42	1.13	0.907	0.340	(0.816)	0.568
162	13.50	1.13	0.907	0.338	(0.816)	0.569
163	13.58	0.77	0.614	0.336	(0.552)	0.278
164	13.67	0.77	0.614	0.334	(0.552)	0.279
165	13.75	0.77	0.614	0.333	(0.552)	0.281
166	13.83	0.77	0.614	0.331	(0.552)	0.283
167	13.92	0.77	0.614	0.329	(0.552)	0.284
168	14.00	0.77	0.614	0.328	(0.552)	0.286
169	14.08	0.90	0.720	0.326	(0.648)	0.394
170	14.17	0.90	0.720	0.324	(0.648)	0.396
171	14.25	0.90	0.720	0.323	(0.648)	0.398
172	14.33	0.87	0.694	0.321	(0.624)	0.373
173	14.42	0.87	0.694	0.319	(0.624)	0.374
174	14.50	0.87	0.694	0.318	(0.624)	0.376
175	14.58	0.87	0.694	0.316	(0.624)	0.378
176	14.67	0.87	0.694	0.314	(0.624)	0.379
177	14.75	0.87	0.694	0.313	(0.624)	0.381
178	14.83	0.83	0.667	0.311	(0.600)	0.356
179	14.92	0.83	0.667	0.310	(0.600)	0.357
180	15.00	0.83	0.667	0.308	(0.600)	0.359
181	15.08	0.80	0.640	0.306	(0.576)	0.334
182	15.17	0.80	0.640	0.305	(0.576)	0.335
183	15.25	0.80	0.640	0.303	(0.576)	0.337
184	15.33	0.77	0.614	0.302	(0.552)	0.312
185	15.42	0.77	0.614	0.300	(0.552)	0.313
186	15.50	0.77	0.614	0.299	(0.552)	0.315
187	15.58	0.63	0.507	0.297	(0.456)	0.210
188	15.67	0.63	0.507	0.296	(0.456)	0.211
189	15.75	0.63	0.507	0.294	(0.456)	0.213
190	15.83	0.63	0.507	0.293	(0.456)	0.214
191	15.92	0.63	0.507	0.291	(0.456)	0.216
192	16.00	0.63	0.507	0.290	(0.456)	0.217
193	16.08	0.13	0.107	(0.288)	0.096	0.011
194	16.17	0.13	0.107	(0.287)	0.096	0.011
195	16.25	0.13	0.107	(0.285)	0.096	0.011
196	16.33	0.13	0.107	(0.284)	0.096	0.011
197	16.42	0.13	0.107	(0.282)	0.096	0.011
198	16.50	0.13	0.107	(0.281)	0.096	0.011
199	16.58	0.10	0.080	(0.279)	0.072	0.008
200	16.67	0.10	0.080	(0.278)	0.072	0.008
201	16.75	0.10	0.080	(0.277)	0.072	0.008
202	16.83	0.10	0.080	(0.275)	0.072	0.008
203	16.92	0.10	0.080	(0.274)	0.072	0.008

204	17.00	0.10	0.080	(0.272)	0.072	0.008
205	17.08	0.17	0.133	(0.271)	0.120	0.013
206	17.17	0.17	0.133	(0.270)	0.120	0.013
207	17.25	0.17	0.133	(0.268)	0.120	0.013
208	17.33	0.17	0.133	(0.267)	0.120	0.013
209	17.42	0.17	0.133	(0.266)	0.120	0.013
210	17.50	0.17	0.133	(0.264)	0.120	0.013
211	17.58	0.17	0.133	(0.263)	0.120	0.013
212	17.67	0.17	0.133	(0.262)	0.120	0.013
213	17.75	0.17	0.133	(0.260)	0.120	0.013
214	17.83	0.13	0.107	(0.259)	0.096	0.011
215	17.92	0.13	0.107	(0.258)	0.096	0.011
216	18.00	0.13	0.107	(0.257)	0.096	0.011
217	18.08	0.13	0.107	(0.255)	0.096	0.011
218	18.17	0.13	0.107	(0.254)	0.096	0.011
219	18.25	0.13	0.107	(0.253)	0.096	0.011
220	18.33	0.13	0.107	(0.252)	0.096	0.011
221	18.42	0.13	0.107	(0.250)	0.096	0.011
222	18.50	0.13	0.107	(0.249)	0.096	0.011
223	18.58	0.10	0.080	(0.248)	0.072	0.008
224	18.67	0.10	0.080	(0.247)	0.072	0.008
225	18.75	0.10	0.080	(0.246)	0.072	0.008
226	18.83	0.07	0.053	(0.244)	0.048	0.005
227	18.92	0.07	0.053	(0.243)	0.048	0.005
228	19.00	0.07	0.053	(0.242)	0.048	0.005
229	19.08	0.10	0.080	(0.241)	0.072	0.008
230	19.17	0.10	0.080	(0.240)	0.072	0.008
231	19.25	0.10	0.080	(0.239)	0.072	0.008
232	19.33	0.13	0.107	(0.238)	0.096	0.011
233	19.42	0.13	0.107	(0.236)	0.096	0.011
234	19.50	0.13	0.107	(0.235)	0.096	0.011
235	19.58	0.10	0.080	(0.234)	0.072	0.008
236	19.67	0.10	0.080	(0.233)	0.072	0.008
237	19.75	0.10	0.080	(0.232)	0.072	0.008
238	19.83	0.07	0.053	(0.231)	0.048	0.005
239	19.92	0.07	0.053	(0.230)	0.048	0.005
240	20.00	0.07	0.053	(0.229)	0.048	0.005
241	20.08	0.10	0.080	(0.228)	0.072	0.008
242	20.17	0.10	0.080	(0.227)	0.072	0.008
243	20.25	0.10	0.080	(0.226)	0.072	0.008
244	20.33	0.10	0.080	(0.225)	0.072	0.008
245	20.42	0.10	0.080	(0.224)	0.072	0.008
246	20.50	0.10	0.080	(0.223)	0.072	0.008
247	20.58	0.10	0.080	(0.222)	0.072	0.008
248	20.67	0.10	0.080	(0.221)	0.072	0.008
249	20.75	0.10	0.080	(0.220)	0.072	0.008
250	20.83	0.07	0.053	(0.219)	0.048	0.005
251	20.92	0.07	0.053	(0.219)	0.048	0.005
252	21.00	0.07	0.053	(0.218)	0.048	0.005
253	21.08	0.10	0.080	(0.217)	0.072	0.008
254	21.17	0.10	0.080	(0.216)	0.072	0.008
255	21.25	0.10	0.080	(0.215)	0.072	0.008
256	21.33	0.07	0.053	(0.214)	0.048	0.005
257	21.42	0.07	0.053	(0.213)	0.048	0.005
258	21.50	0.07	0.053	(0.213)	0.048	0.005
259	21.58	0.10	0.080	(0.212)	0.072	0.008
260	21.67	0.10	0.080	(0.211)	0.072	0.008
261	21.75	0.10	0.080	(0.210)	0.072	0.008
262	21.83	0.07	0.053	(0.210)	0.048	0.005
263	21.92	0.07	0.053	(0.209)	0.048	0.005
264	22.00	0.07	0.053	(0.208)	0.048	0.005
265	22.08	0.10	0.080	(0.208)	0.072	0.008
266	22.17	0.10	0.080	(0.207)	0.072	0.008

267	22.25	0.10	0.080	(0.206)	0.072	0.008
268	22.33	0.07	0.053	(0.206)	0.048	0.005
269	22.42	0.07	0.053	(0.205)	0.048	0.005
270	22.50	0.07	0.053	(0.204)	0.048	0.005
271	22.58	0.07	0.053	(0.204)	0.048	0.005
272	22.67	0.07	0.053	(0.203)	0.048	0.005
273	22.75	0.07	0.053	(0.203)	0.048	0.005
274	22.83	0.07	0.053	(0.202)	0.048	0.005
275	22.92	0.07	0.053	(0.202)	0.048	0.005
276	23.00	0.07	0.053	(0.201)	0.048	0.005
277	23.08	0.07	0.053	(0.201)	0.048	0.005
278	23.17	0.07	0.053	(0.200)	0.048	0.005
279	23.25	0.07	0.053	(0.200)	0.048	0.005
280	23.33	0.07	0.053	(0.199)	0.048	0.005
281	23.42	0.07	0.053	(0.199)	0.048	0.005
282	23.50	0.07	0.053	(0.199)	0.048	0.005
283	23.58	0.07	0.053	(0.198)	0.048	0.005
284	23.67	0.07	0.053	(0.198)	0.048	0.005
285	23.75	0.07	0.053	(0.198)	0.048	0.005
286	23.83	0.07	0.053	(0.198)	0.048	0.005
287	23.92	0.07	0.053	(0.197)	0.048	0.005
288	24.00	0.07	0.053	(0.197)	0.048	0.005

(Loss Rate Not Used)

Sum = 100.0 Sum = 23.9

Flood volume = Effective rainfall 1.99(In)
times area 1.3(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 4.68(In)
Total soil loss = 0.499(Ac.Ft)
Total rainfall = 6.67(In)
Flood volume = 9236.5 Cubic Feet
Total soil loss = 21754.9 Cubic Feet

Peak flow rate of this hydrograph = 0.696(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	0.0000	0.00	Q				
0+15	0.0000	0.00	Q				
0+20	0.0001	0.01	Q				
0+25	0.0001	0.01	Q				
0+30	0.0002	0.01	Q				
0+35	0.0002	0.01	Q				
0+40	0.0003	0.01	Q				
0+45	0.0004	0.01	Q				
0+50	0.0004	0.01	Q				
0+55	0.0005	0.01	Q				
1+ 0	0.0006	0.01	Q				
1+ 5	0.0007	0.01	Q				
1+10	0.0008	0.01	Q				
1+15	0.0008	0.01	Q				
1+20	0.0009	0.01	Q				
1+25	0.0010	0.01	Q				
1+30	0.0010	0.01	Q				
1+35	0.0011	0.01	Q				
1+40	0.0012	0.01	Q				

1+45	0.0013	0.01	Q				
1+50	0.0013	0.01	Q				
1+55	0.0014	0.01	Q				
2+ 0	0.0015	0.01	Q				
2+ 5	0.0016	0.01	Q				
2+10	0.0017	0.01	Q				
2+15	0.0018	0.01	Q				
2+20	0.0019	0.01	Q				
2+25	0.0020	0.01	Q				
2+30	0.0021	0.01	Q				
2+35	0.0021	0.01	Q				
2+40	0.0022	0.01	Q				
2+45	0.0024	0.02	Q				
2+50	0.0025	0.02	Q				
2+55	0.0026	0.02	Q				
3+ 0	0.0027	0.02	Q				
3+ 5	0.0028	0.02	Q				
3+10	0.0029	0.02	Q				
3+15	0.0030	0.02	Q				
3+20	0.0032	0.02	Q				
3+25	0.0033	0.02	Q				
3+30	0.0034	0.02	Q				
3+35	0.0035	0.02	Q				
3+40	0.0036	0.02	Q				
3+45	0.0038	0.02	Q				
3+50	0.0039	0.02	Q				
3+55	0.0040	0.02	Q				
4+ 0	0.0041	0.02	Q				
4+ 5	0.0043	0.02	Q				
4+10	0.0044	0.02	Q				
4+15	0.0045	0.02	Q				
4+20	0.0047	0.02	Q				
4+25	0.0048	0.02	Q				
4+30	0.0050	0.02	Q				
4+35	0.0051	0.02	Q				
4+40	0.0053	0.02	QV				
4+45	0.0055	0.02	QV				
4+50	0.0056	0.02	QV				
4+55	0.0058	0.02	QV				
5+ 0	0.0060	0.03	QV				
5+ 5	0.0062	0.03	QV				
5+10	0.0063	0.02	QV				
5+15	0.0065	0.02	QV				
5+20	0.0066	0.02	QV				
5+25	0.0068	0.02	QV				
5+30	0.0070	0.02	QV				
5+35	0.0071	0.02	QV				
5+40	0.0073	0.02	QV				
5+45	0.0075	0.03	QV				
5+50	0.0077	0.03	QV				
5+55	0.0078	0.03	QV				
6+ 0	0.0080	0.03	QV				
6+ 5	0.0082	0.03	QV				
6+10	0.0084	0.03	QV				
6+15	0.0086	0.03	QV				
6+20	0.0088	0.03	QV				
6+25	0.0090	0.03	QV				
6+30	0.0092	0.03	QV				
6+35	0.0094	0.03	QV				
6+40	0.0097	0.03	QV				
6+45	0.0099	0.03	QV				
6+50	0.0101	0.03	QV				
6+55	0.0103	0.03	QV				

7+ 0	0.0106	0.03	QV				
7+ 5	0.0108	0.03	Q V				
7+10	0.0110	0.03	Q V				
7+15	0.0113	0.03	Q V				
7+20	0.0115	0.03	Q V				
7+25	0.0118	0.04	Q V				
7+30	0.0120	0.04	Q V				
7+35	0.0123	0.04	Q V				
7+40	0.0125	0.04	Q V				
7+45	0.0128	0.04	Q V				
7+50	0.0131	0.04	Q V				
7+55	0.0134	0.04	Q V				
8+ 0	0.0137	0.04	Q V				
8+ 5	0.0140	0.04	Q V				
8+10	0.0143	0.05	Q V				
8+15	0.0146	0.05	Q V				
8+20	0.0149	0.05	Q V				
8+25	0.0153	0.05	Q V				
8+30	0.0156	0.05	Q V				
8+35	0.0160	0.05	Q V				
8+40	0.0163	0.05	Q V				
8+45	0.0167	0.05	Q V				
8+50	0.0171	0.05	Q V				
8+55	0.0174	0.06	Q V				
9+ 0	0.0178	0.06	Q V				
9+ 5	0.0182	0.06	Q V				
9+10	0.0187	0.07	Q V				
9+15	0.0192	0.08	Q V				
9+20	0.0198	0.08	Q V				
9+25	0.0204	0.10	Q V				
9+30	0.0212	0.11	Q V				
9+35	0.0220	0.12	Q V				
9+40	0.0229	0.13	Q V				
9+45	0.0240	0.15	Q V				
9+50	0.0251	0.16	Q V				
9+55	0.0263	0.17	Q V				
10+ 0	0.0276	0.19	Q V				
10+ 5	0.0289	0.19	Q V				
10+10	0.0299	0.15	Q V				
10+15	0.0307	0.11	Q V				
10+20	0.0313	0.09	Q V				
10+25	0.0318	0.08	Q V				
10+30	0.0323	0.07	Q V				
10+35	0.0328	0.07	Q V				
10+40	0.0335	0.10	Q V				
10+45	0.0344	0.13	Q V				
10+50	0.0355	0.15	Q V				
10+55	0.0365	0.16	Q V				
11+ 0	0.0376	0.16	Q V				
11+ 5	0.0388	0.17	Q V				
11+10	0.0399	0.16	Q V				
11+15	0.0410	0.16	Q V				
11+20	0.0420	0.15	Q V				
11+25	0.0431	0.15	Q V				
11+30	0.0442	0.16	Q V				
11+35	0.0452	0.15	Q V				
11+40	0.0462	0.14	Q V				
11+45	0.0470	0.12	Q V				
11+50	0.0478	0.12	Q V				
11+55	0.0487	0.12	Q V				
12+ 0	0.0496	0.13	Q V				
12+ 5	0.0506	0.15	Q V				
12+10	0.0521	0.21	Q V				

12+15	0.0540	0.28	Q	V				
12+20	0.0562	0.32	Q	V				
12+25	0.0586	0.35	Q	V				
12+30	0.0612	0.37	Q	V				
12+35	0.0639	0.39	Q	V				
12+40	0.0668	0.42	Q	V				
12+45	0.0699	0.45	Q	V				
12+50	0.0731	0.47	Q	V				
12+55	0.0765	0.49	Q	V				
13+ 0	0.0800	0.51	Q	V				
13+ 5	0.0836	0.53	Q	V				
13+10	0.0876	0.58	Q	V				
13+15	0.0920	0.64	Q	V				
13+20	0.0966	0.67	Q	V				
13+25	0.1013	0.68	Q	V				
13+30	0.1061	0.70	Q	V				
13+35	0.1108	0.68	Q	V				
13+40	0.1149	0.60	Q	V				
13+45	0.1183	0.50	Q	V				
13+50	0.1214	0.45	Q	V				
13+55	0.1244	0.43	Q	V				
14+ 0	0.1273	0.42	Q	V				
14+ 5	0.1301	0.41	Q	V				
14+10	0.1331	0.44	Q	V				
14+15	0.1364	0.48	Q	V				
14+20	0.1398	0.49	Q	V				
14+25	0.1431	0.49	Q	V				
14+30	0.1465	0.48	Q	V				
14+35	0.1498	0.48	Q	V				
14+40	0.1531	0.48	Q	V				
14+45	0.1565	0.48	Q	V				
14+50	0.1598	0.48	Q	V				
14+55	0.1631	0.48	Q	V				
15+ 0	0.1663	0.47	Q	V				
15+ 5	0.1695	0.47	Q	V				
15+10	0.1726	0.46	Q	V				
15+15	0.1757	0.45	Q	V				
15+20	0.1788	0.44	Q	V				
15+25	0.1818	0.43	Q	V				
15+30	0.1847	0.42	Q	V				
15+35	0.1875	0.41	Q	V				
15+40	0.1901	0.37	Q	V				
15+45	0.1924	0.33	Q	V				
15+50	0.1945	0.31	Q	V				
15+55	0.1966	0.31	Q	V				
16+ 0	0.1987	0.30	Q	V				
16+ 5	0.2006	0.28	Q	V				
16+10	0.2021	0.21	Q				V	
16+15	0.2030	0.13	Q				V	
16+20	0.2037	0.09	Q				V	
16+25	0.2042	0.07	Q				V	
16+30	0.2046	0.06	Q				V	
16+35	0.2049	0.05	Q				V	
16+40	0.2052	0.04	Q				V	
16+45	0.2054	0.03	Q				V	
16+50	0.2056	0.03	Q				V	
16+55	0.2057	0.02	Q				V	
17+ 0	0.2059	0.02	Q				V	
17+ 5	0.2060	0.02	Q				V	
17+10	0.2061	0.02	Q				V	
17+15	0.2062	0.02	Q				V	
17+20	0.2063	0.02	Q				V	
17+25	0.2065	0.02	Q				V	

