Appendix G – Preliminary Drainage Study

PRELIMINARY DRAINAGE STUDY FOR TENTATIVE TRACT MAP NO. 20320 (TERRACINA)

CITY OF REDLANDS, CA

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This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any employees that have provided data and calculations upon which the recommendations, conclusions, and decisions are based.



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Ceazar V. Aguilar, PE 41679 Date

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I. PURPOSE AND SCOPE

The purpose of this study is to develop a drainage plan in support of Tentative Tract Map No. 20302 (TTM 20320), Terracina, that would provide the project with drainage and flood protection from the once-in-a-hundred-year flood without adversely impacting the existing drainage conditions of the adjacent properties and improvements.

TTM 20320 is located in the City of Redlands, along Wabash Avenue, north of Interstate-10 (see Figure 1). This tract is approximately 65 acres in size and will be subdivided into 67 single family residential lots and 9 lettered lots in 2 phases: 42 residential lots and 4 lettered lots for Phase 1 and 25 residential lots and 5 lettered lots for Phase 2. Several improvements are planned in support of the proposed development including street and drainage improvements, above-ground stormwater quality/detention and debris basins, underground stormwater quality/retention storage chambers, and water/sewer systems to serve the proposed community.

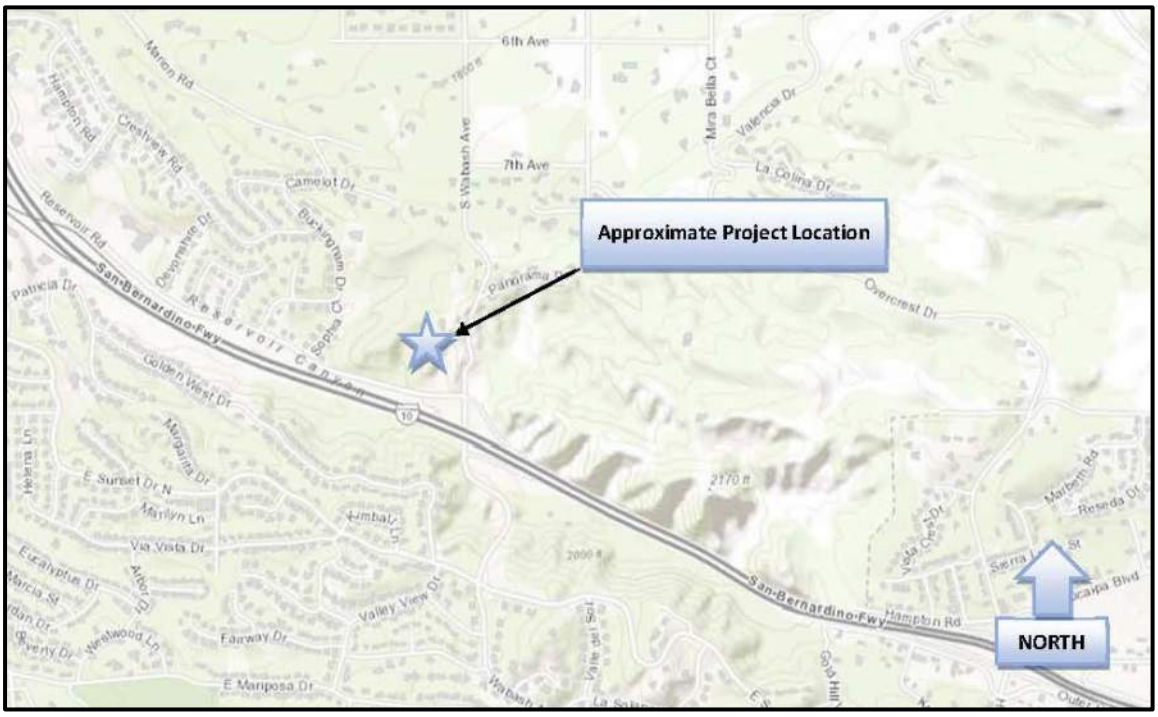


Figure 1: Vicinity Map

The scope of the study includes the following:

1. Determination of the hydrological nodal points and tributary drainage areas within the hydrological limits of influence of the project site.

2. Determination of the 2-year, 10-year and 100-year storm flows for the on-site developable areas and 100-year storm flows for the off-site hillside areas tributary to the hydrological nodal points based upon the existing (pre-project) and proposed

(post-project) conditions utilizing the Civil Design Software (Rational Tabling and Unit Hydrograph methods) for San Bernardino County. The 2-year flood hydrograph was performed in support of the separate and Preliminary Water Quality Management (WQMP) report.

3. Determination of the size and location of the proposed drainage facilities required to flood-protect the proposed development from the 100-year flood without adversely impacting the existing drainage conditions and patterns of the adjacent area. This scope includes hydraulic calculations based on the FlowMaster program for determining the flow capacity of the proposed drainage facilities and streets sections. The debris basins were designed using the US Army Corps of Engineers – Los Angeles District's Debris Method.

4. Preparation of the hydrology maps, drainage plans, and drainage report.

II. PROJECT SITE AND DRAINAGE AREA OVERVIEW

TTM 20320 is located in the City of Redlands. The project is generally bounded by residential development to the north and west, undeveloped land to the east, and Reservoir Road and Interstate 10 to the south. Wabash Avenue runs north and south through the middle of the project boundary and is proposed to be realigned with the construction of the proposed development (see Figure 2).



Figure 2: Project Location Map

In the existing or pre-project condition, the project area west of Wabash Avenue has seven (7) points of drainage concentration. For a majority of this area, storm runoff flows generally south to Reservoir Road, where they drain into four drainage inlets, then conveyed through storm drain pipes under Reservoir Road, and discharged into a concrete lined collector channel that runs east to west along the north side of Interstate 10 (I-10). The channel is owned and maintained by Caltrans. Two more concentration points are located to the west of the proposed development at Sophia Court, where stormflows sheet flow onto the street. The seventh and last concentration point is located at the northwest corner of the proposed development, where flows run through a natural water course into an existing basin. The drainage study area encompassing this area west of Wabash Avenue is approximately 53.43 acres and it consists of relatively steep undeveloped areas with an average slope of approximately 15 percent.

East of Wabash Avenue, storm flows generated from the tributary drainage areas generally flow in a westerly, south-westerly direction and discharge near the northeast corner of Wabash Avenue and the freeway off-ramp. The flows are then conveyed by a 48" storm drain pipe that traverses southwest of the intersection and discharges into a concrete lined collector channel that runs easterly along the north side of I-10. The 48" pipe and channel is owned and maintained by Caltrans. During the final design phase, a drainage acceptance letter will be obtained from Caltrans in order to tie-in into their drainage facilities. The drainage study area tributary to these existing drainage facilities is approximately 95.11 acres and it consists of relatively steep undeveloped areas with an average slope of approximately 10 percent. The described drainage areas for the existing condition are depicted on Exhibit "A".

Review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number 06071C8716H (Ref. 2), dated August 28, 2008 indicates that the project site is mapped within a Zone X (unshaded) flood designation. According to FEMA, Zone X (unshaded) is an "area of minimal flood hazard, usually above 500-year flood, therefore a Letter of Map Revision (LOMR) processing through FEMA will not be required.

III. HYDROLOGY AND DRAINAGE ANALYSIS

Drainage basin boundaries and points of storm flow concentration associated with the existing or pre-project condition were determined utilizing the aerial topographic map from VA Consultants (Ref. 3), USGS map, and Google Earth. Field investigations were also conducted to verify the relative accuracy of the drainage boundaries. The rational tabling and unit hydrograph Methods for San Bernardino County were utilized in support of the hydrological analysis. For the proposed or with-project condition, the roadway and grading plans for TTM 20320 were utilized in the analysis.

The following exhibits are based upon the Rational Tabling Method and the results of the analysis are included in Appendix A through B:

- Exhibit "A" shows the on-site area based on the existing (pre-project) development condition
- Exhibit "B" shows the on-site and off-site areas based on the proposed (post-project) development condition

The following exhibits are based upon the Unit-Hydrograph Method and the results of the analysis are included in Appendix C and D. In an effort to effectively quantify the increase in the 100-year on-site flows due to the proposed development, the existing condition analysis was performed based on the project sites several tributary drainage areas that drain into the discharge point at the locations of the different proposed basins.

- Exhibit "C" shows the hydrology map for the on-site area under the existing (pre-project) condition.
- Exhibit "D" shows the hydrology map for the on-site area under the proposed (post-project) development.

The San Bernardino County Hydrology Manual (Ref. 1) was used to develop the hydrological parameters for the 100-year storm event. Computations were performed using the computer program developed by CivilCadd/CivilDesign.

The appropriate rainfall values used for the study for the various storm events were obtained from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 (Exhibit "F") See Table 1 below.

TABLE 1 - RAINFALL VALUES

Storm Event	Storm Duration	Precipitation Depth (Inches)
2-Year	6-Hour	1.20
	24-Hour	2.18
10-Year	1-Hour	0.78
100-Year	1-Hour	1.27
	3-Hour	2.86
	24-Hour	5.15

Websoil Survey (https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx) classifies the on-site study area as Hydrologic Soils Group A, C and D. For the off-site study area to the east, it is classified as Hydrologic Soils Group D (Exhibit "H").

Antecedent Moisture Condition (AMC) 1 was used for the 2-year storm analysis while AMC-2 was used to determine the 10-year and 100-year storm flows. AMC-3 was used in the 100-year storm hydrograph for the proposed above-ground basins as required by San Bernardino County Flood Control District.

Land-use category description for the on-site proposed condition was based on "3 to 4 dwelling units per acre" with an equivalent pervious percentage of 60 percent and "commercial" with an equivalent pervious percentage of 10 percent while the existing condition and off-site areas used "undeveloped-average cover". A slope of intensity duration curve of 0.65 was used.

Existing Condition

The drainage study area encompassing the area west of Wabash Avenue under the existing condition consists of approximately 53.43 acres (at nodal points 601, 701, 803, 1002, 1004, 1006, and 1008) and consists of relatively steep undeveloped areas with an average slope of approximately 15 percent. These flows concentrate at different locations around the proposed project boundary as shown on Exhibit "A". The most northerly drainage area, Area "F" (Nodal Point 601) drains along an existing drainage course to the northwest into an existing basin. Area "G" (Nodal Point 701) and Area "H" (Nodal Point 803) concentrate and drain as sheet flow to the west at Sophia Court. The remaining tributary areas, Areas "B", "C", "D", & E" (Nodal Points 1002, 1004, 1006, and 1008) concentrate at four locations in Reservoir Road where existing drainage pipes and inlets are located. These flows then discharge into the existing Caltrans' collector channel that runs between I-10 and Reservoir Road.

The project area east of Wabash Avenue consists of approximately 95.11 acres of drainage area as shown on Exhibit "A". This drainage area consists of undeveloped areas with an average slope of 10 percent. The majority of the storm flows emanating east of Wabash Avenue currently concentrate at the existing 48" culvert located east of Wabash Avenue and north of the freeway off-ramp (at nodal point 110). These flows are then conveyed and discharged into the exiting Caltrans' collector channel that runs westerly from this culvert. The channel then confluences with the storm flows emanating from the westerly drainage area.

The total drainage area under the existing condition is 145.3 acres as shown on Table 2, the drainage areas vary from 1.22 acres to 95.1 acres yielding 100-year peak flow rates that range from 3.6 CFS to 172.6 CFS.

TABLE 2: 100-YEAR PEAK DISCHARGES (EXISTING CONDITION)

Nodal Point	Area Size (Acres)	100-year Peak Discharge (CFS)
601	3.19	7.5
803	28.3	52.1
1008	1.22	3.6
1006	2.12	5.5
1004	10.1	21.8
1002	5.27	9.6
110	95.1	172.6

In order to determine the total cumulative flow rates from these two drainage areas, the flows were routed and combined starting at the existing 48-inch RCP down through the existing Caltrans' concrete channel running between Reservoir Road and I-10. As shown on Table 3, 100-year peak flow rates range from 172.6 CFS to 203.4 CFS.

TABLE 3: TOTAL CUMULATIVE 100-YEAR PEAK DISCHARGES AT VARIOUS LOCATIONS ALONG THE EXISTING CALTRANS CONCRETE CHANNEL (EXISTING CONDITION)

Nodal Point	100-year Peak Discharge (CFS)
1010 (at 48" RCP)	172.6
6000 (at conc. channel)	181.3
7000 (at conc. channel)	198.4
8000 (at conc. channel)	201.6
9000 (at conc. channel near westerly project boundary)	203.4

The results of the unit-hydrograph analysis under the existing condition are shown on Table 4. The storm volumes and peak discharges for the 100-year, 24-hour storm range from 0.25 ac-ft to 5.1 ac-ft and 5.6 CFS to 58.6 CFS, respectively.

TABLE 4: 100-YEAR, 24-HOUR STORM VOLUME (EXISTING CONDITION)

Nodal Point	Area Size (Acres)	100-year, 24-hr Volume (ac-ft)	100-year, 24-hr Peak Discharge (CFS)
101	7.47	2.4	31.4
201	14.7	5.1	58.6
203	12.2	4.5	51.6
301	13.9	4.1	55.6
401	4.4	1.5	18.4
501	1.2	0.25	5.6
601	3.4	0.70	13.6
701	1.4	0.28	5.7

Proposed Condition

The drainage study area encompassing the development under the proposed condition consists of "off-site" and "on-site" areas. The "off-site" area represents the areas that will remain undeveloped while the "on-site" area depicts the proposed residential development. The total "off-site" area is approximately 86.9 acres whereas the "on-site" area is approximately 56.7 acres for a total drainage area of 143.6 acres as shown on Exhibit "B". The total drainage area from proposed condition to existing condition is reduced by 1.7 due to the orientation of the project boundary from existing to proposed condition at the west and northwest area of the project, where there are drainage areas not included under the proposed conditions.

The "on-site" storm flows that are discharging from the proposed developed lots will be safely conveyed within the proposed streets sections, intercepted by the proposed catch basins, and conveyed through the proposed storm drain system, discharging into the proposed water quality basins. Ultimately, Basin "A" and Basin "C" will discharge flows down the existing storm drain lines into the existing concrete lined collector channel that runs adjacent along the north side of I-10 while Basin "B-1" and "B-2" will discharge flows at Sophia Court. As shown on Table 5, the drainage areas vary from 1.22 acres to 14.6 acres yielding 100-year peak flow rates that range from 4.7 CFS to 38.8 CFS.

TABLE 5: 100-YEAR ON-SITE PEAK DISCHARGES (PROPOSED CONDITION)

Nodal Point	Area Size (Acres)	100-year Peak Discharge (CFS)
123	14.6	36.3
130	8.13	26.6
135	3.51	9.9
163	1.37	5.2
155	3.10	10.2
149	3.41	9.8
142	1.22	4.7
153	3.52	12.6
240	4.40	9.6
221	13.4	38.8

The "off-site" storm flows that are discharging from the off-site areas will be safely conveyed through the dual-drainage pipe storm drain system to avoid co-mingling of the "off-site" and "on-site" stormflows. For the off-site drainage areas east of Street "C" that discharge at nodal point 136, the flows are captured through the proposed storm drain system and are discharged west of the project boundary at Sophia Court. For the off-site drainage areas that are along the eastern half of the project that discharge at nodal point 213, the flows are captured through the proposed storm drain system and discharge into the existing Caltrans' 48" culvert near the northeast corner of Wabash Avenue and the freeway off-ramp. As shown on Table 6, the drainage areas vary from 5.4 acres to 76.1 acres yielding 100-year peak flow rates that range from 54.6 CFS to 204.4 CFS.

TABLE 6: 100-YEAR OFF-SITE PEAK DISCHARGES (PROPOSED CONDITION)

Nodal Point	Area Size (Acres)	100-year Peak Discharge (CFS)
136	5.4	54.6
213	76.1	158.3
249	5.37	204.4

In order to determine the total cumulative flow rates from these two study areas, the flows were routed and combined starting at the existing 48-inch RCP and down through the existing Caltrans' concrete channel running between Reservoir Road and I-10. The results are shown on Table 7. From this analysis, the total cumulative 100-year flow rates at the existing Caltrans' concrete channel near the westerly project boundary has increased by 25.6 CFS (203.4 CFS versus 230.0 CFS).

TABLE 7: TOTAL CUMULATIVE 100-YEAR PEAK DISCHARGES AT VARIOUS LOCATIONS ALONG THE EXISTING CALTRANS CONCRETE CHANNEL (PROPOSED CONDITION)

Nodal Point	100-year Peak Discharge (CFS)
1010 (at 48" RCP)	204.4
6000 (at conc. channel)	206.9
7000 (at conc. channel)	222.5
8000 (at conc. channel)	227.6
9000 (at conc. channel near westerly project boundary)	230.0

The results of the unit-hydrograph analysis under the proposed condition are shown on Table 8. The storm volumes and peak discharges for the 100-year, 24-hour storm range from 0.55 ac-ft to 5.6 ac-ft and 7.4 CFS to 61.9 CFS, respectively. The drainage areas under the unit-hydrograph method include the basin footprint areas, whereas the drainage areas under the rational tabling method shown in Table 5, do not.

TABLE 8: 100-YEAR, 24-HOUR STORM VOLUME (PROPOSED CONDITION)

Nodal Point	Area Size (Acres)	100-year, 24-hr Volume (ac-ft)	100-year, 24-hr Peak Discharge (CFS)
101	7.47	2.5	41.1
201	14.7	5.6	50.7
203	12.2	4.4	61.9
301	13.9	4.8	56.7
401	4.4	1.8	22.5
501	1.2	0.48	7.4
601	3.4	1.39	19.7
701	1.4	0.55	7.8

Stormwater Quality Analysis (Design Capture Volume) for Underground Stormwater Chambers

In order to design the underground stormwater chambers, the tributary drainage areas were identified and delineated as shown on the unit-hydrograph maps to determine the water quality Design Capture Value (DCV) based upon the 2-year, 1-hour event. The calculations are shown on Appendix "I", but a more detailed analysis and breakdown can be found in

the project WQMP. As shown on Exhibit "D", the proposed hydrology map under the unit-hydrograph method, water quality flows emanating from drainage areas "D", "E", "F" and "G" will drain into stormwater underground chambers located under the proposed sidewalk in Wabash Avenue and Reservoir Road. The DCV values were increased by multiplying the computed results by 1.20, which is equivalent to using a factor of safety of 20 percent. The drainage areas shown on Table 9 vary from 1.4 acres to 3.4 acres yielding water quality volumes that range from 2,647 CF to 9,733 CF. The underground stormwater chamber is a proprietary product that will be designed and manufactured during final engineering by a consultant that specializes in underground storm water detention/infiltration.

TABLE 9: STORMWATER QUALITY ANALYSIS RESULTS

Drainage Area from Unit-Hydrograph	Area Size (Acres)	Design Capture Volume (CF)
D	4.4	9,733
E	1.2	2,647
F	3.4	5,108
G	1.4	2,627

IV. RECOMMENDED PLAN

The drainage plan for TTM 20320 proposes a system of underground storm drains, open channels, and debris basins to intercept and convey the storm flows generated by the project site and the off-site areas emanating from the east. The proposed drainage system also includes above-ground infiltration basins and underground stormwater chambers to address stormwater quality volumes generated by the project site. The drainage system will be designed to perpetuate the existing drainage flow pattern to the maximum extent practical. The improvements proposed by this plan are shown on Exhibit "E" which is enclosed in the back of this report. These exhibits not only show proposed preliminary alignments, but pertinent preliminary size information, as well as the design flow rates.

The hydraulic calculations in support of the proposed drainage facilities sizing, street conveyance capacities, stormwater/infiltration above-ground basins, and debris basins are included in Appendix "E", "F", "G", and "H", respectively.

Hydraulic analysis was performed in support of the existing and proposed drainage facilities using the following:

1. FlowMaster Computer Program – this computer program was used for conveyance capacity calculations for the existing drainage facilities, proposed drainage facilities, and street conveyance capacities (see Appendix "E" & "F").

2. Microsoft Excel – this computer program was utilized to preliminary size the capacities of the proposed above-ground stormwater/infiltration basins based upon

the conservative approach of taking the difference between the 100-year storm volume from existing condition and proposed condition (see Appendix "G").

3. The sizing of the two desilting basins was performed using the US Army Corps of Engineers – Los Angeles District's Debris Method, dated February 1992 and updated on February 2000 (see Appendix "H").

Additionally, the following are provided to describe the results of the hydraulic analysis and description of the proposed drainage improvements.

1. FlowMaster Computer Program

   Catch Basin Sizing Analysis - the results of the analysis are included in Appendix "E.1".

   Parkway Drain Sizing Analysis - the results of the analysis are included in Appendix "E.2".

   Storm Drain Sizing Calculations (see Appendix "E.3")

   - Line "A" – this facility is an underground RCP that varies in size from 24-inches to 30-inches and conveys the tributary on-site 100-year storm flow that ranges from 14.8 CFS to 36.3 CFS. Line "A" is also an outlet for Line "B". Flows that are captured and conveyed by Line "A" outlet into above-ground Basin "B-1".

   - Line "B" System – this facility starts as an underground RCP that is 18-inches in size and transitions to a concrete v-ditch (see Appendix "E.4") that is 1.5 feet in depth with 1:1 side-slopes. Line "B" conveys the tributary on-site 100-year storm flow that ranges from 2.3 CFS to 5.2 CFS. Flows that are captured and conveyed by Line "B" outlet into Line "A".

   - Line "C" System (Line "C", Lat "C", and CP "C") – this facility is an underground RCP that varies in size from 18-inches to 48-inches and is proposed to intercept and convey the "off-site" undeveloped flow of 17.8 CFS. Line "C" provides outlet for Lateral "C-1", Connector Pipe "C" and Outlet Pipe "B-1", the storm drain line that will discharge flows Basin "B-1". Flows that are captured and conveyed by Line "C" outlet as sheet flow onto Sophia Court, west of the proposed development.

   - Line "D" System (Line "D" and Lat "D") – this facility is an underground drainage RCP that is to 36-inches in size. It is proposed to intercept and convey the on-site tributary 100-year storm flow that ranges from 26.6 CFS to 36.5 CFS. Line "D" provides outlet for Lateral "D". Flows that are captured and conveyed by Line "D" outlet into above-ground Basin "B-2".

- Line "F" – this facility is an underground RCP that is 18-inches in size and conveys the tributary on-site 100-year storm flow of 10.2 CFS. Flows that are captured and conveyed by Line "F" outlet into above-ground Basin "A".

- Line "G" – this facility is an underground RCP that is 18-inches in size and conveys the tributary on-site 100-year storm flow of 12.6 CFS. Flows that are captured and conveyed by Line "G" outlet into above-ground Basin "A".

- Line "H" – this facility is an underground RCP that is 18-inches in size and conveys the tributary on-site 100-year storm flow that ranges from 2.3 CFS to 4.6 CFS. Flows that are captured and conveyed by Line "H" outlet into the existing drainage pipe under Reservoir Road.

- Line "I" – this facility is an underground RCP that is 18-inches in size and conveys the tributary on-site 100-year storm flow of 2.3 CFS. Flows that are captured and conveyed by Line "I" sheet flow onto Reservoir Road.

- Line "J" – this facility is an underground RCP that is 18-inches in size and conveys the tributary off-site 100-year storm flow of 2.4 CFS. Flows that are captured and conveyed by Line "J" outlet into Outlet Pipe "B-1".

- Line "K" – this facility is an underground RCP that varies in size from 18-inches to 24-inches and conveys the tributary on-site 100-year storm flow that ranges from 5.6 CFS to 10.2 CFS. Flows that are captured and conveyed by Line "K" outlet into the existing drainage pipe under Reservoir Road

- Line "L" – this facility is an underground RCP that is 18-inches in size and conveys the tributary on-site 100-year storm flow of 5.4 CFS. Flows that are captured and conveyed by Line "L" outlet into the existing drainage pipe under Reservoir Road.

- Line "M" – this facility is an underground RCP that varies in size from 18-inches to 24-inches and conveys the tributary on-site 100-year storm flow that ranges from 2.7 CFS to 15.2 CFS. Flows that are captured and conveyed by Line "M" outlet into the existing 48" drainage culvert located east of Wabash Avenue, north of the freeway off-ramp.

- Line "N" – this facility is an underground RCP that is 18-inches in size and conveys the tributary on-site 100-year storm flow of 0.9 CFS. Flows that are captured and conveyed by Line "N" outlet into above-ground Basin "B-1".

- Line "O" – this facility is an underground RCP that is 30-inches in size and conveys the tributary on-site 100-year storm flow of 38.8 CFS. Flows that are captured and conveyed by Line "O" outlet into above-ground Basin "C".

- Line "P" System (Line "P", Lat "P-1" through Lat "P-6", and CP "P")– this facility is an underground RCP that is 42-inches in size is proposed to intercept and convey the "off-site" undeveloped flow of 170.6 CFS. Line "P" provides outlet for Lateral "P-1" through Lateral "P-6", Connector Pipe "P" and Line "Q". Flows that are captured and conveyed by Line "P" outlet into the existing 48" drainage culvert located east of Wabash Avenue, north of the freeway off-ramp.

- Line "Q" – this facility is an underground RCP that is 42-inches in size and is proposed to intercept and convey the "off-site" undeveloped flow of 75.4 CFS. Flows that are captured and conveyed by Line "Q" will sheet flow across into Line "P".

- Line "R" – this facility is an underground RCP that is 18-inches in size and conveys the tributary on-site 100-year storm flow of 1.5 CFS. Flows that are captured and conveyed by Line "R" outlet into above-ground Basin "B-1".

Street Flow Capacity Calculations (see Appendix "F") – the computer program was applied to the interior streets, Wabash Avenue, and Reservoir Road to determine the flow capacities at the right-of-way, top-of-curb and crown. The results of the flow capacity calculations for the proposed streets sections upstream of the proposed catch basins are shown in Table 10.

TABLE 10: STREET FLOW CAPACITY RESULTS

Cross Section ID	Street Name	Minimum Street Slope	Flow Depth Reference	Flow Capacity (CFS)
A-A	Street I	2.5%	Up to Right of Way Elevation	213.2
A-A	Street I	2.5%	Up to Top of Curb Elevation	104.4
B-B	Street G	3.1%	Up to Right of Way Elevation	251.4
B-B	Street G	3.1%	Up to Top of Curb Elevation	117.0
C-C	Street G	3.1%	Up to Right of Way Elevation	251.4
C-C	Street G	3.1%	Up to Top of Curb Elevation	117.0
D-D	Street H	3.6%	Up to Right of Way Elevation	251.3
D-D	Street H	3.6%	Up to Top of Curb Elevation	123.1
E-E	Wabash Ave	5.4%	Up to Right of Way Elevation	322.9

E-E	Wabash Ave	5.4%	Up to Top of Curb Elevation	145.0
F-F	Reservoir Road	5.4%	100-Year Half Street Capacity	32.6
G-G	Reservoir Road	4.8%	100-Year Half Street Capacity	30.8
H-H	Reservoir Road	5.0%	100-Year Half Street Capacity	31.4
I-I	Street A	6.0%	Up to Right of Way Elevation	327.6
I-I	Street A	6.0%	Up to Top of Curb Elevation	160.5
J-J	Street B	5.4%	Up to Right of Way Elevation	312.7
J-J	Street B	5.4%	Up to Top of Curb Elevation	152.7
K-K	Street E	5.0%	Up to Right of Way Elevation	299.1
K-K	Street E	5.0%	Up to Top of Curb Elevation	146.5
L-L	Street D	14.0%	Up to Right of Way Elevation	500.4
L-L	Street D	14.0%	Up to Top of Curb Elevation	245.1
M-M	Street F	3.0%	Up to Right of Way Elevation	232.4
M-M	Street F	3.0%	Up to Top of Curb Elevation	113.9
N-N	Wabash Ave	1.0%	Up to Right of Way Elevation	107.2
N-N	Wabash Ave	1.0%	Up to Top of Curb Elevation	93.3

The hydrology results show that the maximum computed 100-year and 10-year storm flows within the interior streets are 21.5 CFS and 38.8 CFS, respectively (see Appendix "B" and Exhibit "B") and 9.8 CFS for the 100-year storm flow along the street half section of Reservoir Road. From Table 7, it is apparent that the 100-year and 10-year storm flows are contained within the right-of-way and top of curb elevations, respectively, for the interior streets and within the street half section of Reservoir Road.

2. Microsoft Excel - Basin Capacity Calculation (Appendix "G")

The capacity calculations in support of the proposed above-ground stormwater/infiltration basin (Basin "A", Basin "B-1", Basin "B-2" and Basin "C")

were performed using Microsoft Excel. Since this is a preliminary drainage study, the basins were conservatively designed based upon the difference in the 100-year/24-hour flood volume between the existing and proposed conditions. The basin routing calculations will be performed during final engineering. The preliminary basin parameters are described as shown in Table 11.

TABLE 11: STORMWATER QUALITY/DETENTION BASIN DATA

Basin ID	Basin Depth (FT)	Basin Elevation (FT)	Storage Volume (AF)	Notes
Basin "A"	0.0	1799.7	0.000	Basin floor elevation
	2.57	1802.3	0.277	Top of WQ Volume/Top of Riser
	5.8	1805.5	0.908	Minimum Top Basin Elevation
Basin "B-1"	0.0	1804.00	0.000	Basin floor elevation
	2.87	1806.87	0.476	Top of WQ Volume/Top of Riser
	6.0	1810.00	1.285	Minimum Top Basin Elevation
Basin "B-2"	0.0	1760.0	0.000	Basin floor elevation
	3.05	1763.05	0.401	Top of WQ Volume/Top of Riser
	6.0	1766.00	0.992	Minimum Top Basin Elevation
Basin "C"	0.0	1824.6	0.000	Basin floor elevation
	3.01	1827.61	0.534	Top of WQ Volume/Top of Riser
	3.9	1828.5	0.607	Minimum Top Basin Elevation

3. Sizing of Debris Basins (Appendix "H")

Sizing of the two debris basins (Basin "D" and Basin "E") was performed using the US Army Corps of Engineers – Los Angeles District's Debris Method, dated February 1992 and updated on February 2000. Due to the size of the tributary drainage areas, Equation 1 was used in the analysis.

$$Log\ Dy = 0.65\ (Log\ P) + 0.62\ (Log\ RR) + 0.18\ (Log\ A) + 0.12\ (FF)$$

where:

Dy = Unit Debris Yield (CY/SM)
P = Maximum 1-hour Precipitation (inches, taken to two places after the decimal point, times 100)
RR = Relief Ratio (ft/mi)

A = Drainage Area (ac)
FF = Non-Dimensional Fire Factor

The following parameters were used for this study:

- P = 1.27 inches/hour was used for the 100-year/1-hour rainfall intensities.
- RR = 421.5 ft/mi and 404.1 ft/mi for drainage areas B.1/B.3 and B.4/B.5, respectively.
- A = 34.6 acres and 21.7 acres for drainage areas B.1/B.3 and B.4/B.5, respectively (see Exhibit "D").
- FF = 4.5 for 4-year burn recovery factor

As shown on Table 12 below and Appendix "H", the maximum 100-year debris yield at CP 203 and CP 207 are 421 CY and 236 CY, respectively. The debris yield values were increased by multiplying the computed debris yield by 1.20, which is equivalent to using a factor of safety of 20 percent.

TABLE 12: 100-YEAR DEBRIS PRODUCTION CALCULATION RESULTS

Nodal Point	Drainage Area (acres)	Fire Factor	Debris Yield (CY)
CP 203 (Basin "D")	34.6	4.5	421
CP 207 (Basin "E")	21.7	4.5	236

Debris basin "D" has a storage capacity of 1,014 CY while debris basin "E" has a storage capacity of 1,252 CY. Since the maximum estimated debris yield for Basin "D" and Basin "E" are 421 CY and 236 CY, respectively, it is apparent that both basins have adequate storage capacities to contain the tributary 100-year debris load based on a fire factor of 4.5. Additionally, Basin "D" has about 2.4 times the capacity to contain the 100-year debris while Basin "E" has about 5.3 times the capacity for the 100-year debris load. Detail design information for these two derbis basins will be prepared during the final design phase.

V. FINDINGS

The existing (pre-project) and proposed (post-project) conditions hydrology analyses evaluated the runoff generated at common discharge points. Table 13 tabulates the 100-year peak flow rates resulting from the analyses performed for the nodal points of interest as shown on Exhibit "A", hydrology map based on existing condition – rational tabling method and Exhibit "B", hydrology map for based on proposed condition – rational tabling method. As shown on Table 14, the existing condition 100-year flow has increased by 26.6 CFS (from 230.0 CFS to 203.4 CFS) at node 9000, which is located at the existing Caltrans' collector channel near the westerly project boundary.

TABLE 13: SUMMARY OF 100-YEAR HYDROLOGY RESULTS BETWEEN EXISTING CONDITION AND PROPOSED CONDITION

Nodal Point	Table 3 - Q100 (Exist. Cond.)	Table 7 - Q100 (Prop. Cond.)	Delta
1010	172.6	204.4	31.8
6000	181.3	206.9	25.6
7000	198.4	222.5	24.1
8000	201.6	227.6	26.0
9000	203.4	230.0	26.6

During the final engineering phase, detailed basin routing and hydrograph routing calculations will be performed for Basins "A", "B-1", "B-2", and "C". It is expected that flow attenuation occurring within these basins should show that the proposed condition flows will be less than the existing condition flows, which will help achieve the project goal of reducing the post-development flow to approximately 90 percent (or less) of the existing or pre-development flow as recommended by San Bernardino County Flood Control District.

The results of the drainage study indicate that the 100-year storm flows under the proposed condition do not adversely impact the existing or pre-project drainage condition adjacent to and downstream of TTM 20320. Additionally, implementation of the proposed drainage facilities as recommended in this drainage plan perpetuates the existing drainage flow pattern and provides TTM 20320 with drainage protection from the once in a hundred-year flood event.

VI. REFERENCES

1. San Bernardino County Flood Control District Hydrology Manual, 1986
2. Federal Emergency Management Agency Flood Map Service Center
3. VA Consulting, "*Aerial Topo for Tract Map No. 15856-1*"

APPENDICES

APPENDIX A: 100-YEAR HYDROLOGY CALCULATIONS BASED ON EXISTING CONDITION (RATIONAL TABLING METHOD)

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-EXISTING CONDITION
AREA A
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++

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

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2) = 82.50
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.327(In/Hr)
Initial subarea data:
Initial area flow distance = 495.000(Ft.)
Top (of initial area) elevation = 2140.000(Ft.)
Bottom (of initial area) elevation = 2080.000(Ft.)
Difference in elevation = 60.000(Ft.)
Slope = 0.12121 s(%)= 12.12
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.881 min.
Rainfall intensity = 3.453(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.815
Subarea runoff = 17.076(CFS)
Total initial stream area = 6.070(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.327(In/Hr)

++

Process from Point/Station 101.000 to Point/Station 102.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 30.326(CFS)
Depth of flow = 1.056(Ft.), Average velocity = 6.436(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	20.00
2	73.00	0.00
3	169.00	20.00

Manning's 'N' friction factor = 0.035

Sub-Channel flow = 30.326(CFS)
' ' flow top width = 8.924(Ft.)
' ' velocity= 6.436(Ft/s)
' ' area = 4.712(Sq.Ft)
' ' Froude number = 1.561

Upstream point elevation = 2080.000(Ft.)
Downstream point elevation = 2030.000(Ft.)
Flow length = 895.000(Ft.)
Travel time = 2.32 min.
Time of concentration = 15.20 min.
Depth of flow = 1.056(Ft.)
Average velocity = 6.436(Ft/s)
Total irregular channel flow = 30.326(CFS)
Irregular channel normal depth above invert elev. = 1.056(Ft.)
Average velocity of channel(s) = 6.436(Ft/s)

```
Sub-Channel No. 1 Critical depth =      1.266(Ft.)
  '     '       '     Critical flow top width =     10.695(Ft.)
  '     '       '     Critical flow velocity=    4.481(Ft/s)
  '     '       '     Critical flow area =      6.768(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.250
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2)  = 82.75
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.322(In/Hr)
Rainfall intensity =      3.101(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.806
Subarea runoff =     21.629(CFS) for    9.420(Ac.)
Total runoff =     38.705(CFS)
Effective area this stream =       15.49(Ac.)
Total Study Area (Main Stream No. 1) =       15.49(Ac.)
Area averaged Fm value =    0.324(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     60.544(CFS)
Depth of flow =   1.253(Ft.), Average velocity =   8.815(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00             20.00
        2            70.00              0.00
        3           175.00             20.00
Manning's 'N' friction factor =   0.035
------------------------------------------------------------------
Sub-Channel flow  =     60.544(CFS)
  '     '         flow top width =     10.963(Ft.)
  '     '    velocity=    8.815(Ft/s)
  '     '        area =      6.868(Sq.Ft)
  '     '        Froude number =     1.963

Upstream point elevation =  2030.000(Ft.)
Downstream point elevation =  1929.200(Ft.)
Flow length =  1210.000(Ft.)
Travel time  =    2.29 min.
Time of concentration =   17.49 min.
Depth of flow =   1.253(Ft.)
Average velocity =   8.815(Ft/s)
Total irregular channel flow =    60.544(CFS)
Irregular channel normal depth above invert elev. =   1.253(Ft.)
Average velocity of channel(s) =   8.815(Ft/s)

Sub-Channel No. 1 Critical depth =      1.641(Ft.)
  '     '       '     Critical flow top width =     14.355(Ft.)
  '     '       '     Critical flow velocity=    5.141(Ft/s)
  '     '       '     Critical flow area =     11.776(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.800
SCS curve number for soil(AMC 2)  = 80.10
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.368(In/Hr)
Rainfall intensity =      2.830(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.790
Subarea runoff =     34.972(CFS) for   17.480(Ac.)
Total runoff =     73.677(CFS)
Effective area this stream =       32.97(Ac.)
Total Study Area (Main Stream No. 1) =       32.97(Ac.)
Area averaged Fm value =    0.347(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =    100.661(CFS)
Depth of flow =   1.240(Ft.), Average velocity =   7.697(Ft/s)
```

******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	5.00
2	35.00	0.00
3	85.00	5.00

Manning's 'N' friction factor = 0.035

Sub-Channel flow = 100.661(CFS)
' ' flow top width = 21.086(Ft.)
' ' velocity= 7.697(Ft/s)
' ' area = 13.077(Sq.Ft)
' ' Froude number = 1.722

Upstream point elevation = 1929.200(Ft.)
Downstream point elevation = 1826.000(Ft.)
Flow length = 1645.000(Ft.)
Travel time = 3.56 min.
Time of concentration = 21.05 min.
Depth of flow = 1.240(Ft.)
Average velocity = 7.697(Ft/s)
Total irregular channel flow = 100.661(CFS)
Irregular channel normal depth above invert elev. = 1.240(Ft.)
Average velocity of channel(s) = 7.697(Ft/s)

Sub-Channel No. 1 Critical depth = 1.547(Ft.)
' ' ' Critical flow top width = 26.297(Ft.)
' ' ' Critical flow velocity= 4.949(Ft/s)
' ' ' Critical flow area = 20.339(Sq.Ft)

Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.450
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.350
Decimal fraction soil group D = 0.200
SCS curve number for soil(AMC 2) = 66.95
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.579(In/Hr)
Rainfall intensity = 2.509(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified rational method)(Q=KCIA) is C = 0.740
Subarea runoff = 32.414(CFS) for 24.150(Ac.)
Total runoff = 106.091(CFS)
Effective area this stream = 57.12(Ac.)
Total Study Area (Main Stream No. 1) = 57.12(Ac.)
Area averaged Fm value = 0.445(In/Hr)

++
Process from Point/Station 103.000 to Point/Station 104.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 57.120(Ac.)
Total study area this main stream = 57.120(Ac.)
Runoff from this stream = 106.091(CFS)
Time of concentration = 21.05 min.
Rainfall intensity = 2.509(In/Hr)
Area averaged loss rate (Fm) = 0.4454(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 105.000 to Point/Station 106.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2) = 84.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.301(In/Hr)
Initial subarea data:
Initial area flow distance = 855.000(Ft.)
Top (of initial area) elevation = 2050.000(Ft.)
Bottom (of initial area) elevation = 1978.000(Ft.)
Difference in elevation = 72.000(Ft.)
Slope = 0.08421 s(%)= 8.42
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 17.239 min.

Rainfall intensity = 2.857(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.805
Subarea runoff = 22.430(CFS)
Total initial stream area = 9.750(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.301(In/Hr)

++
Process from Point/Station 106.000 to Point/Station 107.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 30.861(CFS)
Depth of flow = 1.043(Ft.), Average velocity = 7.088(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :
Point number 'X' coordinate 'Y' coordinate
1 0.00 20.00
2 70.00 0.00
3 160.00 20.00
Manning's 'N' friction factor = 0.035

Sub-Channel flow = 30.861(CFS)
' ' flow top width = 8.346(Ft.)
' ' velocity= 7.088(Ft/s)
' ' area = 4.354(Sq.Ft)
' ' Froude number = 1.730

Upstream point elevation = 1978.000(Ft.)
Downstream point elevation = 1941.000(Ft.)
Flow length = 535.000(Ft.)
Travel time = 1.26 min.
Time of concentration = 18.50 min.
Depth of flow = 1.043(Ft.)
Average velocity = 7.088(Ft/s)
Total irregular channel flow = 30.861(CFS)
Irregular channel normal depth above invert elev. = 1.043(Ft.)
Average velocity of channel(s) = 7.088(Ft/s)

Sub-Channel No. 1 Critical depth = 1.297(Ft.)
' ' ' Critical flow top width = 10.375(Ft.)
' ' ' Critical flow velocity= 4.587(Ft/s)
' ' ' Critical flow area = 6.728(Sq.Ft)

Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2) = 80.60
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.360(In/Hr)
Rainfall intensity = 2.729(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.793
Subarea runoff = 14.509(CFS) for 7.330(Ac.)
Total runoff = 36.939(CFS)
Effective area this stream = 17.08(Ac.)
Total Study Area (Main Stream No. 2) = 17.08(Ac.)
Area averaged Fm value = 0.326(In/Hr)

++
Process from Point/Station 107.000 to Point/Station 108.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 44.476(CFS)
Depth of flow = 0.919(Ft.), Average velocity = 6.579(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :
Point number 'X' coordinate 'Y' coordinate
1 0.00 5.00
2 40.00 0.00
3 80.00 5.00
Manning's 'N' friction factor = 0.035

Sub-Channel flow = 44.476(CFS)
' ' flow top width = 14.708(Ft.)
' ' velocity= 6.579(Ft/s)
' ' area = 6.760(Sq.Ft)
' ' Froude number = 1.710

Upstream point elevation = 1941.000(Ft.)
Downstream point elevation = 1906.800(Ft.)
Flow length =   500.000(Ft.)
Travel time =   1.27 min.
Time of concentration =   19.76 min.
Depth of flow =   0.919(Ft.)
Average velocity =   6.579(Ft/s)
Total irregular channel flow =   44.476(CFS)
Irregular channel normal depth above invert elev. =   0.919(Ft.)
Average velocity of channel(s) =   6.579(Ft/s)

Sub-Channel No. 1 Critical depth =   1.141(Ft.)
  '   '   '   Critical flow top width =   18.250(Ft.)
  '   '   '   Critical flow velocity=   4.273(Ft/s)
  '   '   '   Critical flow area =   10.408(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.250
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2) = 75.50
Pervious ratio(Ap) = 1.0000   Max loss rate(Fm)=   0.445(In/Hr)
Rainfall intensity =   2.614(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.776
Subarea runoff =   11.839(CFS) for   6.970(Ac.)
Total runoff =   48.777(CFS)
Effective area this stream =   24.05(Ac.)
Total Study Area (Main Stream No. 2) =   24.05(Ac.)
Area averaged Fm value =   0.360(In/Hr)

++
Process from Point/Station   108.000 to Point/Station   104.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
____
Estimated mean flow rate at midpoint of channel =   61.778(CFS)
Depth of flow =   0.914(Ft.), Average velocity =   6.719(Ft/s)
       ******* Irregular Channel Data ***********

Information entered for subchannel number 1 :
Point number   'X' coordinate   'Y' coordinate
        1   0.00   5.00
        2   55.00   0.00
        3   110.00   5.00
Manning's 'N' friction factor =   0.035

Sub-Channel flow =   61.778(CFS)
  '   '   flow top width =   20.114(Ft.)
  '   '   velocity=   6.719(Ft/s)
  '   '   area =   9.195(Sq.Ft)
  '   '   Froude number =   1.751

Upstream point elevation = 1906.800(Ft.)
Downstream point elevation = 1826.000(Ft.)
Flow length = 1130.000(Ft.)
Travel time =   2.80 min.
Time of concentration =   22.57 min.
Depth of flow =   0.914(Ft.)
Average velocity =   6.719(Ft/s)
Total irregular channel flow =   61.778(CFS)
Irregular channel normal depth above invert elev. =   0.914(Ft.)
Average velocity of channel(s) =   6.719(Ft/s)

Sub-Channel No. 1 Critical depth =   1.141(Ft.)
  '   '   '   Critical flow top width =   25.094(Ft.)
  '   '   '   Critical flow velocity=   4.317(Ft/s)
  '   '   '   Critical flow area =   14.311(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.250
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.750
SCS curve number for soil(AMC 2) = 75.50
Pervious ratio(Ap) = 1.0000   Max loss rate(Fm)=   0.445(In/Hr)
Rainfall intensity =   2.398(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.754
Subarea runoff =   17.862(CFS) for   12.820(Ac.)
Total runoff =   66.640(CFS)

Effective area this stream = 36.87(Ac.)
Total Study Area (Main Stream No. 2) = 36.87(Ac.)
Area averaged Fm value = 0.390(In/Hr)

++
Process from Point/Station 108.000 to Point/Station 104.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 36.870(Ac.)
Total study area this main stream = 36.870(Ac.)
Runoff from this stream = 66.640(CFS)
Time of concentration = 22.57 min.
Rainfall intensity = 2.398(In/Hr)
Area averaged loss rate (Fm) = 0.3897(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	106.091	21.05	2.509
2	66.640	22.57	2.398

Qmax(1) =
1.000 * 1.000 * 106.091) +
1.055 * 0.933 * 66.640) + = 171.684
Qmax(2) =
0.946 * 1.000 * 106.091) +
1.000 * 1.000 * 66.640) + = 167.019

Total of 2 main streams to confluence:
Flow rates before confluence point:
107.091 67.640
Maximum flow rates at confluence using above data:
171.684 167.019
Effective Area of streams before confluence:
57.120 36.870
Effective area values after confluence:
91.508 93.990

Results of confluence:
Total flow rate = 171.684(CFS)
Time of concentration = 21.048 min.
Effective stream area after confluence = 91.508(Ac.)
Stream Area average Pervious fraction(Ap) = 1.000
Stream Area average soil loss rate(Fm) = 0.424(In/Hr)
Steam effective area = 93.99(Ac.)

++
Process from Point/Station 104.000 to Point/Station 110.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 172.734(CFS)
Depth of flow = 1.087(Ft.), Average velocity = 9.139(Ft/s)
******* Irregular Channel Data ***********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	2.50
2	40.00	0.00
3	80.00	2.50

Manning's 'N' friction factor = 0.035

Sub-Channel flow = 172.734(CFS)
' ' flow top width = 34.779(Ft.)
' ' velocity= 9.139(Ft/s)
' ' area = 18.900(Sq.Ft)
' ' Froude number = 2.185

Upstream point elevation = 1828.000(Ft.)
Downstream point elevation = 1817.000(Ft.)
Flow length = 105.000(Ft.)
Travel time = 0.19 min.
Time of concentration = 21.24 min.
Depth of flow = 1.087(Ft.)
Average velocity = 9.139(Ft/s)
Total irregular channel flow = 172.734(CFS)
Irregular channel normal depth above invert elev. = 1.087(Ft.)
Average velocity of channel(s) = 9.139(Ft/s)

```
Sub-Channel No. 1 Critical depth =      1.484(Ft.)
  '     '       '     Critical flow top width =     47.500(Ft.)
  '     '       '     Critical flow velocity=    4.900(Ft/s)
  '     '       '     Critical flow area =     35.254(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.350
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.650
SCS curve number for soil(AMC 2)  = 72.10
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.500(In/Hr)
Rainfall intensity =      2.494(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.747
Subarea runoff =      0.873(CFS) for    1.120(Ac.)
Total runoff =    172.557(CFS)
Effective area this stream =       92.63(Ac.)
Total Study Area (Main Stream No. 1) =       37.99(Ac.)
Area averaged Fm value =    0.424(In/Hr)
End of computations, Total Study Area =           95.11 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  76.6
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-EXISTING CONDITION
AREA B
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 1000.000 to Point/Station 1001.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.300
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.700
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 70.30
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.528(In/Hr)
Initial subarea data:
Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 1932.000(Ft.)
Bottom (of initial area) elevation = 1824.900(Ft.)
Difference in elevation = 107.100(Ft.)
Slope = 0.10710 s(%)= 10.71
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 17.492 min.
Rainfall intensity = 2.830(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.732
Subarea runoff = 5.179(CFS)
Total initial stream area = 2.500(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.528(In/Hr)

++

Process from Point/Station 1001.000 to Point/Station 1002.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 8.049(CFS)
Depth of flow = 0.289(Ft.), Average velocity = 3.221(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	0.75
2	40.00	0.00
3	45.00	0.75

Manning's 'N' friction factor = 0.035

Sub-Channel flow = 8.049(CFS)
' ' flow top width = 17.317(Ft.)
' ' velocity= 3.221(Ft/s)
' ' area = 2.499(Sq.Ft)
' ' Froude number = 1.494

Upstream point elevation = 1824.900(Ft.)
Downstream point elevation = 1791.000(Ft.)
Flow length = 445.000(Ft.)
Travel time = 2.30 min.
Time of concentration = 19.79 min.
Depth of flow = 0.289(Ft.)
Average velocity = 3.221(Ft/s)
Total irregular channel flow = 8.049(CFS)
Irregular channel normal depth above invert elev. = 0.289(Ft.)
Average velocity of channel(s) = 3.221(Ft/s)

Sub-Channel No. 1 Critical depth = 0.340(Ft.)
' ' ' Critical flow top width = 20.391(Ft.)
' ' ' Critical flow velocity= 2.323(Ft/s)
' ' ' Critical flow area = 3.465(Sq.Ft)

Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.657(In/Hr)
Rainfall intensity = 2.611(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.695
Subarea runoff = 4.379(CFS) for 2.770(Ac.)
Total runoff = 9.559(CFS)
Effective area this stream = 5.27(Ac.)
Total Study Area (Main Stream No. 1) = 5.27(Ac.)
Area averaged Fm value = 0.596(In/Hr)
End of computations, Total Study Area = 5.27 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 65.7

San Bernardino County Rational Hydrology Program

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TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-EXISTING CONDITION
AREA C
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 1000.000 to Point/Station 1003.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.250
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 71.75
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.505(In/Hr)
Initial subarea data:
Initial area flow distance = 755.000(Ft.)
Top (of initial area) elevation = 1932.000(Ft.)
Bottom (of initial area) elevation = 1812.500(Ft.)
Difference in elevation = 119.500(Ft.)
Slope = 0.15828 s(%)= 15.83
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 14.458 min.
Rainfall intensity = 3.203(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.758
Subarea runoff = 7.624(CFS)
Total initial stream area = 3.140(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.505(In/Hr)

++

Process from Point/Station 1003.000 to Point/Station 1004.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 16.122(CFS)
Depth of flow = 0.092(Ft.), Average velocity = 2.653(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	4.00
2	30.00	0.00
3	95.00	0.00
4	145.00	4.00

Manning's 'N' friction factor = 0.035

Sub-Channel flow = 16.122(CFS)
' ' flow top width = 66.843(Ft.)
' ' velocity= 2.653(Ft/s)
' ' area = 6.076(Sq.Ft)
' ' Froude number = 1.551

Upstream point elevation = 1812.500(Ft.)
Downstream point elevation = 1775.700(Ft.)
Flow length = 385.000(Ft.)
Travel time = 2.42 min.
Time of concentration = 16.88 min.
Depth of flow = 0.092(Ft.)
Average velocity = 2.653(Ft/s)
Total irregular channel flow = 16.122(CFS)
Irregular channel normal depth above invert elev. = 0.092(Ft.)
Average velocity of channel(s) = 2.653(Ft/s)

```
Sub-Channel No. 1 Critical depth =      0.123(Ft.)
  '     '       '     Critical flow top width =     67.461(Ft.)
  '     '       '     Critical flow velocity=    1.978(Ft/s)
  '     '       '     Critical flow area =      8.149(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.250
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.750
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 71.75
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.505(In/Hr)
Rainfall intensity =      2.897(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.743
Subarea runoff =     14.200(CFS) for    7.000(Ac.)
Total runoff =     21.824(CFS)
Effective area this stream =       10.14(Ac.)
Total Study Area (Main Stream No. 1) =       10.14(Ac.)
Area averaged Fm value =    0.505(In/Hr)
End of computations, Total Study Area =           10.14 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  71.8
```

San Bernardino County Rational Hydrology Program

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Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-EXISTING CONDITION
AREA D
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 1005.000 to Point/Station 1006.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.800
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.200
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 55.80
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.737(In/Hr)
Initial subarea data:
Initial area flow distance = 525.000(Ft.)
Top (of initial area) elevation = 1870.000(Ft.)
Bottom (of initial area) elevation = 1765.000(Ft.)
Difference in elevation = 105.000(Ft.)
Slope = 0.20000 s(%)= 20.00
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.931 min.
Rainfall intensity = 3.629(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.717
Subarea runoff = 5.518(CFS)
Total initial stream area = 2.120(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.737(In/Hr)
End of computations, Total Study Area = 2.12 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 55.8

San Bernardino County Rational Hydrology Program

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TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-EXISTING CONDITION
AREA E
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 1007.000 to Point/Station 1008.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.900
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 52.90
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.774(In/Hr)
Initial subarea data:
Initial area flow distance = 380.000(Ft.)
Top (of initial area) elevation = 1852.000(Ft.)
Bottom (of initial area) elevation = 1753.000(Ft.)
Difference in elevation = 99.000(Ft.)
Slope = 0.26053 s(%)= 26.05
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.944 min.
Rainfall intensity = 4.085(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.729
Subarea runoff = 3.636(CFS)
Total initial stream area = 1.220(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.774(In/Hr)
End of computations, Total Study Area = 1.22 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 52.9

San Bernardino County Rational Hydrology Program

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Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-EXISTING CONDITION
AREA F
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 79.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.387(In/Hr)
Initial subarea data:
Initial area flow distance = 620.000(Ft.)
Top (of initial area) elevation = 1863.300(Ft.)
Bottom (of initial area) elevation = 1823.600(Ft.)
Difference in elevation = 39.700(Ft.)
Slope = 0.06403 s(%)= 6.40
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 16.013 min.
Rainfall intensity = 2.997(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.784
Subarea runoff = 7.494(CFS)
Total initial stream area = 3.190(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.387(In/Hr)
End of computations, Total Study Area = 3.19 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 79.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

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Rational Hydrology Study Date: 06/22/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-EXISTING CONDITION
AREA H
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++

Process from Point/Station 800.000 to Point/Station 801.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 79.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.387(In/Hr)
Initial subarea data:
Initial area flow distance = 995.000(Ft.)
Top (of initial area) elevation = 1937.000(Ft.)
Bottom (of initial area) elevation = 1807.000(Ft.)
Difference in elevation = 130.000(Ft.)
Slope = 0.13065 s(%)= 13.07
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 16.777 min.
Rainfall intensity = 2.908(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.780
Subarea runoff = 19.966(CFS)
Total initial stream area = 8.800(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.387(In/Hr)

++

Process from Point/Station 801.000 to Point/Station 803.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 35.915(CFS)
Depth of flow = 0.160(Ft.), Average velocity = 2.607(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	5.00
2	30.00	0.00
3	115.00	0.00
4	150.00	5.00

Manning's 'N' friction factor = 0.035

Sub-Channel flow = 35.916(CFS)
' ' flow top width = 87.082(Ft.)
' ' velocity= 2.607(Ft/s)
' ' area = 13.779(Sq.Ft)
' ' Froude number = 1.155

Upstream point elevation = 1807.000(Ft.)
Downstream point elevation = 1762.500(Ft.)
Flow length = 1010.000(Ft.)
Travel time = 6.46 min.
Time of concentration = 23.23 min.
Depth of flow = 0.160(Ft.)
Average velocity = 2.607(Ft/s)
Total irregular channel flow = 35.915(CFS)
Irregular channel normal depth above invert elev. = 0.160(Ft.)
Average velocity of channel(s) = 2.607(Ft/s)

```
Sub-Channel No. 1 Critical depth =      0.176(Ft.)
  '     '       '     Critical flow top width =     87.285(Ft.)
  '     '       '     Critical flow velocity=    2.372(Ft/s)
  '     '       '     Critical flow area =     15.142(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.900
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 76.10
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.435(In/Hr)
Rainfall intensity =      2.353(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.741
Subarea runoff =     19.876(CFS) for   14.060(Ac.)
Total runoff =     39.842(CFS)
Effective area this stream =       22.86(Ac.)
Total Study Area (Main Stream No. 1) =       22.86(Ac.)
Area averaged Fm value =    0.416(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      801.000 to Point/Station      803.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     22.860(Ac.)
Total study area this main stream =     22.860(Ac.)
Runoff from this stream =     39.842(CFS)
Time of concentration =   23.23 min.
Rainfall intensity =     2.353(In/Hr)
Area averaged loss rate (Fm) =    0.4164(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      802.000 to Point/Station      803.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.900
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 76.10
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.435(In/Hr)
Initial subarea data:
Initial area flow distance =   940.000(Ft.)
Top (of initial area) elevation =  1884.800(Ft.)
Bottom (of initial area) elevation =  1762.500(Ft.)
Difference in elevation =   122.300(Ft.)
Slope =    0.13011  s(%)=      13.01
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   16.413 min.
Rainfall intensity =      2.949(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.767
Subarea runoff =     15.297(CFS)
Total initial stream area =        6.760(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.435(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      802.000 to Point/Station      803.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      6.760(Ac.)
Total study area this main stream =      6.760(Ac.)
Runoff from this stream =     15.297(CFS)
Time of concentration =   16.41 min.
Rainfall intensity =     2.949(In/Hr)
Area averaged loss rate (Fm) =    0.4350(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)               (In/Hr)
```

```
1       39.842     23.23                2.353
2       15.297     16.41                2.949
Qmax(1) =
           1.000 *    1.000 *    39.842) +
           0.763 *    1.000 *    15.297) + =      51.511
Qmax(2) =
           1.308 *    0.706 *    39.842) +
           1.000 *    1.000 *    15.297) + =      52.110

Total of 2 main streams to confluence:
Flow rates before confluence point:
      40.842      16.297
Maximum flow rates at confluence using above data:
       51.511       52.110
Effective Area of streams before confluence:
       22.860        6.760
Effective area values after confluence:
       29.620       22.909


Results of confluence:
Total flow rate =     52.110(CFS)
Time of concentration =    16.413 min.
Effective stream area after confluence  =     22.909(Ac.)
Stream Area average Pervious fraction(Ap) =  1.000
Stream Area average soil loss rate(Fm) =    0.421(In/Hr)
Steam effective area =      29.62(Ac.)
End of computations, Total Study Area =           29.62 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  77.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

```
 CIVILCADD/CIVILDESIGN  Engineering Software, (c) 1989-2001 Version 6.4
        Rational Hydrology Study        Date: 01/27/20
------------------------------------------------------------------------
TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-EXISTING CONDITION
NODE 9000
100YR-1HR
------------------------------------------------------------------------
TRI-8 Builders - S/N   615
------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

------------------------------------------------------------------------
Rational hydrology study storm event year is   100.0
Computed rainfall intensity:
Storm year =   100.00   1 hour rainfall =     1.270 (In.)
Slope used for rainfall intensity curve b =  0.6500
Soil antecedent moisture condition (AMC) = 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      110.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 84.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.301(In/Hr)
Rainfall intensity =      2.494(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =  21.24 min.  Rain intensity =       2.49(In/Hr)
Total area this stream =        95.13(Ac.)
Total Study Area (Main Stream No. 1) =       95.13(Ac.)
Total runoff =    172.56(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station     1010.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1817.000(Ft.)
Downstream point/station elevation =  1790.000(Ft.)
Pipe length  =   285.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   172.557(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =   172.557(CFS)
Normal flow depth in pipe =   29.34(In.)
Flow top width inside pipe =   20.72(In.)
Critical depth could not be calculated.
Pipe flow velocity =     30.92(Ft/s)
Travel time through pipe =    0.15 min.
Time of concentration (TC) =    21.39 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     1010.000 to Point/Station     6000.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =  1790.000(Ft.)
Downstream point elevation =  1775.900(Ft.)
Channel length thru subarea  =   400.000(Ft.)
Channel base width      =    2.500(Ft.)
Slope or 'Z' of left channel bank =   2.000
Slope or 'Z' of right channel bank =   2.000
Estimated mean flow rate at midpoint of channel =    172.557(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =   12.000(Ft.)
Flow(q) thru subarea =    172.557(CFS)
Depth of flow =   1.642(Ft.), Average velocity =  18.163(Ft/s)
Channel flow top width =    9.069(Ft.)
Flow Velocity =   18.16(Ft/s)
Travel time  =    0.37 min.
Time of concentration =   21.76 min.
Critical depth =      2.844(Ft.)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
```

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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.810(In/Hr)
Rainfall intensity = 2.455(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified rational method)(Q=KCIA) is C = 0.790
Subarea runoff = 0.000(CFS) for 0.000(Ac.)
Total runoff = 172.557(CFS)
Effective area this stream = 95.13(Ac.)
Total Study Area (Main Stream No. 1) = 95.13(Ac.)
Area averaged Fm value = 0.301(In/Hr)

++
Process from Point/Station 1010.000 to Point/Station 6000.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 95.130(Ac.)
Total study area this main stream = 95.130(Ac.)
Runoff from this stream = 172.557(CFS)
Time of concentration = 21.76 min.
Rainfall intensity = 2.455(In/Hr)
Area averaged loss rate (Fm) = 0.3006(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 1002.000 to Point/Station 1002.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.810(In/Hr)
Rainfall intensity = 2.612(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 19.79 min. Rain intensity = 2.61(In/Hr)
Total area this stream = 5.27(Ac.)
Total Study Area (Main Stream No. 2) = 5.27(Ac.)
Total runoff = 9.56(CFS)

++
Process from Point/Station 1002.000 to Point/Station 6000.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1788.000(Ft.)
Downstream point/station elevation = 1775.900(Ft.)
Pipe length = 123.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 9.559(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 9.559(CFS)
Normal flow depth in pipe = 8.54(In.)
Flow top width inside pipe = 10.87(In.)
Critical depth could not be calculated.
Pipe flow velocity = 15.99(Ft/s)
Travel time through pipe = 0.13 min.
Time of concentration (TC) = 19.92 min.