17+30	0.2066	0.02	Q				V	
17+35	0.2067	0.02	Q				V	
17+40	0.2068	0.02	Q				V	
17+45	0.2069	0.02	Q				V	
17+50	0.2070	0.02	Q				V	
17+55	0.2071	0.02	Q				V	
18+ 0	0.2072	0.01	Q				V	
18+ 5	0.2073	0.01	Q				V	
18+10	0.2074	0.01	Q				V	
18+15	0.2075	0.01	Q				V	
18+20	0.2076	0.01	Q				V	
18+25	0.2077	0.01	Q				V	
18+30	0.2078	0.01	Q				V	
18+35	0.2079	0.01	Q				V	
18+40	0.2080	0.01	Q				V	
18+45	0.2081	0.01	Q				V	
18+50	0.2082	0.01	Q				V	
18+55	0.2082	0.01	Q				V	
19+ 0	0.2083	0.01	Q				V	
19+ 5	0.2084	0.01	Q				V	
19+10	0.2084	0.01	Q				V	
19+15	0.2085	0.01	Q				V	
19+20	0.2086	0.01	Q				V	
19+25	0.2086	0.01	Q				V	
19+30	0.2087	0.01	Q				V	
19+35	0.2088	0.01	Q				V	
19+40	0.2089	0.01	Q				V	
19+45	0.2090	0.01	Q				V	
19+50	0.2090	0.01	Q				V	
19+55	0.2091	0.01	Q				V	
20+ 0	0.2092	0.01	Q				V	
20+ 5	0.2092	0.01	Q				V	
20+10	0.2093	0.01	Q				V	
20+15	0.2093	0.01	Q				V	
20+20	0.2094	0.01	Q				V	
20+25	0.2095	0.01	Q				V	
20+30	0.2095	0.01	Q				V	
20+35	0.2096	0.01	Q				V	
20+40	0.2097	0.01	Q				V	
20+45	0.2098	0.01	Q				V	
20+50	0.2098	0.01	Q				V	
20+55	0.2099	0.01	Q				V	
21+ 0	0.2099	0.01	Q				V	
21+ 5	0.2100	0.01	Q				V	
21+10	0.2101	0.01	Q				V	
21+15	0.2101	0.01	Q				V	
21+20	0.2102	0.01	Q				V	
21+25	0.2103	0.01	Q				V	
21+30	0.2103	0.01	Q				V	
21+35	0.2104	0.01	Q				V	
21+40	0.2104	0.01	Q				V	
21+45	0.2105	0.01	Q				V	
21+50	0.2105	0.01	Q				V	
21+55	0.2106	0.01	Q				V	
22+ 0	0.2107	0.01	Q				V	
22+ 5	0.2107	0.01	Q				V	
22+10	0.2108	0.01	Q				V	
22+15	0.2108	0.01	Q				V	
22+20	0.2109	0.01	Q				V	
22+25	0.2110	0.01	Q				V	
22+30	0.2110	0.01	Q				V	
22+35	0.2111	0.01	Q				V	
22+40	0.2111	0.01	Q				V	

22+45	0.2112	0.01	Q				V
22+50	0.2112	0.01	Q				V
22+55	0.2113	0.01	Q				V
23+ 0	0.2113	0.01	Q				V
23+ 5	0.2114	0.01	Q				V
23+10	0.2114	0.01	Q				V
23+15	0.2115	0.01	Q				V
23+20	0.2115	0.01	Q				V
23+25	0.2116	0.01	Q				V
23+30	0.2116	0.01	Q				V
23+35	0.2117	0.01	Q				V
23+40	0.2117	0.01	Q				V
23+45	0.2117	0.01	Q				V
23+50	0.2118	0.01	Q				V
23+55	0.2118	0.01	Q				V
24+ 0	0.2119	0.01	Q				V
24+ 5	0.2119	0.01	Q				V
24+10	0.2120	0.00	Q				V
24+15	0.2120	0.00	Q				V
24+20	0.2120	0.00	Q				V
24+25	0.2120	0.00	Q				V
24+30	0.2120	0.00	Q				V
24+35	0.2120	0.00	Q				V
24+40	0.2120	0.00	Q				V
24+45	0.2120	0.00	Q				V
24+50	0.2120	0.00	Q				V
24+55	0.2120	0.00	Q				V
25+ 0	0.2120	0.00	Q				V
25+ 5	0.2120	0.00	Q				V
25+10	0.2120	0.00	Q				V
25+15	0.2120	0.00	Q				V
25+20	0.2120	0.00	Q				V

Unit Hydrograph Analysis

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Study date 11/05/18 File: UNEX103424100.out

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

Program License Serial Number 6389

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

English Units used in output format

UNIT HYDROGRAPH FOR EXISTING CONDITION - 100 YR STORM NODE 3 TO 4

Drainage Area = 1.00 (Ac.) = 0.002 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 1.00 (Ac.) = 0.002
Sq. Mi.

USER Entry of lag time in hours
Lag time = 0.263 Hr.
Lag time = 15.78 Min.
25% of lag time = 3.95 Min.
40% of lag time = 6.31 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00 (CFS)

2 YEAR Area rainfall data:

Area (Ac.) [1]	Rainfall (In) [2]	Weighting [1*2]
0.00	2.73	0.00
0.00	2.73	0.00
0.00	0.01	0.00
0.00	0.01	0.00
0.00	0.01	0.00
0.00	0.01	0.00
0.00	2.73	0.00
1.00	2.73	2.73

100 YEAR Area rainfall data:

Area (Ac.) [1]	Rainfall (In) [2]	Weighting [1*2]
1.00	6.67	6.67

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.730 (In)

Area Averaged 100-Year Rainfall = 6.670(In)

Point rain (area averaged) = 6.670(In)

Areal adjustment factor = 100.00 %

Adjusted average point rain = 6.670(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
1.000	67.00	0.000
Total Area Entered = 1.00(Ac.)		

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
67.0	67.0	0.394	0.000	0.394	1.000	0.394
Sum (F) =						0.394

Area averaged mean soil loss (F) (In/Hr) = 0.394

Minimum soil loss rate ((In/Hr)) = 0.197

(for 24 hour storm duration)

Soil loss rate (decimal) = 0.900

Unit Hydrograph
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	31.686	0.031
2	0.167	63.371	0.118
3	0.250	95.057	0.204
4	0.333	126.743	0.205
5	0.417	158.428	0.120
6	0.500	190.114	0.068
7	0.583	221.800	0.046
8	0.667	253.485	0.036
9	0.750	285.171	0.029
10	0.833	316.857	0.024
11	0.917	348.542	0.020
12	1.000	380.228	0.017
13	1.083	411.914	0.014
14	1.167	443.599	0.011
15	1.250	475.285	0.010
16	1.333	506.971	0.010
17	1.417	538.657	0.008
18	1.500	570.342	0.007
19	1.583	602.028	0.006
20	1.667	633.714	0.005
21	1.750	665.399	0.004
22	1.833	697.085	0.003
23	1.917	728.771	0.003
24	2.000	760.456	0.003
25	2.083	792.142	0.003
26	2.167	823.828	0.002
Sum = 100.000		Sum=	1.008

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

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr)		Effective (In/Hr)
				Max	Low	
1	0.08	0.07	0.053	(0.699)	0.048	0.005
2	0.17	0.07	0.053	(0.696)	0.048	0.005
3	0.25	0.07	0.053	(0.694)	0.048	0.005
4	0.33	0.10	0.080	(0.691)	0.072	0.008
5	0.42	0.10	0.080	(0.688)	0.072	0.008
6	0.50	0.10	0.080	(0.686)	0.072	0.008
7	0.58	0.10	0.080	(0.683)	0.072	0.008
8	0.67	0.10	0.080	(0.680)	0.072	0.008
9	0.75	0.10	0.080	(0.678)	0.072	0.008
10	0.83	0.13	0.107	(0.675)	0.096	0.011
11	0.92	0.13	0.107	(0.672)	0.096	0.011
12	1.00	0.13	0.107	(0.670)	0.096	0.011
13	1.08	0.10	0.080	(0.667)	0.072	0.008
14	1.17	0.10	0.080	(0.664)	0.072	0.008
15	1.25	0.10	0.080	(0.662)	0.072	0.008
16	1.33	0.10	0.080	(0.659)	0.072	0.008
17	1.42	0.10	0.080	(0.657)	0.072	0.008
18	1.50	0.10	0.080	(0.654)	0.072	0.008
19	1.58	0.10	0.080	(0.651)	0.072	0.008
20	1.67	0.10	0.080	(0.649)	0.072	0.008
21	1.75	0.10	0.080	(0.646)	0.072	0.008
22	1.83	0.13	0.107	(0.643)	0.096	0.011
23	1.92	0.13	0.107	(0.641)	0.096	0.011
24	2.00	0.13	0.107	(0.638)	0.096	0.011
25	2.08	0.13	0.107	(0.636)	0.096	0.011
26	2.17	0.13	0.107	(0.633)	0.096	0.011
27	2.25	0.13	0.107	(0.631)	0.096	0.011
28	2.33	0.13	0.107	(0.628)	0.096	0.011
29	2.42	0.13	0.107	(0.625)	0.096	0.011
30	2.50	0.13	0.107	(0.623)	0.096	0.011
31	2.58	0.17	0.133	(0.620)	0.120	0.013
32	2.67	0.17	0.133	(0.618)	0.120	0.013
33	2.75	0.17	0.133	(0.615)	0.120	0.013
34	2.83	0.17	0.133	(0.613)	0.120	0.013
35	2.92	0.17	0.133	(0.610)	0.120	0.013
36	3.00	0.17	0.133	(0.608)	0.120	0.013
37	3.08	0.17	0.133	(0.605)	0.120	0.013
38	3.17	0.17	0.133	(0.603)	0.120	0.013
39	3.25	0.17	0.133	(0.600)	0.120	0.013
40	3.33	0.17	0.133	(0.598)	0.120	0.013
41	3.42	0.17	0.133	(0.595)	0.120	0.013
42	3.50	0.17	0.133	(0.593)	0.120	0.013
43	3.58	0.17	0.133	(0.590)	0.120	0.013
44	3.67	0.17	0.133	(0.588)	0.120	0.013
45	3.75	0.17	0.133	(0.585)	0.120	0.013
46	3.83	0.20	0.160	(0.583)	0.144	0.016
47	3.92	0.20	0.160	(0.580)	0.144	0.016
48	4.00	0.20	0.160	(0.578)	0.144	0.016
49	4.08	0.20	0.160	(0.575)	0.144	0.016
50	4.17	0.20	0.160	(0.573)	0.144	0.016
51	4.25	0.20	0.160	(0.571)	0.144	0.016
52	4.33	0.23	0.187	(0.568)	0.168	0.019
53	4.42	0.23	0.187	(0.566)	0.168	0.019
54	4.50	0.23	0.187	(0.563)	0.168	0.019
55	4.58	0.23	0.187	(0.561)	0.168	0.019
56	4.67	0.23	0.187	(0.558)	0.168	0.019
57	4.75	0.23	0.187	(0.556)	0.168	0.019
58	4.83	0.27	0.213	(0.554)	0.192	0.021
59	4.92	0.27	0.213	(0.551)	0.192	0.021
60	5.00	0.27	0.213	(0.549)	0.192	0.021
61	5.08	0.20	0.160	(0.546)	0.144	0.016

62	5.17	0.20	0.160	(0.544)	0.144	0.016
63	5.25	0.20	0.160	(0.542)	0.144	0.016
64	5.33	0.23	0.187	(0.539)	0.168	0.019
65	5.42	0.23	0.187	(0.537)	0.168	0.019
66	5.50	0.23	0.187	(0.535)	0.168	0.019
67	5.58	0.27	0.213	(0.532)	0.192	0.021
68	5.67	0.27	0.213	(0.530)	0.192	0.021
69	5.75	0.27	0.213	(0.528)	0.192	0.021
70	5.83	0.27	0.213	(0.525)	0.192	0.021
71	5.92	0.27	0.213	(0.523)	0.192	0.021
72	6.00	0.27	0.213	(0.521)	0.192	0.021
73	6.08	0.30	0.240	(0.518)	0.216	0.024
74	6.17	0.30	0.240	(0.516)	0.216	0.024
75	6.25	0.30	0.240	(0.514)	0.216	0.024
76	6.33	0.30	0.240	(0.511)	0.216	0.024
77	6.42	0.30	0.240	(0.509)	0.216	0.024
78	6.50	0.30	0.240	(0.507)	0.216	0.024
79	6.58	0.33	0.267	(0.505)	0.240	0.027
80	6.67	0.33	0.267	(0.502)	0.240	0.027
81	6.75	0.33	0.267	(0.500)	0.240	0.027
82	6.83	0.33	0.267	(0.498)	0.240	0.027
83	6.92	0.33	0.267	(0.495)	0.240	0.027
84	7.00	0.33	0.267	(0.493)	0.240	0.027
85	7.08	0.33	0.267	(0.491)	0.240	0.027
86	7.17	0.33	0.267	(0.489)	0.240	0.027
87	7.25	0.33	0.267	(0.487)	0.240	0.027
88	7.33	0.37	0.293	(0.484)	0.264	0.029
89	7.42	0.37	0.293	(0.482)	0.264	0.029
90	7.50	0.37	0.293	(0.480)	0.264	0.029
91	7.58	0.40	0.320	(0.478)	0.288	0.032
92	7.67	0.40	0.320	(0.475)	0.288	0.032
93	7.75	0.40	0.320	(0.473)	0.288	0.032
94	7.83	0.43	0.347	(0.471)	0.312	0.035
95	7.92	0.43	0.347	(0.469)	0.312	0.035
96	8.00	0.43	0.347	(0.467)	0.312	0.035
97	8.08	0.50	0.400	(0.465)	0.360	0.040
98	8.17	0.50	0.400	(0.462)	0.360	0.040
99	8.25	0.50	0.400	(0.460)	0.360	0.040
100	8.33	0.50	0.400	(0.458)	0.360	0.040
101	8.42	0.50	0.400	(0.456)	0.360	0.040
102	8.50	0.50	0.400	(0.454)	0.360	0.040
103	8.58	0.53	0.427	(0.452)	0.384	0.043
104	8.67	0.53	0.427	(0.450)	0.384	0.043
105	8.75	0.53	0.427	(0.447)	0.384	0.043
106	8.83	0.57	0.454	(0.445)	0.408	0.045
107	8.92	0.57	0.454	(0.443)	0.408	0.045
108	9.00	0.57	0.454	(0.441)	0.408	0.045
109	9.08	0.63	0.507	0.439	(0.456)	0.068
110	9.17	0.63	0.507	0.437	(0.456)	0.070
111	9.25	0.63	0.507	0.435	(0.456)	0.072
112	9.33	0.67	0.534	0.433	(0.480)	0.101
113	9.42	0.67	0.534	0.431	(0.480)	0.103
114	9.50	0.67	0.534	0.429	(0.480)	0.105
115	9.58	0.70	0.560	0.427	(0.504)	0.134
116	9.67	0.70	0.560	0.425	(0.504)	0.136
117	9.75	0.70	0.560	0.423	(0.504)	0.138
118	9.83	0.73	0.587	0.421	(0.528)	0.166
119	9.92	0.73	0.587	0.419	(0.528)	0.168
120	10.00	0.73	0.587	0.416	(0.528)	0.170
121	10.08	0.50	0.400	(0.414)	0.360	0.040
122	10.17	0.50	0.400	(0.412)	0.360	0.040
123	10.25	0.50	0.400	(0.410)	0.360	0.040
124	10.33	0.50	0.400	(0.408)	0.360	0.040

125	10.42	0.50	0.400	(0.406)	0.360	0.040
126	10.50	0.50	0.400	(0.405)	0.360	0.040
127	10.58	0.67	0.534	0.403	(0.480)	0.131
128	10.67	0.67	0.534	0.401	(0.480)	0.133
129	10.75	0.67	0.534	0.399	(0.480)	0.135
130	10.83	0.67	0.534	0.397	(0.480)	0.137
131	10.92	0.67	0.534	0.395	(0.480)	0.139
132	11.00	0.67	0.534	0.393	(0.480)	0.141
133	11.08	0.63	0.507	0.391	(0.456)	0.116
134	11.17	0.63	0.507	0.389	(0.456)	0.118
135	11.25	0.63	0.507	0.387	(0.456)	0.120
136	11.33	0.63	0.507	0.385	(0.456)	0.122
137	11.42	0.63	0.507	0.383	(0.456)	0.124
138	11.50	0.63	0.507	0.381	(0.456)	0.126
139	11.58	0.57	0.454	0.379	(0.408)	0.074
140	11.67	0.57	0.454	0.377	(0.408)	0.076
141	11.75	0.57	0.454	0.376	(0.408)	0.078
142	11.83	0.60	0.480	0.374	(0.432)	0.107
143	11.92	0.60	0.480	0.372	(0.432)	0.108
144	12.00	0.60	0.480	0.370	(0.432)	0.110
145	12.08	0.83	0.667	0.368	(0.600)	0.299
146	12.17	0.83	0.667	0.366	(0.600)	0.301
147	12.25	0.83	0.667	0.364	(0.600)	0.303
148	12.33	0.87	0.694	0.363	(0.624)	0.331
149	12.42	0.87	0.694	0.361	(0.624)	0.333
150	12.50	0.87	0.694	0.359	(0.624)	0.335
151	12.58	0.93	0.747	0.357	(0.672)	0.390
152	12.67	0.93	0.747	0.355	(0.672)	0.392
153	12.75	0.93	0.747	0.354	(0.672)	0.393
154	12.83	0.97	0.774	0.352	(0.696)	0.422
155	12.92	0.97	0.774	0.350	(0.696)	0.424
156	13.00	0.97	0.774	0.348	(0.696)	0.425
157	13.08	1.13	0.907	0.347	(0.816)	0.561
158	13.17	1.13	0.907	0.345	(0.816)	0.562
159	13.25	1.13	0.907	0.343	(0.816)	0.564
160	13.33	1.13	0.907	0.341	(0.816)	0.566
161	13.42	1.13	0.907	0.340	(0.816)	0.568
162	13.50	1.13	0.907	0.338	(0.816)	0.569
163	13.58	0.77	0.614	0.336	(0.552)	0.278
164	13.67	0.77	0.614	0.334	(0.552)	0.279
165	13.75	0.77	0.614	0.333	(0.552)	0.281
166	13.83	0.77	0.614	0.331	(0.552)	0.283
167	13.92	0.77	0.614	0.329	(0.552)	0.284
168	14.00	0.77	0.614	0.328	(0.552)	0.286
169	14.08	0.90	0.720	0.326	(0.648)	0.394
170	14.17	0.90	0.720	0.324	(0.648)	0.396
171	14.25	0.90	0.720	0.323	(0.648)	0.398
172	14.33	0.87	0.694	0.321	(0.624)	0.373
173	14.42	0.87	0.694	0.319	(0.624)	0.374
174	14.50	0.87	0.694	0.318	(0.624)	0.376
175	14.58	0.87	0.694	0.316	(0.624)	0.378
176	14.67	0.87	0.694	0.314	(0.624)	0.379
177	14.75	0.87	0.694	0.313	(0.624)	0.381
178	14.83	0.83	0.667	0.311	(0.600)	0.356
179	14.92	0.83	0.667	0.310	(0.600)	0.357
180	15.00	0.83	0.667	0.308	(0.600)	0.359
181	15.08	0.80	0.640	0.306	(0.576)	0.334
182	15.17	0.80	0.640	0.305	(0.576)	0.335
183	15.25	0.80	0.640	0.303	(0.576)	0.337
184	15.33	0.77	0.614	0.302	(0.552)	0.312
185	15.42	0.77	0.614	0.300	(0.552)	0.313
186	15.50	0.77	0.614	0.299	(0.552)	0.315
187	15.58	0.63	0.507	0.297	(0.456)	0.210

188	15.67	0.63	0.507	0.296	(0.456)	0.211
189	15.75	0.63	0.507	0.294	(0.456)	0.213
190	15.83	0.63	0.507	0.293	(0.456)	0.214
191	15.92	0.63	0.507	0.291	(0.456)	0.216
192	16.00	0.63	0.507	0.290	(0.456)	0.217
193	16.08	0.13	0.107	(0.288)	0.096	0.011
194	16.17	0.13	0.107	(0.287)	0.096	0.011
195	16.25	0.13	0.107	(0.285)	0.096	0.011
196	16.33	0.13	0.107	(0.284)	0.096	0.011
197	16.42	0.13	0.107	(0.282)	0.096	0.011
198	16.50	0.13	0.107	(0.281)	0.096	0.011
199	16.58	0.10	0.080	(0.279)	0.072	0.008
200	16.67	0.10	0.080	(0.278)	0.072	0.008
201	16.75	0.10	0.080	(0.277)	0.072	0.008
202	16.83	0.10	0.080	(0.275)	0.072	0.008
203	16.92	0.10	0.080	(0.274)	0.072	0.008
204	17.00	0.10	0.080	(0.272)	0.072	0.008
205	17.08	0.17	0.133	(0.271)	0.120	0.013
206	17.17	0.17	0.133	(0.270)	0.120	0.013
207	17.25	0.17	0.133	(0.268)	0.120	0.013
208	17.33	0.17	0.133	(0.267)	0.120	0.013
209	17.42	0.17	0.133	(0.266)	0.120	0.013
210	17.50	0.17	0.133	(0.264)	0.120	0.013
211	17.58	0.17	0.133	(0.263)	0.120	0.013
212	17.67	0.17	0.133	(0.262)	0.120	0.013
213	17.75	0.17	0.133	(0.260)	0.120	0.013
214	17.83	0.13	0.107	(0.259)	0.096	0.011
215	17.92	0.13	0.107	(0.258)	0.096	0.011
216	18.00	0.13	0.107	(0.257)	0.096	0.011
217	18.08	0.13	0.107	(0.255)	0.096	0.011
218	18.17	0.13	0.107	(0.254)	0.096	0.011
219	18.25	0.13	0.107	(0.253)	0.096	0.011
220	18.33	0.13	0.107	(0.252)	0.096	0.011
221	18.42	0.13	0.107	(0.250)	0.096	0.011
222	18.50	0.13	0.107	(0.249)	0.096	0.011
223	18.58	0.10	0.080	(0.248)	0.072	0.008
224	18.67	0.10	0.080	(0.247)	0.072	0.008
225	18.75	0.10	0.080	(0.246)	0.072	0.008
226	18.83	0.07	0.053	(0.244)	0.048	0.005
227	18.92	0.07	0.053	(0.243)	0.048	0.005
228	19.00	0.07	0.053	(0.242)	0.048	0.005
229	19.08	0.10	0.080	(0.241)	0.072	0.008
230	19.17	0.10	0.080	(0.240)	0.072	0.008
231	19.25	0.10	0.080	(0.239)	0.072	0.008
232	19.33	0.13	0.107	(0.238)	0.096	0.011
233	19.42	0.13	0.107	(0.236)	0.096	0.011
234	19.50	0.13	0.107	(0.235)	0.096	0.011
235	19.58	0.10	0.080	(0.234)	0.072	0.008
236	19.67	0.10	0.080	(0.233)	0.072	0.008
237	19.75	0.10	0.080	(0.232)	0.072	0.008
238	19.83	0.07	0.053	(0.231)	0.048	0.005
239	19.92	0.07	0.053	(0.230)	0.048	0.005
240	20.00	0.07	0.053	(0.229)	0.048	0.005
241	20.08	0.10	0.080	(0.228)	0.072	0.008
242	20.17	0.10	0.080	(0.227)	0.072	0.008
243	20.25	0.10	0.080	(0.226)	0.072	0.008
244	20.33	0.10	0.080	(0.225)	0.072	0.008
245	20.42	0.10	0.080	(0.224)	0.072	0.008
246	20.50	0.10	0.080	(0.223)	0.072	0.008
247	20.58	0.10	0.080	(0.222)	0.072	0.008
248	20.67	0.10	0.080	(0.221)	0.072	0.008
249	20.75	0.10	0.080	(0.220)	0.072	0.008
250	20.83	0.07	0.053	(0.219)	0.048	0.005

251	20.92	0.07	0.053	(0.219)	0.048	0.005
252	21.00	0.07	0.053	(0.218)	0.048	0.005
253	21.08	0.10	0.080	(0.217)	0.072	0.008
254	21.17	0.10	0.080	(0.216)	0.072	0.008
255	21.25	0.10	0.080	(0.215)	0.072	0.008
256	21.33	0.07	0.053	(0.214)	0.048	0.005
257	21.42	0.07	0.053	(0.213)	0.048	0.005
258	21.50	0.07	0.053	(0.213)	0.048	0.005
259	21.58	0.10	0.080	(0.212)	0.072	0.008
260	21.67	0.10	0.080	(0.211)	0.072	0.008
261	21.75	0.10	0.080	(0.210)	0.072	0.008
262	21.83	0.07	0.053	(0.210)	0.048	0.005
263	21.92	0.07	0.053	(0.209)	0.048	0.005
264	22.00	0.07	0.053	(0.208)	0.048	0.005
265	22.08	0.10	0.080	(0.208)	0.072	0.008
266	22.17	0.10	0.080	(0.207)	0.072	0.008
267	22.25	0.10	0.080	(0.206)	0.072	0.008
268	22.33	0.07	0.053	(0.206)	0.048	0.005
269	22.42	0.07	0.053	(0.205)	0.048	0.005
270	22.50	0.07	0.053	(0.204)	0.048	0.005
271	22.58	0.07	0.053	(0.204)	0.048	0.005
272	22.67	0.07	0.053	(0.203)	0.048	0.005
273	22.75	0.07	0.053	(0.203)	0.048	0.005
274	22.83	0.07	0.053	(0.202)	0.048	0.005
275	22.92	0.07	0.053	(0.202)	0.048	0.005
276	23.00	0.07	0.053	(0.201)	0.048	0.005
277	23.08	0.07	0.053	(0.201)	0.048	0.005
278	23.17	0.07	0.053	(0.200)	0.048	0.005
279	23.25	0.07	0.053	(0.200)	0.048	0.005
280	23.33	0.07	0.053	(0.199)	0.048	0.005
281	23.42	0.07	0.053	(0.199)	0.048	0.005
282	23.50	0.07	0.053	(0.199)	0.048	0.005
283	23.58	0.07	0.053	(0.198)	0.048	0.005
284	23.67	0.07	0.053	(0.198)	0.048	0.005
285	23.75	0.07	0.053	(0.198)	0.048	0.005
286	23.83	0.07	0.053	(0.198)	0.048	0.005
287	23.92	0.07	0.053	(0.197)	0.048	0.005
288	24.00	0.07	0.053	(0.197)	0.048	0.005

(Loss Rate Not Used)

Sum = 100.0

Sum = 23.9

Flood volume = Effective rainfall 1.99(In)
times area 1.0(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 4.68(In)
Total soil loss = 0.390(Ac.Ft)
Total rainfall = 6.67(In)
Flood volume = 7216.0 Cubic Feet
Total soil loss = 16996.1 Cubic Feet

Peak flow rate of this hydrograph = 0.516(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	0.0000	0.00	Q				
0+15	0.0000	0.00	Q				
0+20	0.0000	0.00	Q				

0+25	0.0001	0.00	Q				
0+30	0.0001	0.00	Q				
0+35	0.0001	0.01	Q				
0+40	0.0002	0.01	Q				
0+45	0.0002	0.01	Q				
0+50	0.0003	0.01	Q				
0+55	0.0003	0.01	Q				
1+ 0	0.0004	0.01	Q				
1+ 5	0.0004	0.01	Q				
1+10	0.0005	0.01	Q				
1+15	0.0006	0.01	Q				
1+20	0.0006	0.01	Q				
1+25	0.0007	0.01	Q				
1+30	0.0007	0.01	Q				
1+35	0.0008	0.01	Q				
1+40	0.0008	0.01	Q				
1+45	0.0009	0.01	Q				
1+50	0.0010	0.01	Q				
1+55	0.0010	0.01	Q				
2+ 0	0.0011	0.01	Q				
2+ 5	0.0011	0.01	Q				
2+10	0.0012	0.01	Q				
2+15	0.0013	0.01	Q				
2+20	0.0014	0.01	Q				
2+25	0.0014	0.01	Q				
2+30	0.0015	0.01	Q				
2+35	0.0016	0.01	Q				
2+40	0.0016	0.01	Q				
2+45	0.0017	0.01	Q				
2+50	0.0018	0.01	Q				
2+55	0.0019	0.01	Q				
3+ 0	0.0020	0.01	Q				
3+ 5	0.0021	0.01	Q				
3+10	0.0022	0.01	Q				
3+15	0.0022	0.01	Q				
3+20	0.0023	0.01	Q				
3+25	0.0024	0.01	Q				
3+30	0.0025	0.01	Q				
3+35	0.0026	0.01	Q				
3+40	0.0027	0.01	Q				
3+45	0.0028	0.01	Q				
3+50	0.0029	0.01	Q				
3+55	0.0030	0.01	Q				
4+ 0	0.0031	0.01	Q				
4+ 5	0.0032	0.01	Q				
4+10	0.0033	0.02	Q				
4+15	0.0034	0.02	Q				
4+20	0.0035	0.02	Q				
4+25	0.0036	0.02	Q				
4+30	0.0037	0.02	Q				
4+35	0.0038	0.02	Q				
4+40	0.0040	0.02	Q				
4+45	0.0041	0.02	Q				
4+50	0.0042	0.02	QV				
4+55	0.0043	0.02	QV				
5+ 0	0.0045	0.02	QV				
5+ 5	0.0046	0.02	QV				
5+10	0.0047	0.02	QV				
5+15	0.0049	0.02	QV				
5+20	0.0050	0.02	QV				
5+25	0.0051	0.02	QV				
5+30	0.0052	0.02	QV				
5+35	0.0054	0.02	QV				

5+40	0.0055	0.02	QV				
5+45	0.0056	0.02	QV				
5+50	0.0058	0.02	QV				
5+55	0.0059	0.02	QV				
6+ 0	0.0060	0.02	QV				
6+ 5	0.0062	0.02	QV				
6+10	0.0063	0.02	QV				
6+15	0.0065	0.02	QV				
6+20	0.0066	0.02	QV				
6+25	0.0068	0.02	QV				
6+30	0.0070	0.02	QV				
6+35	0.0071	0.02	QV				
6+40	0.0073	0.02	QV				
6+45	0.0075	0.02	QV				
6+50	0.0076	0.03	QV				
6+55	0.0078	0.03	QV				
7+ 0	0.0080	0.03	QV				
7+ 5	0.0082	0.03	QV				
7+10	0.0083	0.03	Q V				
7+15	0.0085	0.03	Q V				
7+20	0.0087	0.03	Q V				
7+25	0.0089	0.03	Q V				
7+30	0.0091	0.03	Q V				
7+35	0.0093	0.03	Q V				
7+40	0.0095	0.03	Q V				
7+45	0.0097	0.03	Q V				
7+50	0.0099	0.03	Q V				
7+55	0.0101	0.03	Q V				
8+ 0	0.0103	0.03	Q V				
8+ 5	0.0106	0.03	Q V				
8+10	0.0108	0.03	Q V				
8+15	0.0110	0.04	Q V				
8+20	0.0113	0.04	Q V				
8+25	0.0115	0.04	Q V				
8+30	0.0118	0.04	Q V				
8+35	0.0121	0.04	Q V				
8+40	0.0123	0.04	Q V				
8+45	0.0126	0.04	Q V				
8+50	0.0129	0.04	Q V				
8+55	0.0132	0.04	Q V				
9+ 0	0.0135	0.04	Q V				
9+ 5	0.0138	0.04	Q V				
9+10	0.0141	0.05	Q V				
9+15	0.0145	0.05	Q V				
9+20	0.0149	0.06	Q V				
9+25	0.0153	0.07	Q V				
9+30	0.0159	0.07	Q V				
9+35	0.0164	0.08	Q V				
9+40	0.0171	0.09	Q V				
9+45	0.0178	0.10	Q V				
9+50	0.0186	0.11	Q V				
9+55	0.0194	0.12	Q V				
10+ 0	0.0203	0.13	Q V				
10+ 5	0.0213	0.14	Q V				
10+10	0.0221	0.13	Q V				
10+15	0.0229	0.11	Q V				
10+20	0.0235	0.08	Q V				
10+25	0.0239	0.07	Q V				
10+30	0.0244	0.06	Q V				
10+35	0.0248	0.06	Q V				
10+40	0.0253	0.07	Q V				
10+45	0.0259	0.09	Q V				
10+50	0.0266	0.10	Q V				

10+55	0.0274	0.11	Q	V				
11+ 0	0.0282	0.12	Q	V				
11+ 5	0.0290	0.12	Q	V				
11+10	0.0299	0.12	Q	V				
11+15	0.0307	0.12	Q	V				
11+20	0.0316	0.12	Q	V				
11+25	0.0324	0.12	Q	V				
11+30	0.0332	0.12	Q	V				
11+35	0.0341	0.12	Q	V				
11+40	0.0348	0.12	Q	V				
11+45	0.0356	0.11	Q	V				
11+50	0.0362	0.10	Q	V				
11+55	0.0369	0.10	Q	V				
12+ 0	0.0376	0.10	Q	V				
12+ 5	0.0383	0.11	Q	V				
12+10	0.0393	0.13	Q	V				
12+15	0.0405	0.17	Q	V				
12+20	0.0420	0.22	Q	V				
12+25	0.0436	0.24	Q	V				
12+30	0.0455	0.26	Q	V				
12+35	0.0474	0.28	Q	V				
12+40	0.0495	0.30	Q	V				
12+45	0.0517	0.32	Q	V				
12+50	0.0540	0.34	Q	V				
12+55	0.0564	0.35	Q	V				
13+ 0	0.0590	0.37	Q	V				
13+ 5	0.0616	0.39	Q	V				
13+10	0.0644	0.41	Q	V				
13+15	0.0675	0.45	Q	V				
13+20	0.0708	0.48	Q	V				
13+25	0.0743	0.50	Q	V				
13+30	0.0778	0.51	Q	V				
13+35	0.0814	0.52	Q	V				
13+40	0.0847	0.49	Q	V				
13+45	0.0877	0.44	Q	V				
13+50	0.0904	0.38	Q	V				
13+55	0.0928	0.36	Q	V				
14+ 0	0.0952	0.34	Q	V				
14+ 5	0.0975	0.34	Q	V				
14+10	0.0998	0.34	Q	V				
14+15	0.1023	0.36	Q	V				
14+20	0.1049	0.38	Q	V				
14+25	0.1075	0.38	Q	V				
14+30	0.1102	0.38	Q	V				
14+35	0.1128	0.38	Q	V				
14+40	0.1154	0.38	Q	V				
14+45	0.1180	0.38	Q	V				
14+50	0.1206	0.38	Q	V				
14+55	0.1233	0.38	Q	V				
15+ 0	0.1258	0.37	Q	V				
15+ 5	0.1284	0.37	Q	V				
15+10	0.1309	0.36	Q	V				
15+15	0.1333	0.36	Q	V				
15+20	0.1358	0.35	Q	V				
15+25	0.1381	0.35	Q	V				
15+30	0.1405	0.34	Q	V				
15+35	0.1427	0.33	Q	V				
15+40	0.1449	0.31	Q	V				
15+45	0.1469	0.29	Q	V				
15+50	0.1487	0.27	Q	V				
15+55	0.1505	0.25	Q	V				
16+ 0	0.1522	0.25	Q					
16+ 5	0.1538	0.24	Q					

16+10	0.1552	0.21	Q				V	
16+15	0.1564	0.16	Q				V	
16+20	0.1572	0.12	Q				V	
16+25	0.1578	0.09	Q				V	
16+30	0.1583	0.08	Q				V	
16+35	0.1588	0.06	Q				V	
16+40	0.1591	0.05	Q				V	
16+45	0.1595	0.05	Q				V	
16+50	0.1597	0.04	Q				V	
16+55	0.1600	0.03	Q				V	
17+ 0	0.1602	0.03	Q				V	
17+ 5	0.1604	0.03	Q				V	
17+10	0.1605	0.02	Q				V	
17+15	0.1607	0.02	Q				V	
17+20	0.1609	0.02	Q				V	
17+25	0.1610	0.02	Q				V	
17+30	0.1611	0.02	Q				V	
17+35	0.1612	0.02	Q				V	
17+40	0.1614	0.02	Q				V	
17+45	0.1615	0.02	Q				V	
17+50	0.1616	0.02	Q				V	
17+55	0.1617	0.01	Q				V	
18+ 0	0.1618	0.01	Q				V	
18+ 5	0.1619	0.01	Q				V	
18+10	0.1619	0.01	Q				V	
18+15	0.1620	0.01	Q				V	
18+20	0.1621	0.01	Q				V	
18+25	0.1622	0.01	Q				V	
18+30	0.1622	0.01	Q				V	
18+35	0.1623	0.01	Q				V	
18+40	0.1624	0.01	Q				V	
18+45	0.1625	0.01	Q				V	
18+50	0.1625	0.01	Q				V	
18+55	0.1626	0.01	Q				V	
19+ 0	0.1626	0.01	Q				V	
19+ 5	0.1627	0.01	Q				V	
19+10	0.1627	0.01	Q				V	
19+15	0.1628	0.01	Q				V	
19+20	0.1628	0.01	Q				V	
19+25	0.1629	0.01	Q				V	
19+30	0.1630	0.01	Q				V	
19+35	0.1630	0.01	Q				V	
19+40	0.1631	0.01	Q				V	
19+45	0.1632	0.01	Q				V	
19+50	0.1632	0.01	Q				V	
19+55	0.1633	0.01	Q				V	
20+ 0	0.1633	0.01	Q				V	
20+ 5	0.1634	0.01	Q				V	
20+10	0.1634	0.01	Q				V	
20+15	0.1635	0.01	Q				V	
20+20	0.1635	0.01	Q				V	
20+25	0.1636	0.01	Q				V	
20+30	0.1636	0.01	Q				V	
20+35	0.1637	0.01	Q				V	
20+40	0.1637	0.01	Q				V	
20+45	0.1638	0.01	Q				V	
20+50	0.1638	0.01	Q				V	
20+55	0.1639	0.01	Q				V	
21+ 0	0.1639	0.01	Q				V	
21+ 5	0.1640	0.01	Q				V	
21+10	0.1640	0.01	Q				V	
21+15	0.1641	0.01	Q				V	
21+20	0.1641	0.01	Q				V	