++
Process from Point/Station 1002.000 to Point/Station 6000.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 5.270(Ac.)
Total study area this main stream = 5.270(Ac.)
Runoff from this stream = 9.559(CFS)
Time of concentration = 19.92 min.
Rainfall intensity = 2.601(In/Hr)
Area averaged loss rate (Fm) = 0.8095(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

NODE9000

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	172.557	21.76	2.455
2	9.559	19.92	2.601

```
Qmax(1) =
          1.000 *    1.000 *   172.557) +
          0.919 *    1.000 *     9.559) + =     181.340
Qmax(2) =
          1.067 *    0.915 *   172.557) +
          1.000 *    1.000 *     9.559) + =     178.159

Total of 2 main streams to confluence:
Flow rates before confluence point:
     173.557      10.559
Maximum flow rates at confluence using above data:
      181.340      178.159
Effective Area of streams before confluence:
       95.130        5.270
Effective area values after confluence:
      100.400       92.346


Results of confluence:
Total flow rate =    181.340(CFS)
Time of concentration =    21.761 min.
Effective stream area after confluence  =    100.400(Ac.)
Stream Area average Pervious fraction(Ap) =  1.000
Stream Area average soil loss rate(Fm) =    0.327(In/Hr)
Steam effective area =     100.40(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     6000.000 to Point/Station     7000.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =  1775.900(Ft.)
Downstream point elevation =  1762.500(Ft.)
Channel length thru subarea  =   335.000(Ft.)
Channel base width      =    2.500(Ft.)
Slope or 'Z' of left channel bank =   2.000
Slope or 'Z' of right channel bank =   2.000
Estimated mean flow rate at midpoint of channel =    181.340(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =   12.000(Ft.)
Flow(q) thru subarea =    181.340(CFS)
Depth of flow =   1.632(Ft.), Average velocity =  19.281(Ft/s)
Channel flow top width =    9.027(Ft.)
Flow Velocity =   19.28(Ft/s)
Travel time  =    0.29 min.
Time of concentration =   22.05 min.
Critical depth =      2.922(Ft.)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2)  = 50.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.810(In/Hr)
Rainfall intensity =      2.434(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.779
Subarea runoff =      0.000(CFS) for    0.000(Ac.)
Total runoff =    181.340(CFS)
Effective area this stream =      100.40(Ac.)
Total Study Area (Main Stream No. 1) =        5.27(Ac.)
Area averaged Fm value =    0.327(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     6000.000 to Point/Station     7000.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =    100.400(Ac.)
Total study area this main stream =      5.270(Ac.)
Runoff from this stream =    181.340(CFS)
Time of concentration =   22.05 min.
Rainfall intensity =     2.434(In/Hr)
Area averaged loss rate (Fm) =    0.3273(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
```

Program is now starting with Main Stream No. 2

++
Process from Point/Station 1004.000 to Point/Station 1004.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.810(In/Hr)
Rainfall intensity = 2.896(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 16.88 min. Rain intensity = 2.90(In/Hr)
Total area this stream = 10.14(Ac.)
Total Study Area (Main Stream No. 2) = 10.14(Ac.)
Total runoff = 21.82(CFS)

++
Process from Point/Station 1004.000 to Point/Station 7000.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1772.700(Ft.)
Downstream point/station elevation = 1762.500(Ft.)
Pipe length = 95.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 21.824(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 21.824(CFS)
Normal flow depth in pipe = 10.41(In.)
Flow top width inside pipe = 17.78(In.)
Critical depth could not be calculated.
Pipe flow velocity = 20.62(Ft/s)
Travel time through pipe = 0.08 min.
Time of concentration (TC) = 16.96 min.

++
Process from Point/Station 1004.000 to Point/Station 7000.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 10.140(Ac.)
Total study area this main stream = 10.140(Ac.)
Runoff from this stream = 21.824(CFS)
Time of concentration = 16.96 min.
Rainfall intensity = 2.888(In/Hr)
Area averaged loss rate (Fm) = 0.8095(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	181.340	22.05	2.434
2	21.824	16.96	2.888

Qmax(1) =
1.000 * 1.000 * 181.340) +
0.782 * 1.000 * 21.824) + = 198.405
Qmax(2) =
1.215 * 0.769 * 181.340) +
1.000 * 1.000 * 21.824) + = 191.270

Total of 2 main streams to confluence:
Flow rates before confluence point:
182.340 22.824
Maximum flow rates at confluence using above data:
198.405 191.270
Effective Area of streams before confluence:
100.400 10.140
Effective area values after confluence:
110.540 87.348

Results of confluence:
Total flow rate = 198.405(CFS)
Time of concentration = 22.050 min.
Effective stream area after confluence = 110.540(Ac.)
Stream Area average Pervious fraction(Ap) = 1.000

Stream Area average soil loss rate(Fm) =   0.372(In/Hr)
Steam effective area =   110.54(Ac.)

++
Process from Point/Station   7000.000 to Point/Station   8000.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1762.500(Ft.)
Downstream point elevation = 1753.200(Ft.)
Channel length thru subarea =   230.000(Ft.)
Channel base width   =   2.500(Ft.)
Slope or 'Z' of left channel bank =   2.000
Slope or 'Z' of right channel bank =   2.000
Estimated mean flow rate at midpoint of channel =   198.405(CFS)
Manning's 'N'   = 0.015
Maximum depth of channel =   12.000(Ft.)
Flow(q) thru subarea =   198.405(CFS)
Depth of flow =   1.698(Ft.), Average velocity = 19.814(Ft/s)
Channel flow top width =   9.293(Ft.)
Flow Velocity =   19.81(Ft/s)
Travel time =   0.19 min.
Time of concentration =   22.24 min.
Critical depth =   3.047(Ft.)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000   Max loss rate(Fm)=   0.810(In/Hr)
Rainfall intensity =   2.421(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.762
Subarea runoff =   0.000(CFS) for   0.000(Ac.)
Total runoff =   198.405(CFS)
Effective area this stream =   110.54(Ac.)
Total Study Area (Main Stream No. 1) =   10.14(Ac.)
Area averaged Fm value =   0.372(In/Hr)

++
Process from Point/Station   7000.000 to Point/Station   8000.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =   110.540(Ac.)
Total study area this main stream =   10.140(Ac.)
Runoff from this stream =   198.405(CFS)
Time of concentration =   22.24 min.
Rainfall intensity =   2.421(In/Hr)
Area averaged loss rate (Fm) =   0.3715(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

++
Process from Point/Station   1006.000 to Point/Station   1006.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000   Max loss rate(Fm)=   0.810(In/Hr)
Rainfall intensity =   3.629(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC = 11.93 min. Rain intensity =   3.63(In/Hr)
Total area this stream =   2.12(Ac.)
Total Study Area (Main Stream No. 2) =   2.12(Ac.)
Total runoff =   5.52(CFS)

++
Process from Point/Station   1006.000 to Point/Station   8000.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1762.000(Ft.)
Downstream point/station elevation = 1753.200(Ft.)
Pipe length =   80.00(Ft.)   Manning's N = 0.013

No. of pipes = 1 Required pipe flow =   5.518(CFS)
Nearest computed pipe diameter =   12.00(In.)
Calculated individual pipe flow =   5.518(CFS)
Normal flow depth in pipe =   5.77(In.)
Flow top width inside pipe =   11.99(In.)
Critical Depth =   11.28(In.)
Pipe flow velocity =   14.79(Ft/s)
Travel time through pipe =   0.09 min.
Time of concentration (TC) =   12.02 min.

++
Process from Point/Station   1006.000 to Point/Station   8000.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =   2.120(Ac.)
Total study area this main stream =   2.120(Ac.)
Runoff from this stream =   5.518(CFS)
Time of concentration =   12.02 min.
Rainfall intensity =   3.611(In/Hr)
Area averaged loss rate (Fm) =   0.8095(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	198.405	22.24	2.421
2	5.518	12.02	3.611

Qmax(1) =
           1.000 *   1.000 *   198.405) +
           0.575 *   1.000 *   5.518) + =   201.578
Qmax(2) =
           1.581 *   0.540 *   198.405) +
           1.000 *   1.000 *   5.518) + =   175.040

Total of 2 main streams to confluence:
Flow rates before confluence point:
     199.405   6.518
Maximum flow rates at confluence using above data:
      201.578   175.040
Effective Area of streams before confluence:
      110.540   2.120
Effective area values after confluence:
      112.660   61.859

Results of confluence:
Total flow rate =   201.578(CFS)
Time of concentration =   22.244 min.
Effective stream area after confluence =   112.660(Ac.)
Stream Area average Pervious fraction(Ap) = 1.000
Stream Area average soil loss rate(Fm) =   0.380(In/Hr)
Steam effective area =   112.66(Ac.)

++
Process from Point/Station   8000.000 to Point/Station   9000.000
**** IMPROVED CHANNEL TRAVEL TIME ****
____
Upstream point elevation = 1753.200(Ft.)
Downstream point elevation = 1742.000(Ft.)
Channel length thru subarea =   275.000(Ft.)
Channel base width   =   2.500(Ft.)
Slope or 'Z' of left channel bank =   2.000
Slope or 'Z' of right channel bank =   2.000
Estimated mean flow rate at midpoint of channel =   201.578(CFS)
Manning's 'N'   = 0.015
Maximum depth of channel =   12.000(Ft.)
Flow(q) thru subarea =   201.578(CFS)
Depth of flow =   1.708(Ft.), Average velocity = 19.948(Ft/s)
Channel flow top width =   9.332(Ft.)
Flow Velocity =   19.95(Ft/s)
Travel time =   0.23 min.
Time of concentration =   22.47 min.
Critical depth =   3.063(Ft.)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.810(In/Hr)
Rainfall intensity = 2.404(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified rational method)(Q=KCIA) is C = 0.758
Subarea runoff = 0.000(CFS) for 0.000(Ac.)
Total runoff = 201.578(CFS)
Effective area this stream = 112.66(Ac.)
Total Study Area (Main Stream No. 1) = 2.12(Ac.)
Area averaged Fm value = 0.380(In/Hr)

++
Process from Point/Station 8000.000 to Point/Station 9000.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 112.660(Ac.)
Total study area this main stream = 2.120(Ac.)
Runoff from this stream = 201.578(CFS)
Time of concentration = 22.47 min.
Rainfall intensity = 2.404(In/Hr)
Area averaged loss rate (Fm) = 0.3798(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 1008.000 to Point/Station 1008.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.810(In/Hr)
Rainfall intensity = 4.085(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 9.94 min. Rain intensity = 4.08(In/Hr)
Total area this stream = 1.22(Ac.)
Total Study Area (Main Stream No. 2) = 1.22(Ac.)
Total runoff = 3.64(CFS)

++
Process from Point/Station 1008.000 to Point/Station 9000.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1750.000(Ft.)
Downstream point/station elevation = 1742.000(Ft.)
Pipe length = 65.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 3.636(CFS)
Nearest computed pipe diameter = 9.00(In.)
Calculated individual pipe flow = 3.636(CFS)
Normal flow depth in pipe = 5.16(In.)
Flow top width inside pipe = 8.90(In.)
Critical depth could not be calculated.
Pipe flow velocity = 13.87(Ft/s)
Travel time through pipe = 0.08 min.
Time of concentration (TC) = 10.02 min.

++
Process from Point/Station 1008.000 to Point/Station 9000.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 1.220(Ac.)
Total study area this main stream = 1.220(Ac.)
Runoff from this stream = 3.636(CFS)
Time of concentration = 10.02 min.
Rainfall intensity = 4.064(In/Hr)
Area averaged loss rate (Fm) = 0.8095(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)

```
1      201.578     22.47                2.404
2        3.636     10.02                4.064
Qmax(1) =
           1.000 *    1.000 *   201.578) +
           0.490 *    1.000 *     3.636) + =     203.360
Qmax(2) =
           1.820 *    0.446 *   201.578) +
           1.000 *    1.000 *     3.636) + =     167.223

Total of 2 main streams to confluence:
Flow rates before confluence point:
     202.578       4.636
Maximum flow rates at confluence using above data:
      203.360      167.223
Effective Area of streams before confluence:
      112.660        1.220
Effective area values after confluence:
      113.880       51.461


Results of confluence:
Total flow rate =    203.360(CFS)
Time of concentration =    22.473 min.
Effective stream area after confluence  =    113.880(Ac.)
Stream Area average Pervious fraction(Ap) =  1.000
Stream Area average soil loss rate(Fm) =    0.384(In/Hr)
Steam effective area =     113.88(Ac.)
End of computations, Total Study Area =          113.88 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number =  78.4
```

APPENDIX B: HYDROLOGY CALCULATIONS BASED ON PROPOSED CONDITION (RATIONAL TABLING METHOD)

APPENDIX B.1: 10-YEAR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 06/18/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 123
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 102.000 to Point/Station 103.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 905.000(Ft.)
Top (of initial area) elevation = 1869.200(Ft.)
Bottom (of initial area) elevation = 1857.600(Ft.)
Difference in elevation = 11.600(Ft.)
Slope = 0.01282 s(%)= 1.28
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 14.997 min.
Rainfall intensity = 1.928(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.747
Subarea runoff = 1.310(CFS)
Total initial stream area = 0.910(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)

++
Process from Point/Station 103.000 to Point/Station 104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1852.600(Ft.)
Downstream point/station elevation = 1852.300(Ft.)
Pipe length = 28.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 1.310(CFS)
Nearest computed pipe diameter = 9.00(In.)
Calculated individual pipe flow = 1.310(CFS)
Normal flow depth in pipe = 5.89(In.)
Flow top width inside pipe = 8.56(In.)
Critical Depth = 6.32(In.)
Pipe flow velocity = 4.27(Ft/s)
Travel time through pipe = 0.11 min.
Time of concentration (TC) = 15.11 min.

++
Process from Point/Station 103.000 to Point/Station 104.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.910(Ac.)
Total study area this main stream = 0.910(Ac.)
Runoff from this stream = 1.310(CFS)
Time of concentration = 15.11 min.
Rainfall intensity = 1.919(In/Hr)
Area averaged loss rate (Fm) = 0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   935.000(Ft.)
Top (of initial area) elevation =  1869.200(Ft.)
Bottom (of initial area) elevation =  1857.600(Ft.)
Difference in elevation =    11.600(Ft.)
Slope =    0.01241  s(%)=       1.24
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.284 min.
Rainfall intensity =      2.320(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.879
Subarea runoff =      1.753(CFS)
Total initial stream area =        0.860(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      104.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.860(Ac.)
Total study area this main stream =      0.860(Ac.)
Runoff from this stream =      1.753(CFS)
Time of concentration =   11.28 min.
Rainfall intensity =     2.320(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.310     15.11                1.919
2        1.753     11.28                2.320
Qmax(1) =
           1.000 *    1.000 *     1.310) +
           0.823 *    1.000 *     1.753) + =       2.753
Qmax(2) =
           1.252 *    0.747 *     1.310) +
           1.000 *    1.000 *     1.753) + =       2.978

Total of 2 main streams to confluence:
Flow rates before confluence point:
       2.310       2.753
Maximum flow rates at confluence using above data:
        2.753        2.978
Effective Area of streams before confluence:
        0.910        0.860
Effective area values after confluence:
        1.770        1.540


Results of confluence:
Total flow rate =      2.978(CFS)
Time of concentration =    11.284 min.
Effective stream area after confluence  =      1.540(Ac.)
Stream Area average Pervious fraction(Ap) =  0.357
Stream Area average soil loss rate(Fm) =    0.196(In/Hr)
Steam effective area =       1.77(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1852.300(Ft.)
Downstream point/station elevation =  1838.500(Ft.)
Pipe length  =   114.00(Ft.)   Manning's N = 0.013
```

No. of pipes = 1 Required pipe flow =   2.978(CFS)
Nearest computed pipe diameter =   9.00(In.)
Calculated individual pipe flow =   2.978(CFS)
Normal flow depth in pipe =   4.59(In.)
Flow top width inside pipe =   9.00(In.)
Critical depth could not be calculated.
Pipe flow velocity =   13.14(Ft/s)
Travel time through pipe =   0.14 min.
Time of concentration (TC) =   11.43 min.

++
Process from Point/Station   111.000 to Point/Station   112.000
**** IMPROVED CHANNEL TRAVEL TIME ****
____
Upstream point elevation = 1838.500(Ft.)
Downstream point elevation = 1816.700(Ft.)
Channel length thru subarea =   200.000(Ft.)
Channel base width   =   0.000(Ft.)
Slope or 'Z' of left channel bank =   1.000
Slope or 'Z' of right channel bank =   1.000
Estimated mean flow rate at midpoint of channel =   5.386(CFS)
Manning's 'N'   = 0.015
Maximum depth of channel =   1.000(Ft.)
Flow(q) thru subarea =   5.386(CFS)
Depth of flow =   0.659(Ft.), Average velocity = 12.389(Ft/s)
Channel flow top width =   1.319(Ft.)
Flow Velocity =   12.39(Ft/s)
Travel time =   0.27 min.
Time of concentration =   11.70 min.
Critical depth =   1.109(Ft.)
 Adding area flow to channel
PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.8500   Max loss rate(Fm)=   0.466(In/Hr)
Rainfall intensity =   2.266(In/Hr) for a   10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.756
Subarea runoff =   3.926(CFS) for   2.490(Ac.)
Total runoff =   6.904(CFS)
Effective area this stream =   4.03(Ac.)
Total Study Area (Main Stream No. 1) =   3.35(Ac.)
Area averaged Fm value =   0.363(In/Hr)

++
Process from Point/Station   111.000 to Point/Station   112.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =   4.030(Ac.)
Total study area this main stream =   3.350(Ac.)
Runoff from this stream =   6.904(CFS)
Time of concentration =   11.70 min.
Rainfall intensity =   2.266(In/Hr)
Area averaged loss rate (Fm) =   0.3625(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6616
Program is now starting with Main Stream No. 2

++
Process from Point/Station   113.000 to Point/Station   112.000
**** INITIAL AREA EVALUATION ****
____
PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.8500   Max loss rate(Fm)=   0.466(In/Hr)
Initial subarea data:
Initial area flow distance =   420.000(Ft.)
Top (of initial area) elevation = 1866.500(Ft.)
Bottom (of initial area) elevation = 1816.700(Ft.)
Difference in elevation =   49.800(Ft.)
Slope =   0.11857 s(%)=   11.86
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   8.288 min.

```
Rainfall intensity =      2.835(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.752
Subarea runoff =      2.004(CFS)
Total initial stream area =       0.940(Ac.)
Pervious area fraction = 0.850
Initial area Fm value =    0.466(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      112.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.940(Ac.)
Total study area this main stream =      0.940(Ac.)
Runoff from this stream =      2.004(CFS)
Time of concentration =    8.29 min.
Rainfall intensity =     2.835(In/Hr)
Area averaged loss rate (Fm) =    0.4657(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        6.904     11.70                2.266
2        2.004      8.29                2.835
Qmax(1) =
           1.000 *    1.000 *     6.904) +
           0.760 *    1.000 *     2.004) + =       8.427
Qmax(2) =
           1.299 *    0.709 *     6.904) +
           1.000 *    1.000 *     2.004) + =       8.358

Total of 2 main streams to confluence:
Flow rates before confluence point:
       7.904       3.004
Maximum flow rates at confluence using above data:
       8.427       8.358
Effective Area of streams before confluence:
       4.030       0.940
Effective area values after confluence:
       4.970       3.795


Results of confluence:
Total flow rate =      8.427(CFS)
Time of concentration =    11.698 min.
Effective stream area after confluence  =      4.970(Ac.)
Stream Area average Pervious fraction(Ap) =  0.697
Stream Area average soil loss rate(Fm) =    0.382(In/Hr)
Steam effective area =       4.97(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      120.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1811.700(Ft.)
Downstream point/station elevation =  1807.000(Ft.)
Pipe length  =   145.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     8.427(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     8.427(CFS)
Normal flow depth in pipe =    9.47(In.)
Flow top width inside pipe =   14.47(In.)
Critical Depth =   13.61(In.)
Pipe flow velocity =     10.33(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =    11.93 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      120.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =      4.970(Ac.)
Total study area this main stream =      0.940(Ac.)
Runoff from this stream =      8.427(CFS)
Time of concentration =   11.93 min.
```

Rainfall intensity = 2.237(In/Hr)
Area averaged loss rate (Fm) = 0.3820(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6973
Program is now starting with Main Stream No. 2

++
Process from Point/Station 118.000 to Point/Station 120.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 865.000(Ft.)
Top (of initial area) elevation = 1842.000(Ft.)
Bottom (of initial area) elevation = 1811.600(Ft.)
Difference in elevation = 30.400(Ft.)
Slope = 0.03514 s(%)= 3.51
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.037 min.
Rainfall intensity = 2.224(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.767
Subarea runoff = 3.822(CFS)
Total initial stream area = 2.240(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)

++
Process from Point/Station 118.000 to Point/Station 120.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 2.240(Ac.)
Total study area this main stream = 2.240(Ac.)
Runoff from this stream = 3.822(CFS)
Time of concentration = 12.04 min.
Rainfall intensity = 2.224(In/Hr)
Area averaged loss rate (Fm) = 0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 3

++
Process from Point/Station 119.000 to Point/Station 120.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 610.000(Ft.)
Top (of initial area) elevation = 1867.900(Ft.)
Bottom (of initial area) elevation = 1811.600(Ft.)
Difference in elevation = 56.300(Ft.)
Slope = 0.09230 s(%)= 9.23
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.630 min.
Rainfall intensity = 2.762(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.793
Subarea runoff = 4.948(CFS)
Total initial stream area = 2.260(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)

++
Process from Point/Station 119.000 to Point/Station 120.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 3
Effective stream flow area = 2.260(Ac.)
Total study area this main stream = 2.260(Ac.)

```
Runoff from this stream =      4.948(CFS)
Time of concentration =    8.63 min.
Rainfall intensity =     2.762(In/Hr)
Area averaged loss rate (Fm) =    0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        8.427     11.93                2.237
2        3.822     12.04                2.224
3        4.948      8.63                2.762
Qmax(1) =
           1.000 *    1.000 *     8.427) +
           1.007 *    0.991 *     3.822) +
           0.784 *    1.000 *     4.948) + =      16.123
Qmax(2) =
           0.993 *    1.000 *     8.427) +
           1.000 *    1.000 *     3.822) +
           0.779 *    1.000 *     4.948) + =      16.047
Qmax(3) =
           1.283 *    0.723 *     8.427) +
           1.283 *    0.717 *     3.822) +
           1.000 *    1.000 *     4.948) + =      16.283

Total of 3 main streams to confluence:
Flow rates before confluence point:
       9.427       4.822       5.948
Maximum flow rates at confluence using above data:
       16.123       16.047       16.283
Effective Area of streams before confluence:
        4.970        2.240        2.260
Effective area values after confluence:
        9.450        9.470        7.460


Results of confluence:
Total flow rate =     16.283(CFS)
Time of concentration =     8.630 min.
Effective stream area after confluence  =      7.460(Ac.)
Stream Area average Pervious fraction(Ap) =  0.651
Stream Area average soil loss rate(Fm) =    0.357(In/Hr)
Steam effective area =       9.47(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      121.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1807.000(Ft.)
Downstream point/station elevation =  1806.600(Ft.)
Pipe length  =    36.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    16.283(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    16.283(CFS)
Normal flow depth in pipe =   16.76(In.)
Flow top width inside pipe =   16.86(In.)
Critical Depth =   17.83(In.)
Pipe flow velocity =      7.91(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     8.71 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      121.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =      7.460(Ac.)
Total study area this main stream =      2.260(Ac.)
Runoff from this stream =     16.283(CFS)
Time of concentration =    8.71 min.
Rainfall intensity =     2.746(In/Hr)
Area averaged loss rate (Fm) =    0.3567(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6510
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      121.000
**** INITIAL AREA EVALUATION ****
```

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 835.000(Ft.)
Top (of initial area) elevation = 1834.000(Ft.)
Bottom (of initial area) elevation = 1811.600(Ft.)
Difference in elevation = 22.400(Ft.)
Slope = 0.02683 s(%)= 2.68
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.527 min.
Rainfall intensity = 2.167(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.763
Subarea runoff = 3.823(CFS)
Total initial stream area = 2.310(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)

++
Process from Point/Station 116.000 to Point/Station 121.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 2.310(Ac.)
Total study area this main stream = 2.310(Ac.)
Runoff from this stream = 3.823(CFS)
Time of concentration = 12.53 min.
Rainfall intensity = 2.167(In/Hr)
Area averaged loss rate (Fm) = 0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 3

++
Process from Point/Station 117.000 to Point/Station 121.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 280.000(Ft.)
Top (of initial area) elevation = 1828.800(Ft.)
Bottom (of initial area) elevation = 1811.600(Ft.)
Difference in elevation = 17.200(Ft.)
Slope = 0.06143 s(%)= 6.14
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.856 min.
Rainfall intensity = 3.207(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.808
Subarea runoff = 1.477(CFS)
Total initial stream area = 0.570(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)

++
Process from Point/Station 117.000 to Point/Station 121.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 3
Effective stream flow area = 0.570(Ac.)
Total study area this main stream = 0.570(Ac.)
Runoff from this stream = 1.477(CFS)
Time of concentration = 6.86 min.
Rainfall intensity = 3.207(In/Hr)
Area averaged loss rate (Fm) = 0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)

```
1       16.283      8.71                2.746
2        3.823     12.53                2.167
3        1.477      6.86                3.207
Qmax(1) =
           1.000 *    1.000 *    16.283) +
           1.315 *    0.695 *     3.823) +
           0.840 *    1.000 *     1.477) + =      21.015
Qmax(2) =
           0.758 *    1.000 *    16.283) +
           1.000 *    1.000 *     3.823) +
           0.639 *    1.000 *     1.477) + =      17.106
Qmax(3) =
           1.193 *    0.788 *    16.283) +
           1.565 *    0.547 *     3.823) +
           1.000 *    1.000 *     1.477) + =      20.050

Total of 3 main streams to confluence:
Flow rates before confluence point:
      17.283       4.823       2.477
Maximum flow rates at confluence using above data:
       21.015       17.106       20.050
Effective Area of streams before confluence:
        7.460        2.310        0.570
Effective area values after confluence:
        9.636       10.340        7.710


Results of confluence:
Total flow rate =     21.015(CFS)
Time of concentration =     8.705 min.
Effective stream area after confluence  =      9.636(Ac.)
Stream Area average Pervious fraction(Ap) =  0.637
Stream Area average soil loss rate(Fm) =    0.349(In/Hr)
Steam effective area =      10.34(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      122.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1806.600(Ft.)
Downstream point/station elevation =  1804.600(Ft.)
Pipe length  =   210.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.015(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    21.015(CFS)
Normal flow depth in pipe =   18.70(In.)
Flow top width inside pipe =   19.91(In.)
Critical Depth =   19.71(In.)
Pipe flow velocity =      8.00(Ft/s)
Travel time through pipe =    0.44 min.
Time of concentration (TC) =     9.14 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      122.000 to Point/Station      123.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  1804.600(Ft.)
Downstream point elevation =  1804.000(Ft.)
Channel length thru subarea  =   125.000(Ft.)
Channel base width      =   30.000(Ft.)
Slope or 'Z' of left channel bank =   3.000
Slope or 'Z' of right channel bank =   3.000
Estimated mean flow rate at midpoint of channel =     22.280(CFS)
Manning's 'N'    = 0.035
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =     22.280(CFS)
Depth of flow =   0.435(Ft.), Average velocity =   1.638(Ft/s)
Channel flow top width =   32.608(Ft.)
Flow Velocity =    1.64(Ft/s)
Travel time  =    1.27 min.
Time of concentration =   10.42 min.
Critical depth =      0.254(Ft.)
 Adding area flow to channel
PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.8500     Max loss rate(Fm)=     0.466(In/Hr)
```

The area added to the existing stream causes a
a lower flow rate of Q = 20.232(CFS)
therefore the upstream flow rate of Q = 21.015(CFS) is being used
Rainfall intensity = 2.444(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.767
Subarea runoff = 0.000(CFS) for 1.160(Ac.)
Total runoff = 21.015(CFS)
Effective area this stream = 10.80(Ac.)
Total Study Area (Main Stream No. 1) = 1.73(Ac.)
Area averaged Fm value = 0.361(In/Hr)
End of computations, Total Study Area = 13.74 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.652
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 06/18/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 130
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 127.000 to Point/Station 130.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.394(In/Hr)
Initial subarea data:
Initial area flow distance = 925.000(Ft.)
Top (of initial area) elevation = 1828.400(Ft.)
Bottom (of initial area) elevation = 1765.800(Ft.)
Difference in elevation = 62.600(Ft.)
Slope = 0.06768 s(%)= 6.77
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.846 min.
Rainfall intensity = 2.380(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.751
Subarea runoff = 5.612(CFS)
Total initial stream area = 3.140(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.394(In/Hr)

++
Process from Point/Station 127.000 to Point/Station 130.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 3.140(Ac.)
Total study area this main stream = 3.140(Ac.)
Runoff from this stream = 5.612(CFS)
Time of concentration = 10.85 min.
Rainfall intensity = 2.380(In/Hr)
Area averaged loss rate (Fm) = 0.3944(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 128.000 to Point/Station 129.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 550.000(Ft.)
Top (of initial area) elevation = 1868.600(Ft.)
Bottom (of initial area) elevation = 1828.300(Ft.)
Difference in elevation = 40.300(Ft.)

Slope =   0.07327 s(%)=   7.33
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   8.671 min.
Rainfall intensity =   2.753(In/Hr) for a   10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.793
Subarea runoff =   3.251(CFS)
Total initial stream area =   1.490(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =   0.329(In/Hr)

++
Process from Point/Station   129.000 to Point/Station   130.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
____
Top of street segment elevation = 1828.300(Ft.)
End of street segment elevation = 1765.800(Ft.)
Length of street segment =   805.000(Ft.)
Height of curb above gutter flowline =   6.0(In.)
Width of half street (curb to crown) = 18.000(Ft.)
Distance from crown to crossfall grade break =   0.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz) =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line = 12.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline = 2.000(In.)
 Manning's N in gutter = 0.0150
 Manning's N from gutter to grade break = 0.0150
 Manning's N from grade break to crown = 0.0150
Estimated mean flow rate at midpoint of street =   7.364(CFS)
Depth of flow =   0.330(Ft.), Average velocity =   6.353(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width = 10.161(Ft.)
Flow velocity =   6.35(Ft/s)
Travel time =   2.11 min.   TC =   10.78 min.
 Adding area flow to street
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.6000   Max loss rate(Fm)=   0.394(In/Hr)
Rainfall intensity =   2.389(In/Hr) for a   10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.758
Subarea runoff =   6.281(CFS) for   3.770(Ac.)
Total runoff =   9.532(CFS)
Effective area this stream =   5.26(Ac.)
Total Study Area (Main Stream No. 2) =   5.26(Ac.)
Area averaged Fm value =   0.376(In/Hr)
Street flow at end of street =   9.532(CFS)
Half street flow at end of street =   9.532(CFS)
Depth of flow =   0.354(Ft.), Average velocity =   6.744(Ft/s)
Flow width (from curb towards crown)= 11.344(Ft.)

++
Process from Point/Station   129.000 to Point/Station   130.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =   5.260(Ac.)
Total study area this main stream =   5.260(Ac.)
Runoff from this stream =   9.532(CFS)
Time of concentration =   10.78 min.
Rainfall intensity =   2.389(In/Hr)
Area averaged loss rate (Fm) =   0.3758(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	5.612	10.85	2.380
2	9.532	10.78	2.389

Qmax(1) =
           1.000 *   1.000 *   5.612) +
           0.995 *   1.000 *   9.532) + =   15.102
Qmax(2) =

```
          1.005 *    0.994 *     5.612) +
          1.000 *    1.000 *     9.532) + =      15.138

Total of 2 main streams to confluence:
Flow rates before confluence point:
       6.612      10.532
Maximum flow rates at confluence using above data:
       15.102       15.138
Effective Area of streams before confluence:
        3.140        5.260
Effective area values after confluence:
        8.400        8.382


Results of confluence:
Total flow rate =     15.138(CFS)
Time of concentration =    10.783 min.
Effective stream area after confluence  =      8.382(Ac.)
Stream Area average Pervious fraction(Ap) =  0.600
Stream Area average soil loss rate(Fm) =    0.383(In/Hr)
Steam effective area =       8.40(Ac.)
End of computations, Total Study Area =            8.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.600
Area averaged SCS curve number =  62.9
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/20/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 135
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 134.000 to Point/Station 135.000
**** INITIAL AREA EVALUATION ****

PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.466(In/Hr)
Initial subarea data:
Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 1865.000(Ft.)
Bottom (of initial area) elevation = 1763.000(Ft.)
Difference in elevation = 102.000(Ft.)
Slope = 0.10200 s(%)= 10.20
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.084 min.
Rainfall intensity = 2.219(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.711
Subarea runoff = 5.538(CFS)
Total initial stream area = 3.510(Ac.)
Pervious area fraction = 0.850
Initial area Fm value = 0.466(In/Hr)
End of computations, Total Study Area = 3.51 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.850
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 06/18/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 136
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 79.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.387(In/Hr)
Initial subarea data:
Initial area flow distance = 375.000(Ft.)
Top (of initial area) elevation = 1906.000(Ft.)
Bottom (of initial area) elevation = 1844.000(Ft.)
Difference in elevation = 62.000(Ft.)
Slope = 0.16533 s(%)= 16.53
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.833 min.
Rainfall intensity = 2.382(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.754
Subarea runoff = 2.873(CFS)
Total initial stream area = 1.600(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.387(In/Hr)

++
Process from Point/Station 101.000 to Point/Station 110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1839.000(Ft.)
Downstream point/station elevation = 1838.000(Ft.)
Pipe length = 74.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 2.873(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 2.873(CFS)
Normal flow depth in pipe = 7.35(In.)
Flow top width inside pipe = 11.69(In.)
Critical Depth = 8.72(In.)
Pipe flow velocity = 5.69(Ft/s)
Travel time through pipe = 0.22 min.
Time of concentration (TC) = 11.05 min.

++
Process from Point/Station 101.000 to Point/Station 110.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 1.600(Ac.)
Total study area this main stream = 1.600(Ac.)
Runoff from this stream = 2.873(CFS)
Time of concentration = 11.05 min.
Rainfall intensity = 2.352(In/Hr)
Area averaged loss rate (Fm) = 0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.387(In/Hr)
Initial subarea data:
Initial area flow distance =   635.000(Ft.)
Top (of initial area) elevation =  1937.600(Ft.)
Bottom (of initial area) elevation =  1856.000(Ft.)
Difference in elevation =    81.600(Ft.)
Slope =    0.12850  s(%)=      12.85
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.065 min.
Rainfall intensity =      2.010(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.727
Subarea runoff =      3.653(CFS)
Total initial stream area =        2.500(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.387(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      109.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1851.000(Ft.)
Downstream point/station elevation =  1839.000(Ft.)
Pipe length  =   293.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     3.653(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     3.653(CFS)
Normal flow depth in pipe =    6.05(In.)
Flow top width inside pipe =   12.00(In.)
Critical Depth =    9.78(In.)
Pipe flow velocity =      9.21(Ft/s)
Travel time through pipe =    0.53 min.
Time of concentration (TC) =    14.59 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      109.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      2.500(Ac.)
Runoff from this stream =      3.653(CFS)
Time of concentration =   14.59 min.
Rainfall intensity =     1.963(In/Hr)
Area averaged loss rate (Fm) =    0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      108.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.387(In/Hr)
Initial subarea data:
Initial area flow distance =   425.000(Ft.)
Top (of initial area) elevation =  1937.600(Ft.)
Bottom (of initial area) elevation =  1845.000(Ft.)
Difference in elevation =    92.600(Ft.)
Slope =    0.21788  s(%)=      21.79
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.777 min.
Rainfall intensity =      2.390(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.754
Subarea runoff =      3.642(CFS)
Total initial stream area =        2.020(Ac.)
Pervious area fraction = 1.000
```

Initial area Fm value = 0.387(In/Hr)

++
Process from Point/Station 108.000 to Point/Station 109.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1840.000(Ft.)
Downstream point/station elevation = 1839.000(Ft.)
Pipe length = 73.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 3.642(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 3.642(CFS)
Normal flow depth in pipe = 8.68(In.)
Flow top width inside pipe = 10.73(In.)
Critical Depth = 9.76(In.)
Pipe flow velocity = 5.98(Ft/s)
Travel time through pipe = 0.20 min.
Time of concentration (TC) = 10.98 min.

++
Process from Point/Station 108.000 to Point/Station 109.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 2
Stream flow area = 2.020(Ac.)
Runoff from this stream = 3.642(CFS)
Time of concentration = 10.98 min.
Rainfall intensity = 2.361(In/Hr)
Area averaged loss rate (Fm) = 0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	3.653	14.59	1.963
2	3.642	10.98	2.361

Qmax(1) =
1.000 * 1.000 * 3.653) +
0.798 * 1.000 * 3.642) + = 6.560
Qmax(2) =
1.253 * 0.752 * 3.653) +
1.000 * 1.000 * 3.642) + = 7.086

Total of 2 streams to confluence:
Flow rates before confluence point:
3.653 3.642
Maximum flow rates at confluence using above data:
6.560 7.086
Area of streams before confluence:
2.500 2.020
Effective area values after confluence:
4.520 3.901
Results of confluence:
Total flow rate = 7.086(CFS)
Time of concentration = 10.981 min.
Effective stream area after confluence = 3.901(Ac.)
Stream Area average Pervious fraction(Ap) = 1.000
Stream Area average soil loss rate(Fm) = 0.387(In/Hr)
Study area (this main stream) = 4.52(Ac.)

++
Process from Point/Station 109.000 to Point/Station 110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1839.000(Ft.)
Downstream point/station elevation = 1838.000(Ft.)
Pipe length = 106.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 7.086(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 7.086(CFS)
Normal flow depth in pipe = 11.04(In.)
Flow top width inside pipe = 17.53(In.)
Critical Depth = 12.36(In.)
Pipe flow velocity = 6.24(Ft/s)
Travel time through pipe = 0.28 min.
Time of concentration (TC) = 11.26 min.

++

Process from Point/Station 109.000 to Point/Station 110.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 3.901(Ac.)
Total study area this main stream = 4.520(Ac.)
Runoff from this stream = 7.086(CFS)
Time of concentration = 11.26 min.
Rainfall intensity = 2.323(In/Hr)
Area averaged loss rate (Fm) = 0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	2.873	11.05	2.352
2	7.086	11.26	2.323

Qmax(1) =
1.000 * 1.000 * 2.873) +
1.015 * 0.981 * 7.086) + = 9.930
Qmax(2) =
0.985 * 1.000 * 2.873) +
1.000 * 1.000 * 7.086) + = 9.917

Total of 2 main streams to confluence:
Flow rates before confluence point:
3.873 8.086
Maximum flow rates at confluence using above data:
9.930 9.917
Effective Area of streams before confluence:
1.600 3.901
Effective area values after confluence:
5.427 5.501

Results of confluence:
Total flow rate = 9.930(CFS)
Time of concentration = 11.049 min.
Effective stream area after confluence = 5.427(Ac.)
Stream Area average Pervious fraction(Ap) = 1.000
Stream Area average soil loss rate(Fm) = 0.387(In/Hr)
Steam effective area = 5.50(Ac.)

++
Process from Point/Station 110.000 to Point/Station 124.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1838.000(Ft.)
Downstream point/station elevation = 1781.800(Ft.)
Pipe length = 1590.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 9.930(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 9.930(CFS)
Normal flow depth in pipe = 10.31(In.)
Flow top width inside pipe = 13.91(In.)
Critical Depth = 14.19(In.)
Pipe flow velocity = 11.04(Ft/s)
Travel time through pipe = 2.40 min.
Time of concentration (TC) = 13.45 min.

++
Process from Point/Station 110.000 to Point/Station 124.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 5.427(Ac.)
Total study area this main stream = 4.520(Ac.)
Runoff from this stream = 9.930(CFS)
Time of concentration = 13.45 min.
Rainfall intensity = 2.070(In/Hr)
Area averaged loss rate (Fm) = 0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 123.000 to Point/Station 123.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

```
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.329(In/Hr)
Rainfall intensity =      2.443(In/Hr) for a    10.0 year storm
User specified values are as follows:
TC =  10.42 min.  Rain intensity =       2.44(In/Hr)
Total area this stream =        13.74(Ac.)
Total Study Area (Main Stream No. 2) =       13.74(Ac.)
Total runoff =     21.02(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      123.000 to Point/Station      181.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1804.000(Ft.)
Downstream point/station elevation =  1783.000(Ft.)
Pipe length  =   255.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    21.015(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    21.015(CFS)
Normal flow depth in pipe =   11.06(In.)
Flow top width inside pipe =   17.52(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.44(Ft/s)
Travel time through pipe =    0.23 min.
Time of concentration (TC) =    10.65 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      123.000 to Point/Station      181.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =     13.740(Ac.)
Runoff from this stream =     21.015(CFS)
Time of concentration =   10.65 min.
Rainfall intensity =     2.409(In/Hr)
Area averaged loss rate (Fm) =    0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      180.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.8500     Max loss rate(Fm)=     0.466(In/Hr)
Initial subarea data:
Initial area flow distance =   395.000(Ft.)
Top (of initial area) elevation =  1842.000(Ft.)
Bottom (of initial area) elevation =  1788.000(Ft.)
Difference in elevation =    54.000(Ft.)
Slope =    0.13671  s(%)=      13.67
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.860 min.
Rainfall intensity =      2.934(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.757
Subarea runoff =      1.400(CFS)
Total initial stream area =        0.630(Ac.)
Pervious area fraction = 0.850
Initial area Fm value =    0.466(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      180.000 to Point/Station      181.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1784.000(Ft.)
Downstream point/station elevation =  1783.000(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.400(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     1.400(CFS)
```

```
Normal flow depth in pipe =    3.84(In.)
Flow top width inside pipe =    8.90(In.)
Critical Depth =    6.54(In.)
Pipe flow velocity =      7.79(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     7.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      180.000 to Point/Station      181.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      0.630(Ac.)
Runoff from this stream =      1.400(CFS)
Time of concentration =    7.90 min.
Rainfall intensity =     2.924(In/Hr)
Area averaged loss rate (Fm) =    0.4657(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       21.015     10.65                2.409
2        1.400      7.90                2.924
Qmax(1) =
           1.000 *    1.000 *    21.015) +
           0.790 *    1.000 *     1.400) + =      22.121
Qmax(2) =
           1.248 *    0.742 *    21.015) +
           1.000 *    1.000 *     1.400) + =      20.858

Total of 2 streams to confluence:
Flow rates before confluence point:
      21.015       1.400
Maximum flow rates at confluence using above data:
       22.121       20.858
Area of streams before confluence:
       13.740        0.630
Effective area values after confluence:
       14.370       10.825
Results of confluence:
Total flow rate =     22.121(CFS)
Time of concentration =    10.650 min.
Effective stream area after confluence =     14.370(Ac.)
Stream Area average Pervious fraction(Ap) =  0.611
Stream Area average soil loss rate(Fm) =    0.335(In/Hr)
Study area (this main stream) =      14.37(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      181.000 to Point/Station      124.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1783.000(Ft.)
Downstream point/station elevation =  1776.000(Ft.)
Pipe length  =   305.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    22.121(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    22.121(CFS)
Normal flow depth in pipe =   15.89(In.)
Flow top width inside pipe =   18.02(In.)
Critical Depth =   19.70(In.)
Pipe flow velocity =     11.32(Ft/s)
Travel time through pipe =    0.45 min.
Time of concentration (TC) =    11.10 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      181.000 to Point/Station      124.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =     14.370(Ac.)
Total study area this main stream =     14.370(Ac.)
Runoff from this stream =     22.121(CFS)
Time of concentration =   11.10 min.
Rainfall intensity =     2.345(In/Hr)
Area averaged loss rate (Fm) =    0.3347(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6110
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        9.930     13.45                 2.070
2       22.121     11.10                 2.345
Qmax(1) =
           1.000 *    1.000 *     9.930) +
           0.863 *    1.000 *    22.121) + =      29.021
Qmax(2) =
           1.164 *    0.825 *     9.930) +
           1.000 *    1.000 *    22.121) + =      31.656

Total of 2 main streams to confluence:
Flow rates before confluence point:
      10.930      23.121
Maximum flow rates at confluence using above data:
       29.021       31.656
Effective Area of streams before confluence:
        5.427       14.370
Effective area values after confluence:
       19.797       18.848


Results of confluence:
Total flow rate =     31.656(CFS)
Time of concentration =    11.099 min.
Effective stream area after confluence  =     18.848(Ac.)
Stream Area average Pervious fraction(Ap) =  0.718
Stream Area average soil loss rate(Fm) =    0.349(In/Hr)
Steam effective area =      19.80(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      124.000 to Point/Station      136.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1776.000(Ft.)
Downstream point/station elevation =  1763.300(Ft.)
Pipe length  =   420.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.656(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    31.656(CFS)
Normal flow depth in pipe =   16.31(In.)
Flow top width inside pipe =   22.40(In.)
Critical Depth =   22.62(In.)
Pipe flow velocity =     13.93(Ft/s)
Travel time through pipe =    0.50 min.
Time of concentration (TC) =    11.60 min.
End of computations, Total Study Area =           20.49 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.727
Area averaged SCS curve number =  72.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/20/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 142
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 140.000 to Point/Station 142.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.587(In/Hr)
Initial subarea data:
Initial area flow distance = 435.000(Ft.)
Top (of initial area) elevation = 1849.100(Ft.)
Bottom (of initial area) elevation = 1791.800(Ft.)
Difference in elevation = 57.300(Ft.)
Slope = 0.13172 s(%)= 13.17
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.020 min.
Rainfall intensity = 3.158(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.733
Subarea runoff = 1.342(CFS)
Total initial stream area = 0.580(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.587(In/Hr)

++
Process from Point/Station 140.000 to Point/Station 142.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.580(Ac.)
Total study area this main stream = 0.580(Ac.)
Runoff from this stream = 1.342(CFS)
Time of concentration = 7.02 min.
Rainfall intensity = 3.158(In/Hr)
Area averaged loss rate (Fm) = 0.5867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 140.000 to Point/Station 141.000
**** INITIAL AREA EVALUATION ****

PARK subarea
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.831(In/Hr)
Initial subarea data:
Initial area flow distance = 360.000(Ft.)
Top (of initial area) elevation = 1849.100(Ft.)
Bottom (of initial area) elevation = 1797.200(Ft.)
Difference in elevation = 51.900(Ft.)

```
Slope =    0.14417  s(%)=      14.42
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.494 min.
Rainfall intensity =      3.027(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.653
Subarea runoff =      1.265(CFS)
Total initial stream area =        0.640(Ac.)
Pervious area fraction = 0.850
Initial area Fm value =    0.831(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      141.000 to Point/Station      142.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1797.200(Ft.)
Downstream point/station elevation =  1786.800(Ft.)
Pipe length  =    53.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.265(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.265(CFS)
Normal flow depth in pipe =    3.03(In.)
Flow top width inside pipe =    6.00(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.72(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =     7.56 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      141.000 to Point/Station      142.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.640(Ac.)
Total study area this main stream =      0.640(Ac.)
Runoff from this stream =      1.265(CFS)
Time of concentration =    7.56 min.
Rainfall intensity =     3.009(In/Hr)
Area averaged loss rate (Fm) =    0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.342      7.02                3.158
2        1.265      7.56                3.009
Qmax(1) =
           1.000 *    1.000 *     1.342) +
           1.069 *    0.928 *     1.265) + =       2.597
Qmax(2) =
           0.942 *    1.000 *     1.342) +
           1.000 *    1.000 *     1.265) + =       2.529

Total of 2 main streams to confluence:
Flow rates before confluence point:
       2.342       2.265
Maximum flow rates at confluence using above data:
        2.597        2.529
Effective Area of streams before confluence:
        0.580        0.640
Effective area values after confluence:
        1.174        1.220


Results of confluence:
Total flow rate =      2.597(CFS)
Time of concentration =     7.020 min.
Effective stream area after confluence  =      1.174(Ac.)
Stream Area average Pervious fraction(Ap) =  0.731
Stream Area average soil loss rate(Fm) =    0.715(In/Hr)
Steam effective area =       1.22(Ac.)
End of computations, Total Study Area =            1.22 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.731
Area averaged SCS curve number =  32.0
```

AREAANODE142

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/20/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 149
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 146.000 to Point/Station 147.000
**** INITIAL AREA EVALUATION ****

PARK subarea
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.831(In/Hr)
Initial subarea data:
Initial area flow distance = 260.000(Ft.)
Top (of initial area) elevation = 1799.300(Ft.)
Bottom (of initial area) elevation = 1780.000(Ft.)
Difference in elevation = 19.300(Ft.)
Slope = 0.07423 s(%)= 7.42
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.513 min.
Rainfall intensity = 3.022(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.652
Subarea runoff = 0.572(CFS)
Total initial stream area = 0.290(Ac.)
Pervious area fraction = 0.850
Initial area Fm value = 0.831(In/Hr)

++
Process from Point/Station 146.000 to Point/Station 147.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.290(Ac.)
Total study area this main stream = 0.290(Ac.)
Runoff from this stream = 0.572(CFS)
Time of concentration = 7.51 min.
Rainfall intensity = 3.022(In/Hr)
Area averaged loss rate (Fm) = 0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Program is now starting with Main Stream No. 2

++
Process from Point/Station 158.000 to Point/Station 159.000
**** INITIAL AREA EVALUATION ****

PARK subarea
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.831(In/Hr)
Initial subarea data:
Initial area flow distance = 260.000(Ft.)
Top (of initial area) elevation = 1838.000(Ft.)
Bottom (of initial area) elevation = 1783.100(Ft.)
Difference in elevation = 54.900(Ft.)

```
Slope =    0.21115  s(%)=      21.12
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.096 min.
Rainfall intensity =      3.462(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.684
Subarea runoff =      1.278(CFS)
Total initial stream area =        0.540(Ac.)
Pervious area fraction = 0.850
Initial area Fm value =    0.831(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      159.000 to Point/Station      147.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1783.100(Ft.)
Downstream point/station elevation =  1780.000(Ft.)
Pipe length  =    47.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.278(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.278(CFS)
Normal flow depth in pipe =    4.39(In.)
Flow top width inside pipe =    5.31(In.)
Critical depth could not be calculated.
Pipe flow velocity =      8.29(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     6.19 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      159.000 to Point/Station      147.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.540(Ac.)
Total study area this main stream =      0.540(Ac.)
Runoff from this stream =      1.278(CFS)
Time of concentration =    6.19 min.
Rainfall intensity =     3.427(In/Hr)
Area averaged loss rate (Fm) =    0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        0.572      7.51                3.022
2        1.278      6.19                3.427
Qmax(1) =
           1.000 *    1.000 *     0.572) +
           0.844 *    1.000 *     1.278) + =       1.651
Qmax(2) =
           1.185 *    0.824 *     0.572) +
           1.000 *    1.000 *     1.278) + =       1.837

Total of 2 main streams to confluence:
Flow rates before confluence point:
       1.572       2.278
Maximum flow rates at confluence using above data:
        1.651        1.837
Effective Area of streams before confluence:
        0.290        0.540
Effective area values after confluence:
        0.830        0.779


Results of confluence:
Total flow rate =      1.837(CFS)
Time of concentration =     6.190 min.
Effective stream area after confluence  =      0.779(Ac.)
Stream Area average Pervious fraction(Ap) =  0.850
Stream Area average soil loss rate(Fm) =    0.831(In/Hr)
Steam effective area =       0.83(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      147.000 to Point/Station      149.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =  1780.000(Ft.)
End of street segment elevation =  1766.500(Ft.)
Length of street segment  =   300.000(Ft.)
```

Height of curb above gutter flowline = 6.0(In.)
Width of half street (curb to crown) = 20.000(Ft.)
Distance from crown to crossfall grade break = 0.500(Ft.)
Slope from gutter to grade break (v/hz) = 0.020
Slope from grade break to crown (v/hz) = 0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line = 10.000(Ft.)
Slope from curb to property line (v/hz) = 0.020
Gutter width = 2.000(Ft.)
Gutter hike from flowline = 2.000(In.)
Manning's N in gutter = 0.0150
Manning's N from gutter to grade break = 0.0150
Manning's N from grade break to crown = 0.0150
Estimated mean flow rate at midpoint of street = 2.367(CFS)
Depth of flow = 0.263(Ft.), Average velocity = 4.011(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width = 6.809(Ft.)
Flow velocity = 4.01(Ft/s)
Travel time = 1.25 min. TC = 7.44 min.
Adding area flow to street
RESIDENTIAL(3 - 4 dwl/acre)
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.587(In/Hr)
Rainfall intensity = 3.042(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified rational method)(Q=KCIA) is C = 0.681
Subarea runoff = 0.708(CFS) for 0.450(Ac.)
Total runoff = 2.544(CFS)
Effective area this stream = 1.23(Ac.)
Total Study Area (Main Stream No. 1) = 0.99(Ac.)
Area averaged Fm value = 0.742(In/Hr)
Street flow at end of street = 2.544(CFS)
Half street flow at end of street = 2.544(CFS)
Depth of flow = 0.268(Ft.), Average velocity = 4.070(Ft/s)
Flow width (from curb towards crown)= 7.061(Ft.)

++
Process from Point/Station 147.000 to Point/Station 149.000
**** CONFLUENCE OF MAIN STREAMS ****
_____
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 1.229(Ac.)
Total study area this main stream = 0.990(Ac.)
Runoff from this stream = 2.544(CFS)
Time of concentration = 7.44 min.
Rainfall intensity = 3.042(In/Hr)
Area averaged loss rate (Fm) = 0.7416(In/Hr)
Area averaged Pervious ratio (Ap) = 0.7585
Program is now starting with Main Stream No. 2

++
Process from Point/Station 170.000 to Point/Station 148.000
**** INITIAL AREA EVALUATION ****
_____
PARK subarea
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.831(In/Hr)
Initial subarea data:
Initial area flow distance = 865.000(Ft.)
Top (of initial area) elevation = 1869.300(Ft.)
Bottom (of initial area) elevation = 1778.700(Ft.)
Difference in elevation = 90.600(Ft.)
Slope = 0.10474 s(%)= 10.47
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.343 min.
Rainfall intensity = 2.312(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.576
Subarea runoff = 2.839(CFS)
Total initial stream area = 2.130(Ac.)
Pervious area fraction = 0.850
Initial area Fm value = 0.831(In/Hr)

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      148.000 to Point/Station      149.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  1778.700(Ft.)
Downstream point/station elevation =  1761.500(Ft.)
Pipe length  =    70.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.839(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.839(CFS)
Normal flow depth in pipe =    3.65(In.)
Flow top width inside pipe =    8.84(In.)
Critical depth could not be calculated.
Pipe flow velocity =     16.87(Ft/s)
Travel time through pipe =    0.07 min.
Time of concentration (TC) =    11.41 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      148.000 to Point/Station      149.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      2.130(Ac.)
Total study area this main stream =      2.130(Ac.)
Runoff from this stream =      2.839(CFS)
Time of concentration =   11.41 min.
Rainfall intensity =     2.303(In/Hr)
Area averaged loss rate (Fm) =    0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        2.544      7.44                 3.042
2        2.839     11.41                 2.303
Qmax(1) =
           1.000 *    1.000 *     2.544) +
           1.502 *    0.652 *     2.839) + =       5.323
Qmax(2) =
           0.679 *    1.000 *     2.544) +
           1.000 *    1.000 *     2.839) + =       4.566

Total of 2 main streams to confluence:
Flow rates before confluence point:
       3.544       3.839
Maximum flow rates at confluence using above data:
       5.323       4.566
Effective Area of streams before confluence:
       1.229       2.130
Effective area values after confluence:
       2.617       3.359


Results of confluence:
Total flow rate =      5.323(CFS)
Time of concentration =     7.437 min.
Effective stream area after confluence  =      2.617(Ac.)
Stream Area average Pervious fraction(Ap) =  0.817
Stream Area average soil loss rate(Fm) =    0.798(In/Hr)
Steam effective area =       3.36(Ac.)
End of computations, Total Study Area =             3.41 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.817
Area averaged SCS curve number =  32.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/20/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 153
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 151.000 to Point/Station 153.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.394(In/Hr)
Initial subarea data:
Initial area flow distance = 640.000(Ft.)
Top (of initial area) elevation = 1865.600(Ft.)
Bottom (of initial area) elevation = 1817.500(Ft.)
Difference in elevation = 48.100(Ft.)
Slope = 0.07516 s(%)= 7.52
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.166 min.
Rainfall intensity = 2.655(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.766
Subarea runoff = 4.416(CFS)
Total initial stream area = 2.170(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.394(In/Hr)

++
Process from Point/Station 151.000 to Point/Station 153.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 2.170(Ac.)
Total study area this main stream = 2.170(Ac.)
Runoff from this stream = 4.416(CFS)
Time of concentration = 9.17 min.
Rainfall intensity = 2.655(In/Hr)
Area averaged loss rate (Fm) = 0.3944(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 152.000 to Point/Station 153.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.900
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 65.30
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.362(In/Hr)
Initial subarea data:
Initial area flow distance = 455.000(Ft.)
Top (of initial area) elevation = 1846.400(Ft.)
Bottom (of initial area) elevation = 1817.500(Ft.)
Difference in elevation = 28.900(Ft.)

```
Slope =    0.06352  s(%)=       6.35
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.270 min.
Rainfall intensity =      2.839(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.785
Subarea runoff =      3.009(CFS)
Total initial stream area =        1.350(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =    0.362(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      152.000 to Point/Station      153.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      1.350(Ac.)
Total study area this main stream =      1.350(Ac.)
Runoff from this stream =      3.009(CFS)
Time of concentration =    8.27 min.
Rainfall intensity =     2.839(In/Hr)
Area averaged loss rate (Fm) =    0.3622(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        4.416      9.17                2.655
2        3.009      8.27                2.839
Qmax(1) =
           1.000 *    1.000 *     4.416) +
           0.926 *    1.000 *     3.009) + =       7.202
Qmax(2) =
           1.081 *    0.902 *     4.416) +
           1.000 *    1.000 *     3.009) + =       7.317

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.416       4.009
Maximum flow rates at confluence using above data:
        7.202        7.317
Effective Area of streams before confluence:
        2.170        1.350
Effective area values after confluence:
        3.520        3.308


Results of confluence:
Total flow rate =      7.317(CFS)
Time of concentration =     8.270 min.
Effective stream area after confluence  =      3.308(Ac.)
Stream Area average Pervious fraction(Ap) =  0.600
Stream Area average soil loss rate(Fm) =    0.382(In/Hr)
Steam effective area =       3.52(Ac.)
End of computations, Total Study Area =            3.52 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.600
Area averaged SCS curve number =  63.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/20/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 155
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 102.000 to Point/Station 155.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 46.80
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.508(In/Hr)
Initial subarea data:
Initial area flow distance = 780.000(Ft.)
Top (of initial area) elevation = 1869.200(Ft.)
Bottom (of initial area) elevation = 1804.800(Ft.)
Difference in elevation = 64.400(Ft.)
Slope = 0.08256 s(%)= 8.26
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.736 min.
Rainfall intensity = 2.553(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.721
Subarea runoff = 4.989(CFS)
Total initial stream area = 2.710(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.508(In/Hr)

++
Process from Point/Station 102.000 to Point/Station 155.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 2.710(Ac.)
Runoff from this stream = 4.989(CFS)
Time of concentration = 9.74 min.
Rainfall intensity = 2.553(In/Hr)
Area averaged loss rate (Fm) = 0.5080(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000

++
Process from Point/Station 152.000 to Point/Station 155.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.394(In/Hr)
Initial subarea data:
Initial area flow distance = 450.000(Ft.)
Top (of initial area) elevation = 1846.400(Ft.)
Bottom (of initial area) elevation = 1804.800(Ft.)
Difference in elevation = 41.600(Ft.)
Slope = 0.09244 s(%)= 9.24
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.638 min.