21+25	0.1642	0.01	Q				V
21+30	0.1642	0.01	Q				V
21+35	0.1643	0.01	Q				V
21+40	0.1643	0.01	Q				V
21+45	0.1644	0.01	Q				V
21+50	0.1644	0.01	Q				V
21+55	0.1645	0.01	Q				V
22+ 0	0.1645	0.01	Q				V
22+ 5	0.1646	0.01	Q				V
22+10	0.1646	0.01	Q				V
22+15	0.1646	0.01	Q				V
22+20	0.1647	0.01	Q				V
22+25	0.1647	0.01	Q				V
22+30	0.1648	0.01	Q				V
22+35	0.1648	0.01	Q				V
22+40	0.1649	0.01	Q				V
22+45	0.1649	0.01	Q				V
22+50	0.1649	0.01	Q				V
22+55	0.1650	0.01	Q				V
23+ 0	0.1650	0.01	Q				V
23+ 5	0.1651	0.01	Q				V
23+10	0.1651	0.01	Q				V
23+15	0.1651	0.01	Q				V
23+20	0.1652	0.01	Q				V
23+25	0.1652	0.01	Q				V
23+30	0.1653	0.01	Q				V
23+35	0.1653	0.01	Q				V
23+40	0.1653	0.01	Q				V
23+45	0.1654	0.01	Q				V
23+50	0.1654	0.01	Q				V
23+55	0.1654	0.01	Q				V
24+ 0	0.1655	0.01	Q				V
24+ 5	0.1655	0.01	Q				V
24+10	0.1655	0.00	Q				V
24+15	0.1656	0.00	Q				V
24+20	0.1656	0.00	Q				V
24+25	0.1656	0.00	Q				V
24+30	0.1656	0.00	Q				V
24+35	0.1656	0.00	Q				V
24+40	0.1656	0.00	Q				V
24+45	0.1656	0.00	Q				V
24+50	0.1656	0.00	Q				V
24+55	0.1656	0.00	Q				V
25+ 0	0.1656	0.00	Q				V
25+ 5	0.1656	0.00	Q				V
25+10	0.1656	0.00	Q				V
25+15	0.1656	0.00	Q				V
25+20	0.1657	0.00	Q				V
25+25	0.1657	0.00	Q				V
25+30	0.1657	0.00	Q				V
25+35	0.1657	0.00	Q				V
25+40	0.1657	0.00	Q				V
25+45	0.1657	0.00	Q				V
25+50	0.1657	0.00	Q				V
25+55	0.1657	0.00	Q				V
26+ 0	0.1657	0.00	Q				V
26+ 5	0.1657	0.00	Q				V

Appendix A - Proposed Condition
-10 Yr Storm

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 12/17/18 File:RATPR10.out

RATIONAL METHOD FOR PROPOSED CONDITON - 10 YR STORM

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

English (in-lb) Units used in input data file

Program License Serial Number 6389

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)

For the [Beaumont] area used.

10 year storm 10 minute intensity = 2.300(In/Hr)

10 year storm 60 minute intensity = 0.890(In/Hr)

100 year storm 10 minute intensity = 3.410(In/Hr)

100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 10.0

Calculated rainfall intensity data:

1 hour intensity = 0.890(In/Hr)

Slope of intensity duration curve = 0.5300

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 381.000(Ft.)
Top (of initial area) elevation = 502.450(Ft.)
Bottom (of initial area) elevation = 494.820(Ft.)
Difference in elevation = 7.630(Ft.)
Slope = 0.02003 s(percent)= 2.00
 $TC = k(0.300)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 7.066 min.
Rainfall intensity = 2.765(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.854
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 32.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 5.387(CFS)
Total initial stream area = 2.280(Ac.)
Pervious area fraction = 0.100
End of computations, total study area = 2.28 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 0.100
Area averaged RI index number = 32.0

Unit Hydrograph Analysis

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014, Version 9.0
Study date 12/17/18 File: UNPR102410.out

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

Program License Serial Number 6389

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

English Units used in output format

UNIT HYDROGRAPH FOR PROPOSED CONDITION - 10 YR STORM NODE 1 TO 2

Drainage Area = 2.28(Ac.) = 0.004 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 2.28(Ac.) = 0.004
Sq. Mi.

USER Entry of lag time in hours
Lag time = 0.118 Hr.
Lag time = 7.07 Min.
25% of lag time = 1.77 Min.
40% of lag time = 2.83 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
2.28	2.73	6.22

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
2.28	6.67	15.21

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.730(In)
Area Averaged 100-Year Rainfall = 6.670(In)

Point rain (area averaged) = 4.351(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 4.351(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.280 32.00 0.900
 Total Area Entered = 2.28 (Ac.)

RI	RI	Infil. Rate	Impervious	Adj. Infil. Rate	Area%	F
AMC2	AMC-2	(In/Hr)	(Dec.%)	(In/Hr)	(Dec.)	(In/Hr)
32.0	32.0	0.742	0.900	0.141	1.000	0.141
						Sum (F) = 0.141

Area averaged mean soil loss (F) (In/Hr) = 0.141

Minimum soil loss rate ((In/Hr)) = 0.070

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.180

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	70.741	10.815
2	0.167	141.483	40.485
3	0.250	212.224	22.894
4	0.333	282.965	8.943
5	0.417	353.707	5.437
6	0.500	424.448	3.595
7	0.583	495.190	2.417
8	0.667	565.931	1.879
9	0.750	636.672	1.322
10	0.833	707.414	0.930
11	0.917	778.155	0.712
12	1.000	848.896	0.572
		Sum = 100.000	Sum= 2.298

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max Low	Effective (In/Hr)
1	0.08	0.07	(0.250)	0.006
2	0.17	0.07	(0.249)	0.006
3	0.25	0.07	(0.248)	0.006
4	0.33	0.10	(0.247)	0.009
5	0.42	0.10	(0.246)	0.009
6	0.50	0.10	(0.245)	0.009
7	0.58	0.10	(0.244)	0.009
8	0.67	0.10	(0.243)	0.009
9	0.75	0.10	(0.242)	0.009
10	0.83	0.13	(0.241)	0.013
11	0.92	0.13	(0.240)	0.013
12	1.00	0.13	(0.239)	0.013
13	1.08	0.10	(0.238)	0.009
14	1.17	0.10	(0.238)	0.009
15	1.25	0.10	(0.237)	0.009
16	1.33	0.10	(0.236)	0.009
17	1.42	0.10	(0.235)	0.009
18	1.50	0.10	(0.234)	0.009
19	1.58	0.10	(0.233)	0.009

20	1.67	0.10	0.052	(0.232)	0.009	0.043
21	1.75	0.10	0.052	(0.231)	0.009	0.043
22	1.83	0.13	0.070	(0.230)	0.013	0.057
23	1.92	0.13	0.070	(0.229)	0.013	0.057
24	2.00	0.13	0.070	(0.228)	0.013	0.057
25	2.08	0.13	0.070	(0.227)	0.013	0.057
26	2.17	0.13	0.070	(0.226)	0.013	0.057
27	2.25	0.13	0.070	(0.225)	0.013	0.057
28	2.33	0.13	0.070	(0.224)	0.013	0.057
29	2.42	0.13	0.070	(0.224)	0.013	0.057
30	2.50	0.13	0.070	(0.223)	0.013	0.057
31	2.58	0.17	0.087	(0.222)	0.016	0.071
32	2.67	0.17	0.087	(0.221)	0.016	0.071
33	2.75	0.17	0.087	(0.220)	0.016	0.071
34	2.83	0.17	0.087	(0.219)	0.016	0.071
35	2.92	0.17	0.087	(0.218)	0.016	0.071
36	3.00	0.17	0.087	(0.217)	0.016	0.071
37	3.08	0.17	0.087	(0.216)	0.016	0.071
38	3.17	0.17	0.087	(0.215)	0.016	0.071
39	3.25	0.17	0.087	(0.215)	0.016	0.071
40	3.33	0.17	0.087	(0.214)	0.016	0.071
41	3.42	0.17	0.087	(0.213)	0.016	0.071
42	3.50	0.17	0.087	(0.212)	0.016	0.071
43	3.58	0.17	0.087	(0.211)	0.016	0.071
44	3.67	0.17	0.087	(0.210)	0.016	0.071
45	3.75	0.17	0.087	(0.209)	0.016	0.071
46	3.83	0.20	0.104	(0.208)	0.019	0.086
47	3.92	0.20	0.104	(0.207)	0.019	0.086
48	4.00	0.20	0.104	(0.207)	0.019	0.086
49	4.08	0.20	0.104	(0.206)	0.019	0.086
50	4.17	0.20	0.104	(0.205)	0.019	0.086
51	4.25	0.20	0.104	(0.204)	0.019	0.086
52	4.33	0.23	0.122	(0.203)	0.022	0.100
53	4.42	0.23	0.122	(0.202)	0.022	0.100
54	4.50	0.23	0.122	(0.201)	0.022	0.100
55	4.58	0.23	0.122	(0.200)	0.022	0.100
56	4.67	0.23	0.122	(0.200)	0.022	0.100
57	4.75	0.23	0.122	(0.199)	0.022	0.100
58	4.83	0.27	0.139	(0.198)	0.025	0.114
59	4.92	0.27	0.139	(0.197)	0.025	0.114
60	5.00	0.27	0.139	(0.196)	0.025	0.114
61	5.08	0.20	0.104	(0.195)	0.019	0.086
62	5.17	0.20	0.104	(0.194)	0.019	0.086
63	5.25	0.20	0.104	(0.194)	0.019	0.086
64	5.33	0.23	0.122	(0.193)	0.022	0.100
65	5.42	0.23	0.122	(0.192)	0.022	0.100
66	5.50	0.23	0.122	(0.191)	0.022	0.100
67	5.58	0.27	0.139	(0.190)	0.025	0.114
68	5.67	0.27	0.139	(0.189)	0.025	0.114
69	5.75	0.27	0.139	(0.189)	0.025	0.114
70	5.83	0.27	0.139	(0.188)	0.025	0.114
71	5.92	0.27	0.139	(0.187)	0.025	0.114
72	6.00	0.27	0.139	(0.186)	0.025	0.114
73	6.08	0.30	0.157	(0.185)	0.028	0.128
74	6.17	0.30	0.157	(0.184)	0.028	0.128
75	6.25	0.30	0.157	(0.184)	0.028	0.128
76	6.33	0.30	0.157	(0.183)	0.028	0.128
77	6.42	0.30	0.157	(0.182)	0.028	0.128
78	6.50	0.30	0.157	(0.181)	0.028	0.128
79	6.58	0.33	0.174	(0.180)	0.031	0.143
80	6.67	0.33	0.174	(0.180)	0.031	0.143
81	6.75	0.33	0.174	(0.179)	0.031	0.143
82	6.83	0.33	0.174	(0.178)	0.031	0.143

83	6.92	0.33	0.174	(0.177)	0.031	0.143
84	7.00	0.33	0.174	(0.176)	0.031	0.143
85	7.08	0.33	0.174	(0.176)	0.031	0.143
86	7.17	0.33	0.174	(0.175)	0.031	0.143
87	7.25	0.33	0.174	(0.174)	0.031	0.143
88	7.33	0.37	0.191	(0.173)	0.034	0.157
89	7.42	0.37	0.191	(0.172)	0.034	0.157
90	7.50	0.37	0.191	(0.172)	0.034	0.157
91	7.58	0.40	0.209	(0.171)	0.038	0.171
92	7.67	0.40	0.209	(0.170)	0.038	0.171
93	7.75	0.40	0.209	(0.169)	0.038	0.171
94	7.83	0.43	0.226	(0.168)	0.041	0.186
95	7.92	0.43	0.226	(0.168)	0.041	0.186
96	8.00	0.43	0.226	(0.167)	0.041	0.186
97	8.08	0.50	0.261	(0.166)	0.047	0.214
98	8.17	0.50	0.261	(0.165)	0.047	0.214
99	8.25	0.50	0.261	(0.165)	0.047	0.214
100	8.33	0.50	0.261	(0.164)	0.047	0.214
101	8.42	0.50	0.261	(0.163)	0.047	0.214
102	8.50	0.50	0.261	(0.162)	0.047	0.214
103	8.58	0.53	0.278	(0.161)	0.050	0.228
104	8.67	0.53	0.278	(0.161)	0.050	0.228
105	8.75	0.53	0.278	(0.160)	0.050	0.228
106	8.83	0.57	0.296	(0.159)	0.053	0.243
107	8.92	0.57	0.296	(0.158)	0.053	0.243
108	9.00	0.57	0.296	(0.158)	0.053	0.243
109	9.08	0.63	0.331	(0.157)	0.060	0.271
110	9.17	0.63	0.331	(0.156)	0.060	0.271
111	9.25	0.63	0.331	(0.155)	0.060	0.271
112	9.33	0.67	0.348	(0.155)	0.063	0.285
113	9.42	0.67	0.348	(0.154)	0.063	0.285
114	9.50	0.67	0.348	(0.153)	0.063	0.285
115	9.58	0.70	0.365	(0.153)	0.066	0.300
116	9.67	0.70	0.365	(0.152)	0.066	0.300
117	9.75	0.70	0.365	(0.151)	0.066	0.300
118	9.83	0.73	0.383	(0.150)	0.069	0.314
119	9.92	0.73	0.383	(0.150)	0.069	0.314
120	10.00	0.73	0.383	(0.149)	0.069	0.314
121	10.08	0.50	0.261	(0.148)	0.047	0.214
122	10.17	0.50	0.261	(0.147)	0.047	0.214
123	10.25	0.50	0.261	(0.147)	0.047	0.214
124	10.33	0.50	0.261	(0.146)	0.047	0.214
125	10.42	0.50	0.261	(0.145)	0.047	0.214
126	10.50	0.50	0.261	(0.145)	0.047	0.214
127	10.58	0.67	0.348	(0.144)	0.063	0.285
128	10.67	0.67	0.348	(0.143)	0.063	0.285
129	10.75	0.67	0.348	(0.142)	0.063	0.285
130	10.83	0.67	0.348	(0.142)	0.063	0.285
131	10.92	0.67	0.348	(0.141)	0.063	0.285
132	11.00	0.67	0.348	(0.140)	0.063	0.285
133	11.08	0.63	0.331	(0.140)	0.060	0.271
134	11.17	0.63	0.331	(0.139)	0.060	0.271
135	11.25	0.63	0.331	(0.138)	0.060	0.271
136	11.33	0.63	0.331	(0.138)	0.060	0.271
137	11.42	0.63	0.331	(0.137)	0.060	0.271
138	11.50	0.63	0.331	(0.136)	0.060	0.271
139	11.58	0.57	0.296	(0.136)	0.053	0.243
140	11.67	0.57	0.296	(0.135)	0.053	0.243
141	11.75	0.57	0.296	(0.134)	0.053	0.243
142	11.83	0.60	0.313	(0.134)	0.056	0.257
143	11.92	0.60	0.313	(0.133)	0.056	0.257
144	12.00	0.60	0.313	(0.132)	0.056	0.257
145	12.08	0.83	0.435	(0.132)	0.078	0.357

146	12.17	0.83	0.435	(0.131)	0.078	0.357
147	12.25	0.83	0.435	(0.130)	0.078	0.357
148	12.33	0.87	0.452	(0.130)	0.081	0.371
149	12.42	0.87	0.452	(0.129)	0.081	0.371
150	12.50	0.87	0.452	(0.128)	0.081	0.371
151	12.58	0.93	0.487	(0.128)	0.088	0.400
152	12.67	0.93	0.487	(0.127)	0.088	0.400
153	12.75	0.93	0.487	(0.126)	0.088	0.400
154	12.83	0.97	0.505	(0.126)	0.091	0.414
155	12.92	0.97	0.505	(0.125)	0.091	0.414
156	13.00	0.97	0.505	(0.124)	0.091	0.414
157	13.08	1.13	0.592	(0.124)	0.107	0.485
158	13.17	1.13	0.592	(0.123)	0.107	0.485
159	13.25	1.13	0.592	(0.123)	0.107	0.485
160	13.33	1.13	0.592	(0.122)	0.107	0.485
161	13.42	1.13	0.592	(0.121)	0.107	0.485
162	13.50	1.13	0.592	(0.121)	0.107	0.485
163	13.58	0.77	0.400	(0.120)	0.072	0.328
164	13.67	0.77	0.400	(0.120)	0.072	0.328
165	13.75	0.77	0.400	(0.119)	0.072	0.328
166	13.83	0.77	0.400	(0.118)	0.072	0.328
167	13.92	0.77	0.400	(0.118)	0.072	0.328
168	14.00	0.77	0.400	(0.117)	0.072	0.328
169	14.08	0.90	0.470	(0.117)	0.085	0.385
170	14.17	0.90	0.470	(0.116)	0.085	0.385
171	14.25	0.90	0.470	(0.115)	0.085	0.385
172	14.33	0.87	0.452	(0.115)	0.081	0.371
173	14.42	0.87	0.452	(0.114)	0.081	0.371
174	14.50	0.87	0.452	(0.114)	0.081	0.371
175	14.58	0.87	0.452	(0.113)	0.081	0.371
176	14.67	0.87	0.452	(0.112)	0.081	0.371
177	14.75	0.87	0.452	(0.112)	0.081	0.371
178	14.83	0.83	0.435	(0.111)	0.078	0.357
179	14.92	0.83	0.435	(0.111)	0.078	0.357
180	15.00	0.83	0.435	(0.110)	0.078	0.357
181	15.08	0.80	0.418	(0.110)	0.075	0.343
182	15.17	0.80	0.418	(0.109)	0.075	0.343
183	15.25	0.80	0.418	(0.108)	0.075	0.343
184	15.33	0.77	0.400	(0.108)	0.072	0.328
185	15.42	0.77	0.400	(0.107)	0.072	0.328
186	15.50	0.77	0.400	(0.107)	0.072	0.328
187	15.58	0.63	0.331	(0.106)	0.060	0.271
188	15.67	0.63	0.331	(0.106)	0.060	0.271
189	15.75	0.63	0.331	(0.105)	0.060	0.271
190	15.83	0.63	0.331	(0.105)	0.060	0.271
191	15.92	0.63	0.331	(0.104)	0.060	0.271
192	16.00	0.63	0.331	(0.104)	0.060	0.271
193	16.08	0.13	0.070	(0.103)	0.013	0.057
194	16.17	0.13	0.070	(0.102)	0.013	0.057
195	16.25	0.13	0.070	(0.102)	0.013	0.057
196	16.33	0.13	0.070	(0.101)	0.013	0.057
197	16.42	0.13	0.070	(0.101)	0.013	0.057
198	16.50	0.13	0.070	(0.100)	0.013	0.057
199	16.58	0.10	0.052	(0.100)	0.009	0.043
200	16.67	0.10	0.052	(0.099)	0.009	0.043
201	16.75	0.10	0.052	(0.099)	0.009	0.043
202	16.83	0.10	0.052	(0.098)	0.009	0.043
203	16.92	0.10	0.052	(0.098)	0.009	0.043
204	17.00	0.10	0.052	(0.097)	0.009	0.043
205	17.08	0.17	0.087	(0.097)	0.016	0.071
206	17.17	0.17	0.087	(0.096)	0.016	0.071
207	17.25	0.17	0.087	(0.096)	0.016	0.071
208	17.33	0.17	0.087	(0.095)	0.016	0.071

209	17.42	0.17	0.087	(0.095)	0.016	0.071
210	17.50	0.17	0.087	(0.094)	0.016	0.071
211	17.58	0.17	0.087	(0.094)	0.016	0.071
212	17.67	0.17	0.087	(0.094)	0.016	0.071
213	17.75	0.17	0.087	(0.093)	0.016	0.071
214	17.83	0.13	0.070	(0.093)	0.013	0.057
215	17.92	0.13	0.070	(0.092)	0.013	0.057
216	18.00	0.13	0.070	(0.092)	0.013	0.057
217	18.08	0.13	0.070	(0.091)	0.013	0.057
218	18.17	0.13	0.070	(0.091)	0.013	0.057
219	18.25	0.13	0.070	(0.090)	0.013	0.057
220	18.33	0.13	0.070	(0.090)	0.013	0.057
221	18.42	0.13	0.070	(0.089)	0.013	0.057
222	18.50	0.13	0.070	(0.089)	0.013	0.057
223	18.58	0.10	0.052	(0.089)	0.009	0.043
224	18.67	0.10	0.052	(0.088)	0.009	0.043
225	18.75	0.10	0.052	(0.088)	0.009	0.043
226	18.83	0.07	0.035	(0.087)	0.006	0.029
227	18.92	0.07	0.035	(0.087)	0.006	0.029
228	19.00	0.07	0.035	(0.087)	0.006	0.029
229	19.08	0.10	0.052	(0.086)	0.009	0.043
230	19.17	0.10	0.052	(0.086)	0.009	0.043
231	19.25	0.10	0.052	(0.085)	0.009	0.043
232	19.33	0.13	0.070	(0.085)	0.013	0.057
233	19.42	0.13	0.070	(0.085)	0.013	0.057
234	19.50	0.13	0.070	(0.084)	0.013	0.057
235	19.58	0.10	0.052	(0.084)	0.009	0.043
236	19.67	0.10	0.052	(0.083)	0.009	0.043
237	19.75	0.10	0.052	(0.083)	0.009	0.043
238	19.83	0.07	0.035	(0.083)	0.006	0.029
239	19.92	0.07	0.035	(0.082)	0.006	0.029
240	20.00	0.07	0.035	(0.082)	0.006	0.029
241	20.08	0.10	0.052	(0.082)	0.009	0.043
242	20.17	0.10	0.052	(0.081)	0.009	0.043
243	20.25	0.10	0.052	(0.081)	0.009	0.043
244	20.33	0.10	0.052	(0.080)	0.009	0.043
245	20.42	0.10	0.052	(0.080)	0.009	0.043
246	20.50	0.10	0.052	(0.080)	0.009	0.043
247	20.58	0.10	0.052	(0.079)	0.009	0.043
248	20.67	0.10	0.052	(0.079)	0.009	0.043
249	20.75	0.10	0.052	(0.079)	0.009	0.043
250	20.83	0.07	0.035	(0.078)	0.006	0.029
251	20.92	0.07	0.035	(0.078)	0.006	0.029
252	21.00	0.07	0.035	(0.078)	0.006	0.029
253	21.08	0.10	0.052	(0.078)	0.009	0.043
254	21.17	0.10	0.052	(0.077)	0.009	0.043
255	21.25	0.10	0.052	(0.077)	0.009	0.043
256	21.33	0.07	0.035	(0.077)	0.006	0.029
257	21.42	0.07	0.035	(0.076)	0.006	0.029
258	21.50	0.07	0.035	(0.076)	0.006	0.029
259	21.58	0.10	0.052	(0.076)	0.009	0.043
260	21.67	0.10	0.052	(0.075)	0.009	0.043
261	21.75	0.10	0.052	(0.075)	0.009	0.043
262	21.83	0.07	0.035	(0.075)	0.006	0.029
263	21.92	0.07	0.035	(0.075)	0.006	0.029
264	22.00	0.07	0.035	(0.074)	0.006	0.029
265	22.08	0.10	0.052	(0.074)	0.009	0.043
266	22.17	0.10	0.052	(0.074)	0.009	0.043
267	22.25	0.10	0.052	(0.074)	0.009	0.043
268	22.33	0.07	0.035	(0.073)	0.006	0.029
269	22.42	0.07	0.035	(0.073)	0.006	0.029
270	22.50	0.07	0.035	(0.073)	0.006	0.029
271	22.58	0.07	0.035	(0.073)	0.006	0.029

272	22.67	0.07	0.035	(0.073)	0.006	0.029
273	22.75	0.07	0.035	(0.072)	0.006	0.029
274	22.83	0.07	0.035	(0.072)	0.006	0.029
275	22.92	0.07	0.035	(0.072)	0.006	0.029
276	23.00	0.07	0.035	(0.072)	0.006	0.029
277	23.08	0.07	0.035	(0.072)	0.006	0.029
278	23.17	0.07	0.035	(0.072)	0.006	0.029
279	23.25	0.07	0.035	(0.071)	0.006	0.029
280	23.33	0.07	0.035	(0.071)	0.006	0.029
281	23.42	0.07	0.035	(0.071)	0.006	0.029
282	23.50	0.07	0.035	(0.071)	0.006	0.029
283	23.58	0.07	0.035	(0.071)	0.006	0.029
284	23.67	0.07	0.035	(0.071)	0.006	0.029
285	23.75	0.07	0.035	(0.071)	0.006	0.029
286	23.83	0.07	0.035	(0.071)	0.006	0.029
287	23.92	0.07	0.035	(0.071)	0.006	0.029
288	24.00	0.07	0.035	(0.070)	0.006	0.029

(Loss Rate Not Used)

Sum = 100.0 Sum = 42.8

Flood volume = Effective rainfall 3.57(In)
times area 2.3(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)

Total soil loss = 0.78(In)

Total soil loss = 0.149(Ac.Ft)

Total rainfall = 4.35(In)

Flood volume = 29528.2 Cubic Feet

Total soil loss = 6481.8 Cubic Feet

Peak flow rate of this hydrograph = 1.102(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.01	Q				
0+10	0.0003	0.03	Q				
0+15	0.0006	0.05	Q				
0+20	0.0010	0.06	Q				
0+25	0.0015	0.07	Q				
0+30	0.0021	0.08	Q				
0+35	0.0027	0.09	Q				
0+40	0.0034	0.09	Q				
0+45	0.0040	0.09	Q				
0+50	0.0047	0.10	Q				
0+55	0.0055	0.11	Q				
1+ 0	0.0063	0.12	Q				
1+ 5	0.0072	0.12	Q				
1+10	0.0079	0.11	Q				
1+15	0.0086	0.10	Q				
1+20	0.0093	0.10	Q				
1+25	0.0100	0.10	Q				
1+30	0.0107	0.10	Q				
1+35	0.0114	0.10	Q				
1+40	0.0121	0.10	Q				
1+45	0.0128	0.10	Q				
1+50	0.0135	0.10	Q				
1+55	0.0143	0.12	Q				
2+ 0	0.0151	0.12	Q				
2+ 5	0.0160	0.13	Q				

2+10	0.0169	0.13	Q				
2+15	0.0178	0.13	QV				
2+20	0.0187	0.13	QV				
2+25	0.0196	0.13	QV				
2+30	0.0205	0.13	QV				
2+35	0.0214	0.13	QV				
2+40	0.0224	0.15	QV				
2+45	0.0235	0.16	QV				
2+50	0.0246	0.16	QV				
2+55	0.0257	0.16	QV				
3+ 0	0.0268	0.16	QV				
3+ 5	0.0279	0.16	QV				
3+10	0.0290	0.16	QV				
3+15	0.0301	0.16	QV				
3+20	0.0313	0.16	QV				
3+25	0.0324	0.16	QV				
3+30	0.0335	0.16	QV				
3+35	0.0347	0.16	Q V				
3+40	0.0358	0.16	Q V				
3+45	0.0369	0.16	Q V				
3+50	0.0381	0.17	Q V				
3+55	0.0393	0.18	Q V				
4+ 0	0.0406	0.19	Q V				
4+ 5	0.0419	0.19	Q V				
4+10	0.0433	0.19	Q V				
4+15	0.0446	0.19	Q V				
4+20	0.0460	0.20	Q V				
4+25	0.0474	0.21	Q V				
4+30	0.0489	0.22	Q V				
4+35	0.0505	0.22	Q V				
4+40	0.0520	0.23	Q V				
4+45	0.0536	0.23	Q V				
4+50	0.0552	0.23	Q V				
4+55	0.0569	0.25	Q V				
5+ 0	0.0586	0.25	Q V				
5+ 5	0.0604	0.25	Q V				
5+10	0.0619	0.22	Q V				
5+15	0.0634	0.21	Q V				
5+20	0.0648	0.21	Q V				
5+25	0.0663	0.22	Q V				
5+30	0.0679	0.23	Q V				
5+35	0.0695	0.23	Q V				
5+40	0.0711	0.24	Q V				
5+45	0.0729	0.25	Q V				
5+50	0.0746	0.26	Q V				
5+55	0.0764	0.26	Q V				
6+ 0	0.0782	0.26	Q V				
6+ 5	0.0800	0.26	Q V				
6+10	0.0819	0.28	Q V				
6+15	0.0839	0.29	Q V				
6+20	0.0859	0.29	Q V				
6+25	0.0879	0.29	Q V				
6+30	0.0899	0.29	Q V				
6+35	0.0920	0.30	Q V				
6+40	0.0941	0.31	Q V				
6+45	0.0963	0.32	Q V				
6+50	0.0985	0.32	Q V				
6+55	0.1008	0.32	Q V				
7+ 0	0.1030	0.33	Q V				
7+ 5	0.1052	0.33	Q V				
7+10	0.1075	0.33	Q V				
7+15	0.1098	0.33	Q V				
7+20	0.1120	0.33	Q V				

7+25	0.1144	0.34	Q	V				
7+30	0.1168	0.35	Q	V				
7+35	0.1193	0.36	Q	V				
7+40	0.1219	0.37	Q	V				
7+45	0.1245	0.38	Q	V				
7+50	0.1272	0.39	Q	V				
7+55	0.1300	0.41	Q	V				
8+ 0	0.1329	0.41	Q	V				
8+ 5	0.1358	0.43	Q	V				
8+10	0.1389	0.46	Q	V				
8+15	0.1422	0.47	Q	V				
8+20	0.1455	0.48	Q	V				
8+25	0.1488	0.48	Q	V				
8+30	0.1521	0.49	Q	V				
8+35	0.1555	0.49	Q	V				
8+40	0.1590	0.51	Q	V				
8+45	0.1626	0.52	Q	V				
8+50	0.1662	0.52	Q	V				
8+55	0.1699	0.54	Q	V				
9+ 0	0.1736	0.55	Q	V				
9+ 5	0.1775	0.56	Q	V				
9+10	0.1815	0.59	Q	V				
9+15	0.1857	0.60	Q	V				
9+20	0.1899	0.61	Q	V				
9+25	0.1942	0.63	Q	V				
9+30	0.1987	0.64	Q	V				
9+35	0.2031	0.65	Q	V				
9+40	0.2077	0.67	Q	V				
9+45	0.2124	0.68	Q	V				
9+50	0.2171	0.68	Q	V				
9+55	0.2219	0.70	Q	V				
10+ 0	0.2268	0.71	Q	V				
10+ 5	0.2316	0.69	Q	V				
10+10	0.2357	0.60	Q	V				
10+15	0.2395	0.55	Q	V				
10+20	0.2431	0.53	Q	V				
10+25	0.2467	0.52	Q	V				
10+30	0.2502	0.51	Q	V				
10+35	0.2538	0.52	Q	V				
10+40	0.2578	0.58	Q	V				
10+45	0.2621	0.62	Q	V				
10+50	0.2664	0.63	Q	V				
10+55	0.2708	0.64	Q	V				
11+ 0	0.2752	0.64	Q	V				
11+ 5	0.2797	0.64	Q	V				
11+10	0.2840	0.63	Q	V				
11+15	0.2884	0.63	Q	V				
11+20	0.2927	0.63	Q	V				
11+25	0.2970	0.63	Q	V				
11+30	0.3013	0.63	Q	V				
11+35	0.3056	0.62	Q	V				
11+40	0.3096	0.59	Q	V				
11+45	0.3136	0.58	Q	V				
11+50	0.3175	0.57	Q	V				
11+55	0.3215	0.58	Q	V				
12+ 0	0.3256	0.59	Q	V				
12+ 5	0.3298	0.61	Q	V				
12+10	0.3347	0.71	Q	V				
12+15	0.3399	0.76	Q	V				
12+20	0.3453	0.78	Q	V				
12+25	0.3509	0.81	Q	V				
12+30	0.3566	0.83	Q	V				
12+35	0.3624	0.84	Q	V				

12+40	0.3684	0.87	Q		V		
12+45	0.3746	0.89	Q		V		
12+50	0.3808	0.91	Q		V		
12+55	0.3872	0.93	Q		V		
13+ 0	0.3936	0.94	Q		V		
13+ 5	0.4002	0.96	Q		V		
13+10	0.4073	1.03	Q		V		
13+15	0.4147	1.07	Q		V		
13+20	0.4222	1.09	Q		V		
13+25	0.4297	1.10	Q		V		
13+30	0.4373	1.10	Q		V		
13+35	0.4446	1.07	Q		V		
13+40	0.4510	0.92	Q		V		
13+45	0.4568	0.84	Q		V		
13+50	0.4624	0.81	Q		V		
13+55	0.4679	0.79	Q		V		
14+ 0	0.4733	0.78	Q		V		
14+ 5	0.4787	0.79	Q		V		
14+10	0.4845	0.83	Q		V		
14+15	0.4904	0.86	Q		V		
14+20	0.4964	0.86	Q		V		
14+25	0.5022	0.86	Q		V		
14+30	0.5081	0.85	Q		V		
14+35	0.5140	0.85	Q		V		
14+40	0.5198	0.85	Q		V		
14+45	0.5257	0.85	Q		V		
14+50	0.5316	0.85	Q		V		
14+55	0.5373	0.84	Q		V		
15+ 0	0.5430	0.83	Q		V		
15+ 5	0.5487	0.82	Q		V		
15+10	0.5543	0.81	Q		V		
15+15	0.5598	0.80	Q		V		
15+20	0.5652	0.79	Q		V		
15+25	0.5706	0.78	Q		V		
15+30	0.5758	0.77	Q		V		
15+35	0.5810	0.75	Q		V		
15+40	0.5858	0.69	Q		V		
15+45	0.5903	0.66	Q		V		
15+50	0.5948	0.65	Q		V		
15+55	0.5992	0.64	Q		V		
16+ 0	0.6035	0.63	Q		V		
16+ 5	0.6075	0.58	Q		V		
16+10	0.6101	0.38	Q		V		
16+15	0.6119	0.26	Q		V		
16+20	0.6134	0.22	Q		V		
16+25	0.6147	0.19	Q		V		
16+30	0.6159	0.17	Q		V		
16+35	0.6169	0.15	Q		V		
16+40	0.6178	0.13	Q		V		
16+45	0.6186	0.12	Q		V		
16+50	0.6194	0.11	Q		V		
16+55	0.6201	0.10	Q		V		
17+ 0	0.6208	0.10	Q		V		
17+ 5	0.6216	0.11	Q		V		
17+10	0.6225	0.13	Q		V		
17+15	0.6235	0.15	Q		V		
17+20	0.6245	0.15	Q		V		
17+25	0.6256	0.16	Q		V		
17+30	0.6267	0.16	Q		V		
17+35	0.6278	0.16	Q		V		
17+40	0.6289	0.16	Q		V		
17+45	0.6301	0.16	Q		V		
17+50	0.6312	0.16	Q		V		

17+55	0.6322	0.15	Q				V	
18+ 0	0.6331	0.14	Q				V	
18+ 5	0.6341	0.14	Q				V	
18+10	0.6350	0.13	Q				V	
18+15	0.6359	0.13	Q				V	
18+20	0.6368	0.13	Q				V	
18+25	0.6378	0.13	Q				V	
18+30	0.6387	0.13	Q				V	
18+35	0.6395	0.13	Q				V	
18+40	0.6403	0.11	Q				V	
18+45	0.6411	0.11	Q				V	
18+50	0.6418	0.10	Q				V	
18+55	0.6424	0.09	Q				V	
19+ 0	0.6429	0.08	Q				V	
19+ 5	0.6434	0.08	Q				V	
19+10	0.6440	0.09	Q				V	
19+15	0.6446	0.09	Q				V	
19+20	0.6453	0.10	Q				V	
19+25	0.6461	0.11	Q				V	
19+30	0.6469	0.12	Q				V	
19+35	0.6478	0.12	Q				V	
19+40	0.6485	0.11	Q				V	
19+45	0.6492	0.10	Q				V	
19+50	0.6499	0.10	Q				V	
19+55	0.6505	0.08	Q				V	
20+ 0	0.6510	0.08	Q				V	
20+ 5	0.6515	0.08	Q				V	
20+10	0.6521	0.09	Q				V	
20+15	0.6528	0.09	Q				V	
20+20	0.6534	0.10	Q				V	
20+25	0.6541	0.10	Q				V	
20+30	0.6548	0.10	Q				V	
20+35	0.6554	0.10	Q				V	
20+40	0.6561	0.10	Q				V	
20+45	0.6568	0.10	Q				V	
20+50	0.6574	0.09	Q				V	
20+55	0.6580	0.08	Q				V	
21+ 0	0.6585	0.07	Q				V	
21+ 5	0.6590	0.07	Q				V	
21+10	0.6596	0.09	Q				V	
21+15	0.6602	0.09	Q				V	
21+20	0.6609	0.09	Q				V	
21+25	0.6614	0.08	Q				V	
21+30	0.6619	0.07	Q				V	
21+35	0.6624	0.07	Q				V	
21+40	0.6630	0.09	Q				V	
21+45	0.6636	0.09	Q				V	
21+50	0.6643	0.09	Q				V	
21+55	0.6648	0.08	Q				V	
22+ 0	0.6653	0.07	Q				V	
22+ 5	0.6658	0.07	Q				V	
22+10	0.6664	0.09	Q				V	
22+15	0.6670	0.09	Q				V	
22+20	0.6677	0.09	Q				V	
22+25	0.6682	0.08	Q				V	
22+30	0.6687	0.07	Q				V	
22+35	0.6692	0.07	Q				V	
22+40	0.6696	0.07	Q				V	
22+45	0.6701	0.07	Q				V	
22+50	0.6706	0.07	Q				V	
22+55	0.6710	0.07	Q				V	
23+ 0	0.6715	0.07	Q				V	
23+ 5	0.6719	0.07	Q				V	

23+10	0.6724	0.07	Q				V
23+15	0.6728	0.07	Q				V
23+20	0.6733	0.07	Q				V
23+25	0.6737	0.07	Q				V
23+30	0.6742	0.07	Q				V
23+35	0.6747	0.07	Q				V
23+40	0.6751	0.07	Q				V
23+45	0.6756	0.07	Q				V
23+50	0.6760	0.07	Q				V
23+55	0.6765	0.07	Q				V
24+ 0	0.6769	0.07	Q				V
24+ 5	0.6773	0.06	Q				V
24+10	0.6775	0.03	Q				V
24+15	0.6777	0.02	Q				V
24+20	0.6777	0.01	Q				V
24+25	0.6778	0.01	Q				V
24+30	0.6778	0.01	Q				V
24+35	0.6778	0.00	Q				V
24+40	0.6779	0.00	Q				V
24+45	0.6779	0.00	Q				V
24+50	0.6779	0.00	Q				V
24+55	0.6779	0.00	Q				V

Appendix A - Proposed Condition
-100 Yr Storm

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 12/17/18 File:RATPR100.out

RATIONAL METHOD FOR PROPOSED CONDITION - 100 YR STORM

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

English (in-lb) Units used in input data file

Program License Serial Number 6389

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)

For the [Beaumont] area used.