```
Rainfall intensity =      2.990(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.781
Subarea runoff =      0.911(CFS)
Total initial stream area =        0.390(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =    0.394(In/Hr)


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Process from Point/Station      152.000 to Point/Station      155.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.390(Ac.)
Runoff from this stream =      0.911(CFS)
Time of concentration =    7.64 min.
Rainfall intensity =     2.990(In/Hr)
Area averaged loss rate (Fm) =    0.3944(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        4.989      9.74                2.553
2        0.911      7.64                2.990
Qmax(1) =
           1.000 *    1.000 *     4.989) +
           0.832 *    1.000 *     0.911) + =       5.746
Qmax(2) =
           1.213 *    0.785 *     4.989) +
           1.000 *    1.000 *     0.911) + =       5.660

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.989       0.911
Maximum flow rates at confluence using above data:
       5.746        5.660
Area of streams before confluence:
       2.710        0.390
Effective area values after confluence:
       3.100        2.516
Results of confluence:
Total flow rate =      5.746(CFS)
Time of concentration =     9.736 min.
Effective stream area after confluence =      3.100(Ac.)
Stream Area average Pervious fraction(Ap) =  0.600
Stream Area average soil loss rate(Fm) =    0.494(In/Hr)
Study area (this main stream) =       3.10(Ac.)
End of computations, Total Study Area =            3.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.600
Area averaged SCS curve number =  48.7
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/20/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 163
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 161.000 to Point/Station 163.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.587(In/Hr)
Initial subarea data:
Initial area flow distance = 305.000(Ft.)
Top (of initial area) elevation = 1779.000(Ft.)
Bottom (of initial area) elevation = 1752.300(Ft.)
Difference in elevation = 26.700(Ft.)
Slope = 0.08754 s(%)= 8.75
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.610 min.
Rainfall intensity = 3.284(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.739
Subarea runoff = 1.190(CFS)
Total initial stream area = 0.490(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.587(In/Hr)

++
Process from Point/Station 161.000 to Point/Station 163.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.490(Ac.)
Total study area this main stream = 0.490(Ac.)
Runoff from this stream = 1.190(CFS)
Time of concentration = 6.61 min.
Rainfall intensity = 3.284(In/Hr)
Area averaged loss rate (Fm) = 0.5867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 162.000 to Point/Station 163.000
**** INITIAL AREA EVALUATION ****

PARK subarea
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.831(In/Hr)
Initial subarea data:
Initial area flow distance = 445.000(Ft.)
Top (of initial area) elevation = 1840.000(Ft.)
Bottom (of initial area) elevation = 1752.300(Ft.)
Difference in elevation = 87.700(Ft.)

```
Slope =    0.19708  s(%)=      19.71
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.662 min.
Rainfall intensity =      2.983(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.649
Subarea runoff =      1.705(CFS)
Total initial stream area =        0.880(Ac.)
Pervious area fraction = 0.850
Initial area Fm value =    0.831(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      162.000 to Point/Station      163.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.880(Ac.)
Total study area this main stream =      0.880(Ac.)
Runoff from this stream =      1.705(CFS)
Time of concentration =    7.66 min.
Rainfall intensity =     2.983(In/Hr)
Area averaged loss rate (Fm) =    0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.190      6.61                3.284
2        1.705      7.66                2.983
Qmax(1) =
           1.000 *    1.000 *     1.190) +
           1.140 *    0.863 *     1.705) + =       2.866
Qmax(2) =
           0.888 *    1.000 *     1.190) +
           1.000 *    1.000 *     1.705) + =       2.762

Total of 2 main streams to confluence:
Flow rates before confluence point:
       2.190       2.705
Maximum flow rates at confluence using above data:
        2.866        2.762
Effective Area of streams before confluence:
        0.490        0.880
Effective area values after confluence:
        1.249        1.370


Results of confluence:
Total flow rate =      2.866(CFS)
Time of concentration =     6.610 min.
Effective stream area after confluence  =      1.249(Ac.)
Stream Area average Pervious fraction(Ap) =  0.761
Stream Area average soil loss rate(Fm) =    0.744(In/Hr)
Steam effective area =       1.37(Ac.)
End of computations, Total Study Area =            1.37 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.761
Area averaged SCS curve number =  32.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/20/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA B - NODE 213
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2) = 82.50
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.327(In/Hr)
Initial subarea data:
Initial area flow distance = 495.000(Ft.)
Top (of initial area) elevation = 2140.000(Ft.)
Bottom (of initial area) elevation = 2080.000(Ft.)
Difference in elevation = 60.000(Ft.)
Slope = 0.12121 s(%)= 12.12
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.881 min.
Rainfall intensity = 2.129(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.762
Subarea runoff = 9.843(CFS)
Total initial stream area = 6.070(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.327(In/Hr)

++
Process from Point/Station 201.000 to Point/Station 202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 17.481(CFS)
Depth of flow = 0.859(Ft.), Average velocity = 5.608(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	20.00
2	73.00	0.00
3	169.00	20.00

Manning's 'N' friction factor = 0.035

Sub-Channel flow = 17.481(CFS)
' ' flow top width = 7.258(Ft.)
' ' velocity= 5.608(Ft/s)
' ' area = 3.117(Sq.Ft)
' ' Froude number = 1.508

Upstream point elevation = 2080.000(Ft.)
Downstream point elevation = 2030.000(Ft.)
Flow length = 895.000(Ft.)
Travel time = 2.66 min.
Time of concentration = 15.54 min.
Depth of flow = 0.859(Ft.)
Average velocity = 5.608(Ft/s)
Total irregular channel flow = 17.481(CFS)
Irregular channel normal depth above invert elev. = 0.859(Ft.)
Average velocity of channel(s) = 5.608(Ft/s)

```
Sub-Channel No. 1 Critical depth =      1.016(Ft.)
  '     '       '     Critical flow top width =      8.582(Ft.)
  '     '       '     Critical flow velocity=    4.011(Ft/s)
  '     '       '     Critical flow area =      4.358(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 82.50
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.327(In/Hr)
Rainfall intensity =      1.884(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.744
Subarea runoff =     11.867(CFS) for    9.420(Ac.)
Total runoff =     21.710(CFS)
Effective area this stream =       15.49(Ac.)
Total Study Area (Main Stream No. 1) =       15.49(Ac.)
Area averaged Fm value =    0.327(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     35.116(CFS)
Depth of flow =   1.028(Ft.), Average velocity =   7.593(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00             20.00
        2            70.00              0.00
        3           175.00             20.00
Manning's 'N' friction factor =   0.035
------------------------------------------------------------------
Sub-Channel flow  =     35.116(CFS)
  '     '         flow top width =      8.996(Ft.)
  '     '    velocity=    7.593(Ft/s)
  '     '         area =      4.625(Sq.Ft)
  '     '         Froude number =     1.866

Upstream point elevation =  2030.000(Ft.)
Downstream point elevation =  1907.300(Ft.)
Flow length =  1525.000(Ft.)
Travel time  =    3.35 min.
Time of concentration =   18.89 min.
Depth of flow =   1.028(Ft.)
Average velocity =   7.593(Ft/s)
Total irregular channel flow =    35.116(CFS)
Irregular channel normal depth above invert elev. =   1.028(Ft.)
Average velocity of channel(s) =   7.593(Ft/s)

Sub-Channel No. 1 Critical depth =      1.320(Ft.)
  '     '       '     Critical flow top width =     11.553(Ft.)
  '     '       '     Critical flow velocity=    4.604(Ft/s)
  '     '       '     Critical flow area =      7.627(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.800
SCS curve number for soil(AMC 2)  = 80.10
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.368(In/Hr)
Rainfall intensity =      1.660(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.710
Subarea runoff =     19.111(CFS) for   19.130(Ac.)
Total runoff =     40.821(CFS)
Effective area this stream =       34.62(Ac.)
Total Study Area (Main Stream No. 1) =       34.62(Ac.)
Area averaged Fm value =    0.350(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1902.300(Ft.)
Downstream point/station elevation =  1898.000(Ft.)
```

Pipe length = 89.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 40.821(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 40.821(CFS)
Normal flow depth in pipe = 16.55(In.)
Flow top width inside pipe = 22.21(In.)
Critical depth could not be calculated.
Pipe flow velocity = 17.66(Ft/s)
Travel time through pipe = 0.08 min.
Time of concentration (TC) = 18.97 min.

++
Process from Point/Station 204.000 to Point/Station 227.000
**** IMPROVED CHANNEL TRAVEL TIME ****
____
Upstream point elevation = 1898.000(Ft.)
Downstream point elevation = 1891.900(Ft.)
Channel length thru subarea = 235.000(Ft.)
Channel base width = 0.000(Ft.)
Slope or 'Z' of left channel bank = 1.000
Slope or 'Z' of right channel bank = 1.000
Estimated mean flow rate at midpoint of channel = 40.821(CFS)
Manning's 'N' = 0.015
Maximum depth of channel = 3.500(Ft.)
Flow(q) thru subarea = 40.821(CFS)
Depth of flow = 1.844(Ft.), Average velocity = 12.002(Ft/s)
Channel flow top width = 3.688(Ft.)
Flow Velocity = 12.00(Ft/s)
Travel time = 0.33 min.
Time of concentration = 19.30 min.
Critical depth = 2.531(Ft.)
Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2) = 84.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.301(In/Hr)
Rainfall intensity = 1.637(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.708
Subarea runoff = 0.000(CFS) for 0.000(Ac.)
Total runoff = 40.821(CFS)
Effective area this stream = 34.62(Ac.)
Total Study Area (Main Stream No. 1) = 34.62(Ac.)
Area averaged Fm value = 0.350(In/Hr)

++
Process from Point/Station 204.000 to Point/Station 227.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 34.620(Ac.)
Total study area this main stream = 34.620(Ac.)
Runoff from this stream = 40.821(CFS)
Time of concentration = 19.30 min.
Rainfall intensity = 1.637(In/Hr)
Area averaged loss rate (Fm) = 0.3496(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 226.000 to Point/Station 227.000
**** INITIAL AREA EVALUATION ****
____
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.300
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.300
SCS curve number for soil(AMC 2) = 71.80
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.504(In/Hr)
Initial subarea data:
Initial area flow distance = 875.000(Ft.)
Top (of initial area) elevation = 2001.300(Ft.)
Bottom (of initial area) elevation = 1891.900(Ft.)
Difference in elevation = 109.400(Ft.)
Slope = 0.12503 s(%)= 12.50
TC = k(0.706)*[(length^3)/(elevation change)]^0.2

Initial area time of concentration = 16.077 min.
Rainfall intensity = 1.843(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.654
Subarea runoff = 7.217(CFS)
Total initial stream area = 5.990(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.504(In/Hr)

++
Process from Point/Station 226.000 to Point/Station 227.000
**** CONFLUENCE OF MAIN STREAMS ****
_____
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 5.990(Ac.)
Total study area this main stream = 5.990(Ac.)
Runoff from this stream = 7.217(CFS)
Time of concentration = 16.08 min.
Rainfall intensity = 1.843(In/Hr)
Area averaged loss rate (Fm) = 0.5043(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	40.821	19.30	1.637
2	7.217	16.08	1.843

Qmax(1) =
1.000 * 1.000 * 40.821) +
0.846 * 1.000 * 7.217) + = 46.926
Qmax(2) =
1.160 * 0.833 * 40.821) +
1.000 * 1.000 * 7.217) + = 46.675

Total of 2 main streams to confluence:
Flow rates before confluence point:
41.821 8.217
Maximum flow rates at confluence using above data:
46.926 46.675
Effective Area of streams before confluence:
34.620 5.990
Effective area values after confluence:
40.610 34.831

Results of confluence:
Total flow rate = 46.926(CFS)
Time of concentration = 19.298 min.
Effective stream area after confluence = 40.610(Ac.)
Stream Area average Pervious fraction(Ap) = 1.000
Stream Area average soil loss rate(Fm) = 0.372(In/Hr)
Steam effective area = 40.61(Ac.)

++
Process from Point/Station 227.000 to Point/Station 230.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____
Upstream point/station elevation = 1886.900(Ft.)
Downstream point/station elevation = 1877.600(Ft.)
Pipe length = 35.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 46.926(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 46.926(CFS)
Normal flow depth in pipe = 12.94(In.)
Flow top width inside pipe = 16.19(In.)
Critical depth could not be calculated.
Pipe flow velocity = 34.49(Ft/s)
Travel time through pipe = 0.02 min.
Time of concentration (TC) = 19.32 min.

++
Process from Point/Station 227.000 to Point/Station 230.000
**** CONFLUENCE OF MAIN STREAMS ****
_____
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 40.610(Ac.)
Total study area this main stream = 5.990(Ac.)
Runoff from this stream = 46.926(CFS)

Time of concentration = 19.32 min.
Rainfall intensity = 1.636(In/Hr)
Area averaged loss rate (Fm) = 0.3724(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 228.000 to Point/Station 229.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.657(In/Hr)
Initial subarea data:
Initial area flow distance = 500.000(Ft.)
Top (of initial area) elevation = 1964.700(Ft.)
Bottom (of initial area) elevation = 1885.000(Ft.)
Difference in elevation = 79.700(Ft.)
Slope = 0.15940 s(%)= 15.94
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.243 min.
Rainfall intensity = 2.200(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.631
Subarea runoff = 5.207(CFS)
Total initial stream area = 3.750(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.657(In/Hr)

++
Process from Point/Station 229.000 to Point/Station 230.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1880.000(Ft.)
Downstream point/station elevation = 1877.600(Ft.)
Pipe length = 35.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 5.207(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 5.207(CFS)
Normal flow depth in pipe = 6.41(In.)
Flow top width inside pipe = 11.97(In.)
Critical Depth = 11.12(In.)
Pipe flow velocity = 12.21(Ft/s)
Travel time through pipe = 0.05 min.
Time of concentration (TC) = 12.29 min.

++
Process from Point/Station 229.000 to Point/Station 230.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 3.750(Ac.)
Total study area this main stream = 3.750(Ac.)
Runoff from this stream = 5.207(CFS)
Time of concentration = 12.29 min.
Rainfall intensity = 2.194(In/Hr)
Area averaged loss rate (Fm) = 0.6573(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	46.926	19.32	1.636
2	5.207	12.29	2.194

Qmax(1) =
  1.000 * 1.000 * 46.926) +
  0.637 * 1.000 * 5.207) + = 50.240
Qmax(2) =
  1.442 * 0.636 * 46.926) +
  1.000 * 1.000 * 5.207) + = 48.273

Total of 2 main streams to confluence:
Flow rates before confluence point:
  47.926 6.207
Maximum flow rates at confluence using above data:

```
       50.240       48.273
Effective Area of streams before confluence:
       40.610        3.750
Effective area values after confluence:
       44.360       29.592


Results of confluence:
Total flow rate =     50.240(CFS)
Time of concentration =    19.315 min.
Effective stream area after confluence  =     44.360(Ac.)
Stream Area average Pervious fraction(Ap) =  1.000
Stream Area average soil loss rate(Fm) =    0.397(In/Hr)
Steam effective area =      44.36(Ac.)


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Process from Point/Station      230.000 to Point/Station      231.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1877.600(Ft.)
Downstream point/station elevation =  1866.000(Ft.)
Pipe length  =   230.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    50.240(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    50.240(CFS)
Normal flow depth in pipe =   19.45(In.)
Flow top width inside pipe =   18.81(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.44(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =    19.52 min.


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Process from Point/Station      230.000 to Point/Station      231.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     44.360(Ac.)
Total study area this main stream =      3.750(Ac.)
Runoff from this stream =     50.240(CFS)
Time of concentration =   19.52 min.
Rainfall intensity =     1.624(In/Hr)
Area averaged loss rate (Fm) =    0.3965(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      224.000 to Point/Station      225.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.400
SCS curve number for soil(AMC 2)  = 63.60
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.629(In/Hr)
Initial subarea data:
Initial area flow distance =   895.000(Ft.)
Top (of initial area) elevation =  2031.400(Ft.)
Bottom (of initial area) elevation =  1898.900(Ft.)
Difference in elevation =   132.500(Ft.)
Slope =    0.14804  s(%)=      14.80
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.684 min.
Rainfall intensity =      1.873(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.598
Subarea runoff =      4.424(CFS)
Total initial stream area =        3.950(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.629(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      225.000 to Point/Station      231.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1893.900(Ft.)
Downstream point/station elevation =  1866.000(Ft.)
Pipe length  =   125.00(Ft.)   Manning's N = 0.013
```

No. of pipes = 1 Required pipe flow =   4.424(CFS)
Nearest computed pipe diameter =   9.00(In.)
Calculated individual pipe flow =   4.424(CFS)
Normal flow depth in pipe =   4.85(In.)
Flow top width inside pipe =   8.97(In.)
Critical depth could not be calculated.
Pipe flow velocity =   18.24(Ft/s)
Travel time through pipe =   0.11 min.
Time of concentration (TC) =   15.80 min.

++
Process from Point/Station   225.000 to Point/Station   231.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =   3.950(Ac.)
Total study area this main stream =   3.950(Ac.)
Runoff from this stream =   4.424(CFS)
Time of concentration =   15.80 min.
Rainfall intensity =   1.864(In/Hr)
Area averaged loss rate (Fm) =   0.6286(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3

++
Process from Point/Station   232.000 to Point/Station   233.000
**** INITIAL AREA EVALUATION ****
____
UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000   Max loss rate(Fm)=   0.810(In/Hr)
Initial subarea data:
Initial area flow distance =   275.000(Ft.)
Top (of initial area) elevation = 1901.800(Ft.)
Bottom (of initial area) elevation = 1874.300(Ft.)
Difference in elevation =   27.500(Ft.)
Slope =   0.10000 s(%)=   10.00
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.581 min.
Rainfall intensity =   2.419(In/Hr) for a   10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.599
Subarea runoff =   0.391(CFS)
Total initial stream area =   0.270(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =   0.810(In/Hr)

++
Process from Point/Station   233.000 to Point/Station   231.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____
Upstream point/station elevation = 1869.300(Ft.)
Downstream point/station elevation = 1866.000(Ft.)
Pipe length =   55.00(Ft.)   Manning's N = 0.013
No. of pipes = 1 Required pipe flow =   0.391(CFS)
Nearest computed pipe diameter =   6.00(In.)
Calculated individual pipe flow =   0.391(CFS)
Normal flow depth in pipe =   2.19(In.)
Flow top width inside pipe =   5.78(In.)
Critical Depth =   3.82(In.)
Pipe flow velocity =   6.03(Ft/s)
Travel time through pipe =   0.15 min.
Time of concentration (TC) =   10.73 min.

++
Process from Point/Station   233.000 to Point/Station   231.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 3
Effective stream flow area =   0.270(Ac.)
Total study area this main stream =   0.270(Ac.)
Runoff from this stream =   0.391(CFS)
Time of concentration =   10.73 min.
Rainfall intensity =   2.397(In/Hr)
Area averaged loss rate (Fm) =   0.8095(In/Hr)

Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	50.240	19.52	1.624
2	4.424	15.80	1.864
3	0.391	10.73	2.397

```
Qmax(1) =
           1.000 *    1.000 *    50.240) +
           0.806 *    1.000 *     4.424) +
           0.513 *    1.000 *     0.391) + =      54.007
Qmax(2) =
           1.195 *    0.809 *    50.240) +
           1.000 *    1.000 *     4.424) +
           0.664 *    1.000 *     0.391) + =      53.272
Qmax(3) =
           1.629 *    0.550 *    50.240) +
           1.431 *    0.679 *     4.424) +
           1.000 *    1.000 *     0.391) + =      49.680

Total of 3 main streams to confluence:
Flow rates before confluence point:
      51.240       5.424       1.391
Maximum flow rates at confluence using above data:
       54.007       53.272       49.680
Effective Area of streams before confluence:
       44.360        3.950        0.270
Effective area values after confluence:
       48.580       40.116       27.342


Results of confluence:
Total flow rate =     54.007(CFS)
Time of concentration =    19.523 min.
Effective stream area after confluence  =     48.580(Ac.)
Stream Area average Pervious fraction(Ap) =  1.000
Stream Area average soil loss rate(Fm) =    0.418(In/Hr)
Steam effective area =      48.58(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      231.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1866.000(Ft.)
Downstream point/station elevation =  1862.000(Ft.)
Pipe length  =   160.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    54.007(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    54.007(CFS)
Normal flow depth in pipe =   20.91(In.)
Flow top width inside pipe =   27.58(In.)
Critical Depth =   28.14(In.)
Pipe flow velocity =     14.78(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    19.70 min.


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Process from Point/Station      231.000 to Point/Station      210.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     48.580(Ac.)
Total study area this main stream =      0.270(Ac.)
Runoff from this stream =     54.007(CFS)
Time of concentration =   19.70 min.
Rainfall intensity =     1.615(In/Hr)
Area averaged loss rate (Fm) =    0.4177(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 84.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.301(In/Hr)
Initial subarea data:
Initial area flow distance =   855.000(Ft.)
Top (of initial area) elevation =  2050.000(Ft.)
Bottom (of initial area) elevation =  1978.000(Ft.)
Difference in elevation =    72.000(Ft.)
Slope =    0.08421  s(%)=       8.42
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.239 min.
Rainfall intensity =      1.761(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.746
Subarea runoff =     12.817(CFS)
Total initial stream area =        9.750(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.301(In/Hr)


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Process from Point/Station      206.000 to Point/Station      207.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     20.659(CFS)
Depth of flow =   0.900(Ft.), Average velocity =   6.379(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00             20.00
        2            70.00              0.00
        3           160.00             20.00
Manning's 'N' friction factor =   0.035
------------------------------------------------------------------
Sub-Channel flow  =     20.659(CFS)
  '     '         flow top width =      7.198(Ft.)
  '     '    velocity=    6.379(Ft/s)
  '     '         area =      3.238(Sq.Ft)
  '     '         Froude number =     1.676

Upstream point elevation =  1978.000(Ft.)
Downstream point elevation =  1924.100(Ft.)
Flow length =   790.000(Ft.)
Travel time  =    2.06 min.
Time of concentration =   19.30 min.
Depth of flow =   0.900(Ft.)
Average velocity =   6.379(Ft/s)
Total irregular channel flow =    20.659(CFS)
Irregular channel normal depth above invert elev. =   0.900(Ft.)
Average velocity of channel(s) =   6.379(Ft/s)

Sub-Channel No. 1 Critical depth =      1.109(Ft.)
  '     '       '     Critical flow top width =      8.875(Ft.)
  '     '       '     Critical flow velocity=    4.197(Ft/s)
  '     '       '     Critical flow area =      4.923(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.300
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 73.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.472(In/Hr)
Rainfall intensity =      1.636(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.683
Subarea runoff =     11.403(CFS) for   11.930(Ac.)
Total runoff =     24.220(CFS)
Effective area this stream =       21.68(Ac.)
Total Study Area (Main Stream No. 2) =       21.68(Ac.)
Area averaged Fm value =    0.395(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      209.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1919.100(Ft.)
Downstream point/station elevation =  1864.900(Ft.)
Pipe length  =   700.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    24.220(CFS)
Nearest computed pipe diameter  =     18.00(In.)
```

Calculated individual pipe flow = 24.220(CFS)
Normal flow depth in pipe = 12.49(In.)
Flow top width inside pipe = 16.59(In.)
Critical depth could not be calculated.
Pipe flow velocity = 18.49(Ft/s)
Travel time through pipe = 0.63 min.
Time of concentration (TC) = 19.93 min.

++
Process from Point/Station 207.000 to Point/Station 209.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 1
Stream flow area = 21.680(Ac.)
Runoff from this stream = 24.220(CFS)
Time of concentration = 19.93 min.
Rainfall intensity = 1.603(In/Hr)
Area averaged loss rate (Fm) = 0.3951(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000

++
Process from Point/Station 215.000 to Point/Station 208.000
**** INITIAL AREA EVALUATION ****

PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2) = 75.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.385(In/Hr)
Initial subarea data:
Initial area flow distance = 990.000(Ft.)
Top (of initial area) elevation = 2047.500(Ft.)
Bottom (of initial area) elevation = 1871.700(Ft.)
Difference in elevation = 175.800(Ft.)
Slope = 0.17758 s(%)= 17.76
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.773 min.
Rainfall intensity = 2.391(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.755
Subarea runoff = 6.806(CFS)
Total initial stream area = 3.770(Ac.)
Pervious area fraction = 0.850
Initial area Fm value = 0.385(In/Hr)

++
Process from Point/Station 208.000 to Point/Station 209.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1866.700(Ft.)
Downstream point/station elevation = 1864.900(Ft.)
Pipe length = 45.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.806(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 6.806(CFS)
Normal flow depth in pipe = 9.39(In.)
Flow top width inside pipe = 9.91(In.)
Critical depth could not be calculated.
Pipe flow velocity = 10.33(Ft/s)
Travel time through pipe = 0.07 min.
Time of concentration (TC) = 10.85 min.

++
Process from Point/Station 208.000 to Point/Station 209.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 2
Stream flow area = 3.770(Ac.)
Runoff from this stream = 6.806(CFS)
Time of concentration = 10.85 min.
Rainfall intensity = 2.380(In/Hr)
Area averaged loss rate (Fm) = 0.3850(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)

```
1       24.220     19.93                1.603
2        6.806     10.85                2.380
Qmax(1) =
           1.000 *    1.000 *    24.220) +
           0.610 *    1.000 *     6.806) + =      28.373
Qmax(2) =
           1.644 *    0.544 *    24.220) +
           1.000 *    1.000 *     6.806) + =      28.472

Total of 2 streams to confluence:
Flow rates before confluence point:
      24.220       6.806
Maximum flow rates at confluence using above data:
       28.373       28.472
Area of streams before confluence:
       21.680        3.770
Effective area values after confluence:
       25.450       15.565
Results of confluence:
Total flow rate =     28.472(CFS)
Time of concentration =    10.845 min.
Effective stream area after confluence =     15.565(Ac.)
Stream Area average Pervious fraction(Ap) =  0.978
Stream Area average soil loss rate(Fm) =    0.394(In/Hr)
Study area (this main stream) =      25.45(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1864.900(Ft.)
Downstream point/station elevation =  1862.000(Ft.)
Pipe length  =    95.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    28.472(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    28.472(CFS)
Normal flow depth in pipe =   17.81(In.)
Flow top width inside pipe =   15.07(In.)
Critical depth could not be calculated.
Pipe flow velocity =     13.09(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =    10.97 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =     15.565(Ac.)
Total study area this main stream =     25.450(Ac.)
Runoff from this stream =     28.472(CFS)
Time of concentration =   10.97 min.
Rainfall intensity =     2.363(In/Hr)
Area averaged loss rate (Fm) =    0.3936(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9778
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       54.007     19.70                1.615
2       28.472     10.97                2.363
Qmax(1) =
           1.000 *    1.000 *    54.007) +
           0.620 *    1.000 *    28.472) + =      71.658
Qmax(2) =
           1.625 *    0.557 *    54.007) +
           1.000 *    1.000 *    28.472) + =      77.326

Total of 2 main streams to confluence:
Flow rates before confluence point:
      55.007      29.472
Maximum flow rates at confluence using above data:
       71.658       77.326
Effective Area of streams before confluence:
       48.580       15.565
Effective area values after confluence:
       64.145       42.603
```

```
Results of confluence:
Total flow rate =     77.326(CFS)
Time of concentration =    10.966 min.
Effective stream area after confluence  =     42.603(Ac.)
Stream Area average Pervious fraction(Ap) =  0.995
Stream Area average soil loss rate(Fm) =    0.412(In/Hr)
Steam effective area =      64.15(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1862.000(Ft.)
Downstream point/station elevation =  1842.700(Ft.)
Pipe length  =   290.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    77.326(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    77.326(CFS)
Normal flow depth in pipe =   21.38(In.)
Flow top width inside pipe =   21.93(In.)
Critical depth could not be calculated.
Pipe flow velocity =     22.89(Ft/s)
Travel time through pipe =    0.21 min.
Time of concentration (TC) =    11.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     42.603(Ac.)
Total study area this main stream =     25.450(Ac.)
Runoff from this stream =     77.326(CFS)
Time of concentration =   11.18 min.
Rainfall intensity =     2.334(In/Hr)
Area averaged loss rate (Fm) =    0.4118(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9946
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      234.000 to Point/Station      235.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.387(In/Hr)
Initial subarea data:
Initial area flow distance =   270.000(Ft.)
Top (of initial area) elevation =  1958.000(Ft.)
Bottom (of initial area) elevation =  1892.300(Ft.)
Difference in elevation =    65.700(Ft.)
Slope =    0.24333  s(%)=      24.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.792 min.
Rainfall intensity =      2.728(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.772
Subarea runoff =      1.538(CFS)
Total initial stream area =        0.730(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.387(In/Hr)


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Process from Point/Station      235.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1887.300(Ft.)
Downstream point/station elevation =  1842.700(Ft.)
Pipe length  =   345.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     1.538(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.538(CFS)
Normal flow depth in pipe =    3.92(In.)
Flow top width inside pipe =    5.71(In.)
Critical depth could not be calculated.
Pipe flow velocity =     11.31(Ft/s)
```

```
Travel time through pipe =    0.51 min.
Time of concentration (TC) =     9.30 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      235.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.730(Ac.)
Total study area this main stream =      0.730(Ac.)
Runoff from this stream =      1.538(CFS)
Time of concentration =    9.30 min.
Rainfall intensity =     2.630(In/Hr)
Area averaged loss rate (Fm) =    0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       77.326     11.18                2.334
2        1.538      9.30                2.630
Qmax(1) =
           1.000 *    1.000 *    77.326) +
           0.868 *    1.000 *     1.538) + =      78.661
Qmax(2) =
           1.154 *    0.832 *    77.326) +
           1.000 *    1.000 *     1.538) + =      75.796

Total of 2 main streams to confluence:
Flow rates before confluence point:
      78.326       2.538
Maximum flow rates at confluence using above data:
       78.661       75.796
Effective Area of streams before confluence:
       42.603        0.730
Effective area values after confluence:
       43.333       36.180


Results of confluence:
Total flow rate =     78.661(CFS)
Time of concentration =    11.177 min.
Effective stream area after confluence  =     43.333(Ac.)
Stream Area average Pervious fraction(Ap) =  0.995
Stream Area average soil loss rate(Fm) =    0.411(In/Hr)
Steam effective area =      43.33(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      211.000 to Point/Station      212.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1842.700(Ft.)
Downstream point/station elevation =  1842.000(Ft.)
Pipe length  =    35.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    78.661(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    78.661(CFS)
Normal flow depth in pipe =   28.88(In.)
Flow top width inside pipe =   21.83(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.26(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =    11.22 min.


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Process from Point/Station      211.000 to Point/Station      212.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     43.333(Ac.)
Total study area this main stream =      0.730(Ac.)
Runoff from this stream =     78.661(CFS)
Time of concentration =   11.22 min.
Rainfall intensity =     2.329(In/Hr)
Area averaged loss rate (Fm) =    0.4114(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9947
Program is now starting with Main Stream No. 2
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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      236.000 to Point/Station      237.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.387(In/Hr)
Initial subarea data:
Initial area flow distance =   260.000(Ft.)
Top (of initial area) elevation =  1957.000(Ft.)
Bottom (of initial area) elevation =  1890.000(Ft.)
Difference in elevation =    67.000(Ft.)
Slope =    0.25769  s(%)=      25.77
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.562 min.
Rainfall intensity =      2.776(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.775
Subarea runoff =      2.795(CFS)
Total initial stream area =        1.300(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.387(In/Hr)


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Process from Point/Station      237.000 to Point/Station      212.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  1885.000(Ft.)
Downstream point/station elevation =  1842.000(Ft.)
Pipe length  =   285.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.795(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.795(CFS)
Normal flow depth in pipe =    4.15(In.)
Flow top width inside pipe =    8.97(In.)
Critical Depth =    8.53(In.)
Pipe flow velocity =     14.04(Ft/s)
Travel time through pipe =    0.34 min.
Time of concentration (TC) =     8.90 min.


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Process from Point/Station      237.000 to Point/Station      212.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      1.300(Ac.)
Total study area this main stream =      1.300(Ac.)
Runoff from this stream =      2.795(CFS)
Time of concentration =    8.90 min.
Rainfall intensity =     2.707(In/Hr)
Area averaged loss rate (Fm) =    0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       78.661     11.22                2.329
2        2.795      8.90                2.707
Qmax(1) =
           1.000 *    1.000 *    78.661) +
           0.837 *    1.000 *     2.795) + =      81.001
Qmax(2) =
           1.197 *    0.793 *    78.661) +
           1.000 *    1.000 *     2.795) + =      77.509

Total of 2 main streams to confluence:
Flow rates before confluence point:
      79.661       3.795
Maximum flow rates at confluence using above data:
       81.001       77.509
Effective Area of streams before confluence:
       43.333        1.300
Effective area values after confluence:
       44.633       35.679
```

```
Results of confluence:
Total flow rate =     81.001(CFS)
Time of concentration =    11.218 min.
Effective stream area after confluence  =     44.633(Ac.)
Stream Area average Pervious fraction(Ap) =  0.995
Stream Area average soil loss rate(Fm) =    0.411(In/Hr)
Steam effective area =      44.63(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      213.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1842.000(Ft.)
Downstream point/station elevation =  1821.000(Ft.)
Pipe length  =   565.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    81.001(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    81.001(CFS)
Normal flow depth in pipe =   25.31(In.)
Flow top width inside pipe =   21.79(In.)
Critical depth could not be calculated.
Pipe flow velocity =     18.34(Ft/s)
Travel time through pipe =    0.51 min.
Time of concentration (TC) =    11.73 min.
End of computations, Total Study Area =           76.06 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.993
Area averaged SCS curve number =  77.3
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/20/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA B - NODE 221
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 216.000 to Point/Station 217.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2) = 53.50
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.460(In/Hr)
Initial subarea data:
Initial area flow distance = 910.000(Ft.)
Top (of initial area) elevation = 1961.500(Ft.)
Bottom (of initial area) elevation = 1868.500(Ft.)
Difference in elevation = 93.000(Ft.)
Slope = 0.10220 s(%)= 10.22
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.923 min.
Rainfall intensity = 2.522(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.736
Subarea runoff = 5.327(CFS)
Total initial stream area = 2.870(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.460(In/Hr)

++
Process from Point/Station 216.000 to Point/Station 217.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 2.870(Ac.)
Total study area this main stream = 2.870(Ac.)
Runoff from this stream = 5.327(CFS)
Time of concentration = 9.92 min.
Rainfall intensity = 2.522(In/Hr)
Area averaged loss rate (Fm) = 0.4598(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 223.000 to Point/Station 217.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2) = 53.50
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.460(In/Hr)
Initial subarea data:
Initial area flow distance = 600.000(Ft.)
Top (of initial area) elevation = 1903.100(Ft.)
Bottom (of initial area) elevation = 1868.500(Ft.)
Difference in elevation = 34.600(Ft.)

```
Slope =    0.05767  s(%)=       5.77
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.418 min.
Rainfall intensity =      2.609(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.741
Subarea runoff =      5.571(CFS)
Total initial stream area =        2.880(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =    0.460(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      223.000 to Point/Station      217.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      2.880(Ac.)
Total study area this main stream =      2.880(Ac.)
Runoff from this stream =      5.571(CFS)
Time of concentration =    9.42 min.
Rainfall intensity =     2.609(In/Hr)
Area averaged loss rate (Fm) =    0.4598(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        5.327      9.92                2.522
2        5.571      9.42                2.609
Qmax(1) =
           1.000 *    1.000 *     5.327) +
           0.960 *    1.000 *     5.571) + =      10.672
Qmax(2) =
           1.042 *    0.949 *     5.327) +
           1.000 *    1.000 *     5.571) + =      10.840

Total of 2 main streams to confluence:
Flow rates before confluence point:
       6.327       6.571
Maximum flow rates at confluence using above data:
       10.672       10.840
Effective Area of streams before confluence:
        2.870        2.880
Effective area values after confluence:
        5.750        5.604


Results of confluence:
Total flow rate =     10.840(CFS)
Time of concentration =     9.418 min.
Effective stream area after confluence  =      5.604(Ac.)
Stream Area average Pervious fraction(Ap) =  0.600
Stream Area average soil loss rate(Fm) =    0.460(In/Hr)
Steam effective area =       5.75(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      220.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1868.500(Ft.)
End of street segment elevation =  1862.100(Ft.)
Length of street segment  =   280.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =   0.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  12.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     13.674(CFS)
Depth of flow =   0.463(Ft.), Average velocity =   4.616(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  16.839(Ft.)
Flow velocity =   4.62(Ft/s)
```

```
Travel time =    1.01 min.     TC =   10.43  min.
 Adding area flow to street
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 50.50
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.482(In/Hr)
Rainfall intensity =      2.442(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.728
Subarea runoff =      4.324(CFS) for    2.930(Ac.)
Total runoff =     15.164(CFS)
Effective area this stream =        8.53(Ac.)
Total Study Area (Main Stream No. 1) =        5.81(Ac.)
Area averaged Fm value =    0.467(In/Hr)
Street flow at end of street =     15.164(CFS)
Half street flow at end of street =     15.164(CFS)
Depth of flow =   0.477(Ft.), Average velocity =   4.734(Ft/s)
Flow width (from curb towards crown)=  17.540(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =      8.534(Ac.)
Total study area this main stream =      5.810(Ac.)
Runoff from this stream =     15.164(CFS)
Time of concentration =   10.43 min.
Rainfall intensity =     2.442(In/Hr)
Area averaged loss rate (Fm) =    0.4675(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2


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Process from Point/Station      218.000 to Point/Station      219.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 70.70
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.052(In/Hr)
Initial subarea data:
Initial area flow distance =   845.000(Ft.)
Top (of initial area) elevation =  1925.300(Ft.)
Bottom (of initial area) elevation =  1868.500(Ft.)
Difference in elevation =    56.800(Ft.)
Slope =    0.06722  s(%)=       6.72
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.729 min.
Rainfall intensity =      2.967(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.884
Subarea runoff =      1.705(CFS)
Total initial stream area =        0.650(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.052(In/Hr)


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Process from Point/Station      219.000 to Point/Station      220.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1868.500(Ft.)
End of street segment elevation =  1862.100(Ft.)
Length of street segment  =   250.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =   0.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  12.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
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```
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      3.187(CFS)
Depth of flow =   0.306(Ft.), Average velocity =   3.422(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   8.970(Ft.)
Flow velocity =   3.42(Ft/s)
Travel time =    1.22 min.     TC =    8.95  min.
 Adding area flow to street
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2)  = 53.50
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.460(In/Hr)
Rainfall intensity =      2.698(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.796
Subarea runoff =      2.118(CFS) for    1.130(Ac.)
Total runoff =      3.824(CFS)
Effective area this stream =        1.78(Ac.)
Total Study Area (Main Stream No. 2) =        1.78(Ac.)
Area averaged Fm value =    0.311(In/Hr)
Street flow at end of street =      3.824(CFS)
Half street flow at end of street =      3.824(CFS)
Depth of flow =   0.321(Ft.), Average velocity =   3.565(Ft/s)
Flow width (from curb towards crown)=   9.725(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      1.780(Ac.)
Total study area this main stream =      1.780(Ac.)
Runoff from this stream =      3.824(CFS)
Time of concentration =    8.95 min.
Rainfall intensity =     2.698(In/Hr)
Area averaged loss rate (Fm) =    0.3109(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4174
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       15.164     10.43                 2.442
2        3.824      8.95                 2.698
Qmax(1) =
           1.000 *    1.000 *    15.164) +
           0.893 *    1.000 *     3.824) + =      18.577
Qmax(2) =
           1.130 *    0.858 *    15.164) +
           1.000 *    1.000 *     3.824) + =      18.518

Total of 2 main streams to confluence:
Flow rates before confluence point:
      16.164       4.824
Maximum flow rates at confluence using above data:
       18.577       18.518
Effective Area of streams before confluence:
        8.534        1.780
Effective area values after confluence:
       10.314        9.101


Results of confluence:
Total flow rate =     18.577(CFS)
Time of concentration =    10.429 min.
Effective stream area after confluence  =     10.314(Ac.)
Stream Area average Pervious fraction(Ap) =  0.568
Stream Area average soil loss rate(Fm) =    0.440(In/Hr)
Steam effective area =      10.31(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      221.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1862.100(Ft.)
End of street segment elevation =  1831.200(Ft.)
```

```
Length of street segment  =   550.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =   0.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  12.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     19.658(CFS)
Depth of flow =   0.452(Ft.), Average velocity =   7.086(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  16.271(Ft.)
Flow velocity =   7.09(Ft/s)
Travel time =    1.29 min.     TC =   11.72  min.
 Adding area flow to street
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.400
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.600
SCS curve number for soil(AMC 2)  = 57.80
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.426(In/Hr)
Rainfall intensity =      2.263(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.725
Subarea runoff =      0.325(CFS) for    1.200(Ac.)
Total runoff =     18.903(CFS)
Effective area this stream =       11.51(Ac.)
Total Study Area (Main Stream No. 1) =        2.98(Ac.)
Area averaged Fm value =    0.439(In/Hr)
Street flow at end of street =     18.903(CFS)
Half street flow at end of street =     18.903(CFS)
Depth of flow =   0.447(Ft.), Average velocity =   7.019(Ft/s)
Flow width (from curb towards crown)=  16.019(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      221.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     11.514(Ac.)
Total study area this main stream =      2.980(Ac.)
Runoff from this stream =     18.903(CFS)
Time of concentration =   11.72 min.
Rainfall intensity =     2.263(In/Hr)
Area averaged loss rate (Fm) =    0.4389(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5718
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      222.000 to Point/Station      221.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(3 - 4 dwl/acre)
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
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.587(In/Hr)
Initial subarea data:
Initial area flow distance =   630.000(Ft.)
Top (of initial area) elevation =  1865.700(Ft.)
Bottom (of initial area) elevation =  1831.200(Ft.)
Difference in elevation =    34.500(Ft.)
Slope =    0.05476  s(%)=       5.48
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.704 min.
Rainfall intensity =      2.559(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.694
Subarea runoff =      3.035(CFS)
Total initial stream area =        1.710(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =    0.587(In/Hr)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      222.000 to Point/Station      221.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      1.710(Ac.)
Total study area this main stream =      1.710(Ac.)
Runoff from this stream =      3.035(CFS)
Time of concentration =    9.70 min.
Rainfall intensity =     2.559(In/Hr)
Area averaged loss rate (Fm) =    0.5867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       18.903     11.72                2.263
2        3.035      9.70                2.559
Qmax(1) =
           1.000 *    1.000 *    18.903) +
           0.850 *    1.000 *     3.035) + =      21.482
Qmax(2) =
           1.162 *    0.828 *    18.903) +
           1.000 *    1.000 *     3.035) + =      21.220

Total of 2 main streams to confluence:
Flow rates before confluence point:
      19.903       4.035
Maximum flow rates at confluence using above data:
       21.482       21.220
Effective Area of streams before confluence:
       11.514        1.710
Effective area values after confluence:
       13.224       11.241


Results of confluence:
Total flow rate =     21.482(CFS)
Time of concentration =    11.723 min.
Effective stream area after confluence  =     13.224(Ac.)
Stream Area average Pervious fraction(Ap) =  0.575
Stream Area average soil loss rate(Fm) =    0.458(In/Hr)
Steam effective area =      13.22(Ac.)
End of computations, Total Study Area =           13.37 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.576
Area averaged SCS curve number =  51.3
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/20/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA B - NODE 240
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 102.000 to Point/Station 239.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 445.000(Ft.)
Top (of initial area) elevation = 1869.200(Ft.)
Bottom (of initial area) elevation = 1845.200(Ft.)
Difference in elevation = 24.000(Ft.)
Slope = 0.05393 s(%)= 5.39
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.470 min.
Rainfall intensity = 2.795(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.794
Subarea runoff = 1.421(CFS)
Total initial stream area = 0.640(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)

++
Process from Point/Station 102.000 to Point/Station 239.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.640(Ac.)
Total study area this main stream = 0.640(Ac.)
Runoff from this stream = 1.421(CFS)
Time of concentration = 8.47 min.
Rainfall intensity = 2.795(In/Hr)
Area averaged loss rate (Fm) = 0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 242.000 to Point/Station 243.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 79.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.387(In/Hr)
Initial subarea data:
Initial area flow distance = 170.000(Ft.)
Top (of initial area) elevation = 1899.000(Ft.)
Bottom (of initial area) elevation = 1855.000(Ft.)
Difference in elevation = 44.000(Ft.)

Slope = 0.25882 s(%)= 25.88
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.217 min.
Rainfall intensity = 3.102(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.788
Subarea runoff = 0.904(CFS)
Total initial stream area = 0.370(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.387(In/Hr)

++
Process from Point/Station 243.000 to Point/Station 239.000
**** SUBAREA FLOW ADDITION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Time of concentration = 7.22 min.
Rainfall intensity = 3.102(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.788
Subarea runoff = 0.000(CFS) for 0.000(Ac.)
Total runoff = 0.904(CFS)
Effective area this stream = 0.37(Ac.)
Total Study Area (Main Stream No. 2) = 0.37(Ac.)
Area averaged Fm value = 0.387(In/Hr)

++
Process from Point/Station 243.000 to Point/Station 239.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 0.370(Ac.)
Total study area this main stream = 0.370(Ac.)
Runoff from this stream = 0.904(CFS)
Time of concentration = 7.22 min.
Rainfall intensity = 3.102(In/Hr)
Area averaged loss rate (Fm) = 0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3

++
Process from Point/Station 238.000 to Point/Station 239.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.394(In/Hr)
Initial subarea data:
Initial area flow distance = 780.000(Ft.)
Top (of initial area) elevation = 1932.000(Ft.)
Bottom (of initial area) elevation = 1845.200(Ft.)
Difference in elevation = 86.800(Ft.)
Slope = 0.11128 s(%)= 11.13
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.172 min.
Rainfall intensity = 2.654(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.766
Subarea runoff = 4.821(CFS)
Total initial stream area = 2.370(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.394(In/Hr)

++
Process from Point/Station 238.000 to Point/Station 239.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 3
Effective stream flow area = 2.370(Ac.)
Total study area this main stream = 2.370(Ac.)

```
Runoff from this stream =      4.821(CFS)
Time of concentration =    9.17 min.
Rainfall intensity =     2.654(In/Hr)
Area averaged loss rate (Fm) =    0.3944(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.421      8.47                2.795
2        0.904      7.22                3.102
3        4.821      9.17                2.654
Qmax(1) =
           1.000 *    1.000 *     1.421) +
           0.887 *    1.000 *     0.904) +
           1.062 *    0.923 *     4.821) + =       6.952
Qmax(2) =
           1.124 *    0.852 *     1.421) +
           1.000 *    1.000 *     0.904) +
           1.198 *    0.787 *     4.821) + =       6.810
Qmax(3) =
           0.943 *    1.000 *     1.421) +
           0.835 *    1.000 *     0.904) +
           1.000 *    1.000 *     4.821) + =       6.915

Total of 3 main streams to confluence:
Flow rates before confluence point:
       2.421       1.904       5.821
Maximum flow rates at confluence using above data:
        6.952        6.810        6.915
Effective Area of streams before confluence:
        0.640        0.370        2.370
Effective area values after confluence:
        3.199        2.780        3.380


Results of confluence:
Total flow rate =      6.952(CFS)
Time of concentration =     8.470 min.
Effective stream area after confluence  =      3.199(Ac.)
Stream Area average Pervious fraction(Ap) =  0.644
Stream Area average soil loss rate(Fm) =    0.381(In/Hr)
Steam effective area =       3.38(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      239.000 to Point/Station      240.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1845.200(Ft.)
End of street segment elevation =  1823.500(Ft.)
Length of street segment  =   375.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  26.000(Ft.)
Distance from crown to crossfall grade break  =   0.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      7.420(CFS)
Depth of flow =   0.344(Ft.), Average velocity =   5.683(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  10.858(Ft.)
Flow velocity =   5.68(Ft/s)
Travel time =    1.10 min.     TC =    9.57  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.800
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 36.80
Pervious ratio(Ap) = 0.5000     Max loss rate(Fm)=     0.472(In/Hr)
Rainfall intensity =      2.582(In/Hr) for a    10.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.763
```

Subarea runoff = 0.201(CFS) for 0.430(Ac.)
Total runoff = 7.153(CFS)
Effective area this stream = 3.63(Ac.)
Total Study Area (Main Stream No. 1) = 2.80(Ac.)
Area averaged Fm value = 0.392(In/Hr)
Street flow at end of street = 7.153(CFS)
Half street flow at end of street = 7.153(CFS)
Depth of flow = 0.340(Ft.), Average velocity = 5.635(Ft/s)
Flow width (from curb towards crown)= 10.689(Ft.)

++
Process from Point/Station 239.000 to Point/Station 240.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 3.629(Ac.)
Total study area this main stream = 2.800(Ac.)
Runoff from this stream = 7.153(CFS)
Time of concentration = 9.57 min.
Rainfall intensity = 2.582(In/Hr)
Area averaged loss rate (Fm) = 0.3919(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6267
Program is now starting with Main Stream No. 2

++
Process from Point/Station 151.000 to Point/Station 250.000
**** INITIAL AREA EVALUATION ****

COMMERCIAL subarea type
Decimal fraction soil group A = 0.400
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.600
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 54.20
Pervious ratio(Ap) = 0.1000 Max loss rate(Fm)= 0.076(In/Hr)
Initial subarea data:
Initial area flow distance = 635.000(Ft.)
Top (of initial area) elevation = 1865.600(Ft.)
Bottom (of initial area) elevation = 1823.700(Ft.)
Difference in elevation = 41.900(Ft.)
Slope = 0.06598 s(%)= 6.60
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.920 min.
Rainfall intensity = 3.188(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.879
Subarea runoff = 1.653(CFS)
Total initial stream area = 0.590(Ac.)
Pervious area fraction = 0.100
Initial area Fm value = 0.076(In/Hr)

++
Process from Point/Station 250.000 to Point/Station 240.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1820.000(Ft.)
Downstream point/station elevation = 1819.500(Ft.)
Pipe length = 52.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 1.653(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 1.653(CFS)
Normal flow depth in pipe = 5.81(In.)
Flow top width inside pipe = 11.99(In.)
Critical Depth = 6.55(In.)
Pipe flow velocity = 4.39(Ft/s)
Travel time through pipe = 0.20 min.
Time of concentration (TC) = 7.12 min.

++
Process from Point/Station 250.000 to Point/Station 240.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 0.590(Ac.)
Total study area this main stream = 0.590(Ac.)
Runoff from this stream = 1.653(CFS)
Time of concentration = 7.12 min.
Rainfall intensity = 3.130(In/Hr)
Area averaged loss rate (Fm) = 0.0757(In/Hr)

Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	7.153	9.57	2.582
2	1.653	7.12	3.130

```
Qmax(1) =
           1.000 *    1.000 *     7.153) +
           0.821 *    1.000 *     1.653) + =       8.509
Qmax(2) =
           1.250 *    0.744 *     7.153) +
           1.000 *    1.000 *     1.653) + =       8.303
```

Total of 2 main streams to confluence:
Flow rates before confluence point:
8.153 2.653
Maximum flow rates at confluence using above data:
8.509 8.303
Effective Area of streams before confluence:
3.629 0.590
Effective area values after confluence:
4.219 3.289

Results of confluence:
Total flow rate = 8.509(CFS)
Time of concentration = 9.569 min.
Effective stream area after confluence = 4.219(Ac.)
Stream Area average Pervious fraction(Ap) = 0.553
Stream Area average soil loss rate(Fm) = 0.348(In/Hr)
Steam effective area = 4.22(Ac.)
End of computations, Total Study Area = 4.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.557
Area averaged SCS curve number = 60.7

AREABNODE249

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/20/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA B - NODE 249
10YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 10.0
Computed rainfall intensity:
Storm year = 10.00 1 hour rainfall = 0.783 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 248.000 to Point/Station 249.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2) = 84.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.301(In/Hr)
Initial subarea data:
Initial area flow distance = 980.000(Ft.)
Top (of initial area) elevation = 2017.000(Ft.)
Bottom (of initial area) elevation = 1817.000(Ft.)
Difference in elevation = 200.000(Ft.)
Slope = 0.20408 s(%)= 20.41
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 15.252 min.
Rainfall intensity = 1.907(In/Hr) for a 10.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.758
Subarea runoff = 7.765(CFS)
Total initial stream area = 5.370(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.301(In/Hr)
End of computations, Total Study Area = 5.37 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 84.0

APPENDIX B.2: 100-YEAR

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 06/18/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 123
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 102.000 to Point/Station 103.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 905.000(Ft.)
Top (of initial area) elevation = 1869.200(Ft.)
Bottom (of initial area) elevation = 1857.600(Ft.)
Difference in elevation = 11.600(Ft.)
Slope = 0.01282 s(%)= 1.28
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 14.997 min.
Rainfall intensity = 3.128(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.805
Subarea runoff = 2.292(CFS)
Total initial stream area = 0.910(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)

++
Process from Point/Station 103.000 to Point/Station 104.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1852.600(Ft.)
Downstream point/station elevation = 1852.300(Ft.)
Pipe length = 28.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 2.292(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 2.292(CFS)
Normal flow depth in pipe = 6.85(In.)
Flow top width inside pipe = 11.88(In.)
Critical Depth = 7.77(In.)
Pipe flow velocity = 4.95(Ft/s)
Travel time through pipe = 0.09 min.
Time of concentration (TC) = 15.09 min.

++
Process from Point/Station 103.000 to Point/Station 104.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.910(Ac.)
Total study area this main stream = 0.910(Ac.)
Runoff from this stream = 2.292(CFS)
Time of concentration = 15.09 min.
Rainfall intensity = 3.115(In/Hr)
Area averaged loss rate (Fm) = 0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      104.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.055(In/Hr)
Initial subarea data:
Initial area flow distance =   935.000(Ft.)
Top (of initial area) elevation =  1869.200(Ft.)
Bottom (of initial area) elevation =  1857.600(Ft.)
Difference in elevation =    11.600(Ft.)
Slope =    0.01241  s(%)=       1.24
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.284 min.
Rainfall intensity =      3.763(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =      2.870(CFS)
Total initial stream area =        0.860(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.055(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      104.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.860(Ac.)
Total study area this main stream =      0.860(Ac.)
Runoff from this stream =      2.870(CFS)
Time of concentration =   11.28 min.
Rainfall intensity =     3.763(In/Hr)
Area averaged loss rate (Fm) =    0.0548(In/Hr)
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.292     15.09                3.115
2        2.870     11.28                3.763
Qmax(1) =
           1.000 *    1.000 *     2.292) +
           0.825 *    1.000 *     2.870) + =       4.661
Qmax(2) =
           1.233 *    0.748 *     2.292) +
           1.000 *    1.000 *     2.870) + =       4.982

Total of 2 main streams to confluence:
Flow rates before confluence point:
       3.292       3.870
Maximum flow rates at confluence using above data:
        4.661        4.982
Effective Area of streams before confluence:
        0.910        0.860
Effective area values after confluence:
        1.770        1.540


Results of confluence:
Total flow rate =      4.982(CFS)
Time of concentration =    11.284 min.
Effective stream area after confluence  =      1.540(Ac.)
Stream Area average Pervious fraction(Ap) =  0.357
Stream Area average soil loss rate(Fm) =    0.196(In/Hr)
Steam effective area =       1.77(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      111.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1852.300(Ft.)
Downstream point/station elevation =  1838.500(Ft.)
Pipe length  =   114.00(Ft.)   Manning's N = 0.013
```

No. of pipes = 1 Required pipe flow =   4.982(CFS)
Nearest computed pipe diameter =   9.00(In.)
Calculated individual pipe flow =   4.982(CFS)
Normal flow depth in pipe =   6.47(In.)
Flow top width inside pipe =   8.09(In.)
Critical depth could not be calculated.
Pipe flow velocity =   14.67(Ft/s)
Travel time through pipe =   0.13 min.
Time of concentration (TC) =   11.41 min.

++
Process from Point/Station   111.000 to Point/Station   112.000
**** IMPROVED CHANNEL TRAVEL TIME ****
____
Upstream point elevation = 1838.500(Ft.)
Downstream point elevation = 1816.700(Ft.)
Channel length thru subarea =   200.000(Ft.)
Channel base width   =   0.000(Ft.)
Slope or 'Z' of left channel bank =   1.000
Slope or 'Z' of right channel bank =   1.000
Estimated mean flow rate at midpoint of channel =   9.009(CFS)
Manning's 'N'   = 0.015
Maximum depth of channel =   1.000(Ft.)
Flow(q) thru subarea =   9.009(CFS)
Depth of flow =   0.800(Ft.), Average velocity = 14.089(Ft/s)
Channel flow top width =   1.599(Ft.)
Flow Velocity =   14.09(Ft/s)
Travel time =   0.24 min.
Time of concentration =   11.65 min.
Critical depth =   1.359(Ft.)
 Adding area flow to channel
PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.8500   Max loss rate(Fm)=   0.466(In/Hr)
Rainfall intensity =   3.685(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.811
Subarea runoff =   7.071(CFS) for   2.490(Ac.)
Total runoff =   12.053(CFS)
Effective area this stream =   4.03(Ac.)
Total Study Area (Main Stream No. 1) =   3.35(Ac.)
Area averaged Fm value =   0.362(In/Hr)

++
Process from Point/Station   111.000 to Point/Station   112.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =   4.030(Ac.)
Total study area this main stream =   3.350(Ac.)
Runoff from this stream =   12.053(CFS)
Time of concentration =   11.65 min.
Rainfall intensity =   3.685(In/Hr)
Area averaged loss rate (Fm) =   0.3625(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6616
Program is now starting with Main Stream No. 2

++
Process from Point/Station   113.000 to Point/Station   112.000
**** INITIAL AREA EVALUATION ****
____
PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.8500   Max loss rate(Fm)=   0.466(In/Hr)
Initial subarea data:
Initial area flow distance =   420.000(Ft.)
Top (of initial area) elevation = 1866.500(Ft.)
Bottom (of initial area) elevation = 1816.700(Ft.)
Difference in elevation =   49.800(Ft.)
Slope =   0.11857 s(%)=   11.86
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   8.288 min.

Rainfall intensity = 4.598(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.809
Subarea runoff = 3.496(CFS)
Total initial stream area = 0.940(Ac.)
Pervious area fraction = 0.850
Initial area Fm value = 0.466(In/Hr)

++
Process from Point/Station 113.000 to Point/Station 112.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 0.940(Ac.)
Total study area this main stream = 0.940(Ac.)
Runoff from this stream = 3.496(CFS)
Time of concentration = 8.29 min.
Rainfall intensity = 4.598(In/Hr)
Area averaged loss rate (Fm) = 0.4657(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	12.053	11.65	3.685
2	3.496	8.29	4.598

Qmax(1) =
1.000 * 1.000 * 12.053) +
0.779 * 1.000 * 3.496) + = 14.777
Qmax(2) =
1.275 * 0.711 * 12.053) +
1.000 * 1.000 * 3.496) + = 14.427

Total of 2 main streams to confluence:
Flow rates before confluence point:
13.053 4.496
Maximum flow rates at confluence using above data:
14.777 14.427
Effective Area of streams before confluence:
4.030 0.940
Effective area values after confluence:
4.970 3.807

Results of confluence:
Total flow rate = 14.777(CFS)
Time of concentration = 11.650 min.
Effective stream area after confluence = 4.970(Ac.)
Stream Area average Pervious fraction(Ap) = 0.697
Stream Area average soil loss rate(Fm) = 0.382(In/Hr)
Steam effective area = 4.97(Ac.)

++
Process from Point/Station 112.000 to Point/Station 120.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1811.700(Ft.)
Downstream point/station elevation = 1807.000(Ft.)
Pipe length = 145.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 14.777(CFS)
Nearest computed pipe diameter = 18.00(In.)
Calculated individual pipe flow = 14.777(CFS)
Normal flow depth in pipe = 11.98(In.)
Flow top width inside pipe = 16.99(In.)
Critical Depth = 16.80(In.)
Pipe flow velocity = 11.84(Ft/s)
Travel time through pipe = 0.20 min.
Time of concentration (TC) = 11.85 min.

++
Process from Point/Station 112.000 to Point/Station 120.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 4.970(Ac.)
Total study area this main stream = 0.940(Ac.)
Runoff from this stream = 14.777(CFS)
Time of concentration = 11.85 min.

Rainfall intensity = 3.644(In/Hr)
Area averaged loss rate (Fm) = 0.3820(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6972
Program is now starting with Main Stream No. 2

++
Process from Point/Station 118.000 to Point/Station 120.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 865.000(Ft.)
Top (of initial area) elevation = 1842.000(Ft.)
Bottom (of initial area) elevation = 1811.600(Ft.)
Difference in elevation = 30.400(Ft.)
Slope = 0.03514 s(%)= 3.51
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.037 min.
Rainfall intensity = 3.608(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.818
Subarea runoff = 6.611(CFS)
Total initial stream area = 2.240(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)

++
Process from Point/Station 118.000 to Point/Station 120.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 2.240(Ac.)
Total study area this main stream = 2.240(Ac.)
Runoff from this stream = 6.611(CFS)
Time of concentration = 12.04 min.
Rainfall intensity = 3.608(In/Hr)
Area averaged loss rate (Fm) = 0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 3

++
Process from Point/Station 119.000 to Point/Station 120.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 610.000(Ft.)
Top (of initial area) elevation = 1867.900(Ft.)
Bottom (of initial area) elevation = 1811.600(Ft.)
Difference in elevation = 56.300(Ft.)
Slope = 0.09230 s(%)= 9.23
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.630 min.
Rainfall intensity = 4.479(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.834
Subarea runoff = 8.442(CFS)
Total initial stream area = 2.260(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)

++
Process from Point/Station 119.000 to Point/Station 120.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 3
Effective stream flow area = 2.260(Ac.)
Total study area this main stream = 2.260(Ac.)

```
Runoff from this stream =      8.442(CFS)
Time of concentration =    8.63 min.
Rainfall intensity =     4.479(In/Hr)
Area averaged loss rate (Fm) =    0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       14.777     11.85                3.644
2        6.611     12.04                3.608
3        8.442      8.63                4.479
Qmax(1) =
           1.000 *    1.000 *    14.777) +
           1.011 *    0.985 *     6.611) +
           0.799 *    1.000 *     8.442) + =      28.103
Qmax(2) =
           0.989 *    1.000 *    14.777) +
           1.000 *    1.000 *     6.611) +
           0.790 *    1.000 *     8.442) + =      27.894
Qmax(3) =
           1.256 *    0.728 *    14.777) +
           1.266 *    0.717 *     6.611) +
           1.000 *    1.000 *     8.442) + =      27.953

Total of 3 main streams to confluence:
Flow rates before confluence point:
      15.777       7.611       9.442
Maximum flow rates at confluence using above data:
       28.103       27.894       27.953
Effective Area of streams before confluence:
        4.970        2.240        2.260
Effective area values after confluence:
        9.436        9.470        7.484


Results of confluence:
Total flow rate =     28.103(CFS)
Time of concentration =    11.854 min.
Effective stream area after confluence  =      9.436(Ac.)
Stream Area average Pervious fraction(Ap) =  0.651
Stream Area average soil loss rate(Fm) =    0.357(In/Hr)
Steam effective area =       9.47(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      121.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1807.000(Ft.)
Downstream point/station elevation =  1806.600(Ft.)
Pipe length  =    36.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    28.103(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    28.103(CFS)
Normal flow depth in pipe =   19.31(In.)
Flow top width inside pipe =   24.37(In.)
Critical Depth =   22.13(In.)
Pipe flow velocity =      9.23(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    11.92 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      120.000 to Point/Station      121.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =      9.436(Ac.)
Total study area this main stream =      2.260(Ac.)
Runoff from this stream =     28.103(CFS)
Time of concentration =   11.92 min.
Rainfall intensity =     3.631(In/Hr)
Area averaged loss rate (Fm) =    0.3567(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6510
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      121.000
**** INITIAL AREA EVALUATION ****
```

```
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.329(In/Hr)
Initial subarea data:
Initial area flow distance =   835.000(Ft.)
Top (of initial area) elevation =  1834.000(Ft.)
Bottom (of initial area) elevation =  1811.600(Ft.)
Difference in elevation =    22.400(Ft.)
Slope =    0.02683  s(%)=       2.68
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   12.527 min.
Rainfall intensity =      3.516(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.816
Subarea runoff =      6.625(CFS)
Total initial stream area =        2.310(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =    0.329(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      121.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      2.310(Ac.)
Total study area this main stream =      2.310(Ac.)
Runoff from this stream =      6.625(CFS)
Time of concentration =   12.53 min.
Rainfall intensity =     3.516(In/Hr)
Area averaged loss rate (Fm) =    0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      117.000 to Point/Station      121.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.329(In/Hr)
Initial subarea data:
Initial area flow distance =   280.000(Ft.)
Top (of initial area) elevation =  1828.800(Ft.)
Bottom (of initial area) elevation =  1811.600(Ft.)
Difference in elevation =    17.200(Ft.)
Slope =    0.06143  s(%)=       6.14
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.856 min.
Rainfall intensity =      5.202(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.843
Subarea runoff =      2.500(CFS)
Total initial stream area =        0.570(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =    0.329(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      117.000 to Point/Station      121.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Effective stream flow area =      0.570(Ac.)
Total study area this main stream =      0.570(Ac.)
Runoff from this stream =      2.500(CFS)
Time of concentration =    6.86 min.
Rainfall intensity =     5.202(In/Hr)
Area averaged loss rate (Fm) =    0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)               (In/Hr)
```

```
1       28.103     11.92                 3.631
2        6.625     12.53                 3.516
3        2.500      6.86                 5.202
Qmax(1) =
           1.000 *    1.000 *    28.103) +
           1.036 *    0.951 *     6.625) +
           0.678 *    1.000 *     2.500) + =      36.329
Qmax(2) =
           0.965 *    1.000 *    28.103) +
           1.000 *    1.000 *     6.625) +
           0.654 *    1.000 *     2.500) + =      35.371
Qmax(3) =
           1.480 *    0.575 *    28.103) +
           1.529 *    0.547 *     6.625) +
           1.000 *    1.000 *     2.500) + =      31.963

Total of 3 main streams to confluence:
Flow rates before confluence point:
      29.103       7.625       3.500
Maximum flow rates at confluence using above data:
       36.329       35.371       31.963
Effective Area of streams before confluence:
        9.436        2.310        0.570
Effective area values after confluence:
       12.204       12.316        7.262


Results of confluence:
Total flow rate =     36.329(CFS)
Time of concentration =    11.919 min.
Effective stream area after confluence  =     12.204(Ac.)
Stream Area average Pervious fraction(Ap) =  0.639
Stream Area average soil loss rate(Fm) =    0.350(In/Hr)
Steam effective area =      12.32(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      121.000 to Point/Station      122.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1806.600(Ft.)
Downstream point/station elevation =  1804.600(Ft.)
Pipe length  =   210.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    36.329(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    36.329(CFS)
Normal flow depth in pipe =   22.41(In.)
Flow top width inside pipe =   26.09(In.)
Critical Depth =   24.52(In.)
Pipe flow velocity =      9.24(Ft/s)
Travel time through pipe =    0.38 min.
Time of concentration (TC) =    12.30 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      122.000 to Point/Station      123.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  1804.600(Ft.)
Downstream point elevation =  1804.000(Ft.)
Channel length thru subarea  =   125.000(Ft.)
Channel base width      =   30.000(Ft.)
Slope or 'Z' of left channel bank =   3.000
Slope or 'Z' of right channel bank =   3.000
Estimated mean flow rate at midpoint of channel =     38.056(CFS)
Manning's 'N'    = 0.035
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =     38.056(CFS)
Depth of flow =   0.597(Ft.), Average velocity =   2.004(Ft/s)
Channel flow top width =   33.584(Ft.)
Flow Velocity =    2.00(Ft/s)
Travel time  =    1.04 min.
Time of concentration =   13.34 min.
Critical depth =      0.363(Ft.)
 Adding area flow to channel
PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.8500     Max loss rate(Fm)=     0.466(In/Hr)
```

The area added to the existing stream causes a
a lower flow rate of Q = 36.264(CFS)
therefore the upstream flow rate of Q = 36.329(CFS) is being used
Rainfall intensity = 3.375(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.804
Subarea runoff = 0.000(CFS) for 1.160(Ac.)
Total runoff = 36.329(CFS)
Effective area this stream = 13.36(Ac.)
Total Study Area (Main Stream No. 1) = 1.73(Ac.)
Area averaged Fm value = 0.360(In/Hr)
End of computations, Total Study Area = 13.74 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.652
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 06/18/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 130
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 127.000 to Point/Station 130.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.394(In/Hr)
Initial subarea data:
Initial area flow distance = 925.000(Ft.)
Top (of initial area) elevation = 1828.400(Ft.)
Bottom (of initial area) elevation = 1765.800(Ft.)
Difference in elevation = 62.600(Ft.)
Slope = 0.06768 s(%)= 6.77
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.846 min.
Rainfall intensity = 3.861(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.808
Subarea runoff = 9.796(CFS)
Total initial stream area = 3.140(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.394(In/Hr)

++
Process from Point/Station 127.000 to Point/Station 130.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 3.140(Ac.)
Total study area this main stream = 3.140(Ac.)
Runoff from this stream = 9.796(CFS)
Time of concentration = 10.85 min.
Rainfall intensity = 3.861(In/Hr)
Area averaged loss rate (Fm) = 0.3944(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 128.000 to Point/Station 129.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 550.000(Ft.)
Top (of initial area) elevation = 1868.600(Ft.)
Bottom (of initial area) elevation = 1828.300(Ft.)
Difference in elevation = 40.300(Ft.)

Slope =   0.07327 s(%)=   7.33
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   8.671 min.
Rainfall intensity =   4.465(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.834
Subarea runoff =   5.547(CFS)
Total initial stream area =   1.490(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =   0.329(In/Hr)

++
Process from Point/Station   129.000 to Point/Station   130.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
____
Top of street segment elevation = 1828.300(Ft.)
End of street segment elevation = 1765.800(Ft.)
Length of street segment =   805.000(Ft.)
Height of curb above gutter flowline =   6.0(In.)
Width of half street (curb to crown) = 18.000(Ft.)
Distance from crown to crossfall grade break =   0.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz) =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line = 12.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline = 2.000(In.)
 Manning's N in gutter = 0.0150
 Manning's N from gutter to grade break = 0.0150
 Manning's N from grade break to crown = 0.0150
Estimated mean flow rate at midpoint of street =   12.565(CFS)
Depth of flow =   0.381(Ft.), Average velocity =   7.197(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width = 12.725(Ft.)
Flow velocity =   7.20(Ft/s)
Travel time =   1.86 min.   TC =   10.53 min.
 Adding area flow to street
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.6000   Max loss rate(Fm)=   0.394(In/Hr)
Rainfall intensity =   3.935(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.814
Subarea runoff =   11.300(CFS) for   3.770(Ac.)
Total runoff =   16.847(CFS)
Effective area this stream =   5.26(Ac.)
Total Study Area (Main Stream No. 2) =   5.26(Ac.)
Area averaged Fm value =   0.376(In/Hr)
Street flow at end of street =   16.847(CFS)
Half street flow at end of street =   16.847(CFS)
Depth of flow =   0.413(Ft.), Average velocity =   7.719(Ft/s)
Flow width (from curb towards crown)= 14.339(Ft.)

++
Process from Point/Station   129.000 to Point/Station   130.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =   5.260(Ac.)
Total study area this main stream =   5.260(Ac.)
Runoff from this stream =   16.847(CFS)
Time of concentration =   10.53 min.
Rainfall intensity =   3.935(In/Hr)
Area averaged loss rate (Fm) =   0.3758(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	9.796	10.85	3.861
2	16.847	10.53	3.935

Qmax(1) =
           1.000 *   1.000 *   9.796) +
           0.979 *   1.000 *   16.847) + =   26.294
Qmax(2) =

```
          1.021 *    0.971 *     9.796) +
          1.000 *    1.000 *    16.847) + =      26.565

Total of 2 main streams to confluence:
Flow rates before confluence point:
      10.796      17.847
Maximum flow rates at confluence using above data:
       26.294       26.565
Effective Area of streams before confluence:
        3.140        5.260
Effective area values after confluence:
        8.400        8.310


Results of confluence:
Total flow rate =     26.565(CFS)
Time of concentration =    10.535 min.
Effective stream area after confluence  =      8.310(Ac.)
Stream Area average Pervious fraction(Ap) =  0.600
Stream Area average soil loss rate(Fm) =    0.383(In/Hr)
Steam effective area =       8.40(Ac.)
End of computations, Total Study Area =            8.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.600
Area averaged SCS curve number =  62.9
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/03/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 135
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 134.000 to Point/Station 135.000
**** INITIAL AREA EVALUATION ****

PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.466(In/Hr)
Initial subarea data:
Initial area flow distance = 1000.000(Ft.)
Top (of initial area) elevation = 1865.000(Ft.)
Bottom (of initial area) elevation = 1763.000(Ft.)
Difference in elevation = 102.000(Ft.)
Slope = 0.10200 s(%)= 10.20
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.084 min.
Rainfall intensity = 3.599(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.784
Subarea runoff = 9.897(CFS)
Total initial stream area = 3.510(Ac.)
Pervious area fraction = 0.850
Initial area Fm value = 0.466(In/Hr)
End of computations, Total Study Area = 3.51 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.850
Area averaged SCS curve number = 69.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 06/18/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 136
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 79.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.387(In/Hr)
Initial subarea data:
Initial area flow distance = 375.000(Ft.)
Top (of initial area) elevation = 1906.000(Ft.)
Bottom (of initial area) elevation = 1844.000(Ft.)
Difference in elevation = 62.000(Ft.)
Slope = 0.16533 s(%)= 16.53
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.833 min.
Rainfall intensity = 3.864(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.810
Subarea runoff = 5.007(CFS)
Total initial stream area = 1.600(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.387(In/Hr)

++
Process from Point/Station 101.000 to Point/Station 110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1839.000(Ft.)
Downstream point/station elevation = 1838.000(Ft.)
Pipe length = 74.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 5.007(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 5.007(CFS)
Normal flow depth in pipe = 8.95(In.)
Flow top width inside pipe = 14.72(In.)
Critical Depth = 10.89(In.)
Pipe flow velocity = 6.55(Ft/s)
Travel time through pipe = 0.19 min.
Time of concentration (TC) = 11.02 min.

++
Process from Point/Station 101.000 to Point/Station 110.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 1.600(Ac.)
Total study area this main stream = 1.600(Ac.)
Runoff from this stream = 5.007(CFS)
Time of concentration = 11.02 min.
Rainfall intensity = 3.821(In/Hr)
Area averaged loss rate (Fm) = 0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.387(In/Hr)
Initial subarea data:
Initial area flow distance =   635.000(Ft.)
Top (of initial area) elevation =  1937.600(Ft.)
Bottom (of initial area) elevation =  1856.000(Ft.)
Difference in elevation =    81.600(Ft.)
Slope =    0.12850  s(%)=      12.85
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.065 min.
Rainfall intensity =      3.261(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.793
Subarea runoff =      6.467(CFS)
Total initial stream area =        2.500(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.387(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      109.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1851.000(Ft.)
Downstream point/station elevation =  1839.000(Ft.)
Pipe length  =   293.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.467(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     6.467(CFS)
Normal flow depth in pipe =    8.87(In.)
Flow top width inside pipe =   10.54(In.)
Critical depth could not be calculated.
Pipe flow velocity =     10.38(Ft/s)
Travel time through pipe =    0.47 min.
Time of concentration (TC) =    14.53 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      109.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 1
Stream flow area =      2.500(Ac.)
Runoff from this stream =      6.467(CFS)
Time of concentration =   14.53 min.
Rainfall intensity =     3.192(In/Hr)
Area averaged loss rate (Fm) =    0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      108.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.387(In/Hr)
Initial subarea data:
Initial area flow distance =   425.000(Ft.)
Top (of initial area) elevation =  1937.600(Ft.)
Bottom (of initial area) elevation =  1845.000(Ft.)
Difference in elevation =    92.600(Ft.)
Slope =    0.21788  s(%)=      21.79
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.777 min.
Rainfall intensity =      3.877(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.810
Subarea runoff =      6.345(CFS)
Total initial stream area =        2.020(Ac.)
Pervious area fraction = 1.000
```

Initial area Fm value = 0.387(In/Hr)

++
Process from Point/Station 108.000 to Point/Station 109.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1840.000(Ft.)
Downstream point/station elevation = 1839.000(Ft.)
Pipe length = 73.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 6.345(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 6.345(CFS)
Normal flow depth in pipe = 10.52(In.)
Flow top width inside pipe = 13.73(In.)
Critical Depth = 12.20(In.)
Pipe flow velocity = 6.90(Ft/s)
Travel time through pipe = 0.18 min.
Time of concentration (TC) = 10.95 min.

++
Process from Point/Station 108.000 to Point/Station 109.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 2
Stream flow area = 2.020(Ac.)
Runoff from this stream = 6.345(CFS)
Time of concentration = 10.95 min.
Rainfall intensity = 3.836(In/Hr)
Area averaged loss rate (Fm) = 0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	6.467	14.53	3.192
2	6.345	10.95	3.836

Qmax(1) =
1.000 * 1.000 * 6.467) +
0.813 * 1.000 * 6.345) + = 11.626
Qmax(2) =
1.230 * 0.754 * 6.467) +
1.000 * 1.000 * 6.345) + = 12.337

Total of 2 streams to confluence:
Flow rates before confluence point:
6.467 6.345
Maximum flow rates at confluence using above data:
11.626 12.337
Area of streams before confluence:
2.500 2.020
Effective area values after confluence:
4.520 3.904
Results of confluence:
Total flow rate = 12.337(CFS)
Time of concentration = 10.954 min.
Effective stream area after confluence = 3.904(Ac.)
Stream Area average Pervious fraction(Ap) = 1.000
Stream Area average soil loss rate(Fm) = 0.387(In/Hr)
Study area (this main stream) = 4.52(Ac.)

++
Process from Point/Station 109.000 to Point/Station 110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1839.000(Ft.)
Downstream point/station elevation = 1838.000(Ft.)
Pipe length = 106.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 12.337(CFS)
Nearest computed pipe diameter = 21.00(In.)
Calculated individual pipe flow = 12.337(CFS)
Normal flow depth in pipe = 14.23(In.)
Flow top width inside pipe = 19.63(In.)
Critical Depth = 15.70(In.)
Pipe flow velocity = 7.11(Ft/s)
Travel time through pipe = 0.25 min.
Time of concentration (TC) = 11.20 min.

++

```
Process from Point/Station      109.000 to Point/Station      110.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      3.904(Ac.)
Total study area this main stream =      4.520(Ac.)
Runoff from this stream =     12.337(CFS)
Time of concentration =   11.20 min.
Rainfall intensity =     3.781(In/Hr)
Area averaged loss rate (Fm) =    0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        5.007     11.02                 3.821
2       12.337     11.20                 3.781
Qmax(1) =
           1.000 *    1.000 *     5.007) +
           1.012 *    0.984 *    12.337) + =      17.289
Qmax(2) =
           0.988 *    1.000 *     5.007) +
           1.000 *    1.000 *    12.337) + =      17.286

Total of 2 main streams to confluence:
Flow rates before confluence point:
       6.007      13.337
Maximum flow rates at confluence using above data:
       17.289       17.286
Effective Area of streams before confluence:
       1.600        3.904
Effective area values after confluence:
       5.441        5.504


Results of confluence:
Total flow rate =     17.289(CFS)
Time of concentration =    11.021 min.
Effective stream area after confluence  =      5.441(Ac.)
Stream Area average Pervious fraction(Ap) =  1.000
Stream Area average soil loss rate(Fm) =    0.387(In/Hr)
Steam effective area =       5.50(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      124.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
--------------------------------------------------------------------------------
Upstream point/station elevation =  1838.000(Ft.)
Downstream point/station elevation =  1781.800(Ft.)
Pipe length  =  1590.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.289(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =    17.289(CFS)
Normal flow depth in pipe =   13.05(In.)
Flow top width inside pipe =   16.07(In.)
Critical depth could not be calculated.
Pipe flow velocity =     12.60(Ft/s)
Travel time through pipe =    2.10 min.
Time of concentration (TC) =    13.12 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      110.000 to Point/Station      124.000
**** CONFLUENCE OF MAIN STREAMS ****
--------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =      5.441(Ac.)
Total study area this main stream =      4.520(Ac.)
Runoff from this stream =     17.289(CFS)
Time of concentration =   13.12 min.
Rainfall intensity =     3.411(In/Hr)
Area averaged loss rate (Fm) =    0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      123.000 to Point/Station      123.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
```

```
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.329(In/Hr)
Rainfall intensity =      3.375(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =  13.34 min.  Rain intensity =       3.37(In/Hr)
Total area this stream =        13.74(Ac.)
Total Study Area (Main Stream No. 2) =       13.74(Ac.)
Total runoff =     36.33(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      123.000 to Point/Station      181.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1804.000(Ft.)
Downstream point/station elevation =  1783.000(Ft.)
Pipe length  =   255.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    36.329(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    36.329(CFS)
Normal flow depth in pipe =   14.20(In.)
Flow top width inside pipe =   19.65(In.)
Critical depth could not be calculated.
Pipe flow velocity =     21.00(Ft/s)
Travel time through pipe =    0.20 min.
Time of concentration (TC) =    13.54 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      123.000 to Point/Station      181.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 1
Stream flow area =     13.740(Ac.)
Runoff from this stream =     36.329(CFS)
Time of concentration =   13.54 min.
Rainfall intensity =     3.342(In/Hr)
Area averaged loss rate (Fm) =    0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      118.000 to Point/Station      180.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.8500     Max loss rate(Fm)=     0.466(In/Hr)
Initial subarea data:
Initial area flow distance =   395.000(Ft.)
Top (of initial area) elevation =  1842.000(Ft.)
Bottom (of initial area) elevation =  1788.000(Ft.)
Difference in elevation =    54.000(Ft.)
Slope =    0.13671  s(%)=      13.67
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.860 min.
Rainfall intensity =      4.760(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.812
Subarea runoff =      2.435(CFS)
Total initial stream area =        0.630(Ac.)
Pervious area fraction = 0.850
Initial area Fm value =    0.466(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      180.000 to Point/Station      181.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1784.000(Ft.)
Downstream point/station elevation =  1783.000(Ft.)
Pipe length  =    20.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.435(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.435(CFS)
```

```
Normal flow depth in pipe =    5.33(In.)
Flow top width inside pipe =    8.85(In.)
Critical Depth =    8.25(In.)
Pipe flow velocity =      8.94(Ft/s)
Travel time through pipe =    0.04 min.
Time of concentration (TC) =     7.90 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      180.000 to Point/Station      181.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 2 in normal stream number 2
Stream flow area =      0.630(Ac.)
Runoff from this stream =      2.435(CFS)
Time of concentration =    7.90 min.
Rainfall intensity =     4.745(In/Hr)
Area averaged loss rate (Fm) =    0.4657(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       36.329     13.54                3.342
2        2.435      7.90                4.745
Qmax(1) =
           1.000 *    1.000 *    36.329) +
           0.672 *    1.000 *     2.435) + =      37.965
Qmax(2) =
           1.466 *    0.583 *    36.329) +
           1.000 *    1.000 *     2.435) + =      33.485

Total of 2 streams to confluence:
Flow rates before confluence point:
      36.329       2.435
Maximum flow rates at confluence using above data:
       37.965       33.485
Area of streams before confluence:
       13.740        0.630
Effective area values after confluence:
       14.370        8.643
Results of confluence:
Total flow rate =     37.965(CFS)
Time of concentration =    13.542 min.
Effective stream area after confluence =     14.370(Ac.)
Stream Area average Pervious fraction(Ap) =  0.611
Stream Area average soil loss rate(Fm) =    0.335(In/Hr)
Study area (this main stream) =      14.37(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      181.000 to Point/Station      124.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1783.000(Ft.)
Downstream point/station elevation =  1776.000(Ft.)
Pipe length  =   305.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    37.965(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    37.965(CFS)
Normal flow depth in pipe =   18.42(In.)
Flow top width inside pipe =   25.14(In.)
Critical Depth =   24.74(In.)
Pipe flow velocity =     13.14(Ft/s)
Travel time through pipe =    0.39 min.
Time of concentration (TC) =    13.93 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      181.000 to Point/Station      124.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =     14.370(Ac.)
Total study area this main stream =     14.370(Ac.)
Runoff from this stream =     37.965(CFS)
Time of concentration =   13.93 min.
Rainfall intensity =     3.281(In/Hr)
Area averaged loss rate (Fm) =    0.3347(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6110
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       17.289     13.12                3.411
2       37.965     13.93                3.281
Qmax(1) =
           1.000 *    1.000 *    17.289) +
           1.044 *    0.942 *    37.965) + =      54.632
Qmax(2) =
           0.957 *    1.000 *    17.289) +
           1.000 *    1.000 *    37.965) + =      54.514

Total of 2 main streams to confluence:
Flow rates before confluence point:
      18.289      38.965
Maximum flow rates at confluence using above data:
       54.632       54.514
Effective Area of streams before confluence:
        5.441       14.370
Effective area values after confluence:
       18.980       19.811


Results of confluence:
Total flow rate =     54.632(CFS)
Time of concentration =    13.124 min.
Effective stream area after confluence  =     18.980(Ac.)
Stream Area average Pervious fraction(Ap) =  0.718
Stream Area average soil loss rate(Fm) =    0.349(In/Hr)
Steam effective area =      19.81(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      124.000 to Point/Station      136.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1776.000(Ft.)
Downstream point/station elevation =  1763.300(Ft.)
Pipe length  =   420.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    54.632(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    54.632(CFS)
Normal flow depth in pipe =   22.50(In.)
Flow top width inside pipe =   20.12(In.)
Critical depth could not be calculated.
Pipe flow velocity =     15.43(Ft/s)
Travel time through pipe =    0.45 min.
Time of concentration (TC) =    13.58 min.
End of computations, Total Study Area =           20.49 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.727
Area averaged SCS curve number =  72.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 142
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 140.000 to Point/Station 142.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.587(In/Hr)
Initial subarea data:
Initial area flow distance = 435.000(Ft.)
Top (of initial area) elevation = 1849.100(Ft.)
Bottom (of initial area) elevation = 1791.800(Ft.)
Difference in elevation = 57.300(Ft.)
Slope = 0.13172 s(%)= 13.17
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.020 min.
Rainfall intensity = 5.122(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.797
Subarea runoff = 2.368(CFS)
Total initial stream area = 0.580(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.587(In/Hr)

++
Process from Point/Station 140.000 to Point/Station 142.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.580(Ac.)
Total study area this main stream = 0.580(Ac.)
Runoff from this stream = 2.368(CFS)
Time of concentration = 7.02 min.
Rainfall intensity = 5.122(In/Hr)
Area averaged loss rate (Fm) = 0.5867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 140.000 to Point/Station 141.000
**** INITIAL AREA EVALUATION ****

PARK subarea
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.831(In/Hr)
Initial subarea data:
Initial area flow distance = 360.000(Ft.)
Top (of initial area) elevation = 1849.100(Ft.)
Bottom (of initial area) elevation = 1797.200(Ft.)
Difference in elevation = 51.900(Ft.)

```
Slope =    0.14417  s(%)=      14.42
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.494 min.
Rainfall intensity =      4.910(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.748
Subarea runoff =      2.349(CFS)
Total initial stream area =        0.640(Ac.)
Pervious area fraction = 0.850
Initial area Fm value =    0.831(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      141.000 to Point/Station      142.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1797.200(Ft.)
Downstream point/station elevation =  1786.800(Ft.)
Pipe length  =    53.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.349(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     2.349(CFS)
Normal flow depth in pipe =    4.65(In.)
Flow top width inside pipe =    5.02(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.40(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =     7.56 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      141.000 to Point/Station      142.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.640(Ac.)
Total study area this main stream =      0.640(Ac.)
Runoff from this stream =      2.349(CFS)
Time of concentration =    7.56 min.
Rainfall intensity =     4.884(In/Hr)
Area averaged loss rate (Fm) =    0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.368      7.02                5.122
2        2.349      7.56                4.884
Qmax(1) =
           1.000 *    1.000 *     2.368) +
           1.059 *    0.929 *     2.349) + =       4.679
Qmax(2) =
           0.947 *    1.000 *     2.368) +
           1.000 *    1.000 *     2.349) + =       4.592

Total of 2 main streams to confluence:
Flow rates before confluence point:
       3.368       3.349
Maximum flow rates at confluence using above data:
        4.679        4.592
Effective Area of streams before confluence:
        0.580        0.640
Effective area values after confluence:
        1.175        1.220


Results of confluence:
Total flow rate =      4.679(CFS)
Time of concentration =     7.020 min.
Effective stream area after confluence  =      1.175(Ac.)
Stream Area average Pervious fraction(Ap) =  0.731
Stream Area average soil loss rate(Fm) =    0.715(In/Hr)
Steam effective area =       1.22(Ac.)
End of computations, Total Study Area =            1.22 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.731
Area averaged SCS curve number =  32.0
```

AREAANODE142

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 149
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 146.000 to Point/Station 147.000
**** INITIAL AREA EVALUATION ****

PARK subarea
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.831(In/Hr)
Initial subarea data:
Initial area flow distance = 260.000(Ft.)
Top (of initial area) elevation = 1799.300(Ft.)
Bottom (of initial area) elevation = 1780.000(Ft.)
Difference in elevation = 19.300(Ft.)
Slope = 0.07423 s(%)= 7.42
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.513 min.
Rainfall intensity = 4.901(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.747
Subarea runoff = 1.062(CFS)
Total initial stream area = 0.290(Ac.)
Pervious area fraction = 0.850
Initial area Fm value = 0.831(In/Hr)

++
Process from Point/Station 146.000 to Point/Station 147.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.290(Ac.)
Total study area this main stream = 0.290(Ac.)
Runoff from this stream = 1.062(CFS)
Time of concentration = 7.51 min.
Rainfall intensity = 4.901(In/Hr)
Area averaged loss rate (Fm) = 0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Program is now starting with Main Stream No. 2

++
Process from Point/Station 158.000 to Point/Station 159.000
**** INITIAL AREA EVALUATION ****

PARK subarea
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.831(In/Hr)
Initial subarea data:
Initial area flow distance = 260.000(Ft.)
Top (of initial area) elevation = 1838.000(Ft.)
Bottom (of initial area) elevation = 1783.100(Ft.)
Difference in elevation = 54.900(Ft.)

```
Slope =    0.21115  s(%)=      21.12
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.096 min.
Rainfall intensity =      5.615(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.767
Subarea runoff =      2.325(CFS)
Total initial stream area =        0.540(Ac.)
Pervious area fraction = 0.850
Initial area Fm value =    0.831(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      159.000 to Point/Station      147.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1783.100(Ft.)
Downstream point/station elevation =  1780.000(Ft.)
Pipe length  =    47.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.325(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.325(CFS)
Normal flow depth in pipe =    4.75(In.)
Flow top width inside pipe =    8.99(In.)
Critical Depth =    8.14(In.)
Pipe flow velocity =      9.83(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     6.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      159.000 to Point/Station      147.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.540(Ac.)
Total study area this main stream =      0.540(Ac.)
Runoff from this stream =      2.325(CFS)
Time of concentration =    6.18 min.
Rainfall intensity =     5.568(In/Hr)
Area averaged loss rate (Fm) =    0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        1.062      7.51                4.901
2        2.325      6.18                5.568
Qmax(1) =
           1.000 *    1.000 *     1.062) +
           0.859 *    1.000 *     2.325) + =       3.060
Qmax(2) =
           1.164 *    0.822 *     1.062) +
           1.000 *    1.000 *     2.325) + =       3.341

Total of 2 main streams to confluence:
Flow rates before confluence point:
       2.062       3.325
Maximum flow rates at confluence using above data:
        3.060        3.341
Effective Area of streams before confluence:
        0.290        0.540
Effective area values after confluence:
        0.830        0.778


Results of confluence:
Total flow rate =      3.341(CFS)
Time of concentration =     6.175 min.
Effective stream area after confluence  =      0.778(Ac.)
Stream Area average Pervious fraction(Ap) =  0.850
Stream Area average soil loss rate(Fm) =    0.831(In/Hr)
Steam effective area =       0.83(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      147.000 to Point/Station      149.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =  1780.000(Ft.)
End of street segment elevation =  1766.500(Ft.)
Length of street segment  =   300.000(Ft.)
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Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =   0.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      4.307(CFS)
Depth of flow =   0.308(Ft.), Average velocity =   4.556(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =   9.048(Ft.)
Flow velocity =   4.56(Ft/s)
Travel time =    1.10 min.     TC =    7.27  min.
 Adding area flow to street
RESIDENTIAL(3 - 4 dwl/acre)
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
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.587(In/Hr)
Rainfall intensity =      5.006(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.767
Subarea runoff =      1.374(CFS) for    0.450(Ac.)
Total runoff =      4.715(CFS)
Effective area this stream =        1.23(Ac.)
Total Study Area (Main Stream No. 1) =        0.99(Ac.)
Area averaged Fm value =    0.742(In/Hr)
Street flow at end of street =      4.715(CFS)
Half street flow at end of street =      4.715(CFS)
Depth of flow =   0.315(Ft.), Average velocity =   4.650(Ft/s)
Flow width (from curb towards crown)=   9.420(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      147.000 to Point/Station      149.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =      1.228(Ac.)
Total study area this main stream =      0.990(Ac.)
Runoff from this stream =      4.715(CFS)
Time of concentration =    7.27 min.
Rainfall intensity =     5.006(In/Hr)
Area averaged loss rate (Fm) =    0.7416(In/Hr)
Area averaged Pervious ratio (Ap) = 0.7584
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      170.000 to Point/Station      148.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
PARK subarea
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
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.8500     Max loss rate(Fm)=     0.831(In/Hr)
Initial subarea data:
Initial area flow distance =   865.000(Ft.)
Top (of initial area) elevation =  1869.300(Ft.)
Bottom (of initial area) elevation =  1778.700(Ft.)
Difference in elevation =    90.600(Ft.)
Slope =    0.10474  s(%)=      10.47
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.343 min.
Rainfall intensity =      3.750(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.701
Subarea runoff =      5.595(CFS)
Total initial stream area =        2.130(Ac.)
Pervious area fraction = 0.850
Initial area Fm value =    0.831(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      148.000 to Point/Station      149.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1778.700(Ft.)
Downstream point/station elevation =  1761.500(Ft.)
Pipe length  =    70.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.595(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     5.595(CFS)
Normal flow depth in pipe =    5.46(In.)
Flow top width inside pipe =    8.79(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.97(Ft/s)
Travel time through pipe =    0.06 min.
Time of concentration (TC) =    11.40 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      148.000 to Point/Station      149.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      2.130(Ac.)
Total study area this main stream =      2.130(Ac.)
Runoff from this stream =      5.595(CFS)
Time of concentration =   11.40 min.
Rainfall intensity =     3.737(In/Hr)
Area averaged loss rate (Fm) =    0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        4.715      7.27                5.006
2        5.595     11.40                3.737
Qmax(1) =
           1.000 *    1.000 *     4.715) +
           1.437 *    0.638 *     5.595) + =       9.842
Qmax(2) =
           0.703 *    1.000 *     4.715) +
           1.000 *    1.000 *     5.595) + =       8.907

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.715       6.595
Maximum flow rates at confluence using above data:
       9.842       8.907
Effective Area of streams before confluence:
       1.228       2.130
Effective area values after confluence:
       2.587       3.358


Results of confluence:
Total flow rate =      9.842(CFS)
Time of concentration =     7.273 min.
Effective stream area after confluence  =      2.587(Ac.)
Stream Area average Pervious fraction(Ap) =  0.817
Stream Area average soil loss rate(Fm) =    0.798(In/Hr)
Steam effective area =       3.36(Ac.)
End of computations, Total Study Area =             3.41 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.817
Area averaged SCS curve number =  32.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 153
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 151.000 to Point/Station 153.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.394(In/Hr)
Initial subarea data:
Initial area flow distance = 640.000(Ft.)
Top (of initial area) elevation = 1865.600(Ft.)
Bottom (of initial area) elevation = 1817.500(Ft.)
Difference in elevation = 48.100(Ft.)
Slope = 0.07516 s(%)= 7.52
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.166 min.
Rainfall intensity = 4.307(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.818
Subarea runoff = 7.642(CFS)
Total initial stream area = 2.170(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.394(In/Hr)

++
Process from Point/Station 151.000 to Point/Station 153.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 2.170(Ac.)
Total study area this main stream = 2.170(Ac.)
Runoff from this stream = 7.642(CFS)
Time of concentration = 9.17 min.
Rainfall intensity = 4.307(In/Hr)
Area averaged loss rate (Fm) = 0.3944(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 152.000 to Point/Station 153.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.900
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 65.30
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.362(In/Hr)
Initial subarea data:
Initial area flow distance = 455.000(Ft.)
Top (of initial area) elevation = 1846.400(Ft.)
Bottom (of initial area) elevation = 1817.500(Ft.)
Difference in elevation = 28.900(Ft.)

```
Slope =    0.06352  s(%)=       6.35
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.270 min.
Rainfall intensity =      4.605(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.829
Subarea runoff =      5.155(CFS)
Total initial stream area =        1.350(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =    0.362(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      152.000 to Point/Station      153.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      1.350(Ac.)
Total study area this main stream =      1.350(Ac.)
Runoff from this stream =      5.155(CFS)
Time of concentration =    8.27 min.
Rainfall intensity =     4.605(In/Hr)
Area averaged loss rate (Fm) =    0.3622(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        7.642      9.17                4.307
2        5.155      8.27                4.605
Qmax(1) =
           1.000 *    1.000 *     7.642) +
           0.930 *    1.000 *     5.155) + =      12.435
Qmax(2) =
           1.076 *    0.902 *     7.642) +
           1.000 *    1.000 *     5.155) + =      12.574

Total of 2 main streams to confluence:
Flow rates before confluence point:
       8.642       6.155
Maximum flow rates at confluence using above data:
       12.435       12.574
Effective Area of streams before confluence:
        2.170        1.350
Effective area values after confluence:
        3.520        3.308


Results of confluence:
Total flow rate =     12.574(CFS)
Time of concentration =     8.270 min.
Effective stream area after confluence  =      3.308(Ac.)
Stream Area average Pervious fraction(Ap) =  0.600
Stream Area average soil loss rate(Fm) =    0.382(In/Hr)
Steam effective area =       3.52(Ac.)
End of computations, Total Study Area =            3.52 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.600
Area averaged SCS curve number =  63.0
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 155
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 102.000 to Point/Station 155.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 46.80
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.508(In/Hr)
Initial subarea data:
Initial area flow distance = 780.000(Ft.)
Top (of initial area) elevation = 1869.200(Ft.)
Bottom (of initial area) elevation = 1804.800(Ft.)
Difference in elevation = 64.400(Ft.)
Slope = 0.08256 s(%)= 8.26
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.736 min.
Rainfall intensity = 4.141(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.790
Subarea runoff = 8.862(CFS)
Total initial stream area = 2.710(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.508(In/Hr)

++
Process from Point/Station 102.000 to Point/Station 155.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 1
Stream flow area = 2.710(Ac.)
Runoff from this stream = 8.862(CFS)
Time of concentration = 9.74 min.
Rainfall intensity = 4.141(In/Hr)
Area averaged loss rate (Fm) = 0.5080(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000

++
Process from Point/Station 152.000 to Point/Station 155.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.394(In/Hr)
Initial subarea data:
Initial area flow distance = 450.000(Ft.)
Top (of initial area) elevation = 1846.400(Ft.)
Bottom (of initial area) elevation = 1804.800(Ft.)
Difference in elevation = 41.600(Ft.)
Slope = 0.09244 s(%)= 9.24
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.638 min.

```
Rainfall intensity =      4.849(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.827
Subarea runoff =      1.564(CFS)
Total initial stream area =        0.390(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =    0.394(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      152.000 to Point/Station      155.000
**** CONFLUENCE OF MINOR STREAMS ****
______________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      0.390(Ac.)
Runoff from this stream =      1.564(CFS)
Time of concentration =    7.64 min.
Rainfall intensity =     4.849(In/Hr)
Area averaged loss rate (Fm) =    0.3944(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1        8.862      9.74                4.141
2        1.564      7.64                4.849
Qmax(1) =
           1.000 *    1.000 *     8.862) +
           0.841 *    1.000 *     1.564) + =      10.177
Qmax(2) =
           1.195 *    0.785 *     8.862) +
           1.000 *    1.000 *     1.564) + =       9.870

Total of 2 streams to confluence:
Flow rates before confluence point:
       8.862       1.564
Maximum flow rates at confluence using above data:
      10.177        9.870
Area of streams before confluence:
       2.710       0.390
Effective area values after confluence:
       3.100       2.516
Results of confluence:
Total flow rate =     10.177(CFS)
Time of concentration =     9.736 min.
Effective stream area after confluence =      3.100(Ac.)
Stream Area average Pervious fraction(Ap) =  0.600
Stream Area average soil loss rate(Fm) =    0.494(In/Hr)
Study area (this main stream) =       3.10(Ac.)
End of computations, Total Study Area =            3.10 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.600
Area averaged SCS curve number =  48.7
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

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Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA A - NODE 163
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 161.000 to Point/Station 163.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.587(In/Hr)
Initial subarea data:
Initial area flow distance = 305.000(Ft.)
Top (of initial area) elevation = 1779.000(Ft.)
Bottom (of initial area) elevation = 1752.300(Ft.)
Difference in elevation = 26.700(Ft.)
Slope = 0.08754 s(%)= 8.75
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 6.610 min.
Rainfall intensity = 5.327(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.801
Subarea runoff = 2.091(CFS)
Total initial stream area = 0.490(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.587(In/Hr)

++
Process from Point/Station 161.000 to Point/Station 163.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.490(Ac.)
Total study area this main stream = 0.490(Ac.)
Runoff from this stream = 2.091(CFS)
Time of concentration = 6.61 min.
Rainfall intensity = 5.327(In/Hr)
Area averaged loss rate (Fm) = 0.5867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 162.000 to Point/Station 163.000
**** INITIAL AREA EVALUATION ****

PARK subarea
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.831(In/Hr)
Initial subarea data:
Initial area flow distance = 445.000(Ft.)
Top (of initial area) elevation = 1840.000(Ft.)
Bottom (of initial area) elevation = 1752.300(Ft.)
Difference in elevation = 87.700(Ft.)

```
Slope =    0.19708  s(%)=      19.71
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.662 min.
Rainfall intensity =      4.839(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.745
Subarea runoff =      3.174(CFS)
Total initial stream area =        0.880(Ac.)
Pervious area fraction = 0.850
Initial area Fm value =    0.831(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      162.000 to Point/Station      163.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.880(Ac.)
Total study area this main stream =      0.880(Ac.)
Runoff from this stream =      3.174(CFS)
Time of concentration =    7.66 min.
Rainfall intensity =     4.839(In/Hr)
Area averaged loss rate (Fm) =    0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.091      6.61                 5.327
2        3.174      7.66                 4.839
Qmax(1) =
           1.000 *    1.000 *     2.091) +
           1.122 *    0.863 *     3.174) + =       5.162
Qmax(2) =
           0.897 *    1.000 *     2.091) +
           1.000 *    1.000 *     3.174) + =       5.050

Total of 2 main streams to confluence:
Flow rates before confluence point:
       3.091       4.174
Maximum flow rates at confluence using above data:
        5.162        5.050
Effective Area of streams before confluence:
        0.490        0.880
Effective area values after confluence:
        1.249        1.370


Results of confluence:
Total flow rate =      5.162(CFS)
Time of concentration =     6.610 min.
Effective stream area after confluence  =      1.249(Ac.)
Stream Area average Pervious fraction(Ap) =  0.761
Stream Area average soil loss rate(Fm) =    0.744(In/Hr)
Steam effective area =       1.37(Ac.)
End of computations, Total Study Area =            1.37 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.761
Area averaged SCS curve number =  32.0
```

San Bernardino County Rational Hydrology Program

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Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA B - NODE 213
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

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

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2) = 82.50
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.327(In/Hr)
Initial subarea data:
Initial area flow distance = 495.000(Ft.)
Top (of initial area) elevation = 2140.000(Ft.)
Bottom (of initial area) elevation = 2080.000(Ft.)
Difference in elevation = 60.000(Ft.)
Slope = 0.12121 s(%)= 12.12
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.881 min.
Rainfall intensity = 3.453(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.815
Subarea runoff = 17.076(CFS)
Total initial stream area = 6.070(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.327(In/Hr)

++
Process from Point/Station 201.000 to Point/Station 202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 30.326(CFS)
Depth of flow = 1.056(Ft.), Average velocity = 6.436(Ft/s)
******* Irregular Channel Data **********

Information entered for subchannel number 1 :

Point number	'X' coordinate	'Y' coordinate
1	0.00	20.00
2	73.00	0.00
3	169.00	20.00

Manning's 'N' friction factor = 0.035

Sub-Channel flow = 30.326(CFS)
' ' flow top width = 8.924(Ft.)
' ' velocity= 6.436(Ft/s)
' ' area = 4.712(Sq.Ft)
' ' Froude number = 1.561

Upstream point elevation = 2080.000(Ft.)
Downstream point elevation = 2030.000(Ft.)
Flow length = 895.000(Ft.)
Travel time = 2.32 min.
Time of concentration = 15.20 min.
Depth of flow = 1.056(Ft.)
Average velocity = 6.436(Ft/s)
Total irregular channel flow = 30.326(CFS)
Irregular channel normal depth above invert elev. = 1.056(Ft.)
Average velocity of channel(s) = 6.436(Ft/s)

```
Sub-Channel No. 1 Critical depth =      1.266(Ft.)
  '     '       '     Critical flow top width =     10.695(Ft.)
  '     '       '     Critical flow velocity=    4.481(Ft/s)
  '     '       '     Critical flow area =      6.768(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.300
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 82.50
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.327(In/Hr)
Rainfall intensity =      3.101(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.805
Subarea runoff =     21.592(CFS) for    9.420(Ac.)
Total runoff =     38.668(CFS)
Effective area this stream =       15.49(Ac.)
Total Study Area (Main Stream No. 1) =       15.49(Ac.)
Area averaged Fm value =    0.327(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      202.000 to Point/Station      203.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     62.546(CFS)
Depth of flow =   1.277(Ft.), Average velocity =   8.772(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00             20.00
        2            70.00              0.00
        3           175.00             20.00
Manning's 'N' friction factor =   0.035
------------------------------------------------------------------
Sub-Channel flow  =     62.546(CFS)
  '     '         flow top width =     11.170(Ft.)
  '     '    velocity=    8.772(Ft/s)
  '     '         area =      7.130(Sq.Ft)
  '     '         Froude number =     1.935

Upstream point elevation =  2030.000(Ft.)
Downstream point elevation =  1907.300(Ft.)
Flow length =  1525.000(Ft.)
Travel time  =    2.90 min.
Time of concentration =   18.10 min.
Depth of flow =   1.277(Ft.)
Average velocity =   8.772(Ft/s)
Total irregular channel flow =    62.546(CFS)
Irregular channel normal depth above invert elev. =   1.277(Ft.)
Average velocity of channel(s) =   8.772(Ft/s)

Sub-Channel No. 1 Critical depth =      1.656(Ft.)
  '     '       '     Critical flow top width =     14.492(Ft.)
  '     '       '     Critical flow velocity=    5.212(Ft/s)
  '     '       '     Critical flow area =     12.001(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.800
SCS curve number for soil(AMC 2)  = 80.10
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.368(In/Hr)
Rainfall intensity =      2.768(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.786
Subarea runoff =     36.686(CFS) for   19.130(Ac.)
Total runoff =     75.354(CFS)
Effective area this stream =       34.62(Ac.)
Total Study Area (Main Stream No. 1) =       34.62(Ac.)
Area averaged Fm value =    0.350(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      203.000 to Point/Station      204.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1902.300(Ft.)
Downstream point/station elevation =  1898.000(Ft.)
```

Pipe length = 89.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 75.354(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 75.354(CFS)
Normal flow depth in pipe = 20.98(In.)
Flow top width inside pipe = 27.52(In.)
Critical depth could not be calculated.
Pipe flow velocity = 20.56(Ft/s)
Travel time through pipe = 0.07 min.
Time of concentration (TC) = 18.17 min.

++
Process from Point/Station 204.000 to Point/Station 227.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1898.000(Ft.)
Downstream point elevation = 1891.900(Ft.)
Channel length thru subarea = 235.000(Ft.)
Channel base width = 0.000(Ft.)
Slope or 'Z' of left channel bank = 1.000
Slope or 'Z' of right channel bank = 1.000
Estimated mean flow rate at midpoint of channel = 75.354(CFS)
Manning's 'N' = 0.015
Maximum depth of channel = 3.500(Ft.)
Flow(q) thru subarea = 75.354(CFS)
Depth of flow = 2.321(Ft.), Average velocity = 13.989(Ft/s)
Channel flow top width = 4.642(Ft.)
Flow Velocity = 13.99(Ft/s)
Travel time = 0.28 min.
Time of concentration = 18.45 min.
Critical depth = 3.234(Ft.)
Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2) = 84.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.301(In/Hr)
Rainfall intensity = 2.734(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.785
Subarea runoff = 0.000(CFS) for 0.000(Ac.)
Total runoff = 75.354(CFS)
Effective area this stream = 34.62(Ac.)
Total Study Area (Main Stream No. 1) = 34.62(Ac.)
Area averaged Fm value = 0.350(In/Hr)

++
Process from Point/Station 204.000 to Point/Station 227.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 34.620(Ac.)
Total study area this main stream = 34.620(Ac.)
Runoff from this stream = 75.354(CFS)
Time of concentration = 18.45 min.
Rainfall intensity = 2.734(In/Hr)
Area averaged loss rate (Fm) = 0.3496(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 226.000 to Point/Station 227.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.300
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.300
SCS curve number for soil(AMC 2) = 71.80
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.504(In/Hr)
Initial subarea data:
Initial area flow distance = 875.000(Ft.)
Top (of initial area) elevation = 2001.300(Ft.)
Bottom (of initial area) elevation = 1891.900(Ft.)
Difference in elevation = 109.400(Ft.)
Slope = 0.12503 s(%)= 12.50
TC = k(0.706)*[(length^3)/(elevation change)]^0.2

Initial area time of concentration = 16.077 min.
Rainfall intensity = 2.989(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.748
Subarea runoff = 13.397(CFS)
Total initial stream area = 5.990(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.504(In/Hr)

++
Process from Point/Station 226.000 to Point/Station 227.000
**** CONFLUENCE OF MAIN STREAMS ****
_____
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 5.990(Ac.)
Total study area this main stream = 5.990(Ac.)
Runoff from this stream = 13.397(CFS)
Time of concentration = 16.08 min.
Rainfall intensity = 2.989(In/Hr)
Area averaged loss rate (Fm) = 0.5043(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	75.354	18.45	2.734
2	13.397	16.08	2.989

Qmax(1) =
1.000 * 1.000 * 75.354) +
0.897 * 1.000 * 13.397) + = 87.372
Qmax(2) =
1.107 * 0.871 * 75.354) +
1.000 * 1.000 * 13.397) + = 86.109

Total of 2 main streams to confluence:
Flow rates before confluence point:
76.354 14.397
Maximum flow rates at confluence using above data:
87.372 86.109
Effective Area of streams before confluence:
34.620 5.990
Effective area values after confluence:
40.610 36.161

Results of confluence:
Total flow rate = 87.372(CFS)
Time of concentration = 18.448 min.
Effective stream area after confluence = 40.610(Ac.)
Stream Area average Pervious fraction(Ap) = 1.000
Stream Area average soil loss rate(Fm) = 0.372(In/Hr)
Steam effective area = 40.61(Ac.)

++
Process from Point/Station 227.000 to Point/Station 230.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____
Upstream point/station elevation = 1886.900(Ft.)
Downstream point/station elevation = 1877.600(Ft.)
Pipe length = 35.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 87.372(CFS)
Nearest computed pipe diameter = 24.00(In.)
Calculated individual pipe flow = 87.372(CFS)
Normal flow depth in pipe = 15.49(In.)
Flow top width inside pipe = 22.96(In.)
Critical depth could not be calculated.
Pipe flow velocity = 40.72(Ft/s)
Travel time through pipe = 0.01 min.
Time of concentration (TC) = 18.46 min.

++
Process from Point/Station 227.000 to Point/Station 230.000
**** CONFLUENCE OF MAIN STREAMS ****
_____
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 40.610(Ac.)
Total study area this main stream = 5.990(Ac.)
Runoff from this stream = 87.372(CFS)

Time of concentration = 18.46 min.
Rainfall intensity = 2.732(In/Hr)
Area averaged loss rate (Fm) = 0.3724(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 228.000 to Point/Station 229.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.400
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.657(In/Hr)
Initial subarea data:
Initial area flow distance = 500.000(Ft.)
Top (of initial area) elevation = 1964.700(Ft.)
Bottom (of initial area) elevation = 1885.000(Ft.)
Difference in elevation = 79.700(Ft.)
Slope = 0.15940 s(%)= 15.94
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.243 min.
Rainfall intensity = 3.568(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.734
Subarea runoff = 9.825(CFS)
Total initial stream area = 3.750(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.657(In/Hr)

++
Process from Point/Station 229.000 to Point/Station 230.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1880.000(Ft.)
Downstream point/station elevation = 1877.600(Ft.)
Pipe length = 35.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 9.825(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 9.825(CFS)
Normal flow depth in pipe = 8.20(In.)
Flow top width inside pipe = 14.93(In.)
Critical Depth = 14.16(In.)
Pipe flow velocity = 14.29(Ft/s)
Travel time through pipe = 0.04 min.
Time of concentration (TC) = 12.28 min.

++
Process from Point/Station 229.000 to Point/Station 230.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 3.750(Ac.)
Total study area this main stream = 3.750(Ac.)
Runoff from this stream = 9.825(CFS)
Time of concentration = 12.28 min.
Rainfall intensity = 3.561(In/Hr)
Area averaged loss rate (Fm) = 0.6573(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	87.372	18.46	2.732
2	9.825	12.28	3.561

Qmax(1) =
  1.000 * 1.000 * 87.372) +
  0.715 * 1.000 * 9.825) + = 94.394
Qmax(2) =
  1.351 * 0.665 * 87.372) +
  1.000 * 1.000 * 9.825) + = 88.367

Total of 2 main streams to confluence:
Flow rates before confluence point:
  88.372 10.825
Maximum flow rates at confluence using above data:

```
       94.394       88.367
Effective Area of streams before confluence:
       40.610        3.750
Effective area values after confluence:
       44.360       30.770


Results of confluence:
Total flow rate =     94.394(CFS)
Time of concentration =    18.462 min.
Effective stream area after confluence  =     44.360(Ac.)
Stream Area average Pervious fraction(Ap) =  1.000
Stream Area average soil loss rate(Fm) =    0.397(In/Hr)
Steam effective area =      44.36(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      230.000 to Point/Station      231.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1877.600(Ft.)
Downstream point/station elevation =  1866.000(Ft.)
Pipe length  =   230.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    94.394(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    94.394(CFS)
Normal flow depth in pipe =   25.31(In.)
Flow top width inside pipe =   21.79(In.)
Critical depth could not be calculated.
Pipe flow velocity =     21.36(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    18.64 min.


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Process from Point/Station      230.000 to Point/Station      231.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     44.360(Ac.)
Total study area this main stream =      3.750(Ac.)
Runoff from this stream =     94.394(CFS)
Time of concentration =   18.64 min.
Rainfall intensity =     2.715(In/Hr)
Area averaged loss rate (Fm) =    0.3965(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      224.000 to Point/Station      225.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.600
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.400
SCS curve number for soil(AMC 2)  = 63.60
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.629(In/Hr)
Initial subarea data:
Initial area flow distance =   895.000(Ft.)
Top (of initial area) elevation =  2031.400(Ft.)
Bottom (of initial area) elevation =  1898.900(Ft.)
Difference in elevation =   132.500(Ft.)
Slope =    0.14804  s(%)=      14.80
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.684 min.
Rainfall intensity =      3.038(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.714
Subarea runoff =      8.565(CFS)
Total initial stream area =        3.950(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.629(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      225.000 to Point/Station      231.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1893.900(Ft.)
Downstream point/station elevation =  1866.000(Ft.)
Pipe length  =   125.00(Ft.)   Manning's N = 0.013
```

No. of pipes = 1 Required pipe flow =   8.565(CFS)
Nearest computed pipe diameter =   12.00(In.)
Calculated individual pipe flow =   8.565(CFS)
Normal flow depth in pipe =   6.06(In.)
Flow top width inside pipe =   12.00(In.)
Critical depth could not be calculated.
Pipe flow velocity =   21.53(Ft/s)
Travel time through pipe =   0.10 min.
Time of concentration (TC) =   15.78 min.

++
Process from Point/Station   225.000 to Point/Station   231.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =   3.950(Ac.)
Total study area this main stream =   3.950(Ac.)
Runoff from this stream =   8.565(CFS)
Time of concentration =   15.78 min.
Rainfall intensity =   3.026(In/Hr)
Area averaged loss rate (Fm) =   0.6286(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3

++
Process from Point/Station   232.000 to Point/Station   233.000
**** INITIAL AREA EVALUATION ****
____
UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000   Max loss rate(Fm)=   0.810(In/Hr)
Initial subarea data:
Initial area flow distance =   275.000(Ft.)
Top (of initial area) elevation = 1901.800(Ft.)
Bottom (of initial area) elevation = 1874.300(Ft.)
Difference in elevation =   27.500(Ft.)
Slope =   0.10000 s(%)=   10.00
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   10.581 min.
Rainfall intensity =   3.923(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.714
Subarea runoff =   0.757(CFS)
Total initial stream area =   0.270(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =   0.810(In/Hr)

++
Process from Point/Station   233.000 to Point/Station   231.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____
Upstream point/station elevation = 1869.300(Ft.)
Downstream point/station elevation = 1866.000(Ft.)
Pipe length =   55.00(Ft.)   Manning's N = 0.013
No. of pipes = 1 Required pipe flow =   0.757(CFS)
Nearest computed pipe diameter =   6.00(In.)
Calculated individual pipe flow =   0.757(CFS)
Normal flow depth in pipe =   3.18(In.)
Flow top width inside pipe =   5.99(In.)
Critical Depth =   5.22(In.)
Pipe flow velocity =   7.17(Ft/s)
Travel time through pipe =   0.13 min.
Time of concentration (TC) =   10.71 min.