10 year storm 10 minute intensity = 2.300(In/Hr)

10 year storm 60 minute intensity = 0.890(In/Hr)

100 year storm 10 minute intensity = 3.410(In/Hr)

100 year storm 60 minute intensity = 1.320(In/Hr)

Storm event year = 100.0

Calculated rainfall intensity data:

1 hour intensity = 1.320(In/Hr)

Slope of intensity duration curve = 0.5300

+++++
Process from Point/Station 1.000 to Point/Station 2.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 381.000(Ft.)
Top (of initial area) elevation = 502.450(Ft.)
Bottom (of initial area) elevation = 494.820(Ft.)
Difference in elevation = 7.630(Ft.)
Slope = 0.02003 s(percent)= 2.00
 $TC = k(0.300)*[(length^3)/(elevation\ change)]^{0.2}$
Initial area time of concentration = 7.066 min.
Rainfall intensity = 4.101(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 1.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 52.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 8.222(CFS)
Total initial stream area = 2.280(Ac.)
Pervious area fraction = 0.100
End of computations, total study area = 2.28 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(A_p) = 0.100
Area averaged RI index number = 32.0

Unit Hydrograph Analysis

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Study date 12/17/18 File: UNPR10024100.out

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

Program License Serial Number 6389

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

English Units used in output format

UNIT HYDROGRAPH FOR PROPOSED CONDITION - 100 YR STORM NODE 1 TO 2

Drainage Area = 2.28(Ac.) = 0.004 Sq. Mi.
Sq. Mi. Drainage Area for Depth-Area Areal Adjustment = 2.28(Ac.) = 0.004

USER Entry of lag time in hours
Lag time = 0.118 Hr.
Lag time = 7.07 Min.
25% of lag time = 1.77 Min.
40% of lag time = 2.83 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
2.28	2.73	6.22

100 YEAR Area rainfall data:

Area(Ac.) [1]	Rainfall(In) [2]	Weighting[1*2]
2.28	6.67	15.21

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.730(In)
Area Averaged 100-Year Rainfall = 6.670(In)

Point rain (area averaged) = 6.670(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 6.670(In)

Sub-Area Data:

Area(Ac.) Runoff Index Impervious %
 2.280 32.00 0.900
 Total Area Entered = 2.28 (Ac.)

RI RI Infil. Rate Impervious Adj. Infil. Rate Area% F
 AMC2 AMC-3 (In/Hr) (Dec.%) (In/Hr) (Dec.) (In/Hr)
 32.0 52.0 0.552 0.900 0.105 1.000 0.105
 Sum (F) = 0.105

Area averaged mean soil loss (F) (In/Hr) = 0.105

Minimum soil loss rate ((In/Hr)) = 0.052

(for 24 hour storm duration)

Soil low loss rate (decimal) = 0.180

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

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	70.741	10.815
2	0.167	141.483	40.485
3	0.250	212.224	22.894
4	0.333	282.965	8.943
5	0.417	353.707	5.437
6	0.500	424.448	3.595
7	0.583	495.190	2.417
8	0.667	565.931	1.879
9	0.750	636.672	1.322
10	0.833	707.414	0.930
11	0.917	778.155	0.712
12	1.000	848.896	0.572
		Sum = 100.000	Sum= 2.298

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

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max Low	Effective (In/Hr)
1	0.08	0.07	(0.186) 0.010	0.044
2	0.17	0.07	(0.185) 0.010	0.044
3	0.25	0.07	(0.184) 0.010	0.044
4	0.33	0.10	(0.184) 0.014	0.066
5	0.42	0.10	(0.183) 0.014	0.066
6	0.50	0.10	(0.182) 0.014	0.066
7	0.58	0.10	(0.181) 0.014	0.066
8	0.67	0.10	(0.181) 0.014	0.066
9	0.75	0.10	(0.180) 0.014	0.066
10	0.83	0.13	(0.179) 0.019	0.088
11	0.92	0.13	(0.179) 0.019	0.088
12	1.00	0.13	(0.178) 0.019	0.088
13	1.08	0.10	(0.177) 0.014	0.066
14	1.17	0.10	(0.177) 0.014	0.066
15	1.25	0.10	(0.176) 0.014	0.066
16	1.33	0.10	(0.175) 0.014	0.066
17	1.42	0.10	(0.174) 0.014	0.066
18	1.50	0.10	(0.174) 0.014	0.066
19	1.58	0.10	(0.173) 0.014	0.066

20	1.67	0.10	0.080	(0.172)	0.014	0.066
21	1.75	0.10	0.080	(0.172)	0.014	0.066
22	1.83	0.13	0.107	(0.171)	0.019	0.088
23	1.92	0.13	0.107	(0.170)	0.019	0.088
24	2.00	0.13	0.107	(0.170)	0.019	0.088
25	2.08	0.13	0.107	(0.169)	0.019	0.088
26	2.17	0.13	0.107	(0.168)	0.019	0.088
27	2.25	0.13	0.107	(0.168)	0.019	0.088
28	2.33	0.13	0.107	(0.167)	0.019	0.088
29	2.42	0.13	0.107	(0.166)	0.019	0.088
30	2.50	0.13	0.107	(0.166)	0.019	0.088
31	2.58	0.17	0.133	(0.165)	0.024	0.109
32	2.67	0.17	0.133	(0.164)	0.024	0.109
33	2.75	0.17	0.133	(0.163)	0.024	0.109
34	2.83	0.17	0.133	(0.163)	0.024	0.109
35	2.92	0.17	0.133	(0.162)	0.024	0.109
36	3.00	0.17	0.133	(0.161)	0.024	0.109
37	3.08	0.17	0.133	(0.161)	0.024	0.109
38	3.17	0.17	0.133	(0.160)	0.024	0.109
39	3.25	0.17	0.133	(0.159)	0.024	0.109
40	3.33	0.17	0.133	(0.159)	0.024	0.109
41	3.42	0.17	0.133	(0.158)	0.024	0.109
42	3.50	0.17	0.133	(0.157)	0.024	0.109
43	3.58	0.17	0.133	(0.157)	0.024	0.109
44	3.67	0.17	0.133	(0.156)	0.024	0.109
45	3.75	0.17	0.133	(0.156)	0.024	0.109
46	3.83	0.20	0.160	(0.155)	0.029	0.131
47	3.92	0.20	0.160	(0.154)	0.029	0.131
48	4.00	0.20	0.160	(0.154)	0.029	0.131
49	4.08	0.20	0.160	(0.153)	0.029	0.131
50	4.17	0.20	0.160	(0.152)	0.029	0.131
51	4.25	0.20	0.160	(0.152)	0.029	0.131
52	4.33	0.23	0.187	(0.151)	0.034	0.153
53	4.42	0.23	0.187	(0.150)	0.034	0.153
54	4.50	0.23	0.187	(0.150)	0.034	0.153
55	4.58	0.23	0.187	(0.149)	0.034	0.153
56	4.67	0.23	0.187	(0.148)	0.034	0.153
57	4.75	0.23	0.187	(0.148)	0.034	0.153
58	4.83	0.27	0.213	(0.147)	0.038	0.175
59	4.92	0.27	0.213	(0.146)	0.038	0.175
60	5.00	0.27	0.213	(0.146)	0.038	0.175
61	5.08	0.20	0.160	(0.145)	0.029	0.131
62	5.17	0.20	0.160	(0.145)	0.029	0.131
63	5.25	0.20	0.160	(0.144)	0.029	0.131
64	5.33	0.23	0.187	(0.143)	0.034	0.153
65	5.42	0.23	0.187	(0.143)	0.034	0.153
66	5.50	0.23	0.187	(0.142)	0.034	0.153
67	5.58	0.27	0.213	(0.141)	0.038	0.175
68	5.67	0.27	0.213	(0.141)	0.038	0.175
69	5.75	0.27	0.213	(0.140)	0.038	0.175
70	5.83	0.27	0.213	(0.140)	0.038	0.175
71	5.92	0.27	0.213	(0.139)	0.038	0.175
72	6.00	0.27	0.213	(0.138)	0.038	0.175
73	6.08	0.30	0.240	(0.138)	0.043	0.197
74	6.17	0.30	0.240	(0.137)	0.043	0.197
75	6.25	0.30	0.240	(0.137)	0.043	0.197
76	6.33	0.30	0.240	(0.136)	0.043	0.197
77	6.42	0.30	0.240	(0.135)	0.043	0.197
78	6.50	0.30	0.240	(0.135)	0.043	0.197
79	6.58	0.33	0.267	(0.134)	0.048	0.219
80	6.67	0.33	0.267	(0.133)	0.048	0.219
81	6.75	0.33	0.267	(0.133)	0.048	0.219
82	6.83	0.33	0.267	(0.132)	0.048	0.219

83	6.92	0.33	0.267	(0.132)	0.048	0.219
84	7.00	0.33	0.267	(0.131)	0.048	0.219
85	7.08	0.33	0.267	(0.130)	0.048	0.219
86	7.17	0.33	0.267	(0.130)	0.048	0.219
87	7.25	0.33	0.267	(0.129)	0.048	0.219
88	7.33	0.37	0.293	(0.129)	0.053	0.241
89	7.42	0.37	0.293	(0.128)	0.053	0.241
90	7.50	0.37	0.293	(0.128)	0.053	0.241
91	7.58	0.40	0.320	(0.127)	0.058	0.263
92	7.67	0.40	0.320	(0.126)	0.058	0.263
93	7.75	0.40	0.320	(0.126)	0.058	0.263
94	7.83	0.43	0.347	(0.125)	0.062	0.284
95	7.92	0.43	0.347	(0.125)	0.062	0.284
96	8.00	0.43	0.347	(0.124)	0.062	0.284
97	8.08	0.50	0.400	(0.123)	0.072	0.328
98	8.17	0.50	0.400	(0.123)	0.072	0.328
99	8.25	0.50	0.400	(0.122)	0.072	0.328
100	8.33	0.50	0.400	(0.122)	0.072	0.328
101	8.42	0.50	0.400	(0.121)	0.072	0.328
102	8.50	0.50	0.400	(0.121)	0.072	0.328
103	8.58	0.53	0.427	(0.120)	0.077	0.350
104	8.67	0.53	0.427	(0.119)	0.077	0.350
105	8.75	0.53	0.427	(0.119)	0.077	0.350
106	8.83	0.57	0.454	(0.118)	0.082	0.372
107	8.92	0.57	0.454	(0.118)	0.082	0.372
108	9.00	0.57	0.454	(0.117)	0.082	0.372
109	9.08	0.63	0.507	(0.117)	0.091	0.416
110	9.17	0.63	0.507	(0.116)	0.091	0.416
111	9.25	0.63	0.507	(0.116)	0.091	0.416
112	9.33	0.67	0.534	(0.115)	0.096	0.438
113	9.42	0.67	0.534	(0.114)	0.096	0.438
114	9.50	0.67	0.534	(0.114)	0.096	0.438
115	9.58	0.70	0.560	(0.113)	0.101	0.459
116	9.67	0.70	0.560	(0.113)	0.101	0.459
117	9.75	0.70	0.560	(0.112)	0.101	0.459
118	9.83	0.73	0.587	(0.112)	0.106	0.481
119	9.92	0.73	0.587	(0.111)	0.106	0.481
120	10.00	0.73	0.587	(0.111)	0.106	0.481
121	10.08	0.50	0.400	(0.110)	0.072	0.328
122	10.17	0.50	0.400	(0.110)	0.072	0.328
123	10.25	0.50	0.400	(0.109)	0.072	0.328
124	10.33	0.50	0.400	(0.109)	0.072	0.328
125	10.42	0.50	0.400	(0.108)	0.072	0.328
126	10.50	0.50	0.400	(0.107)	0.072	0.328
127	10.58	0.67	0.534	(0.107)	0.096	0.438
128	10.67	0.67	0.534	(0.106)	0.096	0.438
129	10.75	0.67	0.534	(0.106)	0.096	0.438
130	10.83	0.67	0.534	(0.105)	0.096	0.438
131	10.92	0.67	0.534	(0.105)	0.096	0.438
132	11.00	0.67	0.534	(0.104)	0.096	0.438
133	11.08	0.63	0.507	(0.104)	0.091	0.416
134	11.17	0.63	0.507	(0.103)	0.091	0.416
135	11.25	0.63	0.507	(0.103)	0.091	0.416
136	11.33	0.63	0.507	(0.102)	0.091	0.416
137	11.42	0.63	0.507	(0.102)	0.091	0.416
138	11.50	0.63	0.507	(0.101)	0.091	0.416
139	11.58	0.57	0.454	(0.101)	0.082	0.372
140	11.67	0.57	0.454	(0.100)	0.082	0.372
141	11.75	0.57	0.454	(0.100)	0.082	0.372
142	11.83	0.60	0.480	(0.099)	0.086	0.394
143	11.92	0.60	0.480	(0.099)	0.086	0.394
144	12.00	0.60	0.480	(0.098)	0.086	0.394
145	12.08	0.83	0.667	0.098 (0.120)		0.569

146	12.17	0.83	0.667	0.097	(0.120)	0.570
147	12.25	0.83	0.667	0.097	(0.120)	0.570
148	12.33	0.87	0.694	0.096	(0.125)	0.597
149	12.42	0.87	0.694	0.096	(0.125)	0.598
150	12.50	0.87	0.694	0.095	(0.125)	0.598
151	12.58	0.93	0.747	0.095	(0.134)	0.652
152	12.67	0.93	0.747	0.094	(0.134)	0.653
153	12.75	0.93	0.747	0.094	(0.134)	0.653
154	12.83	0.97	0.774	0.093	(0.139)	0.680
155	12.92	0.97	0.774	0.093	(0.139)	0.681
156	13.00	0.97	0.774	0.093	(0.139)	0.681
157	13.08	1.13	0.907	0.092	(0.163)	0.815
158	13.17	1.13	0.907	0.092	(0.163)	0.816
159	13.25	1.13	0.907	0.091	(0.163)	0.816
160	13.33	1.13	0.907	0.091	(0.163)	0.816
161	13.42	1.13	0.907	0.090	(0.163)	0.817
162	13.50	1.13	0.907	0.090	(0.163)	0.817
163	13.58	0.77	0.614	0.089	(0.110)	0.524
164	13.67	0.77	0.614	0.089	(0.110)	0.525
165	13.75	0.77	0.614	0.088	(0.110)	0.525
166	13.83	0.77	0.614	0.088	(0.110)	0.526
167	13.92	0.77	0.614	0.088	(0.110)	0.526
168	14.00	0.77	0.614	0.087	(0.110)	0.527
169	14.08	0.90	0.720	0.087	(0.130)	0.634
170	14.17	0.90	0.720	0.086	(0.130)	0.634
171	14.25	0.90	0.720	0.086	(0.130)	0.635
172	14.33	0.87	0.694	0.085	(0.125)	0.608
173	14.42	0.87	0.694	0.085	(0.125)	0.609
174	14.50	0.87	0.694	0.084	(0.125)	0.609
175	14.58	0.87	0.694	0.084	(0.125)	0.610
176	14.67	0.87	0.694	0.084	(0.125)	0.610
177	14.75	0.87	0.694	0.083	(0.125)	0.611
178	14.83	0.83	0.667	0.083	(0.120)	0.584
179	14.92	0.83	0.667	0.082	(0.120)	0.585
180	15.00	0.83	0.667	0.082	(0.120)	0.585
181	15.08	0.80	0.640	0.081	(0.115)	0.559
182	15.17	0.80	0.640	0.081	(0.115)	0.559
183	15.25	0.80	0.640	0.081	(0.115)	0.560
184	15.33	0.77	0.614	0.080	(0.110)	0.533
185	15.42	0.77	0.614	0.080	(0.110)	0.534
186	15.50	0.77	0.614	0.079	(0.110)	0.534
187	15.58	0.63	0.507	0.079	(0.091)	0.428
188	15.67	0.63	0.507	0.079	(0.091)	0.428
189	15.75	0.63	0.507	0.078	(0.091)	0.429
190	15.83	0.63	0.507	0.078	(0.091)	0.429
191	15.92	0.63	0.507	0.077	(0.091)	0.430
192	16.00	0.63	0.507	0.077	(0.091)	0.430
193	16.08	0.13	0.107	(0.077)	0.019	0.088
194	16.17	0.13	0.107	(0.076)	0.019	0.088
195	16.25	0.13	0.107	(0.076)	0.019	0.088
196	16.33	0.13	0.107	(0.075)	0.019	0.088
197	16.42	0.13	0.107	(0.075)	0.019	0.088
198	16.50	0.13	0.107	(0.075)	0.019	0.088
199	16.58	0.10	0.080	(0.074)	0.014	0.066
200	16.67	0.10	0.080	(0.074)	0.014	0.066
201	16.75	0.10	0.080	(0.074)	0.014	0.066
202	16.83	0.10	0.080	(0.073)	0.014	0.066
203	16.92	0.10	0.080	(0.073)	0.014	0.066
204	17.00	0.10	0.080	(0.072)	0.014	0.066
205	17.08	0.17	0.133	(0.072)	0.024	0.109
206	17.17	0.17	0.133	(0.072)	0.024	0.109
207	17.25	0.17	0.133	(0.071)	0.024	0.109
208	17.33	0.17	0.133	(0.071)	0.024	0.109