++
Process from Point/Station   233.000 to Point/Station   231.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 3
Effective stream flow area =   0.270(Ac.)
Total study area this main stream =   0.270(Ac.)
Runoff from this stream =   0.757(CFS)
Time of concentration =   10.71 min.
Rainfall intensity =   3.893(In/Hr)
Area averaged loss rate (Fm) =   0.8095(In/Hr)

Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	94.394	18.64	2.715
2	8.565	15.78	3.026
3	0.757	10.71	3.893

```
Qmax(1) =
           1.000 *    1.000 *    94.394) +
           0.870 *    1.000 *     8.565) +
           0.618 *    1.000 *     0.757) + =     102.316
Qmax(2) =
           1.134 *    0.847 *    94.394) +
           1.000 *    1.000 *     8.565) +
           0.719 *    1.000 *     0.757) + =      99.718
Qmax(3) =
           1.508 *    0.574 *    94.394) +
           1.362 *    0.679 *     8.565) +
           1.000 *    1.000 *     0.757) + =      90.441

Total of 3 main streams to confluence:
Flow rates before confluence point:
      95.394       9.565       1.757
Maximum flow rates at confluence using above data:
      102.316       99.718       90.441
Effective Area of streams before confluence:
       44.360        3.950        0.270
Effective area values after confluence:
       48.580       41.772       28.434


Results of confluence:
Total flow rate =    102.316(CFS)
Time of concentration =    18.642 min.
Effective stream area after confluence  =     48.580(Ac.)
Stream Area average Pervious fraction(Ap) =  1.000
Stream Area average soil loss rate(Fm) =    0.418(In/Hr)
Steam effective area =      48.58(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      231.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1866.000(Ft.)
Downstream point/station elevation =  1862.000(Ft.)
Pipe length  =   160.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   102.316(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =   102.316(CFS)
Normal flow depth in pipe =   28.59(In.)
Flow top width inside pipe =   29.10(In.)
Critical depth could not be calculated.
Pipe flow velocity =     17.00(Ft/s)
Travel time through pipe =    0.16 min.
Time of concentration (TC) =    18.80 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      231.000 to Point/Station      210.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     48.580(Ac.)
Total study area this main stream =      0.270(Ac.)
Runoff from this stream =    102.316(CFS)
Time of concentration =   18.80 min.
Rainfall intensity =     2.700(In/Hr)
Area averaged loss rate (Fm) =    0.4177(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      205.000 to Point/Station      206.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2)  = 84.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.301(In/Hr)
Initial subarea data:
Initial area flow distance =   855.000(Ft.)
Top (of initial area) elevation =  2050.000(Ft.)
Bottom (of initial area) elevation =  1978.000(Ft.)
Difference in elevation =    72.000(Ft.)
Slope =    0.08421  s(%)=       8.42
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   17.239 min.
Rainfall intensity =      2.857(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.805
Subarea runoff =     22.430(CFS)
Total initial stream area =        9.750(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.301(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      206.000 to Point/Station      207.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     36.153(CFS)
Depth of flow =   1.110(Ft.), Average velocity =   7.337(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00             20.00
        2            70.00              0.00
        3           160.00             20.00
Manning's 'N' friction factor =   0.035
------------------------------------------------------------------
Sub-Channel flow  =     36.152(CFS)
  '     '         flow top width =      8.879(Ft.)
  '     '    velocity=    7.337(Ft/s)
  '     '         area =      4.927(Sq.Ft)
  '     '         Froude number =     1.736

Upstream point elevation =  1978.000(Ft.)
Downstream point elevation =  1924.100(Ft.)
Flow length =   790.000(Ft.)
Travel time  =    1.79 min.
Time of concentration =   19.03 min.
Depth of flow =   1.110(Ft.)
Average velocity =   7.337(Ft/s)
Total irregular channel flow =    36.153(CFS)
Irregular channel normal depth above invert elev. =   1.110(Ft.)
Average velocity of channel(s) =   7.337(Ft/s)

Sub-Channel No. 1 Critical depth =      1.383(Ft.)
  '     '       '     Critical flow top width =     11.063(Ft.)
  '     '       '     Critical flow velocity=    4.727(Ft/s)
  '     '       '     Critical flow area =      7.649(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.300
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.700
SCS curve number for soil(AMC 2)  = 73.80
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.472(In/Hr)
Rainfall intensity =      2.679(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.767
Subarea runoff =     22.125(CFS) for   11.930(Ac.)
Total runoff =     44.555(CFS)
Effective area this stream =       21.68(Ac.)
Total Study Area (Main Stream No. 2) =       21.68(Ac.)
Area averaged Fm value =    0.395(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      207.000 to Point/Station      209.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1919.100(Ft.)
Downstream point/station elevation =  1864.900(Ft.)
Pipe length  =   700.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    44.555(CFS)
Nearest computed pipe diameter  =     21.00(In.)
```

Calculated individual pipe flow = 44.555(CFS)
Normal flow depth in pipe = 17.44(In.)
Flow top width inside pipe = 15.76(In.)
Critical depth could not be calculated.
Pipe flow velocity = 20.89(Ft/s)
Travel time through pipe = 0.56 min.
Time of concentration (TC) = 19.59 min.

++
Process from Point/Station 207.000 to Point/Station 209.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 1
Stream flow area = 21.680(Ac.)
Runoff from this stream = 44.555(CFS)
Time of concentration = 19.59 min.
Rainfall intensity = 2.629(In/Hr)
Area averaged loss rate (Fm) = 0.3951(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000

++
Process from Point/Station 215.000 to Point/Station 208.000
**** INITIAL AREA EVALUATION ****

PARK subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2) = 75.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.385(In/Hr)
Initial subarea data:
Initial area flow distance = 990.000(Ft.)
Top (of initial area) elevation = 2047.500(Ft.)
Bottom (of initial area) elevation = 1871.700(Ft.)
Difference in elevation = 175.800(Ft.)
Slope = 0.17758 s(%)= 17.76
TC = k(0.483)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.773 min.
Rainfall intensity = 3.878(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.811
Subarea runoff = 11.851(CFS)
Total initial stream area = 3.770(Ac.)
Pervious area fraction = 0.850
Initial area Fm value = 0.385(In/Hr)

++
Process from Point/Station 208.000 to Point/Station 209.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1866.700(Ft.)
Downstream point/station elevation = 1864.900(Ft.)
Pipe length = 45.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 11.851(CFS)
Nearest computed pipe diameter = 15.00(In.)
Calculated individual pipe flow = 11.851(CFS)
Normal flow depth in pipe = 11.31(In.)
Flow top width inside pipe = 12.92(In.)
Critical depth could not be calculated.
Pipe flow velocity = 11.94(Ft/s)
Travel time through pipe = 0.06 min.
Time of concentration (TC) = 10.84 min.

++
Process from Point/Station 208.000 to Point/Station 209.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 2 in normal stream number 2
Stream flow area = 3.770(Ac.)
Runoff from this stream = 11.851(CFS)
Time of concentration = 10.84 min.
Rainfall intensity = 3.863(In/Hr)
Area averaged loss rate (Fm) = 0.3850(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)

```
1       44.555     19.59                2.629
2       11.851     10.84                3.863
Qmax(1) =
           1.000 *    1.000 *    44.555) +
           0.645 *    1.000 *    11.851) + =      52.200
Qmax(2) =
           1.553 *    0.553 *    44.555) +
           1.000 *    1.000 *    11.851) + =      50.111

Total of 2 streams to confluence:
Flow rates before confluence point:
      44.555      11.851
Maximum flow rates at confluence using above data:
       52.200       50.111
Area of streams before confluence:
       21.680        3.770
Effective area values after confluence:
       25.450       15.760
Results of confluence:
Total flow rate =     52.200(CFS)
Time of concentration =    19.592 min.
Effective stream area after confluence =     25.450(Ac.)
Stream Area average Pervious fraction(Ap) =  0.978
Stream Area average soil loss rate(Fm) =    0.394(In/Hr)
Study area (this main stream) =      25.45(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1864.900(Ft.)
Downstream point/station elevation =  1862.000(Ft.)
Pipe length  =    95.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    52.200(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    52.200(CFS)
Normal flow depth in pipe =   21.33(In.)
Flow top width inside pipe =   22.00(In.)
Critical depth could not be calculated.
Pipe flow velocity =     15.50(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =    19.69 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      209.000 to Point/Station      210.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =     25.450(Ac.)
Total study area this main stream =     25.450(Ac.)
Runoff from this stream =     52.200(CFS)
Time of concentration =   19.69 min.
Rainfall intensity =     2.620(In/Hr)
Area averaged loss rate (Fm) =    0.3936(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9778
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1      102.316     18.80                2.700
2       52.200     19.69                2.620
Qmax(1) =
           1.000 *    1.000 *   102.316) +
           1.036 *    0.955 *    52.200) + =     153.943
Qmax(2) =
           0.965 *    1.000 *   102.316) +
           1.000 *    1.000 *    52.200) + =     150.909

Total of 2 main streams to confluence:
Flow rates before confluence point:
     103.316      53.200
Maximum flow rates at confluence using above data:
      153.943      150.909
Effective Area of streams before confluence:
       48.580       25.450
Effective area values after confluence:
       72.872       74.030
```

```
Results of confluence:
Total flow rate =    153.943(CFS)
Time of concentration =    18.799 min.
Effective stream area after confluence  =     72.872(Ac.)
Stream Area average Pervious fraction(Ap) =  0.992
Stream Area average soil loss rate(Fm) =    0.409(In/Hr)
Steam effective area =      74.03(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1862.000(Ft.)
Downstream point/station elevation =  1842.700(Ft.)
Pipe length  =   290.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   153.943(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =   153.943(CFS)
Normal flow depth in pipe =   26.58(In.)
Flow top width inside pipe =   31.65(In.)
Critical depth could not be calculated.
Pipe flow velocity =     27.53(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =    18.97 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     72.872(Ac.)
Total study area this main stream =     25.450(Ac.)
Runoff from this stream =    153.943(CFS)
Time of concentration =   18.97 min.
Rainfall intensity =     2.684(In/Hr)
Area averaged loss rate (Fm) =    0.4094(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9924
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      234.000 to Point/Station      235.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.387(In/Hr)
Initial subarea data:
Initial area flow distance =   270.000(Ft.)
Top (of initial area) elevation =  1958.000(Ft.)
Bottom (of initial area) elevation =  1892.300(Ft.)
Difference in elevation =    65.700(Ft.)
Slope =    0.24333  s(%)=      24.33
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.792 min.
Rainfall intensity =      4.425(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.821
Subarea runoff =      2.653(CFS)
Total initial stream area =        0.730(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.387(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      235.000 to Point/Station      211.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1887.300(Ft.)
Downstream point/station elevation =  1842.700(Ft.)
Pipe length  =   345.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.653(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.653(CFS)
Normal flow depth in pipe =    4.21(In.)
Flow top width inside pipe =    8.98(In.)
Critical Depth =    8.43(In.)
Pipe flow velocity =     13.08(Ft/s)
```

Travel time through pipe = 0.44 min.
Time of concentration (TC) = 9.23 min.

++
Process from Point/Station 235.000 to Point/Station 211.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 0.730(Ac.)
Total study area this main stream = 0.730(Ac.)
Runoff from this stream = 2.653(CFS)
Time of concentration = 9.23 min.
Rainfall intensity = 4.287(In/Hr)
Area averaged loss rate (Fm) = 0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	153.943	18.97	2.684
2	2.653	9.23	4.287

Qmax(1) =
1.000 * 1.000 * 153.943) +
0.589 * 1.000 * 2.653) + = 155.506
Qmax(2) =
1.705 * 0.487 * 153.943) +
1.000 * 1.000 * 2.653) + = 130.339

Total of 2 main streams to confluence:
Flow rates before confluence point:
154.943 3.653
Maximum flow rates at confluence using above data:
155.506 130.339
Effective Area of streams before confluence:
72.872 0.730
Effective area values after confluence:
73.602 36.186

Results of confluence:
Total flow rate = 155.506(CFS)
Time of concentration = 18.974 min.
Effective stream area after confluence = 73.602(Ac.)
Stream Area average Pervious fraction(Ap) = 0.992
Stream Area average soil loss rate(Fm) = 0.409(In/Hr)
Steam effective area = 73.60(Ac.)

++
Process from Point/Station 211.000 to Point/Station 212.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1842.700(Ft.)
Downstream point/station elevation = 1842.000(Ft.)
Pipe length = 35.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 155.506(CFS)
Nearest computed pipe diameter = 45.00(In.)
Calculated individual pipe flow = 155.506(CFS)
Normal flow depth in pipe = 33.66(In.)
Flow top width inside pipe = 39.08(In.)
Critical Depth = 42.57(In.)
Pipe flow velocity = 17.54(Ft/s)
Travel time through pipe = 0.03 min.
Time of concentration (TC) = 19.01 min.

++
Process from Point/Station 211.000 to Point/Station 212.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 73.602(Ac.)
Total study area this main stream = 0.730(Ac.)
Runoff from this stream = 155.506(CFS)
Time of concentration = 19.01 min.
Rainfall intensity = 2.681(In/Hr)
Area averaged loss rate (Fm) = 0.4092(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9924
Program is now starting with Main Stream No. 2

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      236.000 to Point/Station      237.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------------
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.387(In/Hr)
Initial subarea data:
Initial area flow distance =   260.000(Ft.)
Top (of initial area) elevation =  1957.000(Ft.)
Bottom (of initial area) elevation =  1890.000(Ft.)
Difference in elevation =    67.000(Ft.)
Slope =    0.25769  s(%)=      25.77
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.562 min.
Rainfall intensity =      4.502(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.823
Subarea runoff =      4.815(CFS)
Total initial stream area =        1.300(Ac.)
Pervious area fraction = 1.000
Initial area Fm value =    0.387(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      237.000 to Point/Station      212.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  1885.000(Ft.)
Downstream point/station elevation =  1842.000(Ft.)
Pipe length  =   285.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.815(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     4.815(CFS)
Normal flow depth in pipe =    5.81(In.)
Flow top width inside pipe =    8.61(In.)
Critical depth could not be calculated.
Pipe flow velocity =     15.96(Ft/s)
Travel time through pipe =    0.30 min.
Time of concentration (TC) =     8.86 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      237.000 to Point/Station      212.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      1.300(Ac.)
Total study area this main stream =      1.300(Ac.)
Runoff from this stream =      4.815(CFS)
Time of concentration =    8.86 min.
Rainfall intensity =     4.403(In/Hr)
Area averaged loss rate (Fm) =    0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1      155.506     19.01                2.681
2        4.815      8.86                4.403
Qmax(1) =
           1.000 *    1.000 *   155.506) +
           0.571 *    1.000 *     4.815) + =     158.257
Qmax(2) =
           1.758 *    0.466 *   155.506) +
           1.000 *    1.000 *     4.815) + =     132.249

Total of 2 main streams to confluence:
Flow rates before confluence point:
     156.506       5.815
Maximum flow rates at confluence using above data:
      158.257      132.249
Effective Area of streams before confluence:
       73.602        1.300
Effective area values after confluence:
       74.902       35.607
```

```
Results of confluence:
Total flow rate =    158.257(CFS)
Time of concentration =    19.007 min.
Effective stream area after confluence  =     74.902(Ac.)
Stream Area average Pervious fraction(Ap) =  0.993
Stream Area average soil loss rate(Fm) =    0.409(In/Hr)
Steam effective area =      74.90(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      212.000 to Point/Station      213.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1842.000(Ft.)
Downstream point/station elevation =  1821.000(Ft.)
Pipe length  =   565.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =   158.257(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =   158.257(CFS)
Normal flow depth in pipe =   31.78(In.)
Flow top width inside pipe =   30.29(In.)
Critical depth could not be calculated.
Pipe flow velocity =     21.88(Ft/s)
Travel time through pipe =    0.43 min.
Time of concentration (TC) =    19.44 min.
End of computations, Total Study Area =           76.06 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.993
Area averaged SCS curve number =  77.3
```

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA B - NODE 221
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 216.000 to Point/Station 217.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2) = 53.50
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.460(In/Hr)
Initial subarea data:
Initial area flow distance = 910.000(Ft.)
Top (of initial area) elevation = 1961.500(Ft.)
Bottom (of initial area) elevation = 1868.500(Ft.)
Difference in elevation = 93.000(Ft.)
Slope = 0.10220 s(%)= 10.22
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.923 min.
Rainfall intensity = 4.091(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.799
Subarea runoff = 9.379(CFS)
Total initial stream area = 2.870(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.460(In/Hr)

++
Process from Point/Station 216.000 to Point/Station 217.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 2.870(Ac.)
Total study area this main stream = 2.870(Ac.)
Runoff from this stream = 9.379(CFS)
Time of concentration = 9.92 min.
Rainfall intensity = 4.091(In/Hr)
Area averaged loss rate (Fm) = 0.4598(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 223.000 to Point/Station 217.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2) = 53.50
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.460(In/Hr)
Initial subarea data:
Initial area flow distance = 600.000(Ft.)
Top (of initial area) elevation = 1903.100(Ft.)
Bottom (of initial area) elevation = 1868.500(Ft.)
Difference in elevation = 34.600(Ft.)

Slope = 0.05767 s(%)= 5.77
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.418 min.
Rainfall intensity = 4.232(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.802
Subarea runoff = 9.777(CFS)
Total initial stream area = 2.880(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.460(In/Hr)

++
Process from Point/Station 223.000 to Point/Station 217.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 2.880(Ac.)
Total study area this main stream = 2.880(Ac.)
Runoff from this stream = 9.777(CFS)
Time of concentration = 9.42 min.
Rainfall intensity = 4.232(In/Hr)
Area averaged loss rate (Fm) = 0.4598(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	9.379	9.92	4.091
2	9.777	9.42	4.232

Qmax(1) =
1.000 * 1.000 * 9.379) +
0.963 * 1.000 * 9.777) + = 18.790
Qmax(2) =
1.039 * 0.949 * 9.379) +
1.000 * 1.000 * 9.777) + = 19.025

Total of 2 main streams to confluence:
Flow rates before confluence point:
10.379 10.777
Maximum flow rates at confluence using above data:
18.790 19.025
Effective Area of streams before confluence:
2.870 2.880
Effective area values after confluence:
5.750 5.604

Results of confluence:
Total flow rate = 19.025(CFS)
Time of concentration = 9.418 min.
Effective stream area after confluence = 5.604(Ac.)
Stream Area average Pervious fraction(Ap) = 0.600
Stream Area average soil loss rate(Fm) = 0.460(In/Hr)
Steam effective area = 5.75(Ac.)

++
Process from Point/Station 217.000 to Point/Station 220.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****

Top of street segment elevation = 1868.500(Ft.)
End of street segment elevation = 1862.100(Ft.)
Length of street segment = 280.000(Ft.)
Height of curb above gutter flowline = 6.0(In.)
Width of half street (curb to crown) = 20.000(Ft.)
Distance from crown to crossfall grade break = 0.500(Ft.)
Slope from gutter to grade break (v/hz) = 0.020
Slope from grade break to crown (v/hz) = 0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line = 12.000(Ft.)
Slope from curb to property line (v/hz) = 0.020
Gutter width = 2.000(Ft.)
Gutter hike from flowline = 2.000(In.)
Manning's N in gutter = 0.0150
Manning's N from gutter to grade break = 0.0150
Manning's N from grade break to crown = 0.0150
Estimated mean flow rate at midpoint of street = 23.998(CFS)
Depth of flow = 0.550(Ft.), Average velocity = 5.160(Ft/s)
Warning: depth of flow exceeds top of curb
Note: depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property = 2.49(Ft.)

```
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  20.000(Ft.)
Flow velocity =   5.16(Ft/s)
Travel time =    0.90 min.     TC =   10.32  min.
 Adding area flow to street
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.500
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 50.50
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.482(In/Hr)
Rainfall intensity =      3.987(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.794
Subarea runoff =      8.007(CFS) for    2.930(Ac.)
Total runoff =     27.032(CFS)
Effective area this stream =        8.53(Ac.)
Total Study Area (Main Stream No. 1) =        5.81(Ac.)
Area averaged Fm value =    0.467(In/Hr)
Street flow at end of street =     27.032(CFS)
Half street flow at end of street =     27.032(CFS)
Depth of flow =   0.568(Ft.), Average velocity =   5.327(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    3.41(Ft.)
Flow width (from curb towards crown)=  20.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      217.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =      8.534(Ac.)
Total study area this main stream =      5.810(Ac.)
Runoff from this stream =     27.032(CFS)
Time of concentration =   10.32 min.
Rainfall intensity =     3.987(In/Hr)
Area averaged loss rate (Fm) =    0.4675(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      218.000 to Point/Station      219.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------------
COMMERCIAL subarea type
Decimal fraction soil group A = 0.100
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.900
SCS curve number for soil(AMC 2)  = 70.70
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.052(In/Hr)
Initial subarea data:
Initial area flow distance =   845.000(Ft.)
Top (of initial area) elevation =  1925.300(Ft.)
Bottom (of initial area) elevation =  1868.500(Ft.)
Difference in elevation =    56.800(Ft.)
Slope =    0.06722  s(%)=       6.72
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    7.729 min.
Rainfall intensity =      4.812(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.890
Subarea runoff =      2.785(CFS)
Total initial stream area =        0.650(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.052(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      220.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1868.500(Ft.)
End of street segment elevation =  1862.100(Ft.)
Length of street segment  =   250.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =   0.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
```

```
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  12.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =      5.205(CFS)
Depth of flow =   0.349(Ft.), Average velocity =   3.827(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  11.106(Ft.)
Flow velocity =   3.83(Ft/s)
Travel time =    1.09 min.     TC =    8.82  min.
 Adding area flow to street
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.500
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.500
SCS curve number for soil(AMC 2)  = 53.50
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.460(In/Hr)
Rainfall intensity =      4.417(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.837
Subarea runoff =      3.793(CFS) for    1.130(Ac.)
Total runoff =      6.578(CFS)
Effective area this stream =        1.78(Ac.)
Total Study Area (Main Stream No. 2) =        1.78(Ac.)
Area averaged Fm value =    0.311(In/Hr)
Street flow at end of street =      6.578(CFS)
Half street flow at end of street =      6.578(CFS)
Depth of flow =   0.372(Ft.), Average velocity =   4.043(Ft/s)
Flow width (from curb towards crown)=  12.249(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      219.000 to Point/Station      220.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      1.780(Ac.)
Total study area this main stream =      1.780(Ac.)
Runoff from this stream =      6.578(CFS)
Time of concentration =    8.82 min.
Rainfall intensity =     4.417(In/Hr)
Area averaged loss rate (Fm) =    0.3109(In/Hr)
Area averaged Pervious ratio (Ap) = 0.4174
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       27.032     10.32                3.987
2        6.578      8.82                4.417
Qmax(1) =
           1.000 *    1.000 *    27.032) +
           0.895 *    1.000 *     6.578) + =      32.921
Qmax(2) =
           1.122 *    0.854 *    27.032) +
           1.000 *    1.000 *     6.578) + =      32.490

Total of 2 main streams to confluence:
Flow rates before confluence point:
      28.032       7.578
Maximum flow rates at confluence using above data:
       32.921       32.490
Effective Area of streams before confluence:
        8.534        1.780
Effective area values after confluence:
       10.314        9.070


Results of confluence:
Total flow rate =     32.921(CFS)
Time of concentration =    10.323 min.
Effective stream area after confluence  =     10.314(Ac.)
Stream Area average Pervious fraction(Ap) =  0.568
Stream Area average soil loss rate(Fm) =    0.440(In/Hr)
Steam effective area =      10.31(Ac.)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      221.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
______________________________________________________________________________
Top of street segment elevation =  1862.100(Ft.)
End of street segment elevation =  1831.200(Ft.)
Length of street segment  =   550.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  20.000(Ft.)
Distance from crown to crossfall grade break  =   0.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  12.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     34.836(CFS)
Depth of flow =   0.538(Ft.), Average velocity =   7.924(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    1.92(Ft.)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  20.000(Ft.)
Flow velocity =   7.92(Ft/s)
Travel time =    1.16 min.     TC =   11.48  min.
 Adding area flow to street
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.400
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.600
SCS curve number for soil(AMC 2)  = 57.80
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.426(In/Hr)
Rainfall intensity =      3.721(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.794
Subarea runoff =      1.090(CFS) for    1.200(Ac.)
Total runoff =     34.010(CFS)
Effective area this stream =       11.51(Ac.)
Total Study Area (Main Stream No. 1) =        2.98(Ac.)
Area averaged Fm value =    0.439(In/Hr)
Street flow at end of street =     34.010(CFS)
Half street flow at end of street =     34.010(CFS)
Depth of flow =   0.535(Ft.), Average velocity =   7.873(Ft/s)
Warning: depth of flow exceeds top of curb
Note:  depth of flow exceeds top of street crown.
Distance that curb overflow reaches into property =    1.74(Ft.)
Flow width (from curb towards crown)=  20.000(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      220.000 to Point/Station      221.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     11.514(Ac.)
Total study area this main stream =      2.980(Ac.)
Runoff from this stream =     34.010(CFS)
Time of concentration =   11.48 min.
Rainfall intensity =     3.721(In/Hr)
Area averaged loss rate (Fm) =    0.4389(In/Hr)
Area averaged Pervious ratio (Ap) = 0.5718
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      222.000 to Point/Station      221.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
RESIDENTIAL(3 - 4 dwl/acre)
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
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.587(In/Hr)
Initial subarea data:
Initial area flow distance =   630.000(Ft.)
Top (of initial area) elevation =  1865.700(Ft.)
```

AREABNODE221
Bottom (of initial area) elevation = 1831.200(Ft.)
Difference in elevation =   34.500(Ft.)
Slope =   0.05476 s(%)=   5.48
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   9.704 min.
Rainfall intensity =   4.150(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.773
Subarea runoff =   5.485(CFS)
Total initial stream area =   1.710(Ac.)
Pervious area fraction = 0.600
Initial area Fm value =   0.587(In/Hr)

++
Process from Point/Station   222.000 to Point/Station   221.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =   1.710(Ac.)
Total study area this main stream =   1.710(Ac.)
Runoff from this stream =   5.485(CFS)
Time of concentration =   9.70 min.
Rainfall intensity =   4.150(In/Hr)
Area averaged loss rate (Fm) =   0.5867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	34.010	11.48	3.721
2	5.485	9.70	4.150

Qmax(1) =
           1.000 *   1.000 *   34.010) +
           0.879 *   1.000 *   5.485) + =   38.834
Qmax(2) =
           1.131 *   0.845 *   34.010) +
           1.000 *   1.000 *   5.485) + =   37.996

Total of 2 main streams to confluence:
Flow rates before confluence point:
      35.010   6.485
Maximum flow rates at confluence using above data:
       38.834   37.996
Effective Area of streams before confluence:
       11.514   1.710
Effective area values after confluence:
       13.224   11.443

Results of confluence:
Total flow rate =   38.834(CFS)
Time of concentration =   11.480 min.
Effective stream area after confluence =   13.224(Ac.)
Stream Area average Pervious fraction(Ap) = 0.575
Stream Area average soil loss rate(Fm) =   0.458(In/Hr)
Steam effective area =   13.22(Ac.)
End of computations, Total Study Area =   13.37 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.576
Area averaged SCS curve number = 51.3

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 01/27/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA B - NODE 240
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 102.000 to Point/Station 239.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 69.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.329(In/Hr)
Initial subarea data:
Initial area flow distance = 445.000(Ft.)
Top (of initial area) elevation = 1869.200(Ft.)
Bottom (of initial area) elevation = 1845.200(Ft.)
Difference in elevation = 24.000(Ft.)
Slope = 0.05393 s(%)= 5.39
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 8.470 min.
Rainfall intensity = 4.534(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.835
Subarea runoff = 2.422(CFS)
Total initial stream area = 0.640(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.329(In/Hr)

++
Process from Point/Station 102.000 to Point/Station 239.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 0.640(Ac.)
Total study area this main stream = 0.640(Ac.)
Runoff from this stream = 2.422(CFS)
Time of concentration = 8.47 min.
Rainfall intensity = 4.534(In/Hr)
Area averaged loss rate (Fm) = 0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 242.000 to Point/Station 243.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 79.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.387(In/Hr)
Initial subarea data:
Initial area flow distance = 170.000(Ft.)
Top (of initial area) elevation = 1899.000(Ft.)
Bottom (of initial area) elevation = 1855.000(Ft.)
Difference in elevation = 44.000(Ft.)

Slope = 0.25882 s(%)= 25.88
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 7.217 min.
Rainfall intensity = 5.031(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.831
Subarea runoff = 1.547(CFS)
Total initial stream area = 0.370(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.387(In/Hr)

++
Process from Point/Station 243.000 to Point/Station 239.000
**** SUBAREA FLOW ADDITION ****

UNDEVELOPED (poor cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 86.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.265(In/Hr)
Time of concentration = 7.22 min.
Rainfall intensity = 5.031(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.831
Subarea runoff = 0.000(CFS) for 0.000(Ac.)
Total runoff = 1.547(CFS)
Effective area this stream = 0.37(Ac.)
Total Study Area (Main Stream No. 2) = 0.37(Ac.)
Area averaged Fm value = 0.387(In/Hr)

++
Process from Point/Station 243.000 to Point/Station 239.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 0.370(Ac.)
Total study area this main stream = 0.370(Ac.)
Runoff from this stream = 1.547(CFS)
Time of concentration = 7.22 min.
Rainfall intensity = 5.031(In/Hr)
Area averaged loss rate (Fm) = 0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3

++
Process from Point/Station 238.000 to Point/Station 239.000
**** INITIAL AREA EVALUATION ****

RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.200
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 61.60
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.394(In/Hr)
Initial subarea data:
Initial area flow distance = 780.000(Ft.)
Top (of initial area) elevation = 1932.000(Ft.)
Bottom (of initial area) elevation = 1845.200(Ft.)
Difference in elevation = 86.800(Ft.)
Slope = 0.11128 s(%)= 11.13
TC = k(0.412)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 9.172 min.
Rainfall intensity = 4.305(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.818
Subarea runoff = 8.342(CFS)
Total initial stream area = 2.370(Ac.)
Pervious area fraction = 0.600
Initial area Fm value = 0.394(In/Hr)

++
Process from Point/Station 238.000 to Point/Station 239.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 3
Effective stream flow area = 2.370(Ac.)
Total study area this main stream = 2.370(Ac.)

```
Runoff from this stream =      8.342(CFS)
Time of concentration =    9.17 min.
Rainfall intensity =     4.305(In/Hr)
Area averaged loss rate (Fm) =    0.3944(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        2.422      8.47                4.534
2        1.547      7.22                5.031
3        8.342      9.17                4.305
Qmax(1) =
           1.000 *    1.000 *     2.422) +
           0.893 *    1.000 *     1.547) +
           1.058 *    0.923 *     8.342) + =      11.957
Qmax(2) =
           1.118 *    0.852 *     2.422) +
           1.000 *    1.000 *     1.547) +
           1.186 *    0.787 *     8.342) + =      11.637
Qmax(3) =
           0.946 *    1.000 *     2.422) +
           0.844 *    1.000 *     1.547) +
           1.000 *    1.000 *     8.342) + =      11.938

Total of 3 main streams to confluence:
Flow rates before confluence point:
       3.422       2.547       9.342
Maximum flow rates at confluence using above data:
       11.957       11.637       11.938
Effective Area of streams before confluence:
        0.640        0.370        2.370
Effective area values after confluence:
        3.199        2.780        3.380


Results of confluence:
Total flow rate =     11.957(CFS)
Time of concentration =     8.470 min.
Effective stream area after confluence  =      3.199(Ac.)
Stream Area average Pervious fraction(Ap) =  0.644
Stream Area average soil loss rate(Fm) =    0.381(In/Hr)
Steam effective area =       3.38(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      239.000 to Point/Station      240.000
**** STREET FLOW TRAVEL TIME + SUBAREA FLOW ADDITION ****
------------------------------------------------------------------------------
Top of street segment elevation =  1845.200(Ft.)
End of street segment elevation =  1823.500(Ft.)
Length of street segment  =   375.000(Ft.)
Height of curb above gutter flowline  =    6.0(In.)
Width of half street (curb to crown)  =  26.000(Ft.)
Distance from crown to crossfall grade break  =   0.500(Ft.)
Slope from gutter to grade break (v/hz) =   0.020
Slope from grade break to crown (v/hz)  =   0.020
Street flow is on [1] side(s) of the street
Distance from curb to property line  =  10.000(Ft.)
Slope from curb to property line (v/hz) =   0.020
Gutter width =   2.000(Ft.)
Gutter hike from flowline =  2.000(In.)
 Manning's N in gutter =  0.0150
 Manning's N from gutter to grade break =  0.0150
 Manning's N from grade break to crown =  0.0150
Estimated mean flow rate at midpoint of street =     12.761(CFS)
Depth of flow =   0.399(Ft.), Average velocity =   6.458(Ft/s)
Streetflow hydraulics at midpoint of street travel:
Halfstreet flow width =  13.599(Ft.)
Flow velocity =   6.46(Ft/s)
Travel time =    0.97 min.     TC =    9.44  min.
 Adding area flow to street
RESIDENTIAL(5 - 7 dwl/acre)
Decimal fraction soil group A = 0.800
Decimal fraction soil group B = 0.200
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 36.80
Pervious ratio(Ap) = 0.5000     Max loss rate(Fm)=     0.472(In/Hr)
Rainfall intensity =      4.226(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.817
```

```
Subarea runoff =      0.564(CFS) for    0.430(Ac.)
Total runoff =     12.522(CFS)
Effective area this stream =        3.63(Ac.)
Total Study Area (Main Stream No. 1) =        2.80(Ac.)
Area averaged Fm value =    0.392(In/Hr)
Street flow at end of street =     12.522(CFS)
Half street flow at end of street =     12.522(CFS)
Depth of flow =   0.397(Ft.), Average velocity =   6.429(Ft/s)
Flow width (from curb towards crown)=  13.495(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      239.000 to Point/Station      240.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =      3.629(Ac.)
Total study area this main stream =      2.800(Ac.)
Runoff from this stream =     12.522(CFS)
Time of concentration =    9.44 min.
Rainfall intensity =     4.226(In/Hr)
Area averaged loss rate (Fm) =    0.3919(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6267
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      151.000 to Point/Station      250.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
COMMERCIAL subarea type
Decimal fraction soil group A = 0.400
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.600
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 54.20
Pervious ratio(Ap) = 0.1000     Max loss rate(Fm)=     0.076(In/Hr)
Initial subarea data:
Initial area flow distance =   635.000(Ft.)
Top (of initial area) elevation =  1865.600(Ft.)
Bottom (of initial area) elevation =  1823.700(Ft.)
Difference in elevation =    41.900(Ft.)
Slope =    0.06598  s(%)=       6.60
TC = k(0.304)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    6.920 min.
Rainfall intensity =      5.171(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.887
Subarea runoff =      2.705(CFS)
Total initial stream area =        0.590(Ac.)
Pervious area fraction = 0.100
Initial area Fm value =    0.076(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      250.000 to Point/Station      240.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1820.000(Ft.)
Downstream point/station elevation =  1819.500(Ft.)
Pipe length  =    52.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.705(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     2.705(CFS)
Normal flow depth in pipe =    7.93(In.)
Flow top width inside pipe =   11.36(In.)
Critical Depth =    8.47(In.)
Pipe flow velocity =      4.91(Ft/s)
Travel time through pipe =    0.18 min.
Time of concentration (TC) =     7.10 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      250.000 to Point/Station      240.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      0.590(Ac.)
Total study area this main stream =      0.590(Ac.)
Runoff from this stream =      2.705(CFS)
Time of concentration =    7.10 min.
Rainfall intensity =     5.087(In/Hr)
Area averaged loss rate (Fm) =    0.0757(In/Hr)
```

AREABNODE240
Area averaged Pervious ratio (Ap) = 0.1000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	12.522	9.44	4.226
2	2.705	7.10	5.087

```
Qmax(1) =
           1.000 *    1.000 *    12.522) +
           0.828 *    1.000 *     2.705) + =      14.762
Qmax(2) =
           1.224 *    0.752 *    12.522) +
           1.000 *    1.000 *     2.705) + =      14.234
```

Total of 2 main streams to confluence:
Flow rates before confluence point:
13.522 3.705
Maximum flow rates at confluence using above data:
14.762 14.234
Effective Area of streams before confluence:
3.629 0.590
Effective area values after confluence:
4.219 3.318

Results of confluence:
Total flow rate = 14.762(CFS)
Time of concentration = 9.438 min.
Effective stream area after confluence = 4.219(Ac.)
Stream Area average Pervious fraction(Ap) = 0.553
Stream Area average soil loss rate(Fm) = 0.348(In/Hr)
Steam effective area = 4.22(Ac.)
End of computations, Total Study Area = 4.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.557
Area averaged SCS curve number = 60.7

AREABNODE249

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 02/03/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
AREA B - NODE 249
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 248.000 to Point/Station 249.000
**** INITIAL AREA EVALUATION ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2) = 84.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.301(In/Hr)
Initial subarea data:
Initial area flow distance = 980.000(Ft.)
Top (of initial area) elevation = 2017.000(Ft.)
Bottom (of initial area) elevation = 1817.000(Ft.)
Difference in elevation = 200.000(Ft.)
Slope = 0.20408 s(%)= 20.41
TC = k(0.706)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 15.252 min.
Rainfall intensity = 3.093(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.813
Subarea runoff = 13.498(CFS)
Total initial stream area = 5.370(Ac.)
Pervious area fraction = 1.000
Initial area Fm value = 0.301(In/Hr)
End of computations, Total Study Area = 5.37 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged SCS curve number = 84.0

San Bernardino County Rational Hydrology Program

(Hydrology Manual Date - August 1986)

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1989-2001 Version 6.4
Rational Hydrology Study Date: 03/12/20

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-OFFSITE-PROPOSED CONDITION
NODE 9000
100YR-1HR

TRI-8 Builders - S/N 615

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

Rational hydrology study storm event year is 100.0
Computed rainfall intensity:
Storm year = 100.00 1 hour rainfall = 1.270 (In.)
Slope used for rainfall intensity curve b = 0.6500
Soil antecedent moisture condition (AMC) = 2

++
Process from Point/Station 249.000 to Point/Station 249.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
SCS curve number for soil(AMC 2) = 84.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.301(In/Hr)
Rainfall intensity = 3.094(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 15.25 min. Rain intensity = 3.09(In/Hr)
Total area this stream = 5.37(Ac.)
Total Study Area (Main Stream No. 1) = 5.37(Ac.)
Total runoff = 13.50(CFS)

++
Process from Point/Station 249.000 to Point/Station 249.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 5.370(Ac.)
Total study area this main stream = 5.370(Ac.)
Runoff from this stream = 13.500(CFS)
Time of concentration = 15.25 min.
Rainfall intensity = 3.094(In/Hr)
Area averaged loss rate (Fm) = 0.3006(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 2

++
Process from Point/Station 213.000 to Point/Station 213.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 79.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.387(In/Hr)
Rainfall intensity = 2.642(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 19.44 min. Rain intensity = 2.64(In/Hr)
Total area this stream = 76.06(Ac.)
Total Study Area (Main Stream No. 2) = 76.06(Ac.)
Total runoff = 158.26(CFS)

++
Process from Point/Station 213.000 to Point/Station 249.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****

Estimated mean flow rate at midpoint of channel = 158.260(CFS)

```
Depth of flow =   2.455(Ft.), Average velocity =  17.500(Ft/s)
       ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1             0.00              6.00
        2            18.00              0.00
        3            16.00              6.00
Manning's 'N' friction factor =   0.035
------------------------------------------------------------------
Sub-Channel flow  =    158.260(CFS)
  '     '        flow top width =      7.366(Ft.)
  '     '    velocity=   17.500(Ft/s)
  '     '        area =      9.043(Sq.Ft)
  '     '        Froude number =     2.783

Upstream point elevation =  1821.000(Ft.)
Downstream point elevation =  1817.000(Ft.)
Flow length =    20.000(Ft.)
Travel time  =    0.02 min.
Time of concentration =   19.46 min.
Depth of flow =   2.455(Ft.)
Average velocity =  17.500(Ft/s)
Total irregular channel flow =   158.260(CFS)
Irregular channel normal depth above invert elev. =   2.455(Ft.)
Average velocity of channel(s) =  17.500(Ft/s)

Sub-Channel No. 1 Critical depth =      3.688(Ft.)
  '     '       '     Critical flow top width =     11.063(Ft.)
  '     '       '     Critical flow velocity=    7.759(Ft/s)
  '     '       '     Critical flow area =     20.397(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.387(In/Hr)
Rainfall intensity =      2.640(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.768
Subarea runoff =      0.000(CFS) for    0.000(Ac.)
Total runoff =    158.260(CFS)
Effective area this stream =       76.06(Ac.)
Total Study Area (Main Stream No. 2) =       76.06(Ac.)
Area averaged Fm value =    0.387(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      213.000 to Point/Station      249.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =     76.060(Ac.)
Total study area this main stream =     76.060(Ac.)
Runoff from this stream =    158.260(CFS)
Time of concentration =   19.46 min.
Rainfall intensity =     2.640(In/Hr)
Area averaged loss rate (Fm) =    0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      240.000 to Point/Station      240.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
________________________________________________________________________
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.329(In/Hr)
Rainfall intensity =      4.225(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =   9.44 min.  Rain intensity =       4.23(In/Hr)
Total area this stream =         4.40(Ac.)
Total Study Area (Main Stream No. 3) =        4.40(Ac.)
Total runoff =     14.76(CFS)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      240.000 to Point/Station      249.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
______________________________________________________________________________
Estimated mean flow rate at midpoint of channel =     14.760(CFS)
Depth of flow =   0.931(Ft.), Average velocity =   5.678(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              6.00
        2             18.00              0.00
        3             36.00              6.00
Manning's 'N' friction factor =   0.035
------------------------------------------------------------------
Sub-Channel flow  =     14.760(CFS)
  '     '         flow top width =      5.585(Ft.)
  '     '    velocity=    5.678(Ft/s)
  '     '        area =      2.600(Sq.Ft)
  '     '        Froude number =     1.467

Upstream point elevation =  1819.500(Ft.)
Downstream point elevation =  1817.000(Ft.)
Flow length =    47.000(Ft.)
Travel time  =    0.14 min.
Time of concentration =    9.58 min.
Depth of flow =   0.931(Ft.)
Average velocity =   5.678(Ft/s)
Total irregular channel flow =    14.760(CFS)
Irregular channel normal depth above invert elev. =   0.931(Ft.)
Average velocity of channel(s) =   5.678(Ft/s)

Sub-Channel No. 1 Critical depth =      1.086(Ft.)
  '     '       '     Critical flow top width =      6.516(Ft.)
  '     '       '     Critical flow velocity=    4.172(Ft/s)
  '     '       '     Critical flow area =      3.538(Sq.Ft)

 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 79.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.387(In/Hr)
Rainfall intensity =      4.186(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.829
Subarea runoff =      0.000(CFS) for    0.000(Ac.)
Total runoff =     14.760(CFS)
Effective area this stream =        4.40(Ac.)
Total Study Area (Main Stream No. 3) =        4.40(Ac.)
Area averaged Fm value =    0.329(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      240.000 to Point/Station      249.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Effective stream flow area =      4.400(Ac.)
Total study area this main stream =      4.400(Ac.)
Runoff from this stream =     14.760(CFS)
Time of concentration =    9.58 min.
Rainfall intensity =     4.186(In/Hr)
Area averaged loss rate (Fm) =    0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Program is now starting with Main Stream No. 4


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      221.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
RESIDENTIAL(3 - 4 dwl/acre)
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
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.587(In/Hr)
Rainfall intensity =      3.721(In/Hr) for a   100.0 year storm
```

```
User specified values are as follows:
TC =  11.48 min.  Rain intensity =       3.72(In/Hr)
Total area this stream =        13.37(Ac.)
Total Study Area (Main Stream No. 4) =       13.37(Ac.)
Total runoff =     38.83(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      249.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1826.200(Ft.)
Downstream point/station elevation =  1817.000(Ft.)
Pipe length  =   140.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    38.830(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    38.830(CFS)
Normal flow depth in pipe =   16.43(In.)
Flow top width inside pipe =   17.33(In.)
Critical depth could not be calculated.
Pipe flow velocity =     19.22(Ft/s)
Travel time through pipe =    0.12 min.
Time of concentration (TC) =    11.60 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      221.000 to Point/Station      249.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 4
Effective stream flow area =     13.370(Ac.)
Total study area this main stream =     13.370(Ac.)
Runoff from this stream =     38.830(CFS)
Time of concentration =   11.60 min.
Rainfall intensity =     3.695(In/Hr)
Area averaged loss rate (Fm) =    0.5867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       13.500     15.25                3.094
2      158.260     19.46                2.640
3       14.760      9.58                4.186
4       38.830     11.60                3.695
Qmax(1) =
           1.000 *    1.000 *    13.500) +
           1.201 *    0.784 *   158.260) +
           0.717 *    1.000 *    14.760) +
           0.806 *    1.000 *    38.830) + =     204.367
Qmax(2) =
           0.838 *    1.000 *    13.500) +
           1.000 *    1.000 *   158.260) +
           0.599 *    1.000 *    14.760) +
           0.661 *    1.000 *    38.830) + =     204.067
Qmax(3) =
           1.391 *    0.628 *    13.500) +
           1.686 *    0.492 *   158.260) +
           1.000 *    1.000 *    14.760) +
           1.158 *    0.826 *    38.830) + =     194.978
Qmax(4) =
           1.215 *    0.761 *    13.500) +
           1.468 *    0.596 *   158.260) +
           0.873 *    1.000 *    14.760) +
           1.000 *    1.000 *    38.830) + =     202.722

Total of 4 main streams to confluence:
Flow rates before confluence point:
      14.500     159.260      15.760      39.830
Maximum flow rates at confluence using above data:
      204.367      204.067      194.978      202.722
Effective Area of streams before confluence:
        5.370       76.060        4.400       13.370
Effective area values after confluence:
       82.748       99.200       56.248       67.202


Results of confluence:
Total flow rate =    204.367(CFS)
Time of concentration =    15.250 min.
Effective stream area after confluence  =     82.748(Ac.)
```

Stream Area average Pervious fraction(Ap) = 0.928
Stream Area average soil loss rate(Fm) = 0.406(In/Hr)
Steam effective area = 99.20(Ac.)

++
Process from Point/Station 249.000 to Point/Station 1010.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1817.000(Ft.)
Downstream point/station elevation = 1790.000(Ft.)
Pipe length = 285.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 204.367(CFS)
Nearest computed pipe diameter = 36.00(In.)
Calculated individual pipe flow = 204.367(CFS)
Normal flow depth in pipe = 29.34(In.)
Flow top width inside pipe = 27.95(In.)
Critical depth could not be calculated.
Pipe flow velocity = 33.11(Ft/s)
Travel time through pipe = 0.14 min.
Time of concentration (TC) = 15.39 min.

++
Process from Point/Station 1010.000 to Point/Station 6000.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1790.000(Ft.)
Downstream point elevation = 1774.300(Ft.)
Channel length thru subarea = 395.000(Ft.)
Channel base width = 2.500(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 204.367(CFS)
Manning's 'N' = 0.015
Maximum depth of channel = 6.000(Ft.)
Flow(q) thru subarea = 204.367(CFS)
Depth of flow = 1.432(Ft.), Average velocity = 17.350(Ft/s)
Channel flow top width = 13.954(Ft.)
Flow Velocity = 17.35(Ft/s)
Travel time = 0.38 min.
Time of concentration = 15.77 min.
Critical depth = 2.469(Ft.)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.810(In/Hr)
Rainfall intensity = 3.027(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.779
Subarea runoff = 0.000(CFS) for 0.000(Ac.)
Total runoff = 204.367(CFS)
Effective area this stream = 82.75(Ac.)
Total Study Area (Main Stream No. 1) = 13.37(Ac.)
Area averaged Fm value = 0.406(In/Hr)

++
Process from Point/Station 1010.000 to Point/Station 6000.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 82.748(Ac.)
Total study area this main stream = 13.370(Ac.)
Runoff from this stream = 204.367(CFS)
Time of concentration = 15.77 min.
Rainfall intensity = 3.027(In/Hr)
Area averaged loss rate (Fm) = 0.4064(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9283
Program is now starting with Main Stream No. 2

++
Process from Point/Station 142.000 to Point/Station 142.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****

RESIDENTIAL(3 - 4 dwl/acre)
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.6000 Max loss rate(Fm)= 0.587(In/Hr)
Rainfall intensity = 5.123(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 7.02 min. Rain intensity = 5.12(In/Hr)
Total area this stream = 1.22(Ac.)
Total Study Area (Main Stream No. 2) = 1.22(Ac.)
Total runoff = 4.68(CFS)

++
Process from Point/Station 142.000 to Point/Station 6000.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1786.800(Ft.)
Downstream point/station elevation = 1774.300(Ft.)
Pipe length = 123.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 4.680(CFS)
Nearest computed pipe diameter = 9.00(In.)
Calculated individual pipe flow = 4.680(CFS)
Normal flow depth in pipe = 6.60(In.)
Flow top width inside pipe = 7.96(In.)
Critical depth could not be calculated.
Pipe flow velocity = 13.48(Ft/s)
Travel time through pipe = 0.15 min.
Time of concentration (TC) = 7.17 min.

++
Process from Point/Station 142.000 to Point/Station 6000.000
**** CONFLUENCE OF MAIN STREAMS ****

The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 1.220(Ac.)
Total study area this main stream = 1.220(Ac.)
Runoff from this stream = 4.680(CFS)
Time of concentration = 7.17 min.
Rainfall intensity = 5.052(In/Hr)
Area averaged loss rate (Fm) = 0.5867(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	204.367	15.77	3.027
2	4.680	7.17	5.052

Qmax(1) =
1.000 * 1.000 * 204.367) +
0.546 * 1.000 * 4.680) + = 206.924
Qmax(2) =
1.773 * 0.455 * 204.367) +
1.000 * 1.000 * 4.680) + = 169.426

Total of 2 main streams to confluence:
Flow rates before confluence point:
205.367 5.680
Maximum flow rates at confluence using above data:
206.924 169.426
Effective Area of streams before confluence:
82.748 1.220
Effective area values after confluence:
83.968 38.846

Results of confluence:
Total flow rate = 206.924(CFS)
Time of concentration = 15.773 min.
Effective stream area after confluence = 83.968(Ac.)
Stream Area average Pervious fraction(Ap) = 0.924
Stream Area average soil loss rate(Fm) = 0.409(In/Hr)
Steam effective area = 83.97(Ac.)

++
Process from Point/Station 6000.000 to Point/Station 7000.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1774.300(Ft.)
Downstream point elevation = 1762.500(Ft.)

Channel length thru subarea =   330.000(Ft.)
Channel base width   =   2.500(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =   206.924(CFS)
Manning's 'N'   = 0.015
Maximum depth of channel =   6.000(Ft.)
Flow(q) thru subarea =   206.924(CFS)
Depth of flow =   1.473(Ft.), Average velocity = 16.732(Ft/s)
Channel flow top width =   14.287(Ft.)
Flow Velocity =   16.73(Ft/s)
Travel time =   0.33 min.
Time of concentration =   16.10 min.
Critical depth =   2.500(Ft.)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 79.00
Pervious ratio(Ap) = 1.0000   Max loss rate(Fm)=   0.387(In/Hr)
Rainfall intensity =   2.986(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.777
Subarea runoff =   0.000(CFS) for   0.000(Ac.)
Total runoff =   206.924(CFS)
Effective area this stream =   83.97(Ac.)
Total Study Area (Main Stream No. 1) =   1.22(Ac.)
Area averaged Fm value =   0.409(In/Hr)

++
Process from Point/Station   6000.000 to Point/Station   7000.000
**** CONFLUENCE OF MAIN STREAMS ****
____
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =   83.968(Ac.)
Total study area this main stream =   1.220(Ac.)
Runoff from this stream =   206.924(CFS)
Time of concentration =   16.10 min.
Rainfall intensity =   2.986(In/Hr)
Area averaged loss rate (Fm) =   0.4091(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9236
Program is now starting with Main Stream No. 2

++
Process from Point/Station   153.000 to Point/Station   153.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
____
UNDEVELOPED (average cover) subarea
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2) = 79.00
Pervious ratio(Ap) = 1.0000   Max loss rate(Fm)=   0.387(In/Hr)
Rainfall intensity =   4.605(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =   8.27 min. Rain intensity =   4.60(In/Hr)
Total area this stream =   3.52(Ac.)
Total Study Area (Main Stream No. 2) =   3.52(Ac.)
Total runoff =   12.57(CFS)

++
Process from Point/Station   153.000 to Point/Station   7000.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____
Upstream point/station elevation = 1812.500(Ft.)
Downstream point/station elevation = 1762.500(Ft.)
Pipe length =   710.00(Ft.)   Manning's N = 0.013
No. of pipes = 1 Required pipe flow =   12.570(CFS)
Nearest computed pipe diameter =   15.00(In.)
Calculated individual pipe flow =   12.570(CFS)
Normal flow depth in pipe =   9.54(In.)
Flow top width inside pipe =   14.43(In.)
Critical depth could not be calculated.
Pipe flow velocity =   15.26(Ft/s)
Travel time through pipe =   0.78 min.
Time of concentration (TC) =   9.05 min.

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      153.000 to Point/Station     7000.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      3.520(Ac.)
Total study area this main stream =      3.520(Ac.)
Runoff from this stream =     12.570(CFS)
Time of concentration =    9.05 min.
Rainfall intensity =     4.344(In/Hr)
Area averaged loss rate (Fm) =    0.3867(In/Hr)
Area averaged Pervious ratio (Ap) = 1.0000
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      155.000 to Point/Station      155.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
----------------------------------------------------------------------------
RESIDENTIAL(3 - 4 dwl/acre)
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
SCS curve number for soil(AMC 2)  = 69.00
Pervious ratio(Ap) = 0.6000     Max loss rate(Fm)=     0.329(In/Hr)
Rainfall intensity =      4.140(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =   9.74 min.  Rain intensity =       4.14(In/Hr)
Total area this stream =         3.10(Ac.)
Total Study Area (Main Stream No. 3) =        3.10(Ac.)
Total runoff =     10.18(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      155.000 to Point/Station     7000.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
----------------------------------------------------------------------------
Upstream point/station elevation =  1800.000(Ft.)
Downstream point/station elevation =  1762.500(Ft.)
Pipe length  =   370.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.180(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =    10.180(CFS)
Normal flow depth in pipe =    8.88(In.)
Flow top width inside pipe =   10.52(In.)
Critical depth could not be calculated.
Pipe flow velocity =     16.34(Ft/s)
Travel time through pipe =    0.38 min.
Time of concentration (TC) =    10.12 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      155.000 to Point/Station     7000.000
**** CONFLUENCE OF MAIN STREAMS ****
----------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 3
Effective stream flow area =      3.100(Ac.)
Total study area this main stream =      3.100(Ac.)
Runoff from this stream =     10.180(CFS)
Time of concentration =   10.12 min.
Rainfall intensity =     4.039(In/Hr)
Area averaged loss rate (Fm) =    0.3287(In/Hr)
Area averaged Pervious ratio (Ap) = 0.6000
Summary of stream data:

Stream    Flow rate      TC            Rainfall Intensity
 No.        (CFS)       (min)                 (In/Hr)


1      206.924     16.10                2.986
2       12.570      9.05                4.344
3       10.180     10.12                4.039
Qmax(1) =
           1.000 *    1.000 *   206.924) +
           0.657 *    1.000 *    12.570) +
           0.716 *    1.000 *    10.180) + =     222.472
Qmax(2) =
           1.527 *    0.562 *   206.924) +
           1.000 *    1.000 *    12.570) +
           1.082 *    0.894 *    10.180) + =     199.915
```

```
Qmax(3) =
          1.409 *    0.628 *   206.924) +
          0.923 *    1.000 *    12.570) +
          1.000 *    1.000 *    10.180) + =     204.924

Total of 3 main streams to confluence:
Flow rates before confluence point:
     207.924      13.570      11.180
Maximum flow rates at confluence using above data:
      222.472      199.915      204.924
Effective Area of streams before confluence:
       83.968        3.520        3.100
Effective area values after confluence:
       90.588       53.463       59.381


Results of confluence:
Total flow rate =    222.472(CFS)
Time of concentration =    16.102 min.
Effective stream area after confluence  =     90.588(Ac.)
Stream Area average Pervious fraction(Ap) =  0.915
Stream Area average soil loss rate(Fm) =    0.405(In/Hr)
Steam effective area =      90.59(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     7000.000 to Point/Station     8000.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  1762.500(Ft.)
Downstream point elevation =  1753.200(Ft.)
Channel length thru subarea  =   230.000(Ft.)
Channel base width      =    2.500(Ft.)
Slope or 'Z' of left channel bank =   4.000
Slope or 'Z' of right channel bank =   4.000
Estimated mean flow rate at midpoint of channel =    222.472(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    6.000(Ft.)
Flow(q) thru subarea =    222.472(CFS)
Depth of flow =   1.480(Ft.), Average velocity =  17.843(Ft/s)
Channel flow top width =   14.344(Ft.)
Flow Velocity =   17.84(Ft/s)
Travel time  =    0.21 min.
Time of concentration =   16.32 min.
Critical depth =      2.563(Ft.)
 Adding area flow to channel
UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2)  = 50.00
Pervious ratio(Ap) = 1.0000     Max loss rate(Fm)=     0.810(In/Hr)
Rainfall intensity =      2.961(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area,(total area with modified
rational method)(Q=KCIA) is C = 0.777
Subarea runoff =      0.000(CFS) for    0.000(Ac.)
Total runoff =    222.472(CFS)
Effective area this stream =       90.59(Ac.)
Total Study Area (Main Stream No. 1) =        3.10(Ac.)
Area averaged Fm value =    0.405(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     7000.000 to Point/Station     8000.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area =     90.588(Ac.)
Total study area this main stream =      3.100(Ac.)
Runoff from this stream =    222.472(CFS)
Time of concentration =   16.32 min.
Rainfall intensity =     2.961(In/Hr)
Area averaged loss rate (Fm) =    0.4054(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9155
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      149.000 to Point/Station      149.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
______________________________________________________________________________
PARK subarea
```

```
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
SCS curve number for soil(AMC 2)  = 32.00
Pervious ratio(Ap) = 0.8500     Max loss rate(Fm)=     0.831(In/Hr)
Rainfall intensity =      5.007(In/Hr) for a   100.0 year storm
User specified values are as follows:
TC =   7.27 min.  Rain intensity =       5.01(In/Hr)
Total area this stream =         3.41(Ac.)
Total Study Area (Main Stream No. 2) =         3.41(Ac.)
Total runoff =      9.84(CFS)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      149.000 to Point/Station     8000.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
------------------------------------------------------------------------------
Upstream point/station elevation =  1761.500(Ft.)
Downstream point/station elevation =  1753.200(Ft.)
Pipe length  =   100.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.840(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =     9.840(CFS)
Normal flow depth in pipe =    9.42(In.)
Flow top width inside pipe =    9.86(In.)
Critical depth could not be calculated.
Pipe flow velocity =     14.88(Ft/s)
Travel time through pipe =    0.11 min.
Time of concentration (TC) =     7.38 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      149.000 to Point/Station     8000.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area =      3.410(Ac.)
Total study area this main stream =      3.410(Ac.)
Runoff from this stream =      9.840(CFS)
Time of concentration =    7.38 min.
Rainfall intensity =     4.958(In/Hr)
Area averaged loss rate (Fm) =    0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1      222.472     16.32                 2.961
2        9.840      7.38                 4.958
Qmax(1) =
           1.000 *    1.000 *   222.472) +
           0.516 *    1.000 *     9.840) + =     227.550
Qmax(2) =
           1.782 *    0.452 *   222.472) +
           1.000 *    1.000 *     9.840) + =     189.158

Total of 2 main streams to confluence:
Flow rates before confluence point:
     223.472      10.840
Maximum flow rates at confluence using above data:
      227.550      189.158
Effective Area of streams before confluence:
       90.588        3.410
Effective area values after confluence:
       93.998       44.394


Results of confluence:
Total flow rate =    227.550(CFS)
Time of concentration =    16.316 min.
Effective stream area after confluence  =     93.998(Ac.)
Stream Area average Pervious fraction(Ap) =  0.913
Stream Area average soil loss rate(Fm) =    0.421(In/Hr)
Steam effective area =      94.00(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station     8000.000 to Point/Station     9000.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
```

Upstream point elevation = 1753.200(Ft.)
Downstream point elevation = 1742.000(Ft.)
Channel length thru subarea = 270.000(Ft.)
Channel base width = 2.500(Ft.)
Slope or 'Z' of left channel bank = 4.000
Slope or 'Z' of right channel bank = 4.000
Estimated mean flow rate at midpoint of channel = 227.550(CFS)
Manning's 'N' = 0.015
Maximum depth of channel = 6.000(Ft.)
Flow(q) thru subarea = 227.550(CFS)
Depth of flow = 1.487(Ft.), Average velocity = 18.118(Ft/s)
Channel flow top width = 14.395(Ft.)
Flow Velocity = 18.12(Ft/s)
Travel time = 0.25 min.
Time of concentration = 16.56 min.
Critical depth = 2.594(Ft.)
Adding area flow to channel
UNDEVELOPED (average cover) subarea
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
SCS curve number for soil(AMC 2) = 50.00
Pervious ratio(Ap) = 1.0000 Max loss rate(Fm)= 0.810(In/Hr)
Rainfall intensity = 2.932(In/Hr) for a 100.0 year storm
Effective runoff coefficient used for area,(total area with modified rational method)(Q=KCIA) is C = 0.771
Subarea runoff = 0.000(CFS) for 0.000(Ac.)
Total runoff = 227.550(CFS)
Effective area this stream = 94.00(Ac.)
Total Study Area (Main Stream No. 1) = 3.41(Ac.)
Area averaged Fm value = 0.421(In/Hr)

++
Process from Point/Station 8000.000 to Point/Station 9000.000
**** CONFLUENCE OF MAIN STREAMS ****
_____
The following data inside Main Stream is listed:
In Main Stream number: 1
Effective stream flow area = 93.998(Ac.)
Total study area this main stream = 3.410(Ac.)
Runoff from this stream = 227.550(CFS)
Time of concentration = 16.56 min.
Rainfall intensity = 2.932(In/Hr)
Area averaged loss rate (Fm) = 0.4209(In/Hr)
Area averaged Pervious ratio (Ap) = 0.9131
Program is now starting with Main Stream No. 2

++
Process from Point/Station 163.000 to Point/Station 163.000
**** USER DEFINED FLOW INFORMATION AT A POINT ****
_____
PARK subarea
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
SCS curve number for soil(AMC 2) = 32.00
Pervious ratio(Ap) = 0.8500 Max loss rate(Fm)= 0.831(In/Hr)
Rainfall intensity = 5.327(In/Hr) for a 100.0 year storm
User specified values are as follows:
TC = 6.61 min. Rain intensity = 5.33(In/Hr)
Total area this stream = 1.37(Ac.)
Total Study Area (Main Stream No. 2) = 1.37(Ac.)
Total runoff = 5.16(CFS)

++
Process from Point/Station 163.000 to Point/Station 9000.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____
Upstream point/station elevation = 1747.300(Ft.)
Downstream point/station elevation = 1742.000(Ft.)
Pipe length = 70.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 5.160(CFS)
Nearest computed pipe diameter = 12.00(In.)
Calculated individual pipe flow = 5.160(CFS)
Normal flow depth in pipe = 6.19(In.)
Flow top width inside pipe = 11.99(In.)
Critical Depth = 11.09(In.)
Pipe flow velocity = 12.64(Ft/s)
Travel time through pipe = 0.09 min.

Time of concentration (TC) = 6.70 min.

++
Process from Point/Station 163.000 to Point/Station 9000.000
**** CONFLUENCE OF MAIN STREAMS ****
_____
The following data inside Main Stream is listed:
In Main Stream number: 2
Effective stream flow area = 1.370(Ac.)
Total study area this main stream = 1.370(Ac.)
Runoff from this stream = 5.160(CFS)
Time of concentration = 6.70 min.
Rainfall intensity = 5.279(In/Hr)
Area averaged loss rate (Fm) = 0.8311(In/Hr)
Area averaged Pervious ratio (Ap) = 0.8500
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	227.550	16.56	2.932
2	5.160	6.70	5.279

Qmax(1) =
1.000 * 1.000 * 227.550) +
0.472 * 1.000 * 5.160) + = 229.987
Qmax(2) =
1.935 * 0.405 * 227.550) +
1.000 * 1.000 * 5.160) + = 183.299

Total of 2 main streams to confluence:
Flow rates before confluence point:
228.550 6.160
Maximum flow rates at confluence using above data:
229.987 183.299
Effective Area of streams before confluence:
93.998 1.370
Effective area values after confluence:
95.368 39.402

Results of confluence:
Total flow rate = 229.987(CFS)
Time of concentration = 16.565 min.
Effective stream area after confluence = 95.368(Ac.)
Stream Area average Pervious fraction(Ap) = 0.912
Stream Area average soil loss rate(Fm) = 0.427(In/Hr)
Steam effective area = 95.37(Ac.)
End of computations, Total Study Area = 111.82 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.
Note: These figures do not consider reduced effective area
effects caused by confluences in the rational equation.

Area averaged pervious area fraction(Ap) = 0.915
Area averaged SCS curve number = 70.4

APPENDIX C: HYDROLOGY CALCULATIONS BASED ON EXISTING CONDITION (UNIT HYDROGRAPH METHOD)

APPENDIX C.1: 2-YEAR

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

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Study date 03/16/20

++

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA A
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
7.47	1	0.78
Rainfall data for year 2		
7.47	6	1.20
Rainfall data for year 2		
7.47	24	2.18
Rainfall data for year 100		
7.47	1	1.27
Rainfall data for year 100		
7.47	6	2.86
Rainfall data for year 100		
7.47	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.1	49.9	7.47	1.000	0.811	1.000	0.811

Area-averaged adjusted loss rate Fm (In/Hr) = 0.811

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
7.47	1.000	69.1	49.9	10.05	0.001

Area-averaged catchment yield fraction, Y = 0.001
Area-averaged low loss fraction, Yb = 0.999

++
Watercourse length = 730.00(Ft.)
Length from concentration point to centroid = 280.00(Ft.)
Elevation difference along watercourse = 69.50(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 7.47(Ac.)
Catchment Lag time = 0.034 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 244.3158
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.811(In/Hr)
Average low loss rate fraction (Yb) = 0.999 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 7.47(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.210(In)
30-minute factor = 1.000 Adjusted rainfall = 0.359(In)
1-hour factor = 1.000 Adjusted rainfall = 0.442(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 90.34 (CFS))	
1	50.117	45.276
2	95.749	41.224
3	100.000	3.841

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2099	0.2099
2	0.2585	0.0485
3	0.2919	0.0334
4	0.3182	0.0263
5	0.3402	0.0220
6	0.3594	0.0191
7	0.3764	0.0170
8	0.3918	0.0154
9	0.4059	0.0141
10	0.4189	0.0130
11	0.4310	0.0122
12	0.4424	0.0114
13	0.4626	0.0202
14	0.4821	0.0195
15	0.5010	0.0189
16	0.5193	0.0183
17	0.5372	0.0178
18	0.5545	0.0174
19	0.5715	0.0170
20	0.5881	0.0166
21	0.6043	0.0162
22	0.6201	0.0159
23	0.6357	0.0155
24	0.6509	0.0152
25	0.6659	0.0150
26	0.6806	0.0147
27	0.6950	0.0145
28	0.7093	0.0142
29	0.7233	0.0140
30	0.7370	0.0138
31	0.7506	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7902	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8283	0.0125
38	0.8407	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8771	0.0120
42	0.8889	0.0118
43	0.9006	0.0117
44	0.9122	0.0116
45	0.9237	0.0115
46	0.9351	0.0114
47	0.9464	0.0113

		AREAA
48	0.9575	0.0112
49	0.9686	0.0111
50	0.9795	0.0110
51	0.9904	0.0109
52	1.0011	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0536	0.0103
58	1.0639	0.0103
59	1.0741	0.0102
60	1.0842	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1336	0.0097
66	1.1432	0.0097
67	1.1528	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1907	0.0094
72	1.2000	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2213	0.0070
76	1.2282	0.0070
77	1.2352	0.0069
78	1.2421	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2757	0.0066
84	1.2823	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3019	0.0065
88	1.3083	0.0064
89	1.3147	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3336	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3582	0.0061
97	1.3643	0.0061
98	1.3704	0.0060
99	1.3764	0.0060
100	1.3823	0.0060
101	1.3883	0.0059
102	1.3942	0.0059
103	1.4000	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4175	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4403	0.0057
111	1.4459	0.0056
112	1.4515	0.0056
113	1.4570	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4736	0.0055
117	1.4790	0.0055
118	1.4845	0.0054
119	1.4899	0.0054
120	1.4952	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5218	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5425	0.0052
130	1.5477	0.0051
131	1.5528	0.0051

		AREAA
132	1.5579	0.0051
133	1.5630	0.0051
134	1.5680	0.0051
135	1.5730	0.0050
136	1.5781	0.0050
137	1.5830	0.0050
138	1.5880	0.0050
139	1.5930	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6077	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6461	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6602	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6925	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7061	0.0045
164	1.7106	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7240	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7504	0.0044
174	1.7547	0.0044
175	1.7590	0.0043
176	1.7634	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7763	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7932	0.0042
184	1.7975	0.0042
185	1.8017	0.0042
186	1.8058	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8225	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8430	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8592	0.0040
200	1.8632	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8752	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8870	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9183	0.0039
215	1.9221	0.0039

		AREAA
216	1.9260	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9564	0.0038
225	1.9601	0.0038
226	1.9639	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9750	0.0037
230	1.9788	0.0037
231	1.9825	0.0037
232	1.9861	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9972	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0117	0.0036
240	2.0154	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0298	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0405	0.0036
248	2.0440	0.0036
249	2.0476	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0582	0.0035
253	2.0617	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0722	0.0035
257	2.0756	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0860	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1066	0.0034
267	2.1100	0.0034
268	2.1134	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1370	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1471	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1734	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0033	0.0000
2	0.0033	0.0033	0.0000
3	0.0033	0.0033	0.0000
4	0.0033	0.0033	0.0000
5	0.0033	0.0033	0.0000
6	0.0033	0.0033	0.0000

		AREAA	
7	0.0033	0.0033	0.0000
8	0.0033	0.0033	0.0000
9	0.0033	0.0033	0.0000
10	0.0034	0.0033	0.0000
11	0.0034	0.0034	0.0000
12	0.0034	0.0034	0.0000
13	0.0034	0.0034	0.0000
14	0.0034	0.0034	0.0000
15	0.0034	0.0034	0.0000
16	0.0034	0.0034	0.0000
17	0.0034	0.0034	0.0000
18	0.0034	0.0034	0.0000
19	0.0035	0.0034	0.0000
20	0.0035	0.0035	0.0000
21	0.0035	0.0035	0.0000
22	0.0035	0.0035	0.0000
23	0.0035	0.0035	0.0000
24	0.0035	0.0035	0.0000
25	0.0035	0.0035	0.0000
26	0.0035	0.0035	0.0000
27	0.0035	0.0035	0.0000
28	0.0036	0.0035	0.0000
29	0.0036	0.0036	0.0000
30	0.0036	0.0036	0.0000
31	0.0036	0.0036	0.0000
32	0.0036	0.0036	0.0000
33	0.0036	0.0036	0.0000
34	0.0036	0.0036	0.0000
35	0.0036	0.0036	0.0000
36	0.0037	0.0037	0.0000
37	0.0037	0.0037	0.0000
38	0.0037	0.0037	0.0000
39	0.0037	0.0037	0.0000
40	0.0037	0.0037	0.0000
41	0.0037	0.0037	0.0000
42	0.0037	0.0037	0.0000
43	0.0038	0.0038	0.0000
44	0.0038	0.0038	0.0000
45	0.0038	0.0038	0.0000
46	0.0038	0.0038	0.0000
47	0.0038	0.0038	0.0000
48	0.0038	0.0038	0.0000
49	0.0038	0.0038	0.0000
50	0.0039	0.0039	0.0000
51	0.0039	0.0039	0.0000
52	0.0039	0.0039	0.0000
53	0.0039	0.0039	0.0000
54	0.0039	0.0039	0.0000
55	0.0039	0.0039	0.0000
56	0.0040	0.0039	0.0000
57	0.0040	0.0040	0.0000
58	0.0040	0.0040	0.0000
59	0.0040	0.0040	0.0000
60	0.0040	0.0040	0.0000
61	0.0040	0.0040	0.0000
62	0.0041	0.0040	0.0000
63	0.0041	0.0041	0.0000
64	0.0041	0.0041	0.0000
65	0.0041	0.0041	0.0000
66	0.0041	0.0041	0.0000
67	0.0041	0.0041	0.0000
68	0.0042	0.0042	0.0000
69	0.0042	0.0042	0.0000
70	0.0042	0.0042	0.0000
71	0.0042	0.0042	0.0000
72	0.0042	0.0042	0.0000
73	0.0043	0.0043	0.0000
74	0.0043	0.0043	0.0000
75	0.0043	0.0043	0.0000
76	0.0043	0.0043	0.0000
77	0.0044	0.0043	0.0000
78	0.0044	0.0044	0.0000
79	0.0044	0.0044	0.0000
80	0.0044	0.0044	0.0000
81	0.0044	0.0044	0.0000
82	0.0045	0.0044	0.0000
83	0.0045	0.0045	0.0000
84	0.0045	0.0045	0.0000
85	0.0045	0.0045	0.0000
86	0.0045	0.0045	0.0000
87	0.0046	0.0046	0.0000
88	0.0046	0.0046	0.0000
89	0.0046	0.0046	0.0000
90	0.0046	0.0046	0.0000

		AREAA	
91	0.0047	0.0047	0.0000
92	0.0047	0.0047	0.0000
93	0.0047	0.0047	0.0000
94	0.0048	0.0047	0.0000
95	0.0048	0.0048	0.0000
96	0.0048	0.0048	0.0000
97	0.0048	0.0048	0.0000
98	0.0049	0.0049	0.0000
99	0.0049	0.0049	0.0000
100	0.0049	0.0049	0.0000
101	0.0050	0.0050	0.0000
102	0.0050	0.0050	0.0000
103	0.0050	0.0050	0.0000
104	0.0051	0.0050	0.0000
105	0.0051	0.0051	0.0000
106	0.0051	0.0051	0.0000
107	0.0052	0.0052	0.0000
108	0.0052	0.0052	0.0000
109	0.0052	0.0052	0.0000
110	0.0053	0.0052	0.0000
111	0.0053	0.0053	0.0000
112	0.0053	0.0053	0.0000
113	0.0054	0.0054	0.0000
114	0.0054	0.0054	0.0000
115	0.0055	0.0055	0.0000
116	0.0055	0.0055	0.0000
117	0.0055	0.0055	0.0000
118	0.0056	0.0056	0.0000
119	0.0056	0.0056	0.0000
120	0.0057	0.0056	0.0000
121	0.0057	0.0057	0.0000
122	0.0057	0.0057	0.0000
123	0.0058	0.0058	0.0000
124	0.0058	0.0058	0.0000
125	0.0059	0.0059	0.0000
126	0.0059	0.0059	0.0000
127	0.0060	0.0060	0.0000
128	0.0060	0.0060	0.0000
129	0.0061	0.0061	0.0000
130	0.0061	0.0061	0.0000
131	0.0062	0.0062	0.0000
132	0.0063	0.0063	0.0000
133	0.0063	0.0063	0.0000
134	0.0064	0.0064	0.0000
135	0.0065	0.0065	0.0000
136	0.0065	0.0065	0.0000
137	0.0066	0.0066	0.0000
138	0.0066	0.0066	0.0000
139	0.0067	0.0067	0.0000
140	0.0068	0.0068	0.0000
141	0.0069	0.0069	0.0000
142	0.0069	0.0069	0.0000
143	0.0070	0.0070	0.0000
144	0.0071	0.0071	0.0000
145	0.0093	0.0093	0.0000
146	0.0094	0.0094	0.0000
147	0.0095	0.0095	0.0000
148	0.0095	0.0095	0.0000
149	0.0097	0.0097	0.0000
150	0.0097	0.0097	0.0000
151	0.0099	0.0099	0.0000
152	0.0099	0.0099	0.0000
153	0.0101	0.0101	0.0000
154	0.0102	0.0102	0.0000
155	0.0103	0.0103	0.0000
156	0.0104	0.0104	0.0000
157	0.0106	0.0106	0.0000
158	0.0107	0.0107	0.0000
159	0.0109	0.0108	0.0000
160	0.0110	0.0109	0.0000
161	0.0112	0.0111	0.0000
162	0.0113	0.0112	0.0000
163	0.0115	0.0115	0.0000
164	0.0116	0.0116	0.0000
165	0.0118	0.0118	0.0000
166	0.0120	0.0120	0.0000
167	0.0122	0.0122	0.0000
168	0.0124	0.0124	0.0000
169	0.0127	0.0127	0.0000
170	0.0129	0.0128	0.0000
171	0.0132	0.0132	0.0000
172	0.0134	0.0134	0.0000
173	0.0138	0.0138	0.0000
174	0.0140	0.0140	0.0000

		AREAA	
175	0.0145	0.0144	0.0000
176	0.0147	0.0147	0.0000
177	0.0152	0.0152	0.0000
178	0.0155	0.0155	0.0000
179	0.0162	0.0162	0.0000
180	0.0166	0.0165	0.0000
181	0.0174	0.0174	0.0000
182	0.0178	0.0178	0.0000
183	0.0189	0.0189	0.0000
184	0.0195	0.0195	0.0000
185	0.0114	0.0114	0.0000
186	0.0122	0.0121	0.0000
187	0.0141	0.0141	0.0000
188	0.0154	0.0154	0.0000
189	0.0191	0.0191	0.0000
190	0.0220	0.0220	0.0000
191	0.0334	0.0334	0.0000
192	0.0485	0.0485	0.0001
193	0.2099	0.0676	0.1424
194	0.0263	0.0263	0.0000
195	0.0170	0.0170	0.0000
196	0.0130	0.0130	0.0000
197	0.0202	0.0201	0.0000
198	0.0183	0.0183	0.0000
199	0.0170	0.0169	0.0000
200	0.0159	0.0158	0.0000
201	0.0150	0.0149	0.0000
202	0.0142	0.0142	0.0000
203	0.0136	0.0136	0.0000
204	0.0130	0.0130	0.0000
205	0.0125	0.0125	0.0000
206	0.0121	0.0121	0.0000
207	0.0117	0.0117	0.0000
208	0.0114	0.0114	0.0000
209	0.0111	0.0110	0.0000
210	0.0108	0.0108	0.0000
211	0.0105	0.0105	0.0000
212	0.0103	0.0102	0.0000
213	0.0100	0.0100	0.0000
214	0.0098	0.0098	0.0000
215	0.0096	0.0096	0.0000
216	0.0094	0.0094	0.0000
217	0.0071	0.0071	0.0000
218	0.0070	0.0070	0.0000
219	0.0068	0.0068	0.0000
220	0.0067	0.0067	0.0000
221	0.0066	0.0065	0.0000
222	0.0064	0.0064	0.0000
223	0.0063	0.0063	0.0000
224	0.0062	0.0062	0.0000
225	0.0061	0.0061	0.0000
226	0.0060	0.0060	0.0000
227	0.0059	0.0059	0.0000
228	0.0058	0.0058	0.0000
229	0.0057	0.0057	0.0000
230	0.0056	0.0056	0.0000
231	0.0055	0.0055	0.0000
232	0.0054	0.0054	0.0000
233	0.0054	0.0053	0.0000
234	0.0053	0.0053	0.0000
235	0.0052	0.0052	0.0000
236	0.0051	0.0051	0.0000
237	0.0051	0.0051	0.0000
238	0.0050	0.0050	0.0000
239	0.0049	0.0049	0.0000
240	0.0049	0.0049	0.0000
241	0.0048	0.0048	0.0000
242	0.0048	0.0048	0.0000
243	0.0047	0.0047	0.0000
244	0.0047	0.0047	0.0000
245	0.0046	0.0046	0.0000
246	0.0046	0.0046	0.0000
247	0.0045	0.0045	0.0000
248	0.0045	0.0045	0.0000
249	0.0044	0.0044	0.0000
250	0.0044	0.0044	0.0000
251	0.0043	0.0043	0.0000
252	0.0043	0.0043	0.0000
253	0.0043	0.0042	0.0000
254	0.0042	0.0042	0.0000
255	0.0042	0.0042	0.0000
256	0.0041	0.0041	0.0000
257	0.0041	0.0041	0.0000
258	0.0041	0.0041	0.0000

259	0.0040	0.0040	0.0000
260	0.0040	0.0040	0.0000
261	0.0040	0.0040	0.0000
262	0.0039	0.0039	0.0000
263	0.0039	0.0039	0.0000
264	0.0039	0.0039	0.0000
265	0.0038	0.0038	0.0000
266	0.0038	0.0038	0.0000
267	0.0038	0.0038	0.0000
268	0.0037	0.0037	0.0000
269	0.0037	0.0037	0.0000
270	0.0037	0.0037	0.0000
271	0.0037	0.0037	0.0000
272	0.0036	0.0036	0.0000
273	0.0036	0.0036	0.0000
274	0.0036	0.0036	0.0000
275	0.0036	0.0036	0.0000
276	0.0035	0.0035	0.0000
277	0.0035	0.0035	0.0000
278	0.0035	0.0035	0.0000
279	0.0035	0.0035	0.0000
280	0.0034	0.0034	0.0000
281	0.0034	0.0034	0.0000
282	0.0034	0.0034	0.0000
283	0.0034	0.0034	0.0000
284	0.0034	0.0034	0.0000
285	0.0033	0.0033	0.0000
286	0.0033	0.0033	0.0000
287	0.0033	0.0033	0.0000
288	0.0033	0.0033	0.0000

Total soil rain loss = 2.04(In)
Total effective rainfall = 0.14(In)
Peak flow rate in flood hydrograph = 6.45(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	0.0000	0.00	Q				
0+35	0.0000	0.00	Q				
0+40	0.0000	0.00	Q				
0+45	0.0000	0.00	Q				
0+50	0.0000	0.00	Q				
0+55	0.0000	0.00	Q				
1+ 0	0.0000	0.00	Q				
1+ 5	0.0000	0.00	Q				
1+10	0.0000	0.00	Q				
1+15	0.0000	0.00	Q				
1+20	0.0000	0.00	Q				
1+25	0.0000	0.00	Q				
1+30	0.0000	0.00	Q				
1+35	0.0000	0.00	Q				
1+40	0.0001	0.00	Q				
1+45	0.0001	0.00	Q				
1+50	0.0001	0.00	Q				
1+55	0.0001	0.00	Q				
2+ 0	0.0001	0.00	Q				
2+ 5	0.0001	0.00	Q				
2+10	0.0001	0.00	Q				
2+15	0.0001	0.00	Q				
2+20	0.0001	0.00	Q				
2+25	0.0001	0.00	Q				
2+30	0.0001	0.00	Q				
2+35	0.0001	0.00	Q				
2+40	0.0001	0.00	Q				
2+45	0.0001	0.00	Q				
2+50	0.0001	0.00	Q				
2+55	0.0001	0.00	Q				
3+ 0	0.0001	0.00	Q				
3+ 5	0.0001	0.00	Q				
3+10	0.0001	0.00	Q				
3+15	0.0001	0.00	Q				

3+20	0.0001	0.00	Q				
3+25	0.0001	0.00	Q				
3+30	0.0001	0.00	Q				
3+35	0.0001	0.00	Q				
3+40	0.0001	0.00	Q				
3+45	0.0001	0.00	Q				
3+50	0.0001	0.00	Q				
3+55	0.0001	0.00	Q				
4+ 0	0.0001	0.00	Q				
4+ 5	0.0001	0.00	Q				
4+10	0.0001	0.00	Q				
4+15	0.0001	0.00	Q				
4+20	0.0001	0.00	Q				
4+25	0.0001	0.00	Q				
4+30	0.0002	0.00	Q				
4+35	0.0002	0.00	Q				
4+40	0.0002	0.00	Q				
4+45	0.0002	0.00	Q				
4+50	0.0002	0.00	Q				
4+55	0.0002	0.00	Q				
5+ 0	0.0002	0.00	Q				
5+ 5	0.0002	0.00	Q				
5+10	0.0002	0.00	Q				
5+15	0.0002	0.00	Q				
5+20	0.0002	0.00	Q				
5+25	0.0002	0.00	Q				
5+30	0.0002	0.00	Q				
5+35	0.0002	0.00	Q				
5+40	0.0002	0.00	Q				
5+45	0.0002	0.00	Q				
5+50	0.0002	0.00	Q				
5+55	0.0002	0.00	Q				
6+ 0	0.0002	0.00	Q				
6+ 5	0.0002	0.00	Q				
6+10	0.0002	0.00	Q				
6+15	0.0002	0.00	Q				
6+20	0.0002	0.00	Q				
6+25	0.0002	0.00	Q				
6+30	0.0002	0.00	Q				
6+35	0.0002	0.00	Q				
6+40	0.0002	0.00	Q				
6+45	0.0002	0.00	Q				
6+50	0.0002	0.00	Q				
6+55	0.0002	0.00	Q				
7+ 0	0.0003	0.00	Q				
7+ 5	0.0003	0.00	Q				
7+10	0.0003	0.00	Q				
7+15	0.0003	0.00	Q				
7+20	0.0003	0.00	Q				
7+25	0.0003	0.00	Q				
7+30	0.0003	0.00	Q				
7+35	0.0003	0.00	Q				
7+40	0.0003	0.00	Q				
7+45	0.0003	0.00	Q				
7+50	0.0003	0.00	Q				
7+55	0.0003	0.00	Q				
8+ 0	0.0003	0.00	Q				
8+ 5	0.0003	0.00	Q				
8+10	0.0003	0.00	Q				
8+15	0.0003	0.00	Q				
8+20	0.0003	0.00	Q				
8+25	0.0003	0.00	Q				
8+30	0.0003	0.00	Q				
8+35	0.0003	0.00	Q				
8+40	0.0003	0.00	Q				
8+45	0.0003	0.00	Q				
8+50	0.0003	0.00	Q				
8+55	0.0003	0.00	Q				
9+ 0	0.0003	0.00	Q				
9+ 5	0.0003	0.00	Q				
9+10	0.0004	0.00	Q				
9+15	0.0004	0.00	Q				
9+20	0.0004	0.00	Q				
9+25	0.0004	0.00	Q				
9+30	0.0004	0.00	Q				
9+35	0.0004	0.00	Q				
9+40	0.0004	0.00	Q				
9+45	0.0004	0.00	Q				
9+50	0.0004	0.00	Q				
9+55	0.0004	0.00	Q				
10+ 0	0.0004	0.00	Q				
10+ 5	0.0004	0.00	Q				
10+10	0.0004	0.00	Q				
10+15	0.0004	0.00	Q				

10+20	0.0004	0.00	Q				
10+25	0.0004	0.00	Q				
10+30	0.0004	0.00	Q				
10+35	0.0004	0.00	Q				
10+40	0.0004	0.00	Q				
10+45	0.0004	0.00	Q				
10+50	0.0004	0.00	Q				
10+55	0.0004	0.00	Q				
11+ 0	0.0005	0.00	Q				
11+ 5	0.0005	0.00	Q				
11+10	0.0005	0.00	Q				
11+15	0.0005	0.00	Q				
11+20	0.0005	0.00	Q				
11+25	0.0005	0.00	Q				
11+30	0.0005	0.00	Q				
11+35	0.0005	0.00	Q				
11+40	0.0005	0.00	Q				
11+45	0.0005	0.00	Q				
11+50	0.0005	0.00	Q				
11+55	0.0005	0.00	Q				
12+ 0	0.0005	0.00	Q				
12+ 5	0.0005	0.00	Q				
12+10	0.0005	0.00	Q				
12+15	0.0005	0.00	Q				
12+20	0.0005	0.00	Q				
12+25	0.0006	0.00	Q				
12+30	0.0006	0.00	Q				
12+35	0.0006	0.00	Q				
12+40	0.0006	0.00	Q				
12+45	0.0006	0.00	Q				
12+50	0.0006	0.00	Q				
12+55	0.0006	0.00	Q				
13+ 0	0.0006	0.00	Q				
13+ 5	0.0006	0.00	Q				
13+10	0.0006	0.00	Q				
13+15	0.0006	0.00	Q				
13+20	0.0006	0.00	Q				
13+25	0.0007	0.00	Q				
13+30	0.0007	0.00	Q				
13+35	0.0007	0.00	Q				
13+40	0.0007	0.00	Q				
13+45	0.0007	0.00	Q				
13+50	0.0007	0.00	Q				
13+55	0.0007	0.00	Q				
14+ 0	0.0007	0.00	Q				
14+ 5	0.0007	0.00	Q				
14+10	0.0007	0.00	Q				
14+15	0.0008	0.00	Q				
14+20	0.0008	0.00	Q				
14+25	0.0008	0.00	Q				
14+30	0.0008	0.00	Q				
14+35	0.0008	0.00	Q				
14+40	0.0008	0.00	Q				
14+45	0.0008	0.00	Q				
14+50	0.0008	0.00	Q				
14+55	0.0008	0.00	Q				
15+ 0	0.0009	0.00	Q				
15+ 5	0.0009	0.00	Q				
15+10	0.0009	0.00	Q				
15+15	0.0009	0.00	Q				
15+20	0.0009	0.00	Q				
15+25	0.0009	0.00	Q				
15+30	0.0009	0.00	Q				
15+35	0.0009	0.00	Q				
15+40	0.0010	0.00	Q				
15+45	0.0010	0.00	Q				
15+50	0.0010	0.00	Q				
15+55	0.0010	0.00	Q				
16+ 0	0.0010	0.00	Q				
16+ 5	0.0454	6.45	|		V Q		
16+10	0.0859	5.87	|		Q		V
16+15	0.0897	0.55	| Q				V
16+20	0.0897	0.00	Q				V
16+25	0.0897	0.00	Q				V
16+30	0.0897	0.00	Q				V
16+35	0.0897	0.00	Q				V
16+40	0.0897	0.00	Q				V
16+45	0.0897	0.00	Q				V
16+50	0.0898	0.00	Q				V
16+55	0.0898	0.00	Q				V
17+ 0	0.0898	0.00	Q				V
17+ 5	0.0898	0.00	Q				V
17+10	0.0898	0.00	Q				V
17+15	0.0898	0.00	Q				V

17+20	0.0898	0.00	Q				V
17+25	0.0898	0.00	Q				V
17+30	0.0898	0.00	Q				V
17+35	0.0898	0.00	Q				V
17+40	0.0898	0.00	Q				V
17+45	0.0899	0.00	Q				V
17+50	0.0899	0.00	Q				V
17+55	0.0899	0.00	Q				V
18+ 0	0.0899	0.00	Q				V
18+ 5	0.0899	0.00	Q				V
18+10	0.0899	0.00	Q				V
18+15	0.0899	0.00	Q				V
18+20	0.0899	0.00	Q				V
18+25	0.0899	0.00	Q				V
18+30	0.0899	0.00	Q				V
18+35	0.0899	0.00	Q				V
18+40	0.0899	0.00	Q				V
18+45	0.0899	0.00	Q				V
18+50	0.0899	0.00	Q				V
18+55	0.0899	0.00	Q				V
19+ 0	0.0899	0.00	Q				V
19+ 5	0.0899	0.00	Q				V
19+10	0.0899	0.00	Q				V
19+15	0.0900	0.00	Q				V
19+20	0.0900	0.00	Q				V
19+25	0.0900	0.00	Q				V
19+30	0.0900	0.00	Q				V
19+35	0.0900	0.00	Q				V
19+40	0.0900	0.00	Q				V
19+45	0.0900	0.00	Q				V
19+50	0.0900	0.00	Q				V
19+55	0.0900	0.00	Q				V
20+ 0	0.0900	0.00	Q				V
20+ 5	0.0900	0.00	Q				V
20+10	0.0900	0.00	Q				V
20+15	0.0900	0.00	Q				V
20+20	0.0900	0.00	Q				V
20+25	0.0900	0.00	Q				V
20+30	0.0900	0.00	Q				V
20+35	0.0900	0.00	Q				V
20+40	0.0900	0.00	Q				V
20+45	0.0900	0.00	Q				V
20+50	0.0900	0.00	Q				V
20+55	0.0900	0.00	Q				V
21+ 0	0.0900	0.00	Q				V
21+ 5	0.0900	0.00	Q				V
21+10	0.0900	0.00	Q				V
21+15	0.0900	0.00	Q				V
21+20	0.0900	0.00	Q				V
21+25	0.0901	0.00	Q				V
21+30	0.0901	0.00	Q				V
21+35	0.0901	0.00	Q				V
21+40	0.0901	0.00	Q				V
21+45	0.0901	0.00	Q				V
21+50	0.0901	0.00	Q				V
21+55	0.0901	0.00	Q				V
22+ 0	0.0901	0.00	Q				V
22+ 5	0.0901	0.00	Q				V
22+10	0.0901	0.00	Q				V
22+15	0.0901	0.00	Q				V
22+20	0.0901	0.00	Q				V
22+25	0.0901	0.00	Q				V
22+30	0.0901	0.00	Q				V
22+35	0.0901	0.00	Q				V
22+40	0.0901	0.00	Q				V
22+45	0.0901	0.00	Q				V
22+50	0.0901	0.00	Q				V
22+55	0.0901	0.00	Q				V
23+ 0	0.0901	0.00	Q				V
23+ 5	0.0901	0.00	Q				V
23+10	0.0901	0.00	Q				V
23+15	0.0901	0.00	Q				V
23+20	0.0901	0.00	Q				V
23+25	0.0901	0.00	Q				V
23+30	0.0901	0.00	Q				V
23+35	0.0901	0.00	Q				V
23+40	0.0901	0.00	Q				V
23+45	0.0901	0.00	Q				V
23+50	0.0901	0.00	Q				V
23+55	0.0901	0.00	Q				V
24+ 0	0.0901	0.00	Q				V

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

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Study date 06/19/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA B.1
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	13.74	1	0.78
Rainfall data for year 2	13.74	6	1.20
Rainfall data for year 2	13.74	24	2.18
Rainfall data for year 100	13.74	1	1.27
Rainfall data for year 100	13.74	6	2.86
Rainfall data for year 100	13.74	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
79.0	61.8	13.74	1.000	0.654	1.000	0.654

Area-averaged adjusted loss rate Fm (In/Hr) = 0.654

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
13.74	1.000	79.0	61.8	6.18	0.057

Area-averaged catchment yield fraction, Y = 0.057
Area-averaged low loss fraction, Yb = 0.943

++
Watercourse length = 1775.00(Ft.)
Length from concentration point to centroid = 520.00(Ft.)
Elevation difference along watercourse = 65.20(Ft.)
Mannings friction factor along watercourse = 0.040
Watershed area = 13.74(Ac.)
Catchment Lag time = 0.097 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 86.2249
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.654(In/Hr)
Average low loss rate fraction (Yb) = 0.943 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 13.74(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.210(In)
30-minute factor = 0.999 Adjusted rainfall = 0.359(In)
1-hour factor = 0.999 Adjusted rainfall = 0.442(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 166.17 (CFS))	
1	10.357	17.210
2	62.193	86.134
3	84.295	36.726
4	93.294	14.955
5	97.410	6.839
6	98.731	2.195
7	99.396	1.104
8	99.868	0.785
9	100.000	0.219

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2099	0.2099
2	0.2584	0.0485
3	0.2918	0.0334
4	0.3181	0.0263
5	0.3401	0.0220
6	0.3593	0.0191
7	0.3763	0.0170
8	0.3917	0.0154
9	0.4057	0.0141
10	0.4188	0.0130
11	0.4309	0.0121
12	0.4423	0.0114
13	0.4625	0.0202
14	0.4820	0.0195
15	0.5009	0.0189
16	0.5192	0.0183
17	0.5371	0.0178
18	0.5544	0.0174
19	0.5714	0.0170
20	0.5880	0.0166
21	0.6042	0.0162
22	0.6200	0.0159
23	0.6356	0.0155
24	0.6508	0.0153
25	0.6658	0.0150
26	0.6805	0.0147
27	0.6950	0.0145
28	0.7092	0.0142
29	0.7232	0.0140
30	0.7370	0.0138
31	0.7506	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7902	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8283	0.0125
38	0.8407	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8770	0.0120

		AREAB1
42	0.8889	0.0118
43	0.9006	0.0117
44	0.9122	0.0116
45	0.9237	0.0115
46	0.9351	0.0114
47	0.9463	0.0113
48	0.9575	0.0112
49	0.9685	0.0111
50	0.9795	0.0110
51	0.9903	0.0109
52	1.0011	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0536	0.0103
58	1.0639	0.0103
59	1.0740	0.0102
60	1.0841	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1335	0.0097
66	1.1432	0.0097
67	1.1528	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1906	0.0094
72	1.1999	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2212	0.0070
76	1.2282	0.0070
77	1.2352	0.0069
78	1.2420	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2757	0.0066
84	1.2823	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3018	0.0065
88	1.3083	0.0064
89	1.3146	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3335	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3582	0.0061
97	1.3643	0.0061
98	1.3703	0.0060
99	1.3763	0.0060
100	1.3823	0.0060
101	1.3882	0.0059
102	1.3941	0.0059
103	1.4000	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4174	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4402	0.0057
111	1.4459	0.0056
112	1.4514	0.0056
113	1.4570	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4735	0.0055
117	1.4790	0.0055
118	1.4844	0.0054
119	1.4898	0.0054
120	1.4952	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5217	0.0053

		AREAB1
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5425	0.0052
130	1.5477	0.0051
131	1.5528	0.0051
132	1.5579	0.0051
133	1.5629	0.0051
134	1.5680	0.0051
135	1.5730	0.0050
136	1.5780	0.0050
137	1.5830	0.0050
138	1.5880	0.0050
139	1.5929	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6076	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6460	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6601	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6924	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7060	0.0045
164	1.7105	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7239	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7503	0.0044
174	1.7547	0.0044
175	1.7590	0.0043
176	1.7633	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7762	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7932	0.0042
184	1.7974	0.0042
185	1.8016	0.0042
186	1.8058	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8224	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8429	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8591	0.0040
200	1.8631	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8751	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8870	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039

		AREAB1
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9182	0.0039
215	1.9221	0.0039
216	1.9259	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9563	0.0038
225	1.9601	0.0038
226	1.9638	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9750	0.0037
230	1.9787	0.0037
231	1.9824	0.0037
232	1.9861	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9971	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0117	0.0036
240	2.0153	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0297	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0404	0.0036
248	2.0440	0.0036
249	2.0475	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0581	0.0035
253	2.0616	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0721	0.0035
257	2.0756	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0860	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1066	0.0034
267	2.1100	0.0034
268	2.1134	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1370	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1470	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1734	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)

	AREAB1		
1	0.0033	0.0031	0.0002
2	0.0033	0.0031	0.0002
3	0.0033	0.0031	0.0002
4	0.0033	0.0031	0.0002
5	0.0033	0.0031	0.0002
6	0.0033	0.0031	0.0002
7	0.0033	0.0031	0.0002
8	0.0033	0.0031	0.0002
9	0.0033	0.0032	0.0002
10	0.0034	0.0032	0.0002
11	0.0034	0.0032	0.0002
12	0.0034	0.0032	0.0002
13	0.0034	0.0032	0.0002
14	0.0034	0.0032	0.0002
15	0.0034	0.0032	0.0002
16	0.0034	0.0032	0.0002
17	0.0034	0.0032	0.0002
18	0.0034	0.0032	0.0002
19	0.0035	0.0033	0.0002
20	0.0035	0.0033	0.0002
21	0.0035	0.0033	0.0002
22	0.0035	0.0033	0.0002
23	0.0035	0.0033	0.0002
24	0.0035	0.0033	0.0002
25	0.0035	0.0033	0.0002
26	0.0035	0.0033	0.0002
27	0.0035	0.0033	0.0002
28	0.0036	0.0033	0.0002
29	0.0036	0.0034	0.0002
30	0.0036	0.0034	0.0002
31	0.0036	0.0034	0.0002
32	0.0036	0.0034	0.0002
33	0.0036	0.0034	0.0002
34	0.0036	0.0034	0.0002
35	0.0036	0.0034	0.0002
36	0.0037	0.0034	0.0002
37	0.0037	0.0035	0.0002
38	0.0037	0.0035	0.0002
39	0.0037	0.0035	0.0002
40	0.0037	0.0035	0.0002
41	0.0037	0.0035	0.0002
42	0.0037	0.0035	0.0002
43	0.0038	0.0035	0.0002
44	0.0038	0.0036	0.0002
45	0.0038	0.0036	0.0002
46	0.0038	0.0036	0.0002
47	0.0038	0.0036	0.0002
48	0.0038	0.0036	0.0002
49	0.0038	0.0036	0.0002
50	0.0039	0.0036	0.0002
51	0.0039	0.0037	0.0002
52	0.0039	0.0037	0.0002
53	0.0039	0.0037	0.0002
54	0.0039	0.0037	0.0002
55	0.0039	0.0037	0.0002
56	0.0040	0.0037	0.0002
57	0.0040	0.0037	0.0002
58	0.0040	0.0038	0.0002
59	0.0040	0.0038	0.0002
60	0.0040	0.0038	0.0002
61	0.0040	0.0038	0.0002
62	0.0041	0.0038	0.0002
63	0.0041	0.0038	0.0002
64	0.0041	0.0039	0.0002
65	0.0041	0.0039	0.0002
66	0.0041	0.0039	0.0002
67	0.0041	0.0039	0.0002
68	0.0042	0.0039	0.0002
69	0.0042	0.0039	0.0002
70	0.0042	0.0040	0.0002
71	0.0042	0.0040	0.0002
72	0.0042	0.0040	0.0002
73	0.0043	0.0040	0.0002
74	0.0043	0.0040	0.0002
75	0.0043	0.0041	0.0002
76	0.0043	0.0041	0.0002
77	0.0044	0.0041	0.0002
78	0.0044	0.0041	0.0003
79	0.0044	0.0041	0.0003
80	0.0044	0.0042	0.0003
81	0.0044	0.0042	0.0003
82	0.0045	0.0042	0.0003
83	0.0045	0.0042	0.0003
84	0.0045	0.0042	0.0003

85	0.0045	0.0043	0.0003
86	0.0045	0.0043	0.0003
87	0.0046	0.0043	0.0003
88	0.0046	0.0043	0.0003
89	0.0046	0.0044	0.0003
90	0.0046	0.0044	0.0003
91	0.0047	0.0044	0.0003
92	0.0047	0.0044	0.0003
93	0.0047	0.0045	0.0003
94	0.0048	0.0045	0.0003
95	0.0048	0.0045	0.0003
96	0.0048	0.0045	0.0003
97	0.0048	0.0046	0.0003
98	0.0049	0.0046	0.0003
99	0.0049	0.0046	0.0003
100	0.0049	0.0046	0.0003
101	0.0050	0.0047	0.0003
102	0.0050	0.0047	0.0003
103	0.0050	0.0047	0.0003
104	0.0051	0.0048	0.0003
105	0.0051	0.0048	0.0003
106	0.0051	0.0048	0.0003
107	0.0052	0.0049	0.0003
108	0.0052	0.0049	0.0003
109	0.0052	0.0049	0.0003
110	0.0053	0.0050	0.0003
111	0.0053	0.0050	0.0003
112	0.0053	0.0050	0.0003
113	0.0054	0.0051	0.0003
114	0.0054	0.0051	0.0003
115	0.0055	0.0051	0.0003
116	0.0055	0.0052	0.0003
117	0.0055	0.0052	0.0003
118	0.0056	0.0052	0.0003
119	0.0056	0.0053	0.0003
120	0.0057	0.0053	0.0003
121	0.0057	0.0054	0.0003
122	0.0057	0.0054	0.0003
123	0.0058	0.0055	0.0003
124	0.0058	0.0055	0.0003
125	0.0059	0.0056	0.0003
126	0.0059	0.0056	0.0003
127	0.0060	0.0057	0.0003
128	0.0060	0.0057	0.0003
129	0.0061	0.0058	0.0004
130	0.0061	0.0058	0.0004
131	0.0062	0.0059	0.0004
132	0.0063	0.0059	0.0004
133	0.0063	0.0060	0.0004
134	0.0064	0.0060	0.0004
135	0.0065	0.0061	0.0004
136	0.0065	0.0061	0.0004
137	0.0066	0.0062	0.0004
138	0.0066	0.0063	0.0004
139	0.0067	0.0063	0.0004
140	0.0068	0.0064	0.0004
141	0.0069	0.0065	0.0004
142	0.0069	0.0065	0.0004
143	0.0070	0.0066	0.0004
144	0.0071	0.0067	0.0004
145	0.0093	0.0088	0.0005
146	0.0094	0.0088	0.0005
147	0.0095	0.0089	0.0005
148	0.0095	0.0090	0.0005
149	0.0097	0.0091	0.0006
150	0.0097	0.0092	0.0006
151	0.0099	0.0093	0.0006
152	0.0099	0.0094	0.0006
153	0.0101	0.0095	0.0006
154	0.0102	0.0096	0.0006
155	0.0103	0.0097	0.0006
156	0.0104	0.0098	0.0006
157	0.0106	0.0100	0.0006
158	0.0107	0.0101	0.0006
159	0.0109	0.0102	0.0006
160	0.0110	0.0103	0.0006
161	0.0112	0.0105	0.0006
162	0.0113	0.0106	0.0006
163	0.0115	0.0108	0.0007
164	0.0116	0.0109	0.0007
165	0.0118	0.0112	0.0007
166	0.0120	0.0113	0.0007
167	0.0122	0.0115	0.0007
168	0.0124	0.0117	0.0007

		AREAB1	
169	0.0127	0.0120	0.0007
170	0.0129	0.0121	0.0007
171	0.0132	0.0125	0.0008
172	0.0134	0.0126	0.0008
173	0.0138	0.0130	0.0008
174	0.0140	0.0132	0.0008
175	0.0145	0.0136	0.0008
176	0.0147	0.0139	0.0008
177	0.0153	0.0144	0.0009
178	0.0155	0.0147	0.0009
179	0.0162	0.0153	0.0009
180	0.0166	0.0156	0.0009
181	0.0174	0.0164	0.0010
182	0.0178	0.0168	0.0010
183	0.0189	0.0178	0.0011
184	0.0195	0.0184	0.0011
185	0.0114	0.0107	0.0007
186	0.0121	0.0115	0.0007
187	0.0141	0.0133	0.0008
188	0.0154	0.0145	0.0009
189	0.0191	0.0180	0.0011
190	0.0220	0.0208	0.0013
191	0.0334	0.0315	0.0019
192	0.0485	0.0457	0.0028
193	0.2099	0.0545	0.1553
194	0.0263	0.0248	0.0015
195	0.0170	0.0160	0.0010
196	0.0130	0.0123	0.0007
197	0.0202	0.0190	0.0012
198	0.0183	0.0173	0.0011
199	0.0170	0.0160	0.0010
200	0.0159	0.0150	0.0009
201	0.0150	0.0141	0.0009
202	0.0142	0.0134	0.0008
203	0.0136	0.0128	0.0008
204	0.0130	0.0123	0.0007
205	0.0125	0.0118	0.0007
206	0.0121	0.0114	0.0007
207	0.0117	0.0110	0.0007
208	0.0114	0.0107	0.0007
209	0.0111	0.0104	0.0006
210	0.0108	0.0101	0.0006
211	0.0105	0.0099	0.0006
212	0.0103	0.0097	0.0006
213	0.0100	0.0094	0.0006
214	0.0098	0.0092	0.0006
215	0.0096	0.0091	0.0006
216	0.0094	0.0089	0.0005
217	0.0071	0.0067	0.0004
218	0.0070	0.0066	0.0004
219	0.0068	0.0064	0.0004
220	0.0067	0.0063	0.0004
221	0.0066	0.0062	0.0004
222	0.0064	0.0061	0.0004
223	0.0063	0.0059	0.0004
224	0.0062	0.0058	0.0004
225	0.0061	0.0057	0.0003
226	0.0060	0.0056	0.0003
227	0.0059	0.0055	0.0003
228	0.0058	0.0054	0.0003
229	0.0057	0.0054	0.0003
230	0.0056	0.0053	0.0003
231	0.0055	0.0052	0.0003
232	0.0054	0.0051	0.0003
233	0.0054	0.0050	0.0003
234	0.0053	0.0050	0.0003
235	0.0052	0.0049	0.0003
236	0.0051	0.0048	0.0003
237	0.0051	0.0048	0.0003
238	0.0050	0.0047	0.0003
239	0.0049	0.0047	0.0003
240	0.0049	0.0046	0.0003
241	0.0048	0.0046	0.0003
242	0.0048	0.0045	0.0003
243	0.0047	0.0044	0.0003
244	0.0047	0.0044	0.0003
245	0.0046	0.0043	0.0003
246	0.0046	0.0043	0.0003
247	0.0045	0.0043	0.0003
248	0.0045	0.0042	0.0003
249	0.0044	0.0042	0.0003
250	0.0044	0.0041	0.0003
251	0.0043	0.0041	0.0002
252	0.0043	0.0040	0.0002

253	0.0043	0.0040	0.0002
254	0.0042	0.0040	0.0002
255	0.0042	0.0039	0.0002
256	0.0041	0.0039	0.0002
257	0.0041	0.0039	0.0002
258	0.0041	0.0038	0.0002
259	0.0040	0.0038	0.0002
260	0.0040	0.0038	0.0002
261	0.0040	0.0037	0.0002
262	0.0039	0.0037	0.0002
263	0.0039	0.0037	0.0002
264	0.0039	0.0036	0.0002
265	0.0038	0.0036	0.0002
266	0.0038	0.0036	0.0002
267	0.0038	0.0036	0.0002
268	0.0037	0.0035	0.0002
269	0.0037	0.0035	0.0002
270	0.0037	0.0035	0.0002
271	0.0037	0.0035	0.0002
272	0.0036	0.0034	0.0002
273	0.0036	0.0034	0.0002
274	0.0036	0.0034	0.0002
275	0.0036	0.0034	0.0002
276	0.0035	0.0033	0.0002
277	0.0035	0.0033	0.0002
278	0.0035	0.0033	0.0002
279	0.0035	0.0033	0.0002
280	0.0034	0.0032	0.0002
281	0.0034	0.0032	0.0002
282	0.0034	0.0032	0.0002
283	0.0034	0.0032	0.0002
284	0.0034	0.0032	0.0002
285	0.0033	0.0031	0.0002
286	0.0033	0.0031	0.0002
287	0.0033	0.0031	0.0002
288	0.0033	0.0031	0.0002

Total soil rain loss = 1.91(In)
Total effective rainfall = 0.27(In)
Peak flow rate in flood hydrograph = 13.55(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0000	0.00	Q				
0+10	0.0002	0.02	Q				
0+15	0.0003	0.03	Q				
0+20	0.0005	0.03	Q				
0+25	0.0007	0.03	Q				
0+30	0.0010	0.03	Q				
0+35	0.0012	0.03	Q				
0+40	0.0014	0.03	Q				
0+45	0.0016	0.03	Q				
0+50	0.0018	0.03	Q				
0+55	0.0021	0.03	Q				
1+ 0	0.0023	0.03	Q				
1+ 5	0.0025	0.03	Q				
1+10	0.0027	0.03	Q				
1+15	0.0029	0.03	Q				
1+20	0.0032	0.03	Q				
1+25	0.0034	0.03	Q				
1+30	0.0036	0.03	Q				
1+35	0.0038	0.03	Q				
1+40	0.0041	0.03	Q				
1+45	0.0043	0.03	Q				
1+50	0.0045	0.03	Q				
1+55	0.0047	0.03	Q				
2+ 0	0.0050	0.03	Q				
2+ 5	0.0052	0.03	Q				
2+10	0.0054	0.03	Q				
2+15	0.0057	0.03	Q				
2+20	0.0059	0.03	Q				
2+25	0.0061	0.03	Q				
2+30	0.0064	0.03	Q				
2+35	0.0066	0.03	Q				
2+40	0.0068	0.03	Q				
2+45	0.0071	0.03	Q				

2+50	0.0073	0.03	Q				
2+55	0.0075	0.03	Q				
3+ 0	0.0078	0.03	QV				
3+ 5	0.0080	0.03	QV				
3+10	0.0083	0.03	QV				
3+15	0.0085	0.04	QV				
3+20	0.0087	0.04	QV				
3+25	0.0090	0.04	QV				
3+30	0.0092	0.04	QV				
3+35	0.0095	0.04	QV				
3+40	0.0097	0.04	QV				
3+45	0.0100	0.04	QV				
3+50	0.0102	0.04	QV				
3+55	0.0105	0.04	QV				
4+ 0	0.0107	0.04	QV				
4+ 5	0.0110	0.04	QV				
4+10	0.0112	0.04	QV				
4+15	0.0115	0.04	QV				
4+20	0.0117	0.04	QV				
4+25	0.0120	0.04	QV				
4+30	0.0122	0.04	QV				
4+35	0.0125	0.04	QV				
4+40	0.0127	0.04	QV				
4+45	0.0130	0.04	QV				
4+50	0.0133	0.04	QV				
4+55	0.0135	0.04	QV				
5+ 0	0.0138	0.04	QV				
5+ 5	0.0141	0.04	QV				
5+10	0.0143	0.04	QV				
5+15	0.0146	0.04	QV				
5+20	0.0148	0.04	QV				
5+25	0.0151	0.04	QV				
5+30	0.0154	0.04	Q V				
5+35	0.0157	0.04	Q V				
5+40	0.0159	0.04	Q V				
5+45	0.0162	0.04	Q V				
5+50	0.0165	0.04	Q V				
5+55	0.0167	0.04	Q V				
6+ 0	0.0170	0.04	Q V				
6+ 5	0.0173	0.04	Q V				
6+10	0.0176	0.04	Q V				
6+15	0.0179	0.04	Q V				
6+20	0.0181	0.04	Q V				
6+25	0.0184	0.04	Q V				
6+30	0.0187	0.04	Q V				
6+35	0.0190	0.04	Q V				
6+40	0.0193	0.04	Q V				
6+45	0.0196	0.04	Q V				
6+50	0.0199	0.04	Q V				
6+55	0.0202	0.04	Q V				
7+ 0	0.0204	0.04	Q V				
7+ 5	0.0207	0.04	Q V				
7+10	0.0210	0.04	Q V				
7+15	0.0213	0.04	Q V				
7+20	0.0216	0.04	Q V				
7+25	0.0219	0.04	Q V				
7+30	0.0222	0.04	Q V				
7+35	0.0225	0.04	Q V				
7+40	0.0229	0.04	Q V				
7+45	0.0232	0.04	Q V				
7+50	0.0235	0.04	Q V				
7+55	0.0238	0.05	Q V				
8+ 0	0.0241	0.05	Q V				
8+ 5	0.0244	0.05	Q V				
8+10	0.0247	0.05	Q V				
8+15	0.0250	0.05	Q V				
8+20	0.0254	0.05	Q V				
8+25	0.0257	0.05	Q V				
8+30	0.0260	0.05	Q V				
8+35	0.0263	0.05	Q V				
8+40	0.0267	0.05	Q V				
8+45	0.0270	0.05	Q V				
8+50	0.0273	0.05	Q V				
8+55	0.0277	0.05	Q V				
9+ 0	0.0280	0.05	Q V				
9+ 5	0.0283	0.05	Q V				
9+10	0.0287	0.05	Q V				
9+15	0.0290	0.05	Q V				
9+20	0.0294	0.05	Q V				
9+25	0.0297	0.05	Q V				
9+30	0.0301	0.05	Q V				
9+35	0.0304	0.05	Q V				
9+40	0.0308	0.05	Q V				
9+45	0.0311	0.05	Q V				

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 9+50       0.0315      0.05  Q   V     |           |           |           |
 9+55       0.0319      0.05  Q   V     |           |           |           |
10+ 0       0.0322      0.05  Q   V     |           |           |           |
10+ 5       0.0326      0.05  Q   V     |           |           |           |
10+10       0.0330      0.05  Q   V     |           |           |           |
10+15       0.0334      0.05  Q   V     |           |           |           |
10+20       0.0337      0.06  Q   V     |           |           |           |
10+25       0.0341      0.06  Q   V     |           |           |           |
10+30       0.0345      0.06  Q   V     |           |           |           |
10+35       0.0349      0.06  Q   V     |           |           |           |
10+40       0.0353      0.06  Q   V     |           |           |           |
10+45       0.0357      0.06  Q   V     |           |           |           |
10+50       0.0361      0.06  Q   V     |           |           |           |
10+55       0.0365      0.06  Q   V     |           |           |           |
11+ 0       0.0369      0.06  Q   V     |           |           |           |
11+ 5       0.0373      0.06  Q   V     |           |           |           |
11+10       0.0377      0.06  Q   V     |           |           |           |
11+15       0.0381      0.06  Q   V     |           |           |           |
11+20       0.0385      0.06  Q    V    |           |           |           |
11+25       0.0390      0.06  Q    V    |           |           |           |
11+30       0.0394      0.06  Q    V    |           |           |           |
11+35       0.0398      0.06  Q    V    |           |           |           |
11+40       0.0403      0.06  Q    V    |           |           |           |
11+45       0.0407      0.06  Q    V    |           |           |           |
11+50       0.0412      0.07  Q    V    |           |           |           |
11+55       0.0416      0.07  Q    V    |           |           |           |
12+ 0       0.0421      0.07  Q    V    |           |           |           |
12+ 5       0.0426      0.07  Q    V    |           |           |           |
12+10       0.0431      0.08  Q    V    |           |           |           |
12+15       0.0437      0.09  Q    V    |           |           |           |
12+20       0.0443      0.09  Q    V    |           |           |           |
12+25       0.0449      0.09  Q    V    |           |           |           |
12+30       0.0456      0.09  Q    V    |           |           |           |
12+35       0.0462      0.09  Q     V   |           |           |           |
12+40       0.0468      0.09  Q     V   |           |           |           |
12+45       0.0475      0.09  Q     V   |           |           |           |
12+50       0.0481      0.10  Q     V   |           |           |           |
12+55       0.0488      0.10  Q     V   |           |           |           |
13+ 0       0.0495      0.10  Q     V   |           |           |           |
13+ 5       0.0502      0.10  Q     V   |           |           |           |
13+10       0.0509      0.10  Q     V   |           |           |           |
13+15       0.0515      0.10  Q     V   |           |           |           |
13+20       0.0523      0.10  Q     V   |           |           |           |
13+25       0.0530      0.10  Q     V   |           |           |           |
13+30       0.0537      0.11  Q     V   |           |           |           |
13+35       0.0544      0.11  Q      V  |           |           |           |
13+40       0.0552      0.11  Q      V  |           |           |           |
13+45       0.0559      0.11  Q      V  |           |           |           |
13+50       0.0567      0.11  Q      V  |           |           |           |
13+55       0.0575      0.11  Q      V  |           |           |           |
14+ 0       0.0583      0.12  Q      V  |           |           |           |
14+ 5       0.0591      0.12  Q      V  |           |           |           |
14+10       0.0599      0.12  Q      V  |           |           |           |
14+15       0.0607      0.12  Q      V  |           |           |           |
14+20       0.0616      0.12  Q       V |           |           |           |
14+25       0.0625      0.13  Q       V |           |           |           |
14+30       0.0634      0.13  Q       V |           |           |           |
14+35       0.0643      0.13  Q       V |           |           |           |
14+40       0.0652      0.14  Q       V |           |           |           |
14+45       0.0662      0.14  Q       V |           |           |           |
14+50       0.0672      0.14  Q       V |           |           |           |
14+55       0.0682      0.15  Q       V |           |           |           |
15+ 0       0.0692      0.15  Q        V|           |           |           |
15+ 5       0.0703      0.16  Q        V|           |           |           |
15+10       0.0714      0.16  Q        V|           |           |           |
15+15       0.0726      0.17  Q        V|           |           |           |
15+20       0.0738      0.18  Q        V|           |           |           |
15+25       0.0750      0.17  Q        V|           |           |           |
15+30       0.0759      0.14  Q        V|           |           |           |
15+35       0.0768      0.13  Q         V           |           |           |
15+40       0.0777      0.13  Q         V           |           |           |
15+45       0.0787      0.14  Q         V           |           |           |
15+50       0.0798      0.17  Q         V           |           |           |
15+55       0.0812      0.20  Q         V           |           |           |
16+ 0       0.0832      0.29  Q         V           |           |           |
16+ 5       0.1040      3.01  |      Q   |  V        |           |           |
16+10       0.1973     13.55  |          |           |    V Q    |           |
16+15       0.2380      5.91  |          |Q          |           |V          |
16+20       0.2552      2.50  |     Q    |           |           |  V        |
16+25       0.2636      1.21  | Q        |           |           |   V       |
16+30       0.2671      0.52  |Q         |           |           |   V       |
16+35       0.2695      0.35  Q          |           |           |    V      |
16+40       0.2715      0.29  Q          |           |           |    V      |
16+45       0.2728      0.19  Q          |           |           |    V      |
```

16+50	0.2738	0.15	Q				V
16+55	0.2748	0.14	Q				V
17+ 0	0.2757	0.13	Q				V
17+ 5	0.2766	0.13	Q				V
17+10	0.2774	0.12	Q				V
17+15	0.2782	0.12	Q				V
17+20	0.2790	0.11	Q				V
17+25	0.2798	0.11	Q				V
17+30	0.2805	0.11	Q				V
17+35	0.2812	0.10	Q				V
17+40	0.2819	0.10	Q				V
17+45	0.2826	0.10	Q				V
17+50	0.2833	0.10	Q				V
17+55	0.2839	0.09	Q				V
18+ 0	0.2846	0.09	Q				V
18+ 5	0.2852	0.09	Q				V
18+10	0.2857	0.08	Q				V
18+15	0.2862	0.07	Q				V
18+20	0.2867	0.07	Q				V
18+25	0.2871	0.07	Q				V
18+30	0.2875	0.06	Q				V
18+35	0.2880	0.06	Q				V
18+40	0.2884	0.06	Q				V
18+45	0.2888	0.06	Q				V
18+50	0.2892	0.06	Q				V
18+55	0.2896	0.06	Q				V
19+ 0	0.2900	0.06	Q				V
19+ 5	0.2904	0.06	Q				V
19+10	0.2907	0.05	Q				V
19+15	0.2911	0.05	Q				V
19+20	0.2915	0.05	Q				V
19+25	0.2918	0.05	Q				V
19+30	0.2922	0.05	Q				V
19+35	0.2925	0.05	Q				V
19+40	0.2929	0.05	Q				V
19+45	0.2932	0.05	Q				V
19+50	0.2936	0.05	Q				V
19+55	0.2939	0.05	Q				V
20+ 0	0.2942	0.05	Q				V
20+ 5	0.2945	0.05	Q				V
20+10	0.2949	0.05	Q				V
20+15	0.2952	0.05	Q				V
20+20	0.2955	0.05	Q				V
20+25	0.2958	0.04	Q				V
20+30	0.2961	0.04	Q				V
20+35	0.2964	0.04	Q				V
20+40	0.2967	0.04	Q				V
20+45	0.2970	0.04	Q				V
20+50	0.2973	0.04	Q				V
20+55	0.2976	0.04	Q				V
21+ 0	0.2979	0.04	Q				V
21+ 5	0.2981	0.04	Q				V
21+10	0.2984	0.04	Q				V
21+15	0.2987	0.04	Q				V
21+20	0.2990	0.04	Q				V
21+25	0.2993	0.04	Q				V
21+30	0.2995	0.04	Q				V
21+35	0.2998	0.04	Q				V
21+40	0.3001	0.04	Q				V
21+45	0.3003	0.04	Q				V
21+50	0.3006	0.04	Q				V
21+55	0.3008	0.04	Q				V
22+ 0	0.3011	0.04	Q				V
22+ 5	0.3014	0.04	Q				V
22+10	0.3016	0.04	Q				V
22+15	0.3019	0.04	Q				V
22+20	0.3021	0.04	Q				V
22+25	0.3024	0.04	Q				V
22+30	0.3026	0.04	Q				V
22+35	0.3028	0.04	Q				V
22+40	0.3031	0.04	Q				V
22+45	0.3033	0.03	Q				V
22+50	0.3036	0.03	Q				V
22+55	0.3038	0.03	Q				V
23+ 0	0.3040	0.03	Q				V
23+ 5	0.3043	0.03	Q				V
23+10	0.3045	0.03	Q				V
23+15	0.3047	0.03	Q				V
23+20	0.3050	0.03	Q				V
23+25	0.3052	0.03	Q				V
23+30	0.3054	0.03	Q				V
23+35	0.3056	0.03	Q				V
23+40	0.3059	0.03	Q				V
23+45	0.3061	0.03	Q				V