209	17.42	0.17	0.133	(0.071)	0.024	0.109
210	17.50	0.17	0.133	(0.070)	0.024	0.109
211	17.58	0.17	0.133	(0.070)	0.024	0.109
212	17.67	0.17	0.133	(0.070)	0.024	0.109
213	17.75	0.17	0.133	(0.069)	0.024	0.109
214	17.83	0.13	0.107	(0.069)	0.019	0.088
215	17.92	0.13	0.107	(0.069)	0.019	0.088
216	18.00	0.13	0.107	(0.068)	0.019	0.088
217	18.08	0.13	0.107	(0.068)	0.019	0.088
218	18.17	0.13	0.107	(0.067)	0.019	0.088
219	18.25	0.13	0.107	(0.067)	0.019	0.088
220	18.33	0.13	0.107	(0.067)	0.019	0.088
221	18.42	0.13	0.107	(0.067)	0.019	0.088
222	18.50	0.13	0.107	(0.066)	0.019	0.088
223	18.58	0.10	0.080	(0.066)	0.014	0.066
224	18.67	0.10	0.080	(0.066)	0.014	0.066
225	18.75	0.10	0.080	(0.065)	0.014	0.066
226	18.83	0.07	0.053	(0.065)	0.010	0.044
227	18.92	0.07	0.053	(0.065)	0.010	0.044
228	19.00	0.07	0.053	(0.064)	0.010	0.044
229	19.08	0.10	0.080	(0.064)	0.014	0.066
230	19.17	0.10	0.080	(0.064)	0.014	0.066
231	19.25	0.10	0.080	(0.063)	0.014	0.066
232	19.33	0.13	0.107	(0.063)	0.019	0.088
233	19.42	0.13	0.107	(0.063)	0.019	0.088
234	19.50	0.13	0.107	(0.063)	0.019	0.088
235	19.58	0.10	0.080	(0.062)	0.014	0.066
236	19.67	0.10	0.080	(0.062)	0.014	0.066
237	19.75	0.10	0.080	(0.062)	0.014	0.066
238	19.83	0.07	0.053	(0.061)	0.010	0.044
239	19.92	0.07	0.053	(0.061)	0.010	0.044
240	20.00	0.07	0.053	(0.061)	0.010	0.044
241	20.08	0.10	0.080	(0.061)	0.014	0.066
242	20.17	0.10	0.080	(0.060)	0.014	0.066
243	20.25	0.10	0.080	(0.060)	0.014	0.066
244	20.33	0.10	0.080	(0.060)	0.014	0.066
245	20.42	0.10	0.080	(0.060)	0.014	0.066
246	20.50	0.10	0.080	(0.059)	0.014	0.066
247	20.58	0.10	0.080	(0.059)	0.014	0.066
248	20.67	0.10	0.080	(0.059)	0.014	0.066
249	20.75	0.10	0.080	(0.059)	0.014	0.066
250	20.83	0.07	0.053	(0.058)	0.010	0.044
251	20.92	0.07	0.053	(0.058)	0.010	0.044
252	21.00	0.07	0.053	(0.058)	0.010	0.044
253	21.08	0.10	0.080	(0.058)	0.014	0.066
254	21.17	0.10	0.080	(0.057)	0.014	0.066
255	21.25	0.10	0.080	(0.057)	0.014	0.066
256	21.33	0.07	0.053	(0.057)	0.010	0.044
257	21.42	0.07	0.053	(0.057)	0.010	0.044
258	21.50	0.07	0.053	(0.057)	0.010	0.044
259	21.58	0.10	0.080	(0.056)	0.014	0.066
260	21.67	0.10	0.080	(0.056)	0.014	0.066
261	21.75	0.10	0.080	(0.056)	0.014	0.066
262	21.83	0.07	0.053	(0.056)	0.010	0.044
263	21.92	0.07	0.053	(0.056)	0.010	0.044
264	22.00	0.07	0.053	(0.055)	0.010	0.044
265	22.08	0.10	0.080	(0.055)	0.014	0.066
266	22.17	0.10	0.080	(0.055)	0.014	0.066
267	22.25	0.10	0.080	(0.055)	0.014	0.066
268	22.33	0.07	0.053	(0.055)	0.010	0.044
269	22.42	0.07	0.053	(0.054)	0.010	0.044
270	22.50	0.07	0.053	(0.054)	0.010	0.044
271	22.58	0.07	0.053	(0.054)	0.010	0.044

272	22.67	0.07	0.053	(0.054)	0.010	0.044
273	22.75	0.07	0.053	(0.054)	0.010	0.044
274	22.83	0.07	0.053	(0.054)	0.010	0.044
275	22.92	0.07	0.053	(0.054)	0.010	0.044
276	23.00	0.07	0.053	(0.053)	0.010	0.044
277	23.08	0.07	0.053	(0.053)	0.010	0.044
278	23.17	0.07	0.053	(0.053)	0.010	0.044
279	23.25	0.07	0.053	(0.053)	0.010	0.044
280	23.33	0.07	0.053	(0.053)	0.010	0.044
281	23.42	0.07	0.053	(0.053)	0.010	0.044
282	23.50	0.07	0.053	(0.053)	0.010	0.044
283	23.58	0.07	0.053	(0.053)	0.010	0.044
284	23.67	0.07	0.053	(0.053)	0.010	0.044
285	23.75	0.07	0.053	(0.053)	0.010	0.044
286	23.83	0.07	0.053	(0.052)	0.010	0.044
287	23.92	0.07	0.053	(0.052)	0.010	0.044
288	24.00	0.07	0.053	(0.052)	0.010	0.044

(Loss Rate Not Used)

Sum = 100.0 Sum = 67.4

Flood volume = Effective rainfall 5.61 (In)
times area 2.3 (Ac.) / [(In) / (Ft.)] = 1.1 (Ac.Ft)

Total soil loss = 1.06 (In)

Total soil loss = 0.201 (Ac.Ft)

Total rainfall = 6.67 (In)

Flood volume = 46469.5 Cubic Feet

Total soil loss = 8733.8 Cubic Feet

Peak flow rate of this hydrograph = 1.851 (CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q				
0+10	0.0004	0.05	Q				
0+15	0.0009	0.07	Q				
0+20	0.0016	0.09	Q				
0+25	0.0023	0.11	Q				
0+30	0.0032	0.13	Q				
0+35	0.0042	0.14	Q				
0+40	0.0052	0.14	Q				
0+45	0.0062	0.14	Q				
0+50	0.0072	0.15	Q				
0+55	0.0084	0.17	Q				
1+ 0	0.0097	0.19	Q				
1+ 5	0.0110	0.19	Q				
1+10	0.0121	0.17	Q				
1+15	0.0133	0.16	Q				
1+20	0.0143	0.16	Q				
1+25	0.0154	0.15	Q				
1+30	0.0165	0.15	Q				
1+35	0.0175	0.15	Q				
1+40	0.0186	0.15	Q				
1+45	0.0196	0.15	Q				
1+50	0.0207	0.16	Q				
1+55	0.0219	0.18	Q				
2+ 0	0.0232	0.19	Q				
2+ 5	0.0245	0.19	Q				

2+10	0.0259	0.20	Q				
2+15	0.0272	0.20	QV				
2+20	0.0286	0.20	QV				
2+25	0.0300	0.20	QV				
2+30	0.0314	0.20	QV				
2+35	0.0328	0.21	QV				
2+40	0.0343	0.23	QV				
2+45	0.0360	0.24	QV				
2+50	0.0376	0.24	QV				
2+55	0.0393	0.25	QV				
3+ 0	0.0410	0.25	QV				
3+ 5	0.0428	0.25	QV				
3+10	0.0445	0.25	QV				
3+15	0.0462	0.25	IQ				
3+20	0.0479	0.25	IQ				
3+25	0.0497	0.25	IQ				
3+30	0.0514	0.25	IQ				
3+35	0.0531	0.25	IQ				
3+40	0.0549	0.25	IQV				
3+45	0.0566	0.25	IQV				
3+50	0.0584	0.26	IQV				
3+55	0.0603	0.28	IQV				
4+ 0	0.0623	0.29	IQV				
4+ 5	0.0643	0.29	IQV				
4+10	0.0663	0.30	IQV				
4+15	0.0684	0.30	IQV				
4+20	0.0705	0.30	IQV				
4+25	0.0727	0.33	IQV				
4+30	0.0750	0.34	IQV				
4+35	0.0774	0.34	IQV				
4+40	0.0798	0.35	IQV				
4+45	0.0822	0.35	IQ V				
4+50	0.0846	0.35	IQ V				
4+55	0.0872	0.38	IQ V				
5+ 0	0.0899	0.39	IQ V				
5+ 5	0.0925	0.38	IQ V				
5+10	0.0949	0.34	IQ V				
5+15	0.0971	0.32	IQ V				
5+20	0.0993	0.32	IQ V				
5+25	0.1017	0.34	IQ V				
5+30	0.1040	0.35	IQ V				
5+35	0.1065	0.35	IQ V				
5+40	0.1091	0.38	IQ V				
5+45	0.1117	0.39	IQ V				
5+50	0.1144	0.39	IQ V				
5+55	0.1172	0.40	IQ V				
6+ 0	0.1199	0.40	IQ V				
6+ 5	0.1227	0.40	IQ V				
6+10	0.1256	0.43	IQ V				
6+15	0.1286	0.44	IQ V				
6+20	0.1317	0.44	IQ V				
6+25	0.1348	0.45	IQ V				
6+30	0.1379	0.45	IQ V				
6+35	0.1410	0.46	IQ V				
6+40	0.1443	0.48	IQ V				
6+45	0.1476	0.49	IQ V				
6+50	0.1510	0.49	IQ V				
6+55	0.1545	0.50	IQ V				
7+ 0	0.1579	0.50	IQ V				
7+ 5	0.1613	0.50	IQ V				
7+10	0.1648	0.50	IQ V				
7+15	0.1683	0.50	IQ V				
7+20	0.1718	0.51	IQ V				

7+25	0.1754	0.53	Q	V					
7+30	0.1791	0.54	Q	V					
7+35	0.1829	0.55	Q	V					
7+40	0.1869	0.57	Q	V					
7+45	0.1909	0.59	Q	V					
7+50	0.1950	0.60	Q	V					
7+55	0.1993	0.62	Q	V					
8+ 0	0.2037	0.64	Q	V					
8+ 5	0.2082	0.65	Q	V					
8+10	0.2130	0.70	Q	V					
8+15	0.2180	0.72	Q	V					
8+20	0.2230	0.73	Q	V					
8+25	0.2281	0.74	Q	V					
8+30	0.2332	0.75	Q	V					
8+35	0.2384	0.75	Q	V					
8+40	0.2438	0.78	Q	V					
8+45	0.2492	0.79	Q	V					
8+50	0.2547	0.80	Q	V					
8+55	0.2604	0.82	Q	V					
9+ 0	0.2662	0.84	Q	V					
9+ 5	0.2721	0.85	Q	V					
9+10	0.2783	0.90	Q	V					
9+15	0.2846	0.92	Q	V					
9+20	0.2911	0.94	Q	V					
9+25	0.2978	0.97	Q	V					
9+30	0.3046	0.98	Q	V					
9+35	0.3114	1.00	Q	V					
9+40	0.3185	1.02	Q	V					
9+45	0.3256	1.04	Q	V					
9+50	0.3328	1.05	Q	V					
9+55	0.3402	1.07	Q	V					
10+ 0	0.3477	1.09	Q	V					
10+ 5	0.3550	1.06	Q	V					
10+10	0.3613	0.92	Q	V					
10+15	0.3671	0.84	Q	V					
10+20	0.3727	0.81	Q	V					
10+25	0.3781	0.79	Q	V					
10+30	0.3835	0.78	Q	V					
10+35	0.3890	0.80	Q	V					
10+40	0.3952	0.90	Q	V					
10+45	0.4017	0.95	Q	V					
10+50	0.4084	0.97	Q	V					
10+55	0.4151	0.98	Q	V					
11+ 0	0.4219	0.99	Q	V					
11+ 5	0.4287	0.99	Q	V					
11+10	0.4354	0.97	Q	V					
11+15	0.4421	0.96	Q	V					
11+20	0.4487	0.96	Q	V					
11+25	0.4553	0.96	Q	V					
11+30	0.4619	0.96	Q	V					
11+35	0.4684	0.95	Q	V					
11+40	0.4747	0.91	Q	V					
11+45	0.4807	0.88	Q	V					
11+50	0.4868	0.88	Q	V					
11+55	0.4929	0.89	Q	V					
12+ 0	0.4991	0.90	Q	V					
12+ 5	0.5056	0.95	Q	V					
12+10	0.5133	1.11	Q	V					
12+15	0.5216	1.20	Q	V					
12+20	0.5302	1.25	Q	V					
12+25	0.5391	1.30	Q	V					
12+30	0.5482	1.32	Q	V					
12+35	0.5575	1.35	Q	V					

12+40	0.5673	1.42		Q		V		
12+45	0.5773	1.45		Q		V		
12+50	0.5875	1.48		Q		V		
12+55	0.5979	1.51		Q		V		
13+ 0	0.6085	1.54		Q		V		
13+ 5	0.6194	1.58		Q		V		
13+10	0.6312	1.71		Q		V		
13+15	0.6435	1.79		Q		V		
13+20	0.6560	1.82		Q		V		
13+25	0.6687	1.84		Q		V		
13+30	0.6814	1.85		Q		V		
13+35	0.6937	1.79		Q		V		
13+40	0.7042	1.52		Q		V		
13+45	0.7136	1.37		Q		V		
13+50	0.7227	1.32		Q		V		
13+55	0.7315	1.28		Q		V		
14+ 0	0.7402	1.26		Q		V		
14+ 5	0.7490	1.27		Q		V		
14+10	0.7584	1.36		Q		V		
14+15	0.7681	1.41		Q		V		
14+20	0.7778	1.42		Q		V		
14+25	0.7875	1.40		Q		V		
14+30	0.7971	1.40		Q		V		
14+35	0.8067	1.40		Q		V		
14+40	0.8164	1.40		Q		V		
14+45	0.8260	1.40		Q		V		
14+50	0.8356	1.40		Q		V		
14+55	0.8451	1.37		Q		V		
15+ 0	0.8544	1.36		Q		V		
15+ 5	0.8637	1.35		Q		V		
15+10	0.8728	1.32		Q		V		
15+15	0.8818	1.31		Q		V		
15+20	0.8907	1.29		Q		V		
15+25	0.8994	1.26		Q		V		
15+30	0.9080	1.25		Q		V		
15+35	0.9164	1.22		Q		V		
15+40	0.9241	1.11		Q		V		
15+45	0.9313	1.05		Q		V		
15+50	0.9384	1.03		Q		V		
15+55	0.9454	1.02		Q		V		
16+ 0	0.9523	1.01		Q		V		
16+ 5	0.9586	0.92		Q		V		
16+10	0.9627	0.59		Q		V		
16+15	0.9655	0.41		Q		V		
16+20	0.9679	0.34		Q		V		
16+25	0.9699	0.29		Q		V		
16+30	0.9717	0.26		Q		V		
16+35	0.9733	0.24		Q		V		
16+40	0.9747	0.20		Q		V		
16+45	0.9760	0.18		Q		V		
16+50	0.9771	0.17		Q		V		
16+55	0.9783	0.16		Q		V		
17+ 0	0.9793	0.15		Q		V		
17+ 5	0.9805	0.16		Q		V		
17+10	0.9819	0.20		Q		V		
17+15	0.9834	0.23		Q		V		
17+20	0.9850	0.24		Q		V		
17+25	0.9867	0.24		Q		V		
17+30	0.9884	0.24		Q		V		
17+35	0.9901	0.25		Q		V		
17+40	0.9918	0.25		Q		V		
17+45	0.9935	0.25		Q		V		
17+50	0.9952	0.24		Q		V		

17+55	0.9967	0.23	Q				V	
18+ 0	0.9982	0.21	Q				V	
18+ 5	0.9996	0.21	Q				V	
18+10	1.0011	0.21	Q				V	
18+15	1.0025	0.21	Q				V	
18+20	1.0039	0.20	Q				V	
18+25	1.0053	0.20	Q				V	
18+30	1.0067	0.20	Q				V	
18+35	1.0080	0.20	Q				V	
18+40	1.0092	0.18	Q				V	
18+45	1.0104	0.16	Q				V	
18+50	1.0114	0.15	Q				V	
18+55	1.0123	0.13	Q				V	
19+ 0	1.0131	0.12	Q				V	
19+ 5	1.0140	0.12	Q				V	
19+10	1.0149	0.13	Q				V	
19+15	1.0159	0.14	Q				V	
19+20	1.0169	0.15	Q				V	
19+25	1.0181	0.17	Q				V	
19+30	1.0194	0.19	Q				V	
19+35	1.0206	0.19	Q				V	
19+40	1.0218	0.17	Q				V	
19+45	1.0229	0.16	Q				V	
19+50	1.0239	0.15	Q				V	
19+55	1.0248	0.13	Q				V	
20+ 0	1.0256	0.12	Q				V	
20+ 5	1.0264	0.12	Q				V	
20+10	1.0273	0.13	Q				V	
20+15	1.0283	0.14	Q				V	
20+20	1.0293	0.15	Q				V	
20+25	1.0303	0.15	Q				V	
20+30	1.0314	0.15	Q				V	
20+35	1.0324	0.15	Q				V	
20+40	1.0334	0.15	Q				V	
20+45	1.0345	0.15	Q				V	
20+50	1.0354	0.14	Q				V	
20+55	1.0363	0.12	Q				V	
21+ 0	1.0371	0.11	Q				V	
21+ 5	1.0379	0.11	Q				V	
21+10	1.0388	0.13	Q				V	
21+15	1.0398	0.14	Q				V	
21+20	1.0407	0.14	Q				V	
21+25	1.0416	0.12	Q				V	
21+30	1.0423	0.11	Q				V	
21+35	1.0431	0.11	Q				V	
21+40	1.0440	0.13	Q				V	
21+45	1.0450	0.14	Q				V	
21+50	1.0459	0.14	Q				V	
21+55	1.0468	0.12	Q				V	
22+ 0	1.0475	0.11	Q				V	
22+ 5	1.0483	0.11	Q				V	
22+10	1.0492	0.13	Q				V	
22+15	1.0502	0.14	Q				V	
22+20	1.0511	0.14	Q				V	
22+25	1.0520	0.12	Q				V	
22+30	1.0527	0.11	Q				V	
22+35	1.0535	0.11	Q				V	
22+40	1.0542	0.10	Q				V	
22+45	1.0549	0.10	Q				V	
22+50	1.0556	0.10	Q				V	
22+55	1.0563	0.10	Q				V	
23+ 0	1.0570	0.10	Q				V	
23+ 5	1.0577	0.10	Q				V	