```
                                                AREAB1
   23+50       0.3063      0.03  Q         |          |          |        V|
   23+55       0.3065      0.03  Q         |          |          |        V|
   24+ 0       0.3067      0.03  Q         |          |          |        V|
-------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

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Study date 06/19/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA B.2
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
12.45	1	0.78
Rainfall data for year 2		
12.45	6	1.20
Rainfall data for year 2		
12.45	24	2.18
Rainfall data for year 100		
12.45	1	1.27
Rainfall data for year 100		
12.45	6	2.86
Rainfall data for year 100		
12.45	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
75.7	57.9	12.45	1.000	0.709	1.000	0.709

Area-averaged adjusted loss rate Fm (In/Hr) = 0.709

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
12.45	1.000	75.7	57.9	7.28	0.030

Area-averaged catchment yield fraction, Y = 0.030
Area-averaged low loss fraction, Yb = 0.970

++
Watercourse length = 1380.00(Ft.)
Length from concentration point to centroid = 320.00(Ft.)
Elevation difference along watercourse = 108.60(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 12.45(Ac.)
Catchment Lag time = 0.047 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 175.8361
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.709(In/Hr)
Average low loss rate fraction (Yb) = 0.970 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 12.45(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.210(In)
30-minute factor = 0.999 Adjusted rainfall = 0.359(In)
1-hour factor = 0.999 Adjusted rainfall = 0.442(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 150.57 (CFS))	
1	37.071	55.816
2	89.292	78.629
3	98.207	13.423
4	100.000	2.699

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2099	0.2099
2	0.2584	0.0485
3	0.2918	0.0334
4	0.3181	0.0263
5	0.3402	0.0220
6	0.3593	0.0191
7	0.3763	0.0170
8	0.3917	0.0154
9	0.4058	0.0141
10	0.4188	0.0130
11	0.4309	0.0121
12	0.4423	0.0114
13	0.4625	0.0202
14	0.4820	0.0195
15	0.5009	0.0189
16	0.5192	0.0183
17	0.5371	0.0178
18	0.5545	0.0174
19	0.5714	0.0170
20	0.5880	0.0166
21	0.6042	0.0162
22	0.6200	0.0159
23	0.6356	0.0155
24	0.6508	0.0153
25	0.6658	0.0150
26	0.6805	0.0147
27	0.6950	0.0145
28	0.7092	0.0142
29	0.7232	0.0140
30	0.7370	0.0138
31	0.7506	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7902	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8283	0.0125
38	0.8407	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8770	0.0120
42	0.8889	0.0118
43	0.9006	0.0117
44	0.9122	0.0116
45	0.9237	0.0115
46	0.9351	0.0114

		AREAB2
47	0.9463	0.0113
48	0.9575	0.0112
49	0.9685	0.0111
50	0.9795	0.0110
51	0.9904	0.0109
52	1.0011	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0536	0.0103
58	1.0639	0.0103
59	1.0740	0.0102
60	1.0841	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1335	0.0097
66	1.1432	0.0097
67	1.1528	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1906	0.0094
72	1.2000	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2212	0.0070
76	1.2282	0.0070
77	1.2352	0.0069
78	1.2420	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2757	0.0066
84	1.2823	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3018	0.0065
88	1.3083	0.0064
89	1.3147	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3336	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3582	0.0061
97	1.3643	0.0061
98	1.3703	0.0060
99	1.3763	0.0060
100	1.3823	0.0060
101	1.3882	0.0059
102	1.3942	0.0059
103	1.4000	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4174	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4402	0.0057
111	1.4459	0.0056
112	1.4515	0.0056
113	1.4570	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4736	0.0055
117	1.4790	0.0055
118	1.4844	0.0054
119	1.4898	0.0054
120	1.4952	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5217	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5425	0.0052
130	1.5477	0.0051

		AREAB2
131	1.5528	0.0051
132	1.5579	0.0051
133	1.5629	0.0051
134	1.5680	0.0051
135	1.5730	0.0050
136	1.5780	0.0050
137	1.5830	0.0050
138	1.5880	0.0050
139	1.5929	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6076	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6460	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6601	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6924	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7060	0.0045
164	1.7105	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7239	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7503	0.0044
174	1.7547	0.0044
175	1.7590	0.0043
176	1.7634	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7762	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7932	0.0042
184	1.7974	0.0042
185	1.8016	0.0042
186	1.8058	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8224	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8429	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8591	0.0040
200	1.8632	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8751	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8870	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9182	0.0039

		AREAB2
215	1.9221	0.0039
216	1.9259	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9563	0.0038
225	1.9601	0.0038
226	1.9638	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9750	0.0037
230	1.9787	0.0037
231	1.9824	0.0037
232	1.9861	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9972	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0117	0.0036
240	2.0153	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0297	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0405	0.0036
248	2.0440	0.0036
249	2.0476	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0581	0.0035
253	2.0617	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0721	0.0035
257	2.0756	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0860	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1066	0.0034
267	2.1100	0.0034
268	2.1134	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1370	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1470	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1734	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0032	0.0001
2	0.0033	0.0032	0.0001
3	0.0033	0.0032	0.0001
4	0.0033	0.0032	0.0001
5	0.0033	0.0032	0.0001

		AREAB2	
6	0.0033	0.0032	0.0001
7	0.0033	0.0032	0.0001
8	0.0033	0.0032	0.0001
9	0.0033	0.0032	0.0001
10	0.0034	0.0032	0.0001
11	0.0034	0.0033	0.0001
12	0.0034	0.0033	0.0001
13	0.0034	0.0033	0.0001
14	0.0034	0.0033	0.0001
15	0.0034	0.0033	0.0001
16	0.0034	0.0033	0.0001
17	0.0034	0.0033	0.0001
18	0.0034	0.0033	0.0001
19	0.0035	0.0033	0.0001
20	0.0035	0.0034	0.0001
21	0.0035	0.0034	0.0001
22	0.0035	0.0034	0.0001
23	0.0035	0.0034	0.0001
24	0.0035	0.0034	0.0001
25	0.0035	0.0034	0.0001
26	0.0035	0.0034	0.0001
27	0.0035	0.0034	0.0001
28	0.0036	0.0034	0.0001
29	0.0036	0.0035	0.0001
30	0.0036	0.0035	0.0001
31	0.0036	0.0035	0.0001
32	0.0036	0.0035	0.0001
33	0.0036	0.0035	0.0001
34	0.0036	0.0035	0.0001
35	0.0036	0.0035	0.0001
36	0.0037	0.0035	0.0001
37	0.0037	0.0036	0.0001
38	0.0037	0.0036	0.0001
39	0.0037	0.0036	0.0001
40	0.0037	0.0036	0.0001
41	0.0037	0.0036	0.0001
42	0.0037	0.0036	0.0001
43	0.0038	0.0036	0.0001
44	0.0038	0.0037	0.0001
45	0.0038	0.0037	0.0001
46	0.0038	0.0037	0.0001
47	0.0038	0.0037	0.0001
48	0.0038	0.0037	0.0001
49	0.0038	0.0037	0.0001
50	0.0039	0.0037	0.0001
51	0.0039	0.0038	0.0001
52	0.0039	0.0038	0.0001
53	0.0039	0.0038	0.0001
54	0.0039	0.0038	0.0001
55	0.0039	0.0038	0.0001
56	0.0040	0.0038	0.0001
57	0.0040	0.0039	0.0001
58	0.0040	0.0039	0.0001
59	0.0040	0.0039	0.0001
60	0.0040	0.0039	0.0001
61	0.0040	0.0039	0.0001
62	0.0041	0.0039	0.0001
63	0.0041	0.0040	0.0001
64	0.0041	0.0040	0.0001
65	0.0041	0.0040	0.0001
66	0.0041	0.0040	0.0001
67	0.0041	0.0040	0.0001
68	0.0042	0.0040	0.0001
69	0.0042	0.0041	0.0001
70	0.0042	0.0041	0.0001
71	0.0042	0.0041	0.0001
72	0.0042	0.0041	0.0001
73	0.0043	0.0041	0.0001
74	0.0043	0.0042	0.0001
75	0.0043	0.0042	0.0001
76	0.0043	0.0042	0.0001
77	0.0044	0.0042	0.0001
78	0.0044	0.0042	0.0001
79	0.0044	0.0043	0.0001
80	0.0044	0.0043	0.0001
81	0.0044	0.0043	0.0001
82	0.0045	0.0043	0.0001
83	0.0045	0.0043	0.0001
84	0.0045	0.0044	0.0001
85	0.0045	0.0044	0.0001
86	0.0045	0.0044	0.0001
87	0.0046	0.0044	0.0001
88	0.0046	0.0045	0.0001
89	0.0046	0.0045	0.0001

		AREAB2	
90	0.0046	0.0045	0.0001
91	0.0047	0.0045	0.0001
92	0.0047	0.0046	0.0001
93	0.0047	0.0046	0.0001
94	0.0048	0.0046	0.0001
95	0.0048	0.0046	0.0001
96	0.0048	0.0047	0.0001
97	0.0048	0.0047	0.0001
98	0.0049	0.0047	0.0001
99	0.0049	0.0048	0.0001
100	0.0049	0.0048	0.0001
101	0.0050	0.0048	0.0001
102	0.0050	0.0048	0.0001
103	0.0050	0.0049	0.0002
104	0.0051	0.0049	0.0002
105	0.0051	0.0049	0.0002
106	0.0051	0.0050	0.0002
107	0.0052	0.0050	0.0002
108	0.0052	0.0050	0.0002
109	0.0052	0.0051	0.0002
110	0.0053	0.0051	0.0002
111	0.0053	0.0051	0.0002
112	0.0053	0.0052	0.0002
113	0.0054	0.0052	0.0002
114	0.0054	0.0052	0.0002
115	0.0055	0.0053	0.0002
116	0.0055	0.0053	0.0002
117	0.0055	0.0054	0.0002
118	0.0056	0.0054	0.0002
119	0.0056	0.0055	0.0002
120	0.0057	0.0055	0.0002
121	0.0057	0.0055	0.0002
122	0.0057	0.0056	0.0002
123	0.0058	0.0056	0.0002
124	0.0058	0.0057	0.0002
125	0.0059	0.0057	0.0002
126	0.0059	0.0058	0.0002
127	0.0060	0.0058	0.0002
128	0.0060	0.0059	0.0002
129	0.0061	0.0059	0.0002
130	0.0061	0.0060	0.0002
131	0.0062	0.0060	0.0002
132	0.0063	0.0061	0.0002
133	0.0063	0.0062	0.0002
134	0.0064	0.0062	0.0002
135	0.0065	0.0063	0.0002
136	0.0065	0.0063	0.0002
137	0.0066	0.0064	0.0002
138	0.0066	0.0064	0.0002
139	0.0067	0.0065	0.0002
140	0.0068	0.0066	0.0002
141	0.0069	0.0067	0.0002
142	0.0069	0.0067	0.0002
143	0.0070	0.0068	0.0002
144	0.0071	0.0069	0.0002
145	0.0093	0.0090	0.0003
146	0.0094	0.0091	0.0003
147	0.0095	0.0092	0.0003
148	0.0095	0.0093	0.0003
149	0.0097	0.0094	0.0003
150	0.0097	0.0094	0.0003
151	0.0099	0.0096	0.0003
152	0.0099	0.0097	0.0003
153	0.0101	0.0098	0.0003
154	0.0102	0.0099	0.0003
155	0.0103	0.0100	0.0003
156	0.0104	0.0101	0.0003
157	0.0106	0.0103	0.0003
158	0.0107	0.0104	0.0003
159	0.0109	0.0105	0.0003
160	0.0110	0.0106	0.0003
161	0.0112	0.0108	0.0003
162	0.0113	0.0109	0.0003
163	0.0115	0.0111	0.0003
164	0.0116	0.0113	0.0003
165	0.0118	0.0115	0.0004
166	0.0120	0.0116	0.0004
167	0.0122	0.0119	0.0004
168	0.0124	0.0120	0.0004
169	0.0127	0.0123	0.0004
170	0.0129	0.0125	0.0004
171	0.0132	0.0128	0.0004
172	0.0134	0.0130	0.0004
173	0.0138	0.0134	0.0004

174	0.0140	0.0136	0.0004
175	0.0145	0.0140	0.0004
176	0.0147	0.0143	0.0004
177	0.0153	0.0148	0.0005
178	0.0155	0.0151	0.0005
179	0.0162	0.0157	0.0005
180	0.0166	0.0161	0.0005
181	0.0174	0.0169	0.0005
182	0.0178	0.0173	0.0005
183	0.0189	0.0183	0.0006
184	0.0195	0.0189	0.0006
185	0.0114	0.0111	0.0003
186	0.0121	0.0118	0.0004
187	0.0141	0.0137	0.0004
188	0.0154	0.0149	0.0005
189	0.0191	0.0186	0.0006
190	0.0220	0.0214	0.0007
191	0.0334	0.0324	0.0010
192	0.0485	0.0471	0.0015
193	0.2099	0.0591	0.1508
194	0.0263	0.0255	0.0008
195	0.0170	0.0165	0.0005
196	0.0130	0.0126	0.0004
197	0.0202	0.0196	0.0006
198	0.0183	0.0178	0.0005
199	0.0170	0.0164	0.0005
200	0.0159	0.0154	0.0005
201	0.0150	0.0145	0.0004
202	0.0142	0.0138	0.0004
203	0.0136	0.0132	0.0004
204	0.0130	0.0126	0.0004
205	0.0125	0.0122	0.0004
206	0.0121	0.0117	0.0004
207	0.0117	0.0114	0.0004
208	0.0114	0.0110	0.0003
209	0.0111	0.0107	0.0003
210	0.0108	0.0104	0.0003
211	0.0105	0.0102	0.0003
212	0.0103	0.0099	0.0003
213	0.0100	0.0097	0.0003
214	0.0098	0.0095	0.0003
215	0.0096	0.0093	0.0003
216	0.0094	0.0091	0.0003
217	0.0071	0.0069	0.0002
218	0.0070	0.0068	0.0002
219	0.0068	0.0066	0.0002
220	0.0067	0.0065	0.0002
221	0.0066	0.0064	0.0002
222	0.0064	0.0062	0.0002
223	0.0063	0.0061	0.0002
224	0.0062	0.0060	0.0002
225	0.0061	0.0059	0.0002
226	0.0060	0.0058	0.0002
227	0.0059	0.0057	0.0002
228	0.0058	0.0056	0.0002
229	0.0057	0.0055	0.0002
230	0.0056	0.0054	0.0002
231	0.0055	0.0053	0.0002
232	0.0054	0.0053	0.0002
233	0.0054	0.0052	0.0002
234	0.0053	0.0051	0.0002
235	0.0052	0.0051	0.0002
236	0.0051	0.0050	0.0002
237	0.0051	0.0049	0.0002
238	0.0050	0.0049	0.0002
239	0.0049	0.0048	0.0001
240	0.0049	0.0047	0.0001
241	0.0048	0.0047	0.0001
242	0.0048	0.0046	0.0001
243	0.0047	0.0046	0.0001
244	0.0047	0.0045	0.0001
245	0.0046	0.0045	0.0001
246	0.0046	0.0044	0.0001
247	0.0045	0.0044	0.0001
248	0.0045	0.0043	0.0001
249	0.0044	0.0043	0.0001
250	0.0044	0.0042	0.0001
251	0.0043	0.0042	0.0001
252	0.0043	0.0042	0.0001
253	0.0043	0.0041	0.0001
254	0.0042	0.0041	0.0001
255	0.0042	0.0040	0.0001
256	0.0041	0.0040	0.0001
257	0.0041	0.0040	0.0001

258	0.0041	0.0039	0.0001
259	0.0040	0.0039	0.0001
260	0.0040	0.0039	0.0001
261	0.0040	0.0038	0.0001
262	0.0039	0.0038	0.0001
263	0.0039	0.0038	0.0001
264	0.0039	0.0037	0.0001
265	0.0038	0.0037	0.0001
266	0.0038	0.0037	0.0001
267	0.0038	0.0037	0.0001
268	0.0037	0.0036	0.0001
269	0.0037	0.0036	0.0001
270	0.0037	0.0036	0.0001
271	0.0037	0.0036	0.0001
272	0.0036	0.0035	0.0001
273	0.0036	0.0035	0.0001
274	0.0036	0.0035	0.0001
275	0.0036	0.0035	0.0001
276	0.0035	0.0034	0.0001
277	0.0035	0.0034	0.0001
278	0.0035	0.0034	0.0001
279	0.0035	0.0034	0.0001
280	0.0034	0.0033	0.0001
281	0.0034	0.0033	0.0001
282	0.0034	0.0033	0.0001
283	0.0034	0.0033	0.0001
284	0.0034	0.0033	0.0001
285	0.0033	0.0032	0.0001
286	0.0033	0.0032	0.0001
287	0.0033	0.0032	0.0001
288	0.0033	0.0032	0.0001

Total soil rain loss = 1.97(In)
Total effective rainfall = 0.21(In)
Peak flow rate in flood hydrograph = 11.92(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0000	0.01	Q	|	|	|	|
0+10	0.0001	0.01	Q	|	|	|	|
0+15	0.0002	0.01	Q	|	|	|	|
0+20	0.0003	0.01	Q	|	|	|	|
0+25	0.0004	0.01	Q	|	|	|	|
0+30	0.0005	0.01	Q	|	|	|	|
0+35	0.0006	0.01	Q	|	|	|	|
0+40	0.0007	0.02	Q	|	|	|	|
0+45	0.0008	0.02	Q	|	|	|	|
0+50	0.0009	0.02	Q	|	|	|	|
0+55	0.0011	0.02	Q	|	|	|	|
1+ 0	0.0012	0.02	Q	|	|	|	|
1+ 5	0.0013	0.02	Q	|	|	|	|
1+10	0.0014	0.02	Q	|	|	|	|
1+15	0.0015	0.02	Q	|	|	|	|
1+20	0.0016	0.02	Q	|	|	|	|
1+25	0.0017	0.02	Q	|	|	|	|
1+30	0.0018	0.02	Q	|	|	|	|
1+35	0.0019	0.02	Q	|	|	|	|
1+40	0.0020	0.02	Q	|	|	|	|
1+45	0.0021	0.02	Q	|	|	|	|
1+50	0.0022	0.02	Q	|	|	|	|
1+55	0.0023	0.02	Q	|	|	|	|
2+ 0	0.0024	0.02	Q	|	|	|	|
2+ 5	0.0025	0.02	Q	|	|	|	|
2+10	0.0027	0.02	Q	|	|	|	|
2+15	0.0028	0.02	Q	|	|	|	|
2+20	0.0029	0.02	Q	|	|	|	|
2+25	0.0030	0.02	Q	|	|	|	|
2+30	0.0031	0.02	Q	|	|	|	|
2+35	0.0032	0.02	Q	|	|	|	|
2+40	0.0033	0.02	Q	|	|	|	|
2+45	0.0034	0.02	Q	|	|	|	|
2+50	0.0035	0.02	Q	|	|	|	|
2+55	0.0037	0.02	Q	|	|	|	|
3+ 0	0.0038	0.02	Q	|	|	|	|
3+ 5	0.0039	0.02	Q	|	|	|	|
3+10	0.0040	0.02	Q	|	|	|	|

3+15	0.0041	0.02	Q				
3+20	0.0042	0.02	Q				
3+25	0.0043	0.02	Q				
3+30	0.0045	0.02	Q				
3+35	0.0046	0.02	Q				
3+40	0.0047	0.02	Q				
3+45	0.0048	0.02	Q				
3+50	0.0049	0.02	Q				
3+55	0.0051	0.02	Q				
4+ 0	0.0052	0.02	Q				
4+ 5	0.0053	0.02	Q				
4+10	0.0054	0.02	Q				
4+15	0.0055	0.02	QV				
4+20	0.0056	0.02	QV				
4+25	0.0058	0.02	QV				
4+30	0.0059	0.02	QV				
4+35	0.0060	0.02	QV				
4+40	0.0061	0.02	QV				
4+45	0.0063	0.02	QV				
4+50	0.0064	0.02	QV				
4+55	0.0065	0.02	QV				
5+ 0	0.0066	0.02	QV				
5+ 5	0.0068	0.02	QV				
5+10	0.0069	0.02	QV				
5+15	0.0070	0.02	QV				
5+20	0.0071	0.02	QV				
5+25	0.0073	0.02	QV				
5+30	0.0074	0.02	QV				
5+35	0.0075	0.02	QV				
5+40	0.0076	0.02	QV				
5+45	0.0078	0.02	QV				
5+50	0.0079	0.02	QV				
5+55	0.0080	0.02	QV				
6+ 0	0.0082	0.02	QV				
6+ 5	0.0083	0.02	QV				
6+10	0.0084	0.02	QV				
6+15	0.0086	0.02	QV				
6+20	0.0087	0.02	QV				
6+25	0.0088	0.02	QV				
6+30	0.0090	0.02	QV				
6+35	0.0091	0.02	QV				
6+40	0.0092	0.02	QV				
6+45	0.0094	0.02	QV				
6+50	0.0095	0.02	QV				
6+55	0.0097	0.02	QV				
7+ 0	0.0098	0.02	QV				
7+ 5	0.0099	0.02	QV				
7+10	0.0101	0.02	QV				
7+15	0.0102	0.02	QV				
7+20	0.0104	0.02	QV				
7+25	0.0105	0.02	QV				
7+30	0.0107	0.02	QV				
7+35	0.0108	0.02	QV				
7+40	0.0109	0.02	Q V				
7+45	0.0111	0.02	Q V				
7+50	0.0112	0.02	Q V				
7+55	0.0114	0.02	Q V				
8+ 0	0.0115	0.02	Q V				
8+ 5	0.0117	0.02	Q V				
8+10	0.0118	0.02	Q V				
8+15	0.0120	0.02	Q V				
8+20	0.0121	0.02	Q V				
8+25	0.0123	0.02	Q V				
8+30	0.0124	0.02	Q V				
8+35	0.0126	0.02	Q V				
8+40	0.0128	0.02	Q V				
8+45	0.0129	0.02	Q V				
8+50	0.0131	0.02	Q V				
8+55	0.0132	0.02	Q V				
9+ 0	0.0134	0.02	Q V				
9+ 5	0.0136	0.02	Q V				
9+10	0.0137	0.02	Q V				
9+15	0.0139	0.02	Q V				
9+20	0.0140	0.02	Q V				
9+25	0.0142	0.02	Q V				
9+30	0.0144	0.02	Q V				
9+35	0.0145	0.02	Q V				
9+40	0.0147	0.02	Q V				
9+45	0.0149	0.02	Q V				
9+50	0.0151	0.03	Q V				
9+55	0.0152	0.03	Q V				
10+ 0	0.0154	0.03	Q V				
10+ 5	0.0156	0.03	Q V				
10+10	0.0158	0.03	Q V				

10+15	0.0159	0.03	Q V				
10+20	0.0161	0.03	Q V				
10+25	0.0163	0.03	Q V				
10+30	0.0165	0.03	Q V				
10+35	0.0167	0.03	Q V				
10+40	0.0169	0.03	Q V				
10+45	0.0171	0.03	Q V				
10+50	0.0172	0.03	Q V				
10+55	0.0174	0.03	Q V				
11+ 0	0.0176	0.03	Q V				
11+ 5	0.0178	0.03	Q V				
11+10	0.0180	0.03	Q V				
11+15	0.0182	0.03	Q V				
11+20	0.0184	0.03	Q V				
11+25	0.0186	0.03	Q V				
11+30	0.0188	0.03	Q V				
11+35	0.0190	0.03	Q V				
11+40	0.0192	0.03	Q V				
11+45	0.0195	0.03	Q V				
11+50	0.0197	0.03	Q V				
11+55	0.0199	0.03	Q V				
12+ 0	0.0201	0.03	Q V				
12+ 5	0.0204	0.04	Q V				
12+10	0.0206	0.04	Q V				
12+15	0.0209	0.04	Q V				
12+20	0.0212	0.04	Q V				
12+25	0.0215	0.04	Q V				
12+30	0.0218	0.04	Q V				
12+35	0.0221	0.04	Q V				
12+40	0.0224	0.04	Q V				
12+45	0.0227	0.05	Q V				
12+50	0.0231	0.05	Q V				
12+55	0.0234	0.05	Q V				
13+ 0	0.0237	0.05	Q V				
13+ 5	0.0240	0.05	Q V				
13+10	0.0244	0.05	Q V				
13+15	0.0247	0.05	Q V				
13+20	0.0250	0.05	Q V				
13+25	0.0254	0.05	Q V				
13+30	0.0257	0.05	Q V				
13+35	0.0261	0.05	Q V				
13+40	0.0264	0.05	Q V				
13+45	0.0268	0.05	Q V				
13+50	0.0272	0.05	Q V				
13+55	0.0275	0.05	Q V				
14+ 0	0.0279	0.06	Q V				
14+ 5	0.0283	0.06	Q V				
14+10	0.0287	0.06	Q V				
14+15	0.0291	0.06	Q V				
14+20	0.0295	0.06	Q V				
14+25	0.0299	0.06	Q V				
14+30	0.0304	0.06	Q V				
14+35	0.0308	0.06	Q V				
14+40	0.0312	0.07	Q V				
14+45	0.0317	0.07	Q V				
14+50	0.0322	0.07	Q V				
14+55	0.0327	0.07	Q V				
15+ 0	0.0332	0.07	Q V				
15+ 5	0.0337	0.08	Q V				
15+10	0.0342	0.08	Q V				
15+15	0.0348	0.08	Q V				
15+20	0.0354	0.09	Q V				
15+25	0.0359	0.07	Q V				
15+30	0.0363	0.06	Q V				
15+35	0.0367	0.06	Q V				
15+40	0.0372	0.06	Q V				
15+45	0.0377	0.07	Q V				
15+50	0.0383	0.09	Q V				
15+55	0.0391	0.12	Q V				
16+ 0	0.0403	0.17	Q V				
16+ 5	0.0991	8.55	|	QV			
16+10	0.1812	11.92	|		Q	V	
16+15	0.1958	2.12	Q |			V	
16+20	0.1991	0.48	Q			V	
16+25	0.1996	0.07	Q			V	
16+30	0.2002	0.08	Q			V	
16+35	0.2008	0.08	Q			V	
16+40	0.2013	0.08	Q			V	
16+45	0.2018	0.07	Q			V	
16+50	0.2023	0.07	Q			V	
16+55	0.2027	0.06	Q			V	
17+ 0	0.2031	0.06	Q			V	
17+ 5	0.2035	0.06	Q			V	
17+10	0.2039	0.06	Q			V	

17+15	0.2043	0.05	Q	|	|	|	V |
17+20	0.2046	0.05	Q	|	|	|	V |
17+25	0.2050	0.05	Q	|	|	|	V |
17+30	0.2053	0.05	Q	|	|	|	V |
17+35	0.2057	0.05	Q	|	|	|	V |
17+40	0.2060	0.05	Q	|	|	|	V |
17+45	0.2063	0.05	Q	|	|	|	V |
17+50	0.2066	0.05	Q	|	|	|	V |
17+55	0.2069	0.04	Q	|	|	|	V |
18+ 0	0.2072	0.04	Q	|	|	|	V |
18+ 5	0.2075	0.04	Q	|	|	|	V |
18+10	0.2077	0.03	Q	|	|	|	V |
18+15	0.2079	0.03	Q	|	|	|	V |
18+20	0.2081	0.03	Q	|	|	|	V |
18+25	0.2083	0.03	Q	|	|	|	V |
18+30	0.2085	0.03	Q	|	|	|	V |
18+35	0.2087	0.03	Q	|	|	|	V |
18+40	0.2089	0.03	Q	|	|	|	V |
18+45	0.2091	0.03	Q	|	|	|	V |
18+50	0.2093	0.03	Q	|	|	|	V |
18+55	0.2095	0.03	Q	|	|	|	V |
19+ 0	0.2097	0.03	Q	|	|	|	V |
19+ 5	0.2099	0.03	Q	|	|	|	V |
19+10	0.2100	0.03	Q	|	|	|	V |
19+15	0.2102	0.03	Q	|	|	|	V |
19+20	0.2104	0.02	Q	|	|	|	V |
19+25	0.2106	0.02	Q	|	|	|	V |
19+30	0.2107	0.02	Q	|	|	|	V |
19+35	0.2109	0.02	Q	|	|	|	V |
19+40	0.2110	0.02	Q	|	|	|	V |
19+45	0.2112	0.02	Q	|	|	|	V |
19+50	0.2114	0.02	Q	|	|	|	V |
19+55	0.2115	0.02	Q	|	|	|	V |
20+ 0	0.2117	0.02	Q	|	|	|	V |
20+ 5	0.2118	0.02	Q	|	|	|	V |
20+10	0.2120	0.02	Q	|	|	|	V |
20+15	0.2121	0.02	Q	|	|	|	V |
20+20	0.2123	0.02	Q	|	|	|	V|
20+25	0.2124	0.02	Q	|	|	|	V|
20+30	0.2126	0.02	Q	|	|	|	V|
20+35	0.2127	0.02	Q	|	|	|	V|
20+40	0.2128	0.02	Q	|	|	|	V|
20+45	0.2130	0.02	Q	|	|	|	V|
20+50	0.2131	0.02	Q	|	|	|	V|
20+55	0.2132	0.02	Q	|	|	|	V|
21+ 0	0.2134	0.02	Q	|	|	|	V|
21+ 5	0.2135	0.02	Q	|	|	|	V|
21+10	0.2136	0.02	Q	|	|	|	V|
21+15	0.2138	0.02	Q	|	|	|	V|
21+20	0.2139	0.02	Q	|	|	|	V|
21+25	0.2140	0.02	Q	|	|	|	V|
21+30	0.2142	0.02	Q	|	|	|	V|
21+35	0.2143	0.02	Q	|	|	|	V|
21+40	0.2144	0.02	Q	|	|	|	V|
21+45	0.2145	0.02	Q	|	|	|	V|
21+50	0.2147	0.02	Q	|	|	|	V|
21+55	0.2148	0.02	Q	|	|	|	V|
22+ 0	0.2149	0.02	Q	|	|	|	V|
22+ 5	0.2150	0.02	Q	|	|	|	V|
22+10	0.2151	0.02	Q	|	|	|	V|
22+15	0.2153	0.02	Q	|	|	|	V|
22+20	0.2154	0.02	Q	|	|	|	V|
22+25	0.2155	0.02	Q	|	|	|	V|
22+30	0.2156	0.02	Q	|	|	|	V|
22+35	0.2157	0.02	Q	|	|	|	V|
22+40	0.2158	0.02	Q	|	|	|	V|
22+45	0.2159	0.02	Q	|	|	|	V|
22+50	0.2161	0.02	Q	|	|	|	V|
22+55	0.2162	0.02	Q	|	|	|	V|
23+ 0	0.2163	0.02	Q	|	|	|	V|
23+ 5	0.2164	0.02	Q	|	|	|	V|
23+10	0.2165	0.02	Q	|	|	|	V|
23+15	0.2166	0.02	Q	|	|	|	V|
23+20	0.2167	0.02	Q	|	|	|	V|
23+25	0.2168	0.02	Q	|	|	|	V|
23+30	0.2169	0.02	Q	|	|	|	V|
23+35	0.2170	0.02	Q	|	|	|	V|
23+40	0.2171	0.02	Q	|	|	|	V|
23+45	0.2172	0.02	Q	|	|	|	V|
23+50	0.2173	0.02	Q	|	|	|	V|
23+55	0.2175	0.01	Q	|	|	|	V|
24+ 0	0.2176	0.01	Q	|	|	|	V|

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA C
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
13.87	1	0.78
Rainfall data for year 2		
13.87	6	1.20
Rainfall data for year 2		
13.87	24	2.18
Rainfall data for year 100		
13.87	1	1.27
Rainfall data for year 100		
13.87	6	2.86
Rainfall data for year 100		
13.87	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
65.2	45.2	13.87	1.000	0.864	1.000	0.864

Area-averaged adjusted loss rate Fm (In/Hr) = 0.864

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
13.87	1.000	65.2	45.2	10.90	0.000

Area-averaged catchment yield fraction, Y = 0.000
Area-averaged low loss fraction, Yb = 1.000

++
Watercourse length = 1690.00(Ft.)
Length from concentration point to centroid = 755.00(Ft.)
Elevation difference along watercourse = 102.90(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 13.87(Ac.)
Catchment Lag time = 0.074 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 111.9005
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.864(In/Hr)
Average low loss rate fraction (Yb) = 1.000 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 13.87(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.210(In)
30-minute factor = 0.999 Adjusted rainfall = 0.359(In)
1-hour factor = 0.999 Adjusted rainfall = 0.442(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 167.74 (CFS))	
1	18.635	31.258
2	74.821	94.247
3	91.420	27.842
4	97.414	10.055
5	98.973	2.615
6	99.728	1.267
7	100.000	0.456

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2099	0.2099
2	0.2584	0.0485
3	0.2918	0.0334
4	0.3181	0.0263
5	0.3401	0.0220
6	0.3593	0.0191
7	0.3763	0.0170
8	0.3917	0.0154
9	0.4057	0.0141
10	0.4188	0.0130
11	0.4309	0.0121
12	0.4423	0.0114
13	0.4625	0.0202
14	0.4820	0.0195
15	0.5009	0.0189
16	0.5192	0.0183
17	0.5370	0.0178
18	0.5544	0.0174
19	0.5714	0.0170
20	0.5879	0.0166
21	0.6042	0.0162
22	0.6200	0.0159
23	0.6356	0.0155
24	0.6508	0.0153
25	0.6658	0.0150
26	0.6805	0.0147
27	0.6950	0.0145
28	0.7092	0.0142
29	0.7232	0.0140
30	0.7370	0.0138
31	0.7506	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7902	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8283	0.0125
38	0.8407	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8770	0.0120
42	0.8889	0.0118
43	0.9006	0.0117

		AREAC
44	0.9122	0.0116
45	0.9237	0.0115
46	0.9351	0.0114
47	0.9463	0.0113
48	0.9575	0.0112
49	0.9685	0.0111
50	0.9795	0.0110
51	0.9903	0.0109
52	1.0011	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0536	0.0103
58	1.0639	0.0103
59	1.0740	0.0102
60	1.0841	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1335	0.0097
66	1.1432	0.0097
67	1.1528	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1906	0.0094
72	1.1999	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2212	0.0070
76	1.2282	0.0070
77	1.2352	0.0069
78	1.2420	0.0069
79	1.2489	0.0068
80	1.2556	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2757	0.0066
84	1.2823	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3018	0.0065
88	1.3083	0.0064
89	1.3146	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3335	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3582	0.0061
97	1.3643	0.0061
98	1.3703	0.0060
99	1.3763	0.0060
100	1.3823	0.0060
101	1.3882	0.0059
102	1.3941	0.0059
103	1.4000	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4174	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4402	0.0057
111	1.4459	0.0056
112	1.4514	0.0056
113	1.4570	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4735	0.0055
117	1.4790	0.0055
118	1.4844	0.0054
119	1.4898	0.0054
120	1.4952	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5217	0.0053
126	1.5270	0.0052
127	1.5322	0.0052

		AREAC
128	1.5374	0.0052
129	1.5425	0.0052
130	1.5477	0.0051
131	1.5528	0.0051
132	1.5579	0.0051
133	1.5629	0.0051
134	1.5680	0.0051
135	1.5730	0.0050
136	1.5780	0.0050
137	1.5830	0.0050
138	1.5880	0.0050
139	1.5929	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6076	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6460	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6601	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6924	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7060	0.0045
164	1.7105	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7239	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7503	0.0044
174	1.7547	0.0044
175	1.7590	0.0043
176	1.7633	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7762	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7932	0.0042
184	1.7974	0.0042
185	1.8016	0.0042
186	1.8058	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8224	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8429	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8591	0.0040
200	1.8631	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8751	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8870	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039

		AREAC
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9182	0.0039
215	1.9221	0.0039
216	1.9259	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9563	0.0038
225	1.9601	0.0038
226	1.9638	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9750	0.0037
230	1.9787	0.0037
231	1.9824	0.0037
232	1.9861	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9971	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0117	0.0036
240	2.0153	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0297	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0404	0.0036
248	2.0440	0.0036
249	2.0475	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0581	0.0035
253	2.0616	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0721	0.0035
257	2.0756	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0860	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1066	0.0034
267	2.1100	0.0034
268	2.1134	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1370	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1470	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1734	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0033	0.0000
2	0.0033	0.0033	0.0000

		AREAC	
3	0.0033	0.0033	0.0000
4	0.0033	0.0033	0.0000
5	0.0033	0.0033	0.0000
6	0.0033	0.0033	0.0000
7	0.0033	0.0033	0.0000
8	0.0033	0.0033	0.0000
9	0.0033	0.0033	0.0000
10	0.0034	0.0034	0.0000
11	0.0034	0.0034	0.0000
12	0.0034	0.0034	0.0000
13	0.0034	0.0034	0.0000
14	0.0034	0.0034	0.0000
15	0.0034	0.0034	0.0000
16	0.0034	0.0034	0.0000
17	0.0034	0.0034	0.0000
18	0.0034	0.0034	0.0000
19	0.0035	0.0035	0.0000
20	0.0035	0.0035	0.0000
21	0.0035	0.0035	0.0000
22	0.0035	0.0035	0.0000
23	0.0035	0.0035	0.0000
24	0.0035	0.0035	0.0000
25	0.0035	0.0035	0.0000
26	0.0035	0.0035	0.0000
27	0.0035	0.0035	0.0000
28	0.0036	0.0036	0.0000
29	0.0036	0.0036	0.0000
30	0.0036	0.0036	0.0000
31	0.0036	0.0036	0.0000
32	0.0036	0.0036	0.0000
33	0.0036	0.0036	0.0000
34	0.0036	0.0036	0.0000
35	0.0036	0.0036	0.0000
36	0.0037	0.0037	0.0000
37	0.0037	0.0037	0.0000
38	0.0037	0.0037	0.0000
39	0.0037	0.0037	0.0000
40	0.0037	0.0037	0.0000
41	0.0037	0.0037	0.0000
42	0.0037	0.0037	0.0000
43	0.0038	0.0038	0.0000
44	0.0038	0.0038	0.0000
45	0.0038	0.0038	0.0000
46	0.0038	0.0038	0.0000
47	0.0038	0.0038	0.0000
48	0.0038	0.0038	0.0000
49	0.0038	0.0038	0.0000
50	0.0039	0.0039	0.0000
51	0.0039	0.0039	0.0000
52	0.0039	0.0039	0.0000
53	0.0039	0.0039	0.0000
54	0.0039	0.0039	0.0000
55	0.0039	0.0039	0.0000
56	0.0040	0.0040	0.0000
57	0.0040	0.0040	0.0000
58	0.0040	0.0040	0.0000
59	0.0040	0.0040	0.0000
60	0.0040	0.0040	0.0000
61	0.0040	0.0040	0.0000
62	0.0041	0.0041	0.0000
63	0.0041	0.0041	0.0000
64	0.0041	0.0041	0.0000
65	0.0041	0.0041	0.0000
66	0.0041	0.0041	0.0000
67	0.0041	0.0041	0.0000
68	0.0042	0.0042	0.0000
69	0.0042	0.0042	0.0000
70	0.0042	0.0042	0.0000
71	0.0042	0.0042	0.0000
72	0.0042	0.0042	0.0000
73	0.0043	0.0043	0.0000
74	0.0043	0.0043	0.0000
75	0.0043	0.0043	0.0000
76	0.0043	0.0043	0.0000
77	0.0044	0.0044	0.0000
78	0.0044	0.0044	0.0000
79	0.0044	0.0044	0.0000
80	0.0044	0.0044	0.0000
81	0.0044	0.0044	0.0000
82	0.0045	0.0045	0.0000
83	0.0045	0.0045	0.0000
84	0.0045	0.0045	0.0000
85	0.0045	0.0045	0.0000
86	0.0045	0.0045	0.0000

87	0.0046	0.0046	0.0000
88	0.0046	0.0046	0.0000
89	0.0046	0.0046	0.0000
90	0.0046	0.0046	0.0000
91	0.0047	0.0047	0.0000
92	0.0047	0.0047	0.0000
93	0.0047	0.0047	0.0000
94	0.0048	0.0048	0.0000
95	0.0048	0.0048	0.0000
96	0.0048	0.0048	0.0000
97	0.0048	0.0048	0.0000
98	0.0049	0.0049	0.0000
99	0.0049	0.0049	0.0000
100	0.0049	0.0049	0.0000
101	0.0050	0.0050	0.0000
102	0.0050	0.0050	0.0000
103	0.0050	0.0050	0.0000
104	0.0051	0.0051	0.0000
105	0.0051	0.0051	0.0000
106	0.0051	0.0051	0.0000
107	0.0052	0.0052	0.0000
108	0.0052	0.0052	0.0000
109	0.0052	0.0052	0.0000
110	0.0053	0.0053	0.0000
111	0.0053	0.0053	0.0000
112	0.0053	0.0053	0.0000
113	0.0054	0.0054	0.0000
114	0.0054	0.0054	0.0000
115	0.0055	0.0055	0.0000
116	0.0055	0.0055	0.0000
117	0.0055	0.0055	0.0000
118	0.0056	0.0056	0.0000
119	0.0056	0.0056	0.0000
120	0.0057	0.0057	0.0000
121	0.0057	0.0057	0.0000
122	0.0057	0.0057	0.0000
123	0.0058	0.0058	0.0000
124	0.0058	0.0058	0.0000
125	0.0059	0.0059	0.0000
126	0.0059	0.0059	0.0000
127	0.0060	0.0060	0.0000
128	0.0060	0.0060	0.0000
129	0.0061	0.0061	0.0000
130	0.0061	0.0061	0.0000
131	0.0062	0.0062	0.0000
132	0.0063	0.0063	0.0000
133	0.0063	0.0063	0.0000
134	0.0064	0.0064	0.0000
135	0.0065	0.0065	0.0000
136	0.0065	0.0065	0.0000
137	0.0066	0.0066	0.0000
138	0.0066	0.0066	0.0000
139	0.0067	0.0067	0.0000
140	0.0068	0.0068	0.0000
141	0.0069	0.0069	0.0000
142	0.0069	0.0069	0.0000
143	0.0070	0.0070	0.0000
144	0.0071	0.0071	0.0000
145	0.0093	0.0093	0.0000
146	0.0094	0.0094	0.0000
147	0.0095	0.0095	0.0000
148	0.0095	0.0095	0.0000
149	0.0097	0.0097	0.0000
150	0.0097	0.0097	0.0000
151	0.0099	0.0099	0.0000
152	0.0099	0.0099	0.0000
153	0.0101	0.0101	0.0000
154	0.0102	0.0102	0.0000
155	0.0103	0.0103	0.0000
156	0.0104	0.0104	0.0000
157	0.0106	0.0106	0.0000
158	0.0107	0.0107	0.0000
159	0.0109	0.0109	0.0000
160	0.0110	0.0110	0.0000
161	0.0112	0.0112	0.0000
162	0.0113	0.0113	0.0000
163	0.0115	0.0115	0.0000
164	0.0116	0.0116	0.0000
165	0.0118	0.0118	0.0000
166	0.0120	0.0120	0.0000
167	0.0122	0.0122	0.0000
168	0.0124	0.0124	0.0000
169	0.0127	0.0127	0.0000
170	0.0129	0.0129	0.0000

		AREAC	
171	0.0132	0.0132	0.0000
172	0.0134	0.0134	0.0000
173	0.0138	0.0138	0.0000
174	0.0140	0.0140	0.0000
175	0.0145	0.0145	0.0000
176	0.0147	0.0147	0.0000
177	0.0153	0.0153	0.0000
178	0.0155	0.0155	0.0000
179	0.0162	0.0162	0.0000
180	0.0166	0.0166	0.0000
181	0.0174	0.0174	0.0000
182	0.0178	0.0178	0.0000
183	0.0189	0.0189	0.0000
184	0.0195	0.0195	0.0000
185	0.0114	0.0114	0.0000
186	0.0121	0.0121	0.0000
187	0.0141	0.0141	0.0000
188	0.0154	0.0154	0.0000
189	0.0191	0.0191	0.0000
190	0.0220	0.0220	0.0000
191	0.0334	0.0334	0.0000
192	0.0485	0.0485	0.0000
193	0.2099	0.0720	0.1379
194	0.0263	0.0263	0.0000
195	0.0170	0.0170	0.0000
196	0.0130	0.0130	0.0000
197	0.0202	0.0202	0.0000
198	0.0183	0.0183	0.0000
199	0.0170	0.0170	0.0000
200	0.0159	0.0159	0.0000
201	0.0150	0.0150	0.0000
202	0.0142	0.0142	0.0000
203	0.0136	0.0136	0.0000
204	0.0130	0.0130	0.0000
205	0.0125	0.0125	0.0000
206	0.0121	0.0121	0.0000
207	0.0117	0.0117	0.0000
208	0.0114	0.0114	0.0000
209	0.0111	0.0111	0.0000
210	0.0108	0.0108	0.0000
211	0.0105	0.0105	0.0000
212	0.0103	0.0103	0.0000
213	0.0100	0.0100	0.0000
214	0.0098	0.0098	0.0000
215	0.0096	0.0096	0.0000
216	0.0094	0.0094	0.0000
217	0.0071	0.0071	0.0000
218	0.0070	0.0070	0.0000
219	0.0068	0.0068	0.0000
220	0.0067	0.0067	0.0000
221	0.0066	0.0066	0.0000
222	0.0064	0.0064	0.0000
223	0.0063	0.0063	0.0000
224	0.0062	0.0062	0.0000
225	0.0061	0.0061	0.0000
226	0.0060	0.0060	0.0000
227	0.0059	0.0059	0.0000
228	0.0058	0.0058	0.0000
229	0.0057	0.0057	0.0000
230	0.0056	0.0056	0.0000
231	0.0055	0.0055	0.0000
232	0.0054	0.0054	0.0000
233	0.0054	0.0054	0.0000
234	0.0053	0.0053	0.0000
235	0.0052	0.0052	0.0000
236	0.0051	0.0051	0.0000
237	0.0051	0.0051	0.0000
238	0.0050	0.0050	0.0000
239	0.0049	0.0049	0.0000
240	0.0049	0.0049	0.0000
241	0.0048	0.0048	0.0000
242	0.0048	0.0048	0.0000
243	0.0047	0.0047	0.0000
244	0.0047	0.0047	0.0000
245	0.0046	0.0046	0.0000
246	0.0046	0.0046	0.0000
247	0.0045	0.0045	0.0000
248	0.0045	0.0045	0.0000
249	0.0044	0.0044	0.0000
250	0.0044	0.0044	0.0000
251	0.0043	0.0043	0.0000
252	0.0043	0.0043	0.0000
253	0.0043	0.0043	0.0000
254	0.0042	0.0042	0.0000

255	0.0042	0.0042	0.0000
256	0.0041	0.0041	0.0000
257	0.0041	0.0041	0.0000
258	0.0041	0.0041	0.0000
259	0.0040	0.0040	0.0000
260	0.0040	0.0040	0.0000
261	0.0040	0.0040	0.0000
262	0.0039	0.0039	0.0000
263	0.0039	0.0039	0.0000
264	0.0039	0.0039	0.0000
265	0.0038	0.0038	0.0000
266	0.0038	0.0038	0.0000
267	0.0038	0.0038	0.0000
268	0.0037	0.0037	0.0000
269	0.0037	0.0037	0.0000
270	0.0037	0.0037	0.0000
271	0.0037	0.0037	0.0000
272	0.0036	0.0036	0.0000
273	0.0036	0.0036	0.0000
274	0.0036	0.0036	0.0000
275	0.0036	0.0036	0.0000
276	0.0035	0.0035	0.0000
277	0.0035	0.0035	0.0000
278	0.0035	0.0035	0.0000
279	0.0035	0.0035	0.0000
280	0.0034	0.0034	0.0000
281	0.0034	0.0034	0.0000
282	0.0034	0.0034	0.0000
283	0.0034	0.0034	0.0000
284	0.0034	0.0034	0.0000
285	0.0033	0.0033	0.0000
286	0.0033	0.0033	0.0000
287	0.0033	0.0033	0.0000
288	0.0033	0.0033	0.0000

Total soil rain loss = 2.04(In)
Total effective rainfall = 0.14(In)
Peak flow rate in flood hydrograph = 13.00(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0000	0.00	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	0.0000	0.00	Q	|	|	|	|
0+35	0.0000	0.00	Q	|	|	|	|
0+40	0.0000	0.00	Q	|	|	|	|
0+45	0.0000	0.00	Q	|	|	|	|
0+50	0.0000	0.00	Q	|	|	|	|
0+55	0.0000	0.00	Q	|	|	|	|
1+ 0	0.0000	0.00	Q	|	|	|	|
1+ 5	0.0000	0.00	Q	|	|	|	|
1+10	0.0000	0.00	Q	|	|	|	|
1+15	0.0000	0.00	Q	|	|	|	|
1+20	0.0000	0.00	Q	|	|	|	|
1+25	0.0000	0.00	Q	|	|	|	|
1+30	0.0000	0.00	Q	|	|	|	|
1+35	0.0000	0.00	Q	|	|	|	|
1+40	0.0000	0.00	Q	|	|	|	|
1+45	0.0000	0.00	Q	|	|	|	|
1+50	0.0000	0.00	Q	|	|	|	|
1+55	0.0000	0.00	Q	|	|	|	|
2+ 0	0.0000	0.00	Q	|	|	|	|
2+ 5	0.0000	0.00	Q	|	|	|	|
2+10	0.0000	0.00	Q	|	|	|	|
2+15	0.0000	0.00	Q	|	|	|	|
2+20	0.0000	0.00	Q	|	|	|	|
2+25	0.0000	0.00	Q	|	|	|	|
2+30	0.0000	0.00	Q	|	|	|	|
2+35	0.0000	0.00	Q	|	|	|	|
2+40	0.0000	0.00	Q	|	|	|	|
2+45	0.0000	0.00	Q	|	|	|	|
2+50	0.0000	0.00	Q	|	|	|	|
2+55	0.0000	0.00	Q	|	|	|	|

3+ 0	0.0000	0.00	Q				
3+ 5	0.0000	0.00	Q				
3+10	0.0000	0.00	Q				
3+15	0.0000	0.00	Q				
3+20	0.0000	0.00	Q				
3+25	0.0000	0.00	Q				
3+30	0.0000	0.00	Q				
3+35	0.0000	0.00	Q				
3+40	0.0000	0.00	Q				
3+45	0.0000	0.00	Q				
3+50	0.0000	0.00	Q				
3+55	0.0000	0.00	Q				
4+ 0	0.0000	0.00	Q				
4+ 5	0.0000	0.00	Q				
4+10	0.0000	0.00	Q				
4+15	0.0000	0.00	Q				
4+20	0.0000	0.00	Q				
4+25	0.0000	0.00	Q				
4+30	0.0000	0.00	Q				
4+35	0.0000	0.00	Q				
4+40	0.0000	0.00	Q				
4+45	0.0000	0.00	Q				
4+50	0.0000	0.00	Q				
4+55	0.0000	0.00	Q				
5+ 0	0.0000	0.00	Q				
5+ 5	0.0000	0.00	Q				
5+10	0.0000	0.00	Q				
5+15	0.0000	0.00	Q				
5+20	0.0000	0.00	Q				
5+25	0.0000	0.00	Q				
5+30	0.0000	0.00	Q				
5+35	0.0000	0.00	Q				
5+40	0.0000	0.00	Q				
5+45	0.0000	0.00	Q				
5+50	0.0000	0.00	Q				
5+55	0.0000	0.00	Q				
6+ 0	0.0000	0.00	Q				
6+ 5	0.0000	0.00	Q				
6+10	0.0000	0.00	Q				
6+15	0.0000	0.00	Q				
6+20	0.0000	0.00	Q				
6+25	0.0000	0.00	Q				
6+30	0.0000	0.00	Q				
6+35	0.0000	0.00	Q				
6+40	0.0000	0.00	Q				
6+45	0.0000	0.00	Q				
6+50	0.0000	0.00	Q				
6+55	0.0000	0.00	Q				
7+ 0	0.0000	0.00	Q				
7+ 5	0.0000	0.00	Q				
7+10	0.0000	0.00	Q				
7+15	0.0000	0.00	Q				
7+20	0.0000	0.00	Q				
7+25	0.0000	0.00	Q				
7+30	0.0000	0.00	Q				
7+35	0.0000	0.00	Q				
7+40	0.0000	0.00	Q				
7+45	0.0000	0.00	Q				
7+50	0.0000	0.00	Q				
7+55	0.0000	0.00	Q				
8+ 0	0.0000	0.00	Q				
8+ 5	0.0000	0.00	Q				
8+10	0.0000	0.00	Q				
8+15	0.0000	0.00	Q				
8+20	0.0000	0.00	Q				
8+25	0.0000	0.00	Q				
8+30	0.0000	0.00	Q				
8+35	0.0000	0.00	Q				
8+40	0.0000	0.00	Q				
8+45	0.0000	0.00	Q				
8+50	0.0000	0.00	Q				
8+55	0.0000	0.00	Q				
9+ 0	0.0000	0.00	Q				
9+ 5	0.0000	0.00	Q				
9+10	0.0000	0.00	Q				
9+15	0.0000	0.00	Q				
9+20	0.0000	0.00	Q				
9+25	0.0000	0.00	Q				
9+30	0.0000	0.00	Q				
9+35	0.0000	0.00	Q				
9+40	0.0000	0.00	Q				
9+45	0.0000	0.00	Q				
9+50	0.0000	0.00	Q				
9+55	0.0000	0.00	Q				

10+ 0	0.0000	0.00	Q					
10+ 5	0.0000	0.00	Q					
10+10	0.0000	0.00	Q					
10+15	0.0000	0.00	Q					
10+20	0.0000	0.00	Q					
10+25	0.0000	0.00	Q					
10+30	0.0000	0.00	Q					
10+35	0.0000	0.00	Q					
10+40	0.0000	0.00	Q					
10+45	0.0000	0.00	Q					
10+50	0.0000	0.00	Q					
10+55	0.0000	0.00	Q					
11+ 0	0.0000	0.00	Q					
11+ 5	0.0000	0.00	Q					
11+10	0.0000	0.00	Q					
11+15	0.0000	0.00	Q					
11+20	0.0000	0.00	Q					
11+25	0.0000	0.00	Q					
11+30	0.0000	0.00	Q					
11+35	0.0000	0.00	Q					
11+40	0.0000	0.00	Q					
11+45	0.0000	0.00	Q					
11+50	0.0000	0.00	Q					
11+55	0.0000	0.00	Q					
12+ 0	0.0000	0.00	Q					
12+ 5	0.0000	0.00	Q					
12+10	0.0000	0.00	Q					
12+15	0.0000	0.00	Q					
12+20	0.0000	0.00	Q					
12+25	0.0000	0.00	Q					
12+30	0.0000	0.00	Q					
12+35	0.0000	0.00	Q					
12+40	0.0000	0.00	Q					
12+45	0.0000	0.00	Q					
12+50	0.0000	0.00	Q					
12+55	0.0000	0.00	Q					
13+ 0	0.0000	0.00	Q					
13+ 5	0.0000	0.00	Q					
13+10	0.0000	0.00	Q					
13+15	0.0000	0.00	Q					
13+20	0.0000	0.00	Q					
13+25	0.0000	0.00	Q					
13+30	0.0000	0.00	Q					
13+35	0.0000	0.00	Q					
13+40	0.0000	0.00	Q					
13+45	0.0000	0.00	Q					
13+50	0.0000	0.00	Q					
13+55	0.0000	0.00	Q					
14+ 0	0.0000	0.00	Q					
14+ 5	0.0000	0.00	Q					
14+10	0.0000	0.00	Q					
14+15	0.0000	0.00	Q					
14+20	0.0000	0.00	Q					
14+25	0.0000	0.00	Q					
14+30	0.0000	0.00	Q					
14+35	0.0000	0.00	Q					
14+40	0.0000	0.00	Q					
14+45	0.0000	0.00	Q					
14+50	0.0000	0.00	Q					
14+55	0.0000	0.00	Q					
15+ 0	0.0000	0.00	Q					
15+ 5	0.0000	0.00	Q					
15+10	0.0000	0.00	Q					
15+15	0.0000	0.00	Q					
15+20	0.0000	0.00	Q					
15+25	0.0000	0.00	Q					
15+30	0.0000	0.00	Q					
15+35	0.0000	0.00	Q					
15+40	0.0000	0.00	Q					
15+45	0.0000	0.00	Q					
15+50	0.0000	0.00	Q					
15+55	0.0000	0.00	Q					
16+ 0	0.0000	0.00	Q					
16+ 5	0.0297	4.31	| VQ					
16+10	0.1192	13.00	|			Q V		
16+15	0.1456	3.84	| Q				V	
16+20	0.1552	1.39	Q |				V	
16+25	0.1577	0.36	Q					V|
16+30	0.1589	0.17	Q					V|
16+35	0.1593	0.06	Q					V|
16+40	0.1593	0.00	Q					V|
16+45	0.1593	0.00	Q					V|
16+50	0.1593	0.00	Q					V|
16+55	0.1593	0.00	Q					V|

17+ 0	0.1593	0.00	Q	|	|	|	V|
17+ 5	0.1593	0.00	Q	|	|	|	V|
17+10	0.1593	0.00	Q	|	|	|	V|
17+15	0.1593	0.00	Q	|	|	|	V|
17+20	0.1593	0.00	Q	|	|	|	V|
17+25	0.1593	0.00	Q	|	|	|	V|
17+30	0.1593	0.00	Q	|	|	|	V|
17+35	0.1593	0.00	Q	|	|	|	V|
17+40	0.1593	0.00	Q	|	|	|	V|
17+45	0.1593	0.00	Q	|	|	|	V|
17+50	0.1593	0.00	Q	|	|	|	V|
17+55	0.1593	0.00	Q	|	|	|	V|
18+ 0	0.1593	0.00	Q	|	|	|	V|
18+ 5	0.1593	0.00	Q	|	|	|	V|
18+10	0.1593	0.00	Q	|	|	|	V|
18+15	0.1593	0.00	Q	|	|	|	V|
18+20	0.1593	0.00	Q	|	|	|	V|
18+25	0.1593	0.00	Q	|	|	|	V|
18+30	0.1593	0.00	Q	|	|	|	V|
18+35	0.1593	0.00	Q	|	|	|	V|
18+40	0.1593	0.00	Q	|	|	|	V|
18+45	0.1593	0.00	Q	|	|	|	V|
18+50	0.1593	0.00	Q	|	|	|	V|
18+55	0.1593	0.00	Q	|	|	|	V|
19+ 0	0.1593	0.00	Q	|	|	|	V|
19+ 5	0.1593	0.00	Q	|	|	|	V|
19+10	0.1593	0.00	Q	|	|	|	V|
19+15	0.1593	0.00	Q	|	|	|	V|
19+20	0.1593	0.00	Q	|	|	|	V|
19+25	0.1593	0.00	Q	|	|	|	V|
19+30	0.1593	0.00	Q	|	|	|	V|
19+35	0.1593	0.00	Q	|	|	|	V|
19+40	0.1593	0.00	Q	|	|	|	V|
19+45	0.1593	0.00	Q	|	|	|	V|
19+50	0.1593	0.00	Q	|	|	|	V|
19+55	0.1593	0.00	Q	|	|	|	V|
20+ 0	0.1593	0.00	Q	|	|	|	V|
20+ 5	0.1593	0.00	Q	|	|	|	V|
20+10	0.1593	0.00	Q	|	|	|	V|
20+15	0.1593	0.00	Q	|	|	|	V|
20+20	0.1593	0.00	Q	|	|	|	V|
20+25	0.1593	0.00	Q	|	|	|	V|
20+30	0.1593	0.00	Q	|	|	|	V|
20+35	0.1593	0.00	Q	|	|	|	V|
20+40	0.1593	0.00	Q	|	|	|	V|
20+45	0.1593	0.00	Q	|	|	|	V|
20+50	0.1593	0.00	Q	|	|	|	V|
20+55	0.1593	0.00	Q	|	|	|	V|
21+ 0	0.1593	0.00	Q	|	|	|	V|
21+ 5	0.1593	0.00	Q	|	|	|	V|
21+10	0.1593	0.00	Q	|	|	|	V|
21+15	0.1593	0.00	Q	|	|	|	V|
21+20	0.1593	0.00	Q	|	|	|	V|
21+25	0.1593	0.00	Q	|	|	|	V|
21+30	0.1593	0.00	Q	|	|	|	V|
21+35	0.1593	0.00	Q	|	|	|	V|
21+40	0.1593	0.00	Q	|	|	|	V|
21+45	0.1593	0.00	Q	|	|	|	V|
21+50	0.1593	0.00	Q	|	|	|	V|
21+55	0.1593	0.00	Q	|	|	|	V|
22+ 0	0.1593	0.00	Q	|	|	|	V|
22+ 5	0.1593	0.00	Q	|	|	|	V|
22+10	0.1593	0.00	Q	|	|	|	V|
22+15	0.1593	0.00	Q	|	|	|	V|
22+20	0.1593	0.00	Q	|	|	|	V|
22+25	0.1593	0.00	Q	|	|	|	V|
22+30	0.1593	0.00	Q	|	|	|	V|
22+35	0.1593	0.00	Q	|	|	|	V|
22+40	0.1593	0.00	Q	|	|	|	V|
22+45	0.1593	0.00	Q	|	|	|	V|
22+50	0.1593	0.00	Q	|	|	|	V|
22+55	0.1593	0.00	Q	|	|	|	V|
23+ 0	0.1593	0.00	Q	|	|	|	V|
23+ 5	0.1593	0.00	Q	|	|	|	V|
23+10	0.1593	0.00	Q	|	|	|	V|
23+15	0.1593	0.00	Q	|	|	|	V|
23+20	0.1593	0.00	Q	|	|	|	V|
23+25	0.1593	0.00	Q	|	|	|	V|
23+30	0.1593	0.00	Q	|	|	|	V|
23+35	0.1593	0.00	Q	|	|	|	V|
23+40	0.1593	0.00	Q	|	|	|	V|
23+45	0.1593	0.00	Q	|	|	|	V|
23+50	0.1593	0.00	Q	|	|	|	V|
23+55	0.1593	0.00	Q	|	|	|	V|

```
                                                                AREAC
   24+ 0       0.1593      0.00  Q          |          |          |        V|
-------------------------------------------------------------------------------
```

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

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Study date 02/26/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA D
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	4.42	1	0.78
Rainfall data for year 2	4.42	6	1.20
Rainfall data for year 2	4.42	24	2.18
Rainfall data for year 100	4.42	1	1.27
Rainfall data for year 100	4.42	6	2.86
Rainfall data for year 100	4.42	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
71.9	53.3	4.42	1.000	0.769	1.000	0.769

Area-averaged adjusted loss rate Fm (In/Hr) = 0.769

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
4.42	1.000	71.9	53.3	8.77	0.009

Area-averaged catchment yield fraction, Y = 0.009
Area-averaged low loss fraction, Yb = 0.991

++
Watercourse length = 1155.00(Ft.)
Length from concentration point to centroid = 490.00(Ft.)
Elevation difference along watercourse = 108.50(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 4.42(Ac.)
Catchment Lag time = 0.050 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 165.4908
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.769(In/Hr)
Average low loss rate fraction (Yb) = 0.991 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 4.42(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.210(In)
30-minute factor = 1.000 Adjusted rainfall = 0.359(In)
1-hour factor = 1.000 Adjusted rainfall = 0.443(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 53.45 (CFS))	
1	34.589	18.489
2	87.698	28.389
3	97.742	5.369
4	99.504	0.941
5	100.000	0.265

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2100	0.2100
2	0.2585	0.0485
3	0.2919	0.0334
4	0.3183	0.0263
5	0.3403	0.0220
6	0.3594	0.0191
7	0.3764	0.0170
8	0.3918	0.0154
9	0.4059	0.0141
10	0.4190	0.0130
11	0.4311	0.0122
12	0.4425	0.0114
13	0.4627	0.0202
14	0.4822	0.0195
15	0.5011	0.0189
16	0.5194	0.0183
17	0.5372	0.0178
18	0.5546	0.0174
19	0.5715	0.0170
20	0.5881	0.0166
21	0.6043	0.0162
22	0.6202	0.0159
23	0.6357	0.0155
24	0.6509	0.0152
25	0.6659	0.0150
26	0.6806	0.0147
27	0.6951	0.0145
28	0.7093	0.0142
29	0.7233	0.0140
30	0.7371	0.0138
31	0.7506	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7903	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8284	0.0125
38	0.8408	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8771	0.0120
42	0.8889	0.0118
43	0.9006	0.0117
44	0.9122	0.0116
45	0.9237	0.0115

		AREAD
46	0.9351	0.0114
47	0.9464	0.0113
48	0.9575	0.0112
49	0.9686	0.0111
50	0.9795	0.0110
51	0.9904	0.0109
52	1.0012	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0536	0.0103
58	1.0639	0.0103
59	1.0741	0.0102
60	1.0842	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1336	0.0097
66	1.1432	0.0097
67	1.1529	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1907	0.0094
72	1.2000	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2213	0.0070
76	1.2283	0.0070
77	1.2352	0.0069
78	1.2421	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2758	0.0066
84	1.2823	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3019	0.0065
88	1.3083	0.0064
89	1.3147	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3336	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3583	0.0061
97	1.3643	0.0061
98	1.3704	0.0060
99	1.3764	0.0060
100	1.3823	0.0060
101	1.3883	0.0059
102	1.3942	0.0059
103	1.4001	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4175	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4403	0.0057
111	1.4459	0.0056
112	1.4515	0.0056
113	1.4570	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4736	0.0055
117	1.4790	0.0055
118	1.4845	0.0054
119	1.4899	0.0054
120	1.4953	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5218	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5426	0.0052

		AREAD
130	1.5477	0.0051
131	1.5528	0.0051
132	1.5579	0.0051
133	1.5630	0.0051
134	1.5680	0.0051
135	1.5731	0.0050
136	1.5781	0.0050
137	1.5830	0.0050
138	1.5880	0.0050
139	1.5930	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6077	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6461	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6602	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6925	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7061	0.0045
164	1.7106	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7240	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7504	0.0044
174	1.7547	0.0044
175	1.7591	0.0043
176	1.7634	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7763	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7932	0.0042
184	1.7975	0.0042
185	1.8017	0.0042
186	1.8059	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8225	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8430	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8592	0.0040
200	1.8632	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8752	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8870	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039

		AREAD
214	1.9183	0.0039
215	1.9221	0.0039
216	1.9260	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9564	0.0038
225	1.9601	0.0038
226	1.9639	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9751	0.0037
230	1.9788	0.0037
231	1.9825	0.0037
232	1.9862	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9972	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0117	0.0036
240	2.0154	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0298	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0405	0.0036
248	2.0440	0.0036
249	2.0476	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0582	0.0035
253	2.0617	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0722	0.0035
257	2.0757	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0861	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1066	0.0034
267	2.1101	0.0034
268	2.1135	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1371	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1471	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1735	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0032	0.0000
2	0.0033	0.0032	0.0000
3	0.0033	0.0033	0.0000
4	0.0033	0.0033	0.0000

5	0.0033	0.0033	0.0000
6	0.0033	0.0033	0.0000
7	0.0033	0.0033	0.0000
8	0.0033	0.0033	0.0000
9	0.0033	0.0033	0.0000
10	0.0034	0.0033	0.0000
11	0.0034	0.0033	0.0000
12	0.0034	0.0033	0.0000
13	0.0034	0.0034	0.0000
14	0.0034	0.0034	0.0000
15	0.0034	0.0034	0.0000
16	0.0034	0.0034	0.0000
17	0.0034	0.0034	0.0000
18	0.0034	0.0034	0.0000
19	0.0035	0.0034	0.0000
20	0.0035	0.0034	0.0000
21	0.0035	0.0034	0.0000
22	0.0035	0.0035	0.0000
23	0.0035	0.0035	0.0000
24	0.0035	0.0035	0.0000
25	0.0035	0.0035	0.0000
26	0.0035	0.0035	0.0000
27	0.0035	0.0035	0.0000
28	0.0036	0.0035	0.0000
29	0.0036	0.0035	0.0000
30	0.0036	0.0035	0.0000
31	0.0036	0.0036	0.0000
32	0.0036	0.0036	0.0000
33	0.0036	0.0036	0.0000
34	0.0036	0.0036	0.0000
35	0.0036	0.0036	0.0000
36	0.0037	0.0036	0.0000
37	0.0037	0.0036	0.0000
38	0.0037	0.0036	0.0000
39	0.0037	0.0037	0.0000
40	0.0037	0.0037	0.0000
41	0.0037	0.0037	0.0000
42	0.0037	0.0037	0.0000
43	0.0038	0.0037	0.0000
44	0.0038	0.0037	0.0000
45	0.0038	0.0038	0.0000
46	0.0038	0.0038	0.0000
47	0.0038	0.0038	0.0000
48	0.0038	0.0038	0.0000
49	0.0038	0.0038	0.0000
50	0.0039	0.0038	0.0000
51	0.0039	0.0038	0.0000
52	0.0039	0.0039	0.0000
53	0.0039	0.0039	0.0000
54	0.0039	0.0039	0.0000
55	0.0039	0.0039	0.0000
56	0.0040	0.0039	0.0000
57	0.0040	0.0039	0.0000
58	0.0040	0.0039	0.0000
59	0.0040	0.0040	0.0000
60	0.0040	0.0040	0.0000
61	0.0040	0.0040	0.0000
62	0.0041	0.0040	0.0000
63	0.0041	0.0040	0.0000
64	0.0041	0.0041	0.0000
65	0.0041	0.0041	0.0000
66	0.0041	0.0041	0.0000
67	0.0041	0.0041	0.0000
68	0.0042	0.0041	0.0000
69	0.0042	0.0041	0.0000
70	0.0042	0.0042	0.0000
71	0.0042	0.0042	0.0000
72	0.0042	0.0042	0.0000
73	0.0043	0.0042	0.0000
74	0.0043	0.0042	0.0000
75	0.0043	0.0043	0.0000
76	0.0043	0.0043	0.0000
77	0.0044	0.0043	0.0000
78	0.0044	0.0043	0.0000
79	0.0044	0.0044	0.0000
80	0.0044	0.0044	0.0000
81	0.0044	0.0044	0.0000
82	0.0045	0.0044	0.0000
83	0.0045	0.0044	0.0000
84	0.0045	0.0045	0.0000
85	0.0045	0.0045	0.0000
86	0.0045	0.0045	0.0000
87	0.0046	0.0045	0.0000
88	0.0046	0.0046	0.0000

89	0.0046	0.0046	0.0000
90	0.0046	0.0046	0.0000
91	0.0047	0.0046	0.0000
92	0.0047	0.0047	0.0000
93	0.0047	0.0047	0.0000
94	0.0048	0.0047	0.0000
95	0.0048	0.0047	0.0000
96	0.0048	0.0048	0.0000
97	0.0048	0.0048	0.0000
98	0.0049	0.0048	0.0000
99	0.0049	0.0049	0.0000
100	0.0049	0.0049	0.0000
101	0.0050	0.0049	0.0000
102	0.0050	0.0049	0.0000
103	0.0050	0.0050	0.0000
104	0.0051	0.0050	0.0000
105	0.0051	0.0050	0.0000
106	0.0051	0.0051	0.0000
107	0.0052	0.0051	0.0000
108	0.0052	0.0051	0.0000
109	0.0052	0.0052	0.0000
110	0.0053	0.0052	0.0000
111	0.0053	0.0053	0.0000
112	0.0053	0.0053	0.0000
113	0.0054	0.0053	0.0000
114	0.0054	0.0054	0.0000
115	0.0055	0.0054	0.0000
116	0.0055	0.0054	0.0000
117	0.0055	0.0055	0.0001
118	0.0056	0.0055	0.0001
119	0.0056	0.0056	0.0001
120	0.0057	0.0056	0.0001
121	0.0057	0.0057	0.0001
122	0.0057	0.0057	0.0001
123	0.0058	0.0058	0.0001
124	0.0058	0.0058	0.0001
125	0.0059	0.0058	0.0001
126	0.0059	0.0059	0.0001
127	0.0060	0.0060	0.0001
128	0.0060	0.0060	0.0001
129	0.0061	0.0061	0.0001
130	0.0061	0.0061	0.0001
131	0.0062	0.0062	0.0001
132	0.0063	0.0062	0.0001
133	0.0063	0.0063	0.0001
134	0.0064	0.0063	0.0001
135	0.0065	0.0064	0.0001
136	0.0065	0.0064	0.0001
137	0.0066	0.0065	0.0001
138	0.0066	0.0066	0.0001
139	0.0067	0.0067	0.0001
140	0.0068	0.0067	0.0001
141	0.0069	0.0068	0.0001
142	0.0069	0.0069	0.0001
143	0.0070	0.0070	0.0001
144	0.0071	0.0070	0.0001
145	0.0093	0.0092	0.0001
146	0.0094	0.0093	0.0001
147	0.0095	0.0094	0.0001
148	0.0095	0.0095	0.0001
149	0.0097	0.0096	0.0001
150	0.0097	0.0097	0.0001
151	0.0099	0.0098	0.0001
152	0.0099	0.0099	0.0001
153	0.0101	0.0100	0.0001
154	0.0102	0.0101	0.0001
155	0.0103	0.0102	0.0001
156	0.0104	0.0103	0.0001
157	0.0106	0.0105	0.0001
158	0.0107	0.0106	0.0001
159	0.0109	0.0108	0.0001
160	0.0110	0.0109	0.0001
161	0.0112	0.0111	0.0001
162	0.0113	0.0112	0.0001
163	0.0115	0.0114	0.0001
164	0.0116	0.0115	0.0001
165	0.0118	0.0117	0.0001
166	0.0120	0.0119	0.0001
167	0.0122	0.0121	0.0001
168	0.0124	0.0123	0.0001
169	0.0127	0.0126	0.0001
170	0.0129	0.0127	0.0001
171	0.0132	0.0131	0.0001
172	0.0134	0.0133	0.0001

173	0.0138	0.0137	0.0001
174	0.0140	0.0139	0.0001
175	0.0145	0.0143	0.0001
176	0.0147	0.0146	0.0001
177	0.0152	0.0151	0.0001
178	0.0155	0.0154	0.0001
179	0.0162	0.0160	0.0001
180	0.0166	0.0164	0.0002
181	0.0174	0.0172	0.0002
182	0.0178	0.0177	0.0002
183	0.0189	0.0187	0.0002
184	0.0195	0.0193	0.0002
185	0.0114	0.0113	0.0001
186	0.0122	0.0120	0.0001
187	0.0141	0.0140	0.0001
188	0.0154	0.0152	0.0001
189	0.0191	0.0190	0.0002
190	0.0220	0.0218	0.0002
191	0.0334	0.0331	0.0003
192	0.0485	0.0481	0.0004
193	0.2100	0.0641	0.1459
194	0.0263	0.0261	0.0002
195	0.0170	0.0169	0.0002
196	0.0130	0.0129	0.0001
197	0.0202	0.0200	0.0002
198	0.0183	0.0182	0.0002
199	0.0170	0.0168	0.0002
200	0.0159	0.0157	0.0001
201	0.0150	0.0148	0.0001
202	0.0142	0.0141	0.0001
203	0.0136	0.0135	0.0001
204	0.0130	0.0129	0.0001
205	0.0125	0.0124	0.0001
206	0.0121	0.0120	0.0001
207	0.0117	0.0116	0.0001
208	0.0114	0.0113	0.0001
209	0.0111	0.0110	0.0001
210	0.0108	0.0107	0.0001
211	0.0105	0.0104	0.0001
212	0.0103	0.0102	0.0001
213	0.0100	0.0099	0.0001
214	0.0098	0.0097	0.0001
215	0.0096	0.0095	0.0001
216	0.0094	0.0093	0.0001
217	0.0071	0.0071	0.0001
218	0.0070	0.0069	0.0001
219	0.0068	0.0068	0.0001
220	0.0067	0.0066	0.0001
221	0.0066	0.0065	0.0001
222	0.0064	0.0064	0.0001
223	0.0063	0.0062	0.0001
224	0.0062	0.0061	0.0001
225	0.0061	0.0060	0.0001
226	0.0060	0.0059	0.0001
227	0.0059	0.0058	0.0001
228	0.0058	0.0057	0.0001
229	0.0057	0.0056	0.0001
230	0.0056	0.0055	0.0001
231	0.0055	0.0055	0.0000
232	0.0054	0.0054	0.0000
233	0.0054	0.0053	0.0000
234	0.0053	0.0052	0.0000
235	0.0052	0.0052	0.0000
236	0.0051	0.0051	0.0000
237	0.0051	0.0050	0.0000
238	0.0050	0.0050	0.0000
239	0.0049	0.0049	0.0000
240	0.0049	0.0048	0.0000
241	0.0048	0.0048	0.0000
242	0.0048	0.0047	0.0000
243	0.0047	0.0047	0.0000
244	0.0047	0.0046	0.0000
245	0.0046	0.0046	0.0000
246	0.0046	0.0045	0.0000
247	0.0045	0.0045	0.0000
248	0.0045	0.0044	0.0000
249	0.0044	0.0044	0.0000
250	0.0044	0.0043	0.0000
251	0.0043	0.0043	0.0000
252	0.0043	0.0043	0.0000
253	0.0043	0.0042	0.0000
254	0.0042	0.0042	0.0000
255	0.0042	0.0041	0.0000
256	0.0041	0.0041	0.0000

257	0.0041	0.0041	0.0000
258	0.0041	0.0040	0.0000
259	0.0040	0.0040	0.0000
260	0.0040	0.0040	0.0000
261	0.0040	0.0039	0.0000
262	0.0039	0.0039	0.0000
263	0.0039	0.0039	0.0000
264	0.0039	0.0038	0.0000
265	0.0038	0.0038	0.0000
266	0.0038	0.0038	0.0000
267	0.0038	0.0037	0.0000
268	0.0037	0.0037	0.0000
269	0.0037	0.0037	0.0000
270	0.0037	0.0037	0.0000
271	0.0037	0.0036	0.0000
272	0.0036	0.0036	0.0000
273	0.0036	0.0036	0.0000
274	0.0036	0.0036	0.0000
275	0.0036	0.0035	0.0000
276	0.0035	0.0035	0.0000
277	0.0035	0.0035	0.0000
278	0.0035	0.0035	0.0000
279	0.0035	0.0034	0.0000
280	0.0034	0.0034	0.0000
281	0.0034	0.0034	0.0000
282	0.0034	0.0034	0.0000
283	0.0034	0.0033	0.0000
284	0.0034	0.0033	0.0000
285	0.0033	0.0033	0.0000
286	0.0033	0.0033	0.0000
287	0.0033	0.0033	0.0000
288	0.0033	0.0032	0.0000

Total soil rain loss = 2.02(In)
Total effective rainfall = 0.16(In)
Peak flow rate in flood hydrograph = 4.15(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0000	0.00	Q				
0+15	0.0000	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	0.0001	0.00	Q				
0+50	0.0001	0.00	Q				
0+55	0.0001	0.00	Q				
1+ 0	0.0001	0.00	Q				
1+ 5	0.0001	0.00	Q				
1+10	0.0001	0.00	Q				
1+15	0.0002	0.00	Q				
1+20	0.0002	0.00	Q				
1+25	0.0002	0.00	Q				
1+30	0.0002	0.00	Q				
1+35	0.0002	0.00	Q				
1+40	0.0002	0.00	Q				
1+45	0.0002	0.00	Q				
1+50	0.0002	0.00	Q				
1+55	0.0002	0.00	Q				
2+ 0	0.0003	0.00	Q				
2+ 5	0.0003	0.00	Q				
2+10	0.0003	0.00	Q				
2+15	0.0003	0.00	Q				
2+20	0.0003	0.00	Q				
2+25	0.0003	0.00	Q				
2+30	0.0003	0.00	Q				
2+35	0.0003	0.00	Q				
2+40	0.0004	0.00	Q				
2+45	0.0004	0.00	Q				
2+50	0.0004	0.00	Q				
2+55	0.0004	0.00	Q				
3+ 0	0.0004	0.00	Q				
3+ 5	0.0004	0.00	Q				

3+10	0.0004	0.00	Q				
3+15	0.0004	0.00	Q				
3+20	0.0005	0.00	Q				
3+25	0.0005	0.00	Q				
3+30	0.0005	0.00	Q				
3+35	0.0005	0.00	Q				
3+40	0.0005	0.00	Q				
3+45	0.0005	0.00	Q				
3+50	0.0005	0.00	Q				
3+55	0.0005	0.00	Q				
4+ 0	0.0006	0.00	Q				
4+ 5	0.0006	0.00	Q				
4+10	0.0006	0.00	Q				
4+15	0.0006	0.00	Q				
4+20	0.0006	0.00	Q				
4+25	0.0006	0.00	Q				
4+30	0.0006	0.00	Q				
4+35	0.0006	0.00	Q				
4+40	0.0007	0.00	Q				
4+45	0.0007	0.00	Q				
4+50	0.0007	0.00	Q				
4+55	0.0007	0.00	Q				
5+ 0	0.0007	0.00	Q				
5+ 5	0.0007	0.00	Q				
5+10	0.0007	0.00	Q				
5+15	0.0008	0.00	Q				
5+20	0.0008	0.00	Q				
5+25	0.0008	0.00	Q				
5+30	0.0008	0.00	Q				
5+35	0.0008	0.00	Q				
5+40	0.0008	0.00	Q				
5+45	0.0008	0.00	Q				
5+50	0.0008	0.00	Q				
5+55	0.0009	0.00	Q				
6+ 0	0.0009	0.00	Q				
6+ 5	0.0009	0.00	Q				
6+10	0.0009	0.00	Q				
6+15	0.0009	0.00	Q				
6+20	0.0009	0.00	Q				
6+25	0.0009	0.00	Q				
6+30	0.0010	0.00	Q				
6+35	0.0010	0.00	Q				
6+40	0.0010	0.00	Q				
6+45	0.0010	0.00	Q				
6+50	0.0010	0.00	Q				
6+55	0.0010	0.00	Q				
7+ 0	0.0011	0.00	Q				
7+ 5	0.0011	0.00	Q				
7+10	0.0011	0.00	Q				
7+15	0.0011	0.00	Q				
7+20	0.0011	0.00	Q				
7+25	0.0011	0.00	Q				
7+30	0.0011	0.00	Q				
7+35	0.0012	0.00	Q				
7+40	0.0012	0.00	Q				
7+45	0.0012	0.00	Q				
7+50	0.0012	0.00	Q				
7+55	0.0012	0.00	Q				
8+ 0	0.0012	0.00	Q				
8+ 5	0.0013	0.00	Q				
8+10	0.0013	0.00	Q				
8+15	0.0013	0.00	Q				
8+20	0.0013	0.00	Q				
8+25	0.0013	0.00	Q				
8+30	0.0013	0.00	Q				
8+35	0.0014	0.00	Q				
8+40	0.0014	0.00	Q				
8+45	0.0014	0.00	Q				
8+50	0.0014	0.00	Q				
8+55	0.0014	0.00	Q				
9+ 0	0.0014	0.00	Q				
9+ 5	0.0015	0.00	Q				
9+10	0.0015	0.00	Q				
9+15	0.0015	0.00	Q				
9+20	0.0015	0.00	Q				
9+25	0.0015	0.00	QV				
9+30	0.0015	0.00	QV				
9+35	0.0016	0.00	QV				
9+40	0.0016	0.00	QV				
9+45	0.0016	0.00	QV				
9+50	0.0016	0.00	QV				
9+55	0.0016	0.00	QV				
10+ 0	0.0017	0.00	QV				
10+ 5	0.0017	0.00	QV				

10+10	0.0017	0.00	QV				
10+15	0.0017	0.00	QV				
10+20	0.0017	0.00	QV				
10+25	0.0017	0.00	QV				
10+30	0.0018	0.00	QV				
10+35	0.0018	0.00	QV				
10+40	0.0018	0.00	QV				
10+45	0.0018	0.00	QV				
10+50	0.0018	0.00	QV				
10+55	0.0019	0.00	QV				
11+ 0	0.0019	0.00	QV				
11+ 5	0.0019	0.00	QV				
11+10	0.0019	0.00	QV				
11+15	0.0020	0.00	QV				
11+20	0.0020	0.00	QV				
11+25	0.0020	0.00	QV				
11+30	0.0020	0.00	QV				
11+35	0.0020	0.00	QV				
11+40	0.0021	0.00	QV				
11+45	0.0021	0.00	QV				
11+50	0.0021	0.00	QV				
11+55	0.0021	0.00	QV				
12+ 0	0.0022	0.00	QV				
12+ 5	0.0022	0.00	QV				
12+10	0.0022	0.00	QV				
12+15	0.0022	0.00	QV				
12+20	0.0023	0.00	QV				
12+25	0.0023	0.00	QV				
12+30	0.0023	0.00	QV				
12+35	0.0024	0.00	QV				
12+40	0.0024	0.00	QV				
12+45	0.0024	0.00	QV				
12+50	0.0025	0.00	QV				
12+55	0.0025	0.00	QV				
13+ 0	0.0025	0.01	QV				
13+ 5	0.0026	0.01	QV				
13+10	0.0026	0.01	QV				
13+15	0.0026	0.01	QV				
13+20	0.0027	0.01	QV				
13+25	0.0027	0.01	QV				
13+30	0.0028	0.01	QV				
13+35	0.0028	0.01	QV				
13+40	0.0028	0.01	QV				
13+45	0.0029	0.01	QV				
13+50	0.0029	0.01	QV				
13+55	0.0030	0.01	QV				
14+ 0	0.0030	0.01	QV				
14+ 5	0.0030	0.01	Q V				
14+10	0.0031	0.01	Q V				
14+15	0.0031	0.01	Q V				
14+20	0.0032	0.01	Q V				
14+25	0.0032	0.01	Q V				
14+30	0.0033	0.01	Q V				
14+35	0.0033	0.01	Q V				
14+40	0.0034	0.01	Q V				
14+45	0.0034	0.01	Q V				
14+50	0.0035	0.01	Q V				
14+55	0.0035	0.01	Q V				
15+ 0	0.0036	0.01	Q V				
15+ 5	0.0036	0.01	Q V				
15+10	0.0037	0.01	Q V				
15+15	0.0037	0.01	Q V				
15+20	0.0038	0.01	Q V				
15+25	0.0039	0.01	Q V				
15+30	0.0039	0.01	Q V				
15+35	0.0039	0.01	Q V				
15+40	0.0040	0.01	Q V				
15+45	0.0040	0.01	Q V				
15+50	0.0041	0.01	Q V				
15+55	0.0042	0.01	Q V				
16+ 0	0.0043	0.02	Q V				
16+ 5	0.0230	2.71		Q V			
16+10	0.0516	4.15		Q		V	
16+15	0.0570	0.79	Q			V	
16+20	0.0580	0.15	Q			V	
16+25	0.0583	0.05	Q			V	
16+30	0.0584	0.01	Q			V	
16+35	0.0585	0.01	Q			V	
16+40	0.0585	0.01	Q			V	
16+45	0.0586	0.01	Q			V	
16+50	0.0586	0.01	Q			V	
16+55	0.0587	0.01	Q			V	
17+ 0	0.0587	0.01	Q			V	
17+ 5	0.0588	0.01	Q			V	

17+10	0.0588	0.01	Q	|	|	|	V|
17+15	0.0588	0.01	Q	|	|	|	V|
17+20	0.0589	0.01	Q	|	|	|	V|
17+25	0.0589	0.01	Q	|	|	|	V|
17+30	0.0590	0.01	Q	|	|	|	V|
17+35	0.0590	0.01	Q	|	|	|	V|
17+40	0.0590	0.01	Q	|	|	|	V|
17+45	0.0591	0.00	Q	|	|	|	V|
17+50	0.0591	0.00	Q	|	|	|	V|
17+55	0.0591	0.00	Q	|	|	|	V|
18+ 0	0.0592	0.00	Q	|	|	|	V|
18+ 5	0.0592	0.00	Q	|	|	|	V|
18+10	0.0592	0.00	Q	|	|	|	V|
18+15	0.0592	0.00	Q	|	|	|	V|
18+20	0.0593	0.00	Q	|	|	|	V|
18+25	0.0593	0.00	Q	|	|	|	V|
18+30	0.0593	0.00	Q	|	|	|	V|
18+35	0.0593	0.00	Q	|	|	|	V|
18+40	0.0593	0.00	Q	|	|	|	V|
18+45	0.0594	0.00	Q	|	|	|	V|
18+50	0.0594	0.00	Q	|	|	|	V|
18+55	0.0594	0.00	Q	|	|	|	V|
19+ 0	0.0594	0.00	Q	|	|	|	V|
19+ 5	0.0594	0.00	Q	|	|	|	V|
19+10	0.0595	0.00	Q	|	|	|	V|
19+15	0.0595	0.00	Q	|	|	|	V|
19+20	0.0595	0.00	Q	|	|	|	V|
19+25	0.0595	0.00	Q	|	|	|	V|
19+30	0.0595	0.00	Q	|	|	|	V|
19+35	0.0596	0.00	Q	|	|	|	V|
19+40	0.0596	0.00	Q	|	|	|	V|
19+45	0.0596	0.00	Q	|	|	|	V|
19+50	0.0596	0.00	Q	|	|	|	V|
19+55	0.0596	0.00	Q	|	|	|	V|
20+ 0	0.0596	0.00	Q	|	|	|	V|
20+ 5	0.0597	0.00	Q	|	|	|	V|
20+10	0.0597	0.00	Q	|	|	|	V|
20+15	0.0597	0.00	Q	|	|	|	V|
20+20	0.0597	0.00	Q	|	|	|	V|
20+25	0.0597	0.00	Q	|	|	|	V|
20+30	0.0597	0.00	Q	|	|	|	V|
20+35	0.0597	0.00	Q	|	|	|	V|
20+40	0.0598	0.00	Q	|	|	|	V|
20+45	0.0598	0.00	Q	|	|	|	V|
20+50	0.0598	0.00	Q	|	|	|	V|
20+55	0.0598	0.00	Q	|	|	|	V|
21+ 0	0.0598	0.00	Q	|	|	|	V|
21+ 5	0.0598	0.00	Q	|	|	|	V|
21+10	0.0599	0.00	Q	|	|	|	V|
21+15	0.0599	0.00	Q	|	|	|	V|
21+20	0.0599	0.00	Q	|	|	|	V|
21+25	0.0599	0.00	Q	|	|	|	V|
21+30	0.0599	0.00	Q	|	|	|	V|
21+35	0.0599	0.00	Q	|	|	|	V|
21+40	0.0599	0.00	Q	|	|	|	V|
21+45	0.0599	0.00	Q	|	|	|	V|
21+50	0.0600	0.00	Q	|	|	|	V|
21+55	0.0600	0.00	Q	|	|	|	V|
22+ 0	0.0600	0.00	Q	|	|	|	V|
22+ 5	0.0600	0.00	Q	|	|	|	V|
22+10	0.0600	0.00	Q	|	|	|	V|
22+15	0.0600	0.00	Q	|	|	|	V|
22+20	0.0600	0.00	Q	|	|	|	V|
22+25	0.0600	0.00	Q	|	|	|	V|
22+30	0.0601	0.00	Q	|	|	|	V|
22+35	0.0601	0.00	Q	|	|	|	V|
22+40	0.0601	0.00	Q	|	|	|	V|
22+45	0.0601	0.00	Q	|	|	|	V|
22+50	0.0601	0.00	Q	|	|	|	V|
22+55	0.0601	0.00	Q	|	|	|	V|
23+ 0	0.0601	0.00	Q	|	|	|	V|
23+ 5	0.0601	0.00	Q	|	|	|	V|
23+10	0.0602	0.00	Q	|	|	|	V|
23+15	0.0602	0.00	Q	|	|	|	V|
23+20	0.0602	0.00	Q	|	|	|	V|
23+25	0.0602	0.00	Q	|	|	|	V|
23+30	0.0602	0.00	Q	|	|	|	V|
23+35	0.0602	0.00	Q	|	|	|	V|
23+40	0.0602	0.00	Q	|	|	|	V|
23+45	0.0602	0.00	Q	|	|	|	V|
23+50	0.0602	0.00	Q	|	|	|	V|
23+55	0.0603	0.00	Q	|	|	|	V|
24+ 0	0.0603	0.00	Q	|	|	|	V|

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

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Study date 02/26/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA E
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	1.20	1	0.78
Rainfall data for year 2	1.20	6	1.20
Rainfall data for year 2	1.20	24	2.18
Rainfall data for year 100	1.20	1	1.27
Rainfall data for year 100	1.20	6	2.86
Rainfall data for year 100	1.20	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
50.0	31.0	1.20	1.000	0.983	1.000	0.983

Area-averaged adjusted loss rate Fm (In/Hr) = 0.983

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
1.20	1.000	50.0	31.0	10.90	0.000

Area-averaged catchment yield fraction, Y = 0.000
Area-averaged low loss fraction, Yb = 1.000

++
Watercourse length = 650.00(Ft.)
Length from concentration point to centroid = 120.00(Ft.)
Elevation difference along watercourse = 57.30(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 1.20(Ac.)
Catchment Lag time = 0.024 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 347.2069
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.983(In/Hr)
Average low loss rate fraction (Yb) = 1.000 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 1.20(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.210(In)
30-minute factor = 1.000 Adjusted rainfall = 0.359(In)
1-hour factor = 1.000 Adjusted rainfall = 0.443(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 14.51 (CFS))	
1	62.757	9.108
2	98.885	5.243
3	100.000	0.162

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2100	0.2100
2	0.2585	0.0485
3	0.2920	0.0334
4	0.3183	0.0263
5	0.3403	0.0220
6	0.3595	0.0191
7	0.3765	0.0170
8	0.3919	0.0154
9	0.4060	0.0141
10	0.4190	0.0130
11	0.4312	0.0122
12	0.4426	0.0114
13	0.4627	0.0202
14	0.4822	0.0195
15	0.5011	0.0189
16	0.5194	0.0183
17	0.5373	0.0178
18	0.5547	0.0174
19	0.5716	0.0169
20	0.5882	0.0166
21	0.6044	0.0162
22	0.6202	0.0159
23	0.6357	0.0155
24	0.6510	0.0152
25	0.6660	0.0150
26	0.6807	0.0147
27	0.6951	0.0145
28	0.7093	0.0142
29	0.7233	0.0140
30	0.7371	0.0138
31	0.7507	0.0136
32	0.7641	0.0134
33	0.7773	0.0132
34	0.7903	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8284	0.0125
38	0.8408	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8771	0.0120
42	0.8889	0.0118
43	0.9007	0.0117
44	0.9123	0.0116
45	0.9237	0.0115
46	0.9351	0.0114
47	0.9464	0.0113

		AREAE
48	0.9575	0.0112
49	0.9686	0.0111
50	0.9795	0.0110
51	0.9904	0.0109
52	1.0012	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0537	0.0103
58	1.0639	0.0103
59	1.0741	0.0102
60	1.0842	0.0101
61	1.0942	0.0100
62	1.1042	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1336	0.0097
66	1.1433	0.0097
67	1.1529	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1907	0.0094
72	1.2000	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2213	0.0070
76	1.2283	0.0070
77	1.2352	0.0069
78	1.2421	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2758	0.0066
84	1.2824	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3019	0.0065
88	1.3083	0.0064
89	1.3147	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3336	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3522	0.0061
96	1.3583	0.0061
97	1.3643	0.0061
98	1.3704	0.0060
99	1.3764	0.0060
100	1.3824	0.0060
101	1.3883	0.0059
102	1.3942	0.0059
103	1.4001	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4175	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4403	0.0057
111	1.4459	0.0056
112	1.4515	0.0056
113	1.4571	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4736	0.0055
117	1.4791	0.0055
118	1.4845	0.0054
119	1.4899	0.0054
120	1.4953	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5113	0.0053
124	1.5165	0.0053
125	1.5218	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5426	0.0052
130	1.5477	0.0051
131	1.5528	0.0051

		AREAE
132	1.5579	0.0051
133	1.5630	0.0051
134	1.5680	0.0051
135	1.5731	0.0050
136	1.5781	0.0050
137	1.5831	0.0050
138	1.5880	0.0050
139	1.5930	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6077	0.0049
143	1.6126	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6414	0.0048
150	1.6461	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6602	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6925	0.0046
161	1.6970	0.0045
162	1.7016	0.0045
163	1.7061	0.0045
164	1.7106	0.0045
165	1.7151	0.0045
166	1.7195	0.0045
167	1.7240	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7504	0.0044
174	1.7547	0.0044
175	1.7591	0.0043
176	1.7634	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7763	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7933	0.0042
184	1.7975	0.0042
185	1.8017	0.0042
186	1.8059	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8225	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8430	0.0041
196	1.8471	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8592	0.0040
200	1.8632	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8752	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8871	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9028	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9183	0.0039
215	1.9221	0.0039

		AREAE
216	1.9260	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9375	0.0038
220	1.9413	0.0038
221	1.9451	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9564	0.0038
225	1.9601	0.0038
226	1.9639	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9751	0.0037
230	1.9788	0.0037
231	1.9825	0.0037
232	1.9862	0.0037
233	1.9899	0.0037
234	1.9935	0.0037
235	1.9972	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0118	0.0036
240	2.0154	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0298	0.0036
245	2.0334	0.0036
246	2.0369	0.0036
247	2.0405	0.0036
248	2.0440	0.0036
249	2.0476	0.0035
250	2.0511	0.0035
251	2.0547	0.0035
252	2.0582	0.0035
253	2.0617	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0722	0.0035
257	2.0757	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0861	0.0035
261	2.0895	0.0035
262	2.0930	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1067	0.0034
267	2.1101	0.0034
268	2.1135	0.0034
269	2.1169	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1304	0.0034
274	2.1337	0.0034
275	2.1371	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1471	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1735	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0033	0.0000
2	0.0033	0.0033	0.0000
3	0.0033	0.0033	0.0000
4	0.0033	0.0033	0.0000
5	0.0033	0.0033	0.0000
6	0.0033	0.0033	0.0000

		AREAE	
7	0.0033	0.0033	0.0000
8	0.0033	0.0033	0.0000
9	0.0033	0.0033	0.0000
10	0.0034	0.0034	0.0000
11	0.0034	0.0034	0.0000
12	0.0034	0.0034	0.0000
13	0.0034	0.0034	0.0000
14	0.0034	0.0034	0.0000
15	0.0034	0.0034	0.0000
16	0.0034	0.0034	0.0000
17	0.0034	0.0034	0.0000
18	0.0034	0.0034	0.0000
19	0.0035	0.0035	0.0000
20	0.0035	0.0035	0.0000
21	0.0035	0.0035	0.0000
22	0.0035	0.0035	0.0000
23	0.0035	0.0035	0.0000
24	0.0035	0.0035	0.0000
25	0.0035	0.0035	0.0000
26	0.0035	0.0035	0.0000
27	0.0035	0.0035	0.0000
28	0.0036	0.0036	0.0000
29	0.0036	0.0036	0.0000
30	0.0036	0.0036	0.0000
31	0.0036	0.0036	0.0000
32	0.0036	0.0036	0.0000
33	0.0036	0.0036	0.0000
34	0.0036	0.0036	0.0000
35	0.0036	0.0036	0.0000
36	0.0037	0.0037	0.0000
37	0.0037	0.0037	0.0000
38	0.0037	0.0037	0.0000
39	0.0037	0.0037	0.0000
40	0.0037	0.0037	0.0000
41	0.0037	0.0037	0.0000
42	0.0037	0.0037	0.0000
43	0.0038	0.0038	0.0000
44	0.0038	0.0038	0.0000
45	0.0038	0.0038	0.0000
46	0.0038	0.0038	0.0000
47	0.0038	0.0038	0.0000
48	0.0038	0.0038	0.0000
49	0.0038	0.0038	0.0000
50	0.0039	0.0039	0.0000
51	0.0039	0.0039	0.0000
52	0.0039	0.0039	0.0000
53	0.0039	0.0039	0.0000
54	0.0039	0.0039	0.0000
55	0.0039	0.0039	0.0000
56	0.0040	0.0040	0.0000
57	0.0040	0.0040	0.0000
58	0.0040	0.0040	0.0000
59	0.0040	0.0040	0.0000
60	0.0040	0.0040	0.0000
61	0.0040	0.0040	0.0000
62	0.0041	0.0041	0.0000
63	0.0041	0.0041	0.0000
64	0.0041	0.0041	0.0000
65	0.0041	0.0041	0.0000
66	0.0041	0.0041	0.0000
67	0.0041	0.0041	0.0000
68	0.0042	0.0042	0.0000
69	0.0042	0.0042	0.0000
70	0.0042	0.0042	0.0000
71	0.0042	0.0042	0.0000
72	0.0042	0.0042	0.0000
73	0.0043	0.0043	0.0000
74	0.0043	0.0043	0.0000
75	0.0043	0.0043	0.0000
76	0.0043	0.0043	0.0000
77	0.0044	0.0044	0.0000
78	0.0044	0.0044	0.0000
79	0.0044	0.0044	0.0000
80	0.0044	0.0044	0.0000
81	0.0044	0.0044	0.0000
82	0.0045	0.0045	0.0000
83	0.0045	0.0045	0.0000
84	0.0045	0.0045	0.0000
85	0.0045	0.0045	0.0000
86	0.0045	0.0045	0.0000
87	0.0046	0.0046	0.0000
88	0.0046	0.0046	0.0000
89	0.0046	0.0046	0.0000
90	0.0046	0.0046	0.0000

91	0.0047	0.0047	0.0000
92	0.0047	0.0047	0.0000
93	0.0047	0.0047	0.0000
94	0.0048	0.0048	0.0000
95	0.0048	0.0048	0.0000
96	0.0048	0.0048	0.0000
97	0.0048	0.0048	0.0000
98	0.0049	0.0049	0.0000
99	0.0049	0.0049	0.0000
100	0.0049	0.0049	0.0000
101	0.0050	0.0050	0.0000
102	0.0050	0.0050	0.0000
103	0.0050	0.0050	0.0000
104	0.0051	0.0051	0.0000
105	0.0051	0.0051	0.0000
106	0.0051	0.0051	0.0000
107	0.0052	0.0052	0.0000
108	0.0052	0.0052	0.0000
109	0.0052	0.0052	0.0000
110	0.0053	0.0053	0.0000
111	0.0053	0.0053	0.0000
112	0.0053	0.0053	0.0000
113	0.0054	0.0054	0.0000
114	0.0054	0.0054	0.0000
115	0.0055	0.0055	0.0000
116	0.0055	0.0055	0.0000
117	0.0055	0.0055	0.0000
118	0.0056	0.0056	0.0000
119	0.0056	0.0056	0.0000
120	0.0057	0.0057	0.0000
121	0.0057	0.0057	0.0000
122	0.0057	0.0057	0.0000
123	0.0058	0.0058	0.0000
124	0.0058	0.0058	0.0000
125	0.0059	0.0059	0.0000
126	0.0059	0.0059	0.0000
127	0.0060	0.0060	0.0000
128	0.0060	0.0060	0.0000
129	0.0061	0.0061	0.0000
130	0.0061	0.0061	0.0000
131	0.0062	0.0062	0.0000
132	0.0063	0.0063	0.0000
133	0.0063	0.0063	0.0000
134	0.0064	0.0064	0.0000
135	0.0065	0.0065	0.0000
136	0.0065	0.0065	0.0000
137	0.0066	0.0066	0.0000
138	0.0066	0.0066	0.0000
139	0.0067	0.0067	0.0000
140	0.0068	0.0068	0.0000
141	0.0069	0.0069	0.0000
142	0.0069	0.0069	0.0000
143	0.0070	0.0070	0.0000
144	0.0071	0.0071	0.0000
145	0.0093	0.0093	0.0000
146	0.0094	0.0094	0.0000
147	0.0095	0.0095	0.0000
148	0.0095	0.0095	0.0000
149	0.0097	0.0097	0.0000
150	0.0097	0.0097	0.0000
151	0.0099	0.0099	0.0000
152	0.0099	0.0099	0.0000
153	0.0101	0.0101	0.0000
154	0.0102	0.0102	0.0000
155	0.0103	0.0103	0.0000
156	0.0104	0.0104	0.0000
157	0.0106	0.0106	0.0000
158	0.0107	0.0107	0.0000
159	0.0109	0.0109	0.0000
160	0.0110	0.0110	0.0000
161	0.0112	0.0112	0.0000
162	0.0113	0.0113	0.0000
163	0.0115	0.0115	0.0000
164	0.0116	0.0116	0.0000
165	0.0118	0.0118	0.0000
166	0.0120	0.0120	0.0000
167	0.0122	0.0122	0.0000
168	0.0124	0.0124	0.0000
169	0.0127	0.0127	0.0000
170	0.0129	0.0129	0.0000
171	0.0132	0.0132	0.0000
172	0.0134	0.0134	0.0000
173	0.0138	0.0138	0.0000
174	0.0140	0.0140	0.0000

175	0.0145	0.0145	0.0000
176	0.0147	0.0147	0.0000
177	0.0152	0.0152	0.0000
178	0.0155	0.0155	0.0000
179	0.0162	0.0162	0.0000
180	0.0166	0.0166	0.0000
181	0.0174	0.0174	0.0000
182	0.0178	0.0178	0.0000
183	0.0189	0.0189	0.0000
184	0.0195	0.0195	0.0000
185	0.0114	0.0114	0.0000
186	0.0122	0.0122	0.0000
187	0.0141	0.0141	0.0000
188	0.0154	0.0154	0.0000
189	0.0191	0.0191	0.0000
190	0.0220	0.0220	0.0000
191	0.0334	0.0334	0.0000
192	0.0485	0.0485	0.0000
193	0.2100	0.0819	0.1281
194	0.0263	0.0263	0.0000
195	0.0170	0.0170	0.0000
196	0.0130	0.0130	0.0000
197	0.0202	0.0202	0.0000
198	0.0183	0.0183	0.0000
199	0.0169	0.0169	0.0000
200	0.0159	0.0159	0.0000
201	0.0150	0.0150	0.0000
202	0.0142	0.0142	0.0000
203	0.0136	0.0136	0.0000
204	0.0130	0.0130	0.0000
205	0.0125	0.0125	0.0000
206	0.0121	0.0121	0.0000
207	0.0117	0.0117	0.0000
208	0.0114	0.0114	0.0000
209	0.0111	0.0111	0.0000
210	0.0108	0.0108	0.0000
211	0.0105	0.0105	0.0000
212	0.0103	0.0103	0.0000
213	0.0100	0.0100	0.0000
214	0.0098	0.0098	0.0000
215	0.0096	0.0096	0.0000
216	0.0094	0.0094	0.0000
217	0.0071	0.0071	0.0000
218	0.0070	0.0070	0.0000
219	0.0068	0.0068	0.0000
220	0.0067	0.0067	0.0000
221	0.0066	0.0066	0.0000
222	0.0064	0.0064	0.0000
223	0.0063	0.0063	0.0000
224	0.0062	0.0062	0.0000
225	0.0061	0.0061	0.0000
226	0.0060	0.0060	0.0000
227	0.0059	0.0059	0.0000
228	0.0058	0.0058	0.0000
229	0.0057	0.0057	0.0000
230	0.0056	0.0056	0.0000
231	0.0055	0.0055	0.0000
232	0.0054	0.0054	0.0000
233	0.0054	0.0054	0.0000
234	0.0053	0.0053	0.0000
235	0.0052	0.0052	0.0000
236	0.0051	0.0051	0.0000
237	0.0051	0.0051	0.0000
238	0.0050	0.0050	0.0000
239	0.0049	0.0049	0.0000
240	0.0049	0.0049	0.0000
241	0.0048	0.0048	0.0000
242	0.0048	0.0048	0.0000
243	0.0047	0.0047	0.0000
244	0.0047	0.0047	0.0000
245	0.0046	0.0046	0.0000
246	0.0046	0.0046	0.0000
247	0.0045	0.0045	0.0000
248	0.0045	0.0045	0.0000
249	0.0044	0.0044	0.0000
250	0.0044	0.0044	0.0000
251	0.0043	0.0043	0.0000
252	0.0043	0.0043	0.0000
253	0.0043	0.0043	0.0000
254	0.0042	0.0042	0.0000
255	0.0042	0.0042	0.0000
256	0.0041	0.0041	0.0000
257	0.0041	0.0041	0.0000
258	0.0041	0.0041	0.0000

259	0.0040	0.0040	0.0000
260	0.0040	0.0040	0.0000
261	0.0040	0.0040	0.0000
262	0.0039	0.0039	0.0000
263	0.0039	0.0039	0.0000
264	0.0039	0.0039	0.0000
265	0.0038	0.0038	0.0000
266	0.0038	0.0038	0.0000
267	0.0038	0.0038	0.0000
268	0.0037	0.0037	0.0000
269	0.0037	0.0037	0.0000
270	0.0037	0.0037	0.0000
271	0.0037	0.0037	0.0000
272	0.0036	0.0036	0.0000
273	0.0036	0.0036	0.0000
274	0.0036	0.0036	0.0000
275	0.0036	0.0036	0.0000
276	0.0035	0.0035	0.0000
277	0.0035	0.0035	0.0000
278	0.0035	0.0035	0.0000
279	0.0035	0.0035	0.0000
280	0.0034	0.0034	0.0000
281	0.0034	0.0034	0.0000
282	0.0034	0.0034	0.0000
283	0.0034	0.0034	0.0000
284	0.0034	0.0034	0.0000
285	0.0033	0.0033	0.0000
286	0.0033	0.0033	0.0000
287	0.0033	0.0033	0.0000
288	0.0033	0.0033	0.0000

Total soil rain loss = 2.05(In)
Total effective rainfall = 0.13(In)
Peak flow rate in flood hydrograph = 1.17(CFS)

++

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0000	0.00	Q	|	|	|	|
0+15	0.0000	0.00	Q	|	|	|	|
0+20	0.0000	0.00	Q	|	|	|	|
0+25	0.0000	0.00	Q	|	|	|	|
0+30	0.0000	0.00	Q	|	|	|	|
0+35	0.0000	0.00	Q	|	|	|	|
0+40	0.0000	0.00	Q	|	|	|	|
0+45	0.0000	0.00	Q	|	|	|	|
0+50	0.0000	0.00	Q	|	|	|	|
0+55	0.0000	0.00	Q	|	|	|	|
1+ 0	0.0000	0.00	Q	|	|	|	|
1+ 5	0.0000	0.00	Q	|	|	|	|
1+10	0.0000	0.00	Q	|	|	|	|
1+15	0.0000	0.00	Q	|	|	|	|
1+20	0.0000	0.00	Q	|	|	|	|
1+25	0.0000	0.00	Q	|	|	|	|
1+30	0.0000	0.00	Q	|	|	|	|
1+35	0.0000	0.00	Q	|	|	|	|
1+40	0.0000	0.00	Q	|	|	|	|
1+45	0.0000	0.00	Q	|	|	|	|
1+50	0.0000	0.00	Q	|	|	|	|
1+55	0.0000	0.00	Q	|	|	|	|
2+ 0	0.0000	0.00	Q	|	|	|	|
2+ 5	0.0000	0.00	Q	|	|	|	|
2+10	0.0000	0.00	Q	|	|	|	|
2+15	0.0000	0.00	Q	|	|	|	|
2+20	0.0000	0.00	Q	|	|	|	|
2+25	0.0000	0.00	Q	|	|	|	|
2+30	0.0000	0.00	Q	|	|	|	|
2+35	0.0000	0.00	Q	|	|	|	|
2+40	0.0000	0.00	Q	|	|	|	|
2+45	0.0000	0.00	Q	|	|	|	|
2+50	0.0000	0.00	Q	|	|	|	|
2+55	0.0000	0.00	Q	|	|	|	|
3+ 0	0.0000	0.00	Q	|	|	|	|
3+ 5	0.0000	0.00	Q	|	|	|	|
3+10	0.0000	0.00	Q	|	|	|	|
3+15	0.0000	0.00	Q	|	|	|	|

3+20	0.0000	0.00	Q				
3+25	0.0000	0.00	Q				
3+30	0.0000	0.00	Q				
3+35	0.0000	0.00	Q				
3+40	0.0000	0.00	Q				
3+45	0.0000	0.00	Q				
3+50	0.0000	0.00	Q				
3+55	0.0000	0.00	Q				
4+ 0	0.0000	0.00	Q				
4+ 5	0.0000	0.00	Q				
4+10	0.0000	0.00	Q				
4+15	0.0000	0.00	Q				
4+20	0.0000	0.00	Q				
4+25	0.0000	0.00	Q				
4+30	0.0000	0.00	Q				
4+35	0.0000	0.00	Q				
4+40	0.0000	0.00	Q				
4+45	0.0000	0.00	Q				
4+50	0.0000	0.00	Q				
4+55	0.0000	0.00	Q				
5+ 0	0.0000	0.00	Q				
5+ 5	0.0000	0.00	Q				
5+10	0.0000	0.00	Q				
5+15	0.0000	0.00	Q				
5+20	0.0000	0.00	Q				
5+25	0.0000	0.00	Q				
5+30	0.0000	0.00	Q				
5+35	0.0000	0.00	Q				
5+40	0.0000	0.00	Q				
5+45	0.0000	0.00	Q				
5+50	0.0000	0.00	Q				
5+55	0.0000	0.00	Q				
6+ 0	0.0000	0.00	Q				
6+ 5	0.0000	0.00	Q				
6+10	0.0000	0.00	Q				
6+15	0.0000	0.00	Q				
6+20	0.0000	0.00	Q				
6+25	0.0000	0.00	Q				
6+30	0.0000	0.00	Q				
6+35	0.0000	0.00	Q				
6+40	0.0000	0.00	Q				
6+45	0.0000	0.00	Q				
6+50	0.0000	0.00	Q				
6+55	0.0000	0.00	Q				
7+ 0	0.0000	0.00	Q				
7+ 5	0.0000	0.00	Q				
7+10	0.0000	0.00	Q				
7+15	0.0000	0.00	Q				
7+20	0.0000	0.00	Q				
7+25	0.0000	0.00	Q				
7+30	0.0000	0.00	Q				
7+35	0.0000	0.00	Q				
7+40	0.0000	0.00	Q				
7+45	0.0000	0.00	Q				
7+50	0.0000	0.00	Q				
7+55	0.0000	0.00	Q				
8+ 0	0.0000	0.00	Q				
8+ 5	0.0000	0.00	Q				
8+10	0.0000	0.00	Q				
8+15	0.0000	0.00	Q				
8+20	0.0000	0.00	Q				
8+25	0.0000	0.00	Q				
8+30	0.0000	0.00	Q				
8+35	0.0000	0.00	Q				
8+40	0.0000	0.00	Q				
8+45	0.0000	0.00	Q				
8+50	0.0000	0.00	Q				
8+55	0.0000	0.00	Q				
9+ 0	0.0000	0.00	Q				
9+ 5	0.0000	0.00	Q				
9+10	0.0000	0.00	Q				
9+15	0.0000	0.00	Q				
9+20	0.0000	0.00	Q				
9+25	0.0000	0.00	Q				
9+30	0.0000	0.00	Q				
9+35	0.0000	0.00	Q				
9+40	0.0000	0.00	Q				
9+45	0.0000	0.00	Q				
9+50	0.0000	0.00	Q				
9+55	0.0000	0.00	Q				
10+ 0	0.0000	0.00	Q				
10+ 5	0.0000	0.00	Q				
10+10	0.0000	0.00	Q				
10+15	0.0000	0.00	Q				

10+20	0.0000	0.00	Q				
10+25	0.0000	0.00	Q				
10+30	0.0000	0.00	Q				
10+35	0.0000	0.00	Q				
10+40	0.0000	0.00	Q				
10+45	0.0000	0.00	Q				
10+50	0.0000	0.00	Q				
10+55	0.0000	0.00	Q				
11+ 0	0.0000	0.00	Q				
11+ 5	0.0000	0.00	Q				
11+10	0.0000	0.00	Q				
11+15	0.0000	0.00	Q				
11+20	0.0000	0.00	Q				
11+25	0.0000	0.00	Q				
11+30	0.0000	0.00	Q				
11+35	0.0000	0.00	Q				
11+40	0.0000	0.00	Q				
11+45	0.0000	0.00	Q				
11+50	0.0000	0.00	Q				
11+55	0.0000	0.00	Q				
12+ 0	0.0000	0.00	Q				
12+ 5	0.0000	0.00	Q				
12+10	0.0000	0.00	Q				
12+15	0.0000	0.00	Q				
12+20	0.0000	0.00	Q				
12+25	0.0000	0.00	Q				
12+30	0.0000	0.00	Q				
12+35	0.0000	0.00	Q				
12+40	0.0000	0.00	Q				
12+45	0.0000	0.00	Q				
12+50	0.0000	0.00	Q				
12+55	0.0000	0.00	Q				
13+ 0	0.0000	0.00	Q				
13+ 5	0.0000	0.00	Q				
13+10	0.0000	0.00	Q				
13+15	0.0000	0.00	Q				
13+20	0.0000	0.00	Q				
13+25	0.0000	0.00	Q				
13+30	0.0000	0.00	Q				
13+35	0.0000	0.00	Q				
13+40	0.0000	0.00	Q				
13+45	0.0000	0.00	Q				
13+50	0.0000	0.00	Q				
13+55	0.0000	0.00	Q				
14+ 0	0.0000	0.00	Q				
14+ 5	0.0000	0.00	Q				
14+10	0.0000	0.00	Q				
14+15	0.0000	0.00	Q				
14+20	0.0000	0.00	Q				
14+25	0.0000	0.00	Q				
14+30	0.0000	0.00	Q				
14+35	0.0000	0.00	Q				
14+40	0.0000	0.00	Q				
14+45	0.0000	0.00	Q				
14+50	0.0000	0.00	Q				
14+55	0.0000	0.00	Q				
15+ 0	0.0000	0.00	Q				
15+ 5	0.0000	0.00	Q				
15+10	0.0000	0.00	Q				
15+15	0.0000	0.00	Q				
15+20	0.