23+10	1.0584	0.10	Q				V
23+15	1.0591	0.10	Q				V
23+20	1.0598	0.10	Q				V
23+25	1.0605	0.10	Q				V
23+30	1.0612	0.10	Q				V
23+35	1.0619	0.10	Q				V
23+40	1.0625	0.10	Q				V
23+45	1.0632	0.10	Q				V
23+50	1.0639	0.10	Q				V
23+55	1.0646	0.10	Q				V
24+ 0	1.0653	0.10	Q				V
24+ 5	1.0659	0.09	Q				V
24+10	1.0663	0.05	Q				V
24+15	1.0665	0.03	Q				V
24+20	1.0666	0.02	Q				V
24+25	1.0666	0.01	Q				V
24+30	1.0667	0.01	Q				V
24+35	1.0667	0.01	Q				V
24+40	1.0668	0.00	Q				V
24+45	1.0668	0.00	Q				V
24+50	1.0668	0.00	Q				V
24+55	1.0668	0.00	Q				V

APPENDIX B

HYDRAULICS

Worksheet for Overflow Pipe - 100-yr Storm

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Normal Depth	14.88	in
Diameter	14.88	in
Discharge	8.22	ft ³ /s

Results

Diameter	14.88	in
Normal Depth	14.88	in
Flow Area	1.21	ft ²
Wetted Perimeter	3.90	ft
Hydraulic Radius	3.72	in
Top Width	0.00	ft
Critical Depth	1.12	ft
Percent Full	100.0	%
Critical Slope	0.00876	ft/ft
Velocity	6.81	ft/s
Velocity Head	0.72	ft
Specific Energy	1.96	ft
Froude Number	0.00	
Maximum Discharge	8.84	ft ³ /s
Discharge Full	8.22	ft ³ /s
Slope Full	0.01000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

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

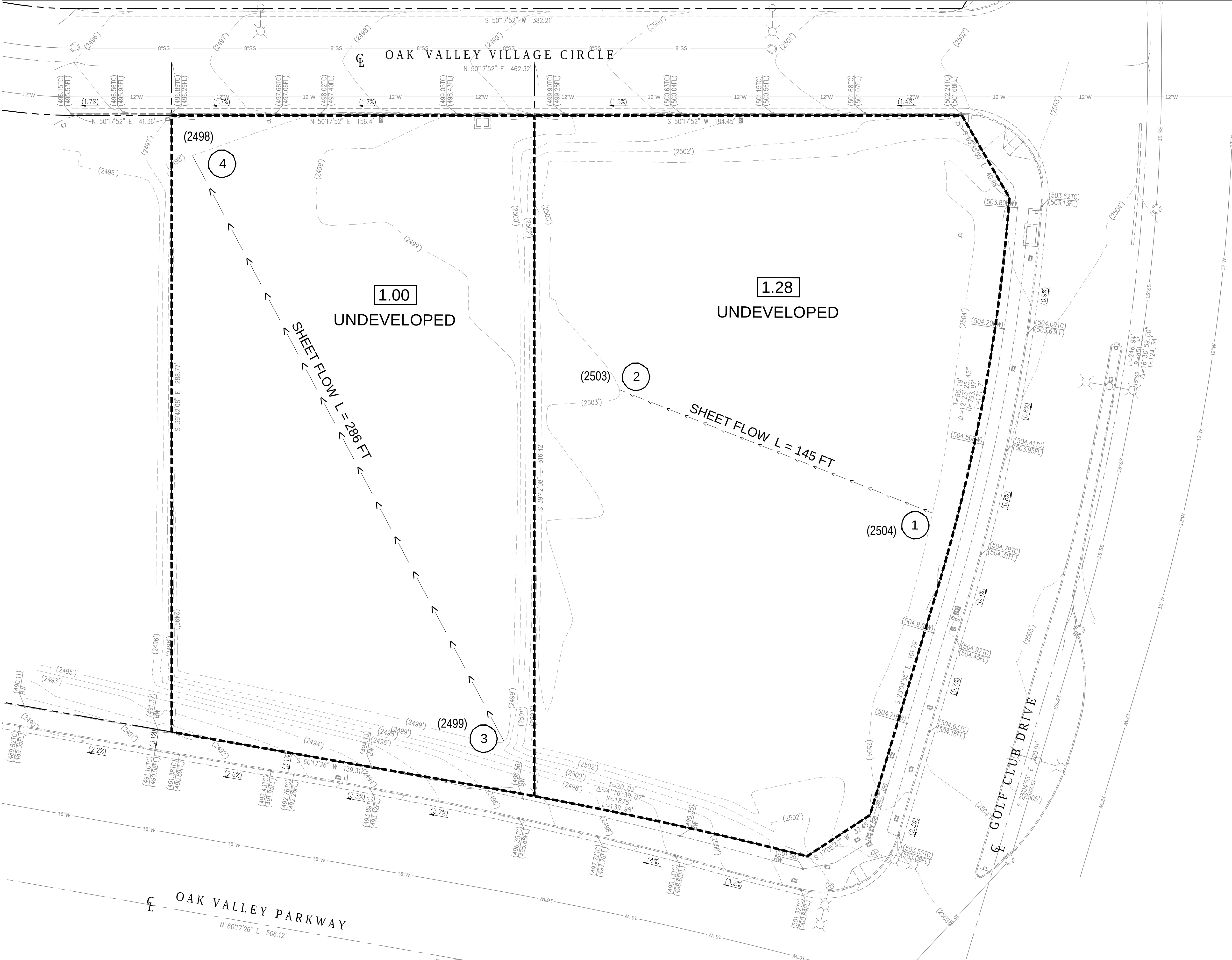
Worksheet for Overflow Pipe - 100-yr Storm

GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	14.88	in
Critical Depth	1.12	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00876	ft/ft

APPENDIX C

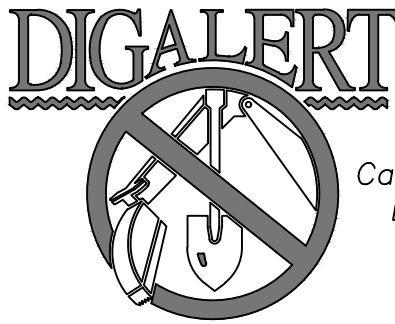
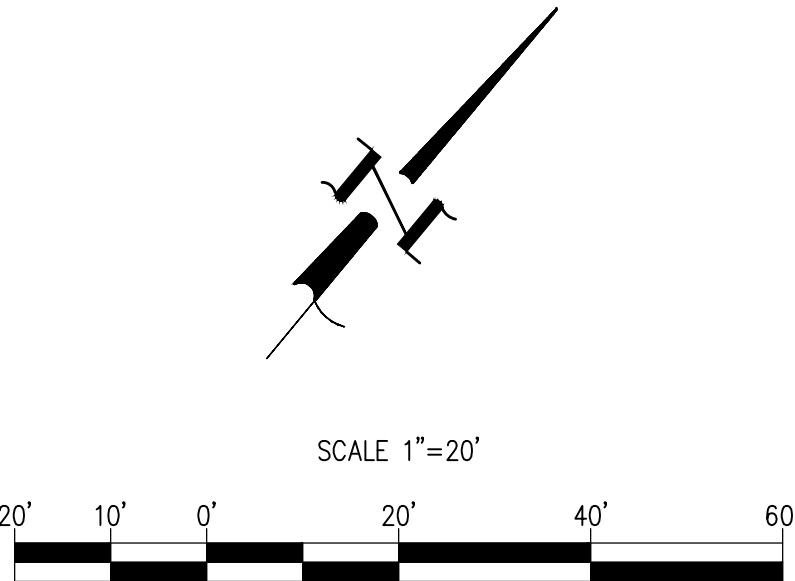
HYDROLOGY MAPS



NODE	AREA (ac)	LAND USE	Q ₁₀ (cfs)	V ₁₀ (ac-ft)	Q ₁₀₀ (cfs)	V ₁₀₀ (ac-ft)
1 TO 2	1.28	UNDEVELOPED	2.0	0.0782	3.54	0.2112
3 TO 4	1.00	UNDEVELOPED	1.19	0.0611	2.19	0.1655

LEGEND:

- TRIBUTARY AREA LINE
- 1.15 ----- TRIBUTARY AREA IN ACRE
- UNDEVELOPED ----- LAND USE
- EXISTING ELEVATION
- 5 (309.00) ----- NODE NUMBER
- FLOW PATH



BENCHMARK:
BENCHMARK ESTABLISHED BY THE COUNTY OF RIVERSIDE,
500 FEET NORTHWEST ALONG THE INTERSTATE HIGHWAY
NO. 10 ON-RAMP, FROM THE SAN TIMOTEO CANYON
ROAD OVERPASS, 20 FEET SOUTHWEST OF A BARBWARE
FENCE, 17 FEET FEET NORTHEAST OF HIGHWAY NO. 10
ON-RAMP, ON TOP OF AND AT THE SOUTHEAST END OF
AN 8 INCH BY 8 FOOT CONCRETE HEADWALL, A BRASS
DISK STAMPED C-41-2-65.

ELEV. 2481.499'

BY	MARK	DESCRIPTION	APPR.	DATE
ENGINEER		REVISIONS		CITY

Gil Zulueta Mendoza Associates, Inc.
6185 MAGNOLIA AVE., #129
RIVERSIDE, CA 92506
Ph 951.286.9520 Fax 815.425.8582
E-MAIL: gil@gzmassociates.com

GIL Z. MENDOZA, R.C.E. C53454 DATE



DESIGN BY: ARA
DRAWN BY: ARA
CHECKED BY: GZM
SCALE: AS NOTED
DATE: 09/07/2018
JOB NUMBER: 2299-0200



Reviewed By: _____ Date: _____
Staff Engineer
Recommended for Approval By: _____ Date: _____
Administrative Engineer
Approved By: _____ Date: _____
City Engineer/Director of Public Works

CITY OF BEAUMONT, PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

550E, 6th St
Beaumont, CA 92223
TEL: (951) 769-8529 FAX: (951) 769-6526

CITY OF BEAUMONT, CALIFORNIA
HYDROLOGY MAP - PROPOSED CONDITION
BEAUMONT STATION

AT THE INTERSECTION OF OAK VALLEY VILLAGE PKWY. & GOLF CLUB DR.

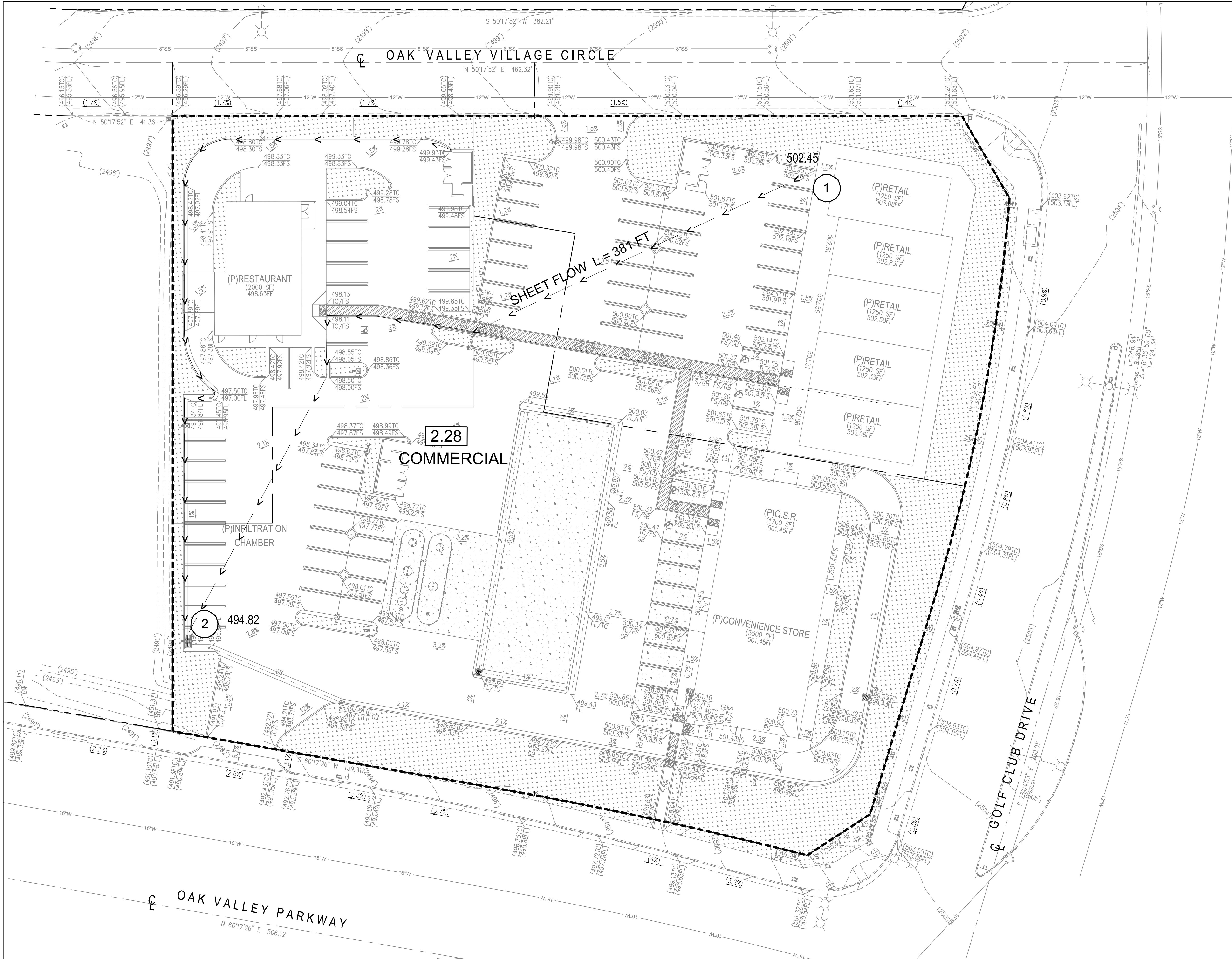
IN THE CITY OF BEAUMONT, CALIFORNIA

HYDROLOGY MAP - PROPOSED CONDITION

SHEET

1

OF 1 SHEETS
FILE NO:

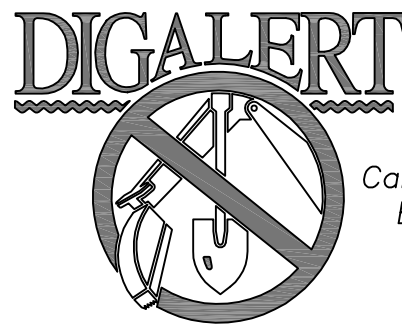
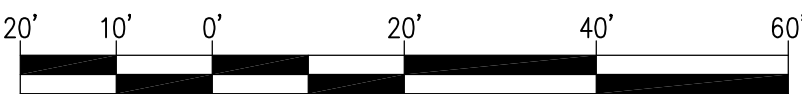


NODE	AREA (ac)	LAND USE	Q ₁₀ (cfs)	V ₁₀ (cf)	Q ₁₀₀ (cfs)	V ₁₀₀ (cf)
1 TO 2	2.28	COMMERCIAL	5.39	29,528	8.22	46,469

LEGEND:

- TRIBUTARY AREA LINE
- 2.28 TRIBUTARY AREA IN ACRE
- COMMERCIAL LAND USE
- 309.00 PROPOSED ELEVATION
- 1 NODE NUMBER
- → → → → FLOW PATH

SCALE 1"=20'



Call 2 Working Days
Before You Dig!
811

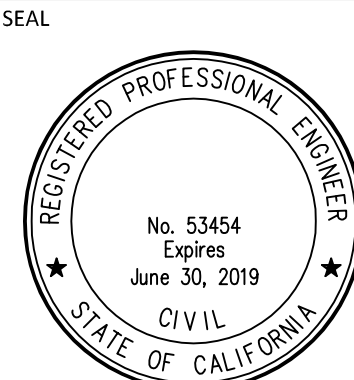
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FENCE, 17 FEET NORTHEAST OF HIGHWAY NO. 10
ON-RAMP, ON TOP OF AND AT THE SOUTHEAST END OF
AN 8 INCH BY 8 FOOT CONCRETE HEADWALL, A BRASS
DISK STAMPED C-41-2-65.

ELEV. 2481.499'

BY	MARK	DESCRIPTION	APPR.	DATE
ENGINEER		REVISIONS		CITY

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GIL Z. MENDOZA, R.C.E. C53454 DATE



DESIGN BY: ARA
DRAWN BY: ARA
CHECKED BY: GZM
SCALE: AS NOTED
DATE: 09/07/2018
JOB NUMBER: 2299-0200



Reviewed By: Staff Engineer Date: _____
Recommended for Approval By: Administrative Engineer Date: _____
Approved By: City Engineer/Director of Public Works Date: _____

CITY OF BEAUMONT, PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

550E, 6th St
Beaumont, CA 92223
TEL: (951) 769-4520 FAX: (951) 769-6528

CITY OF BEAUMONT, CALIFORNIA
HYDROLOGY MAP - EXISTING CONDITION
BEAUMONT STATION
AT THE INTERSECTION OF OAK VALLEY VILLAGE PKWY. & GOLF CLUB DR.
IN THE CITY OF BEAUMONT, CALIFORNIA

HYDROLOGY MAP -- EXISTING CONDITION

SHEET
1
OF 1 SHEETS
FILE NO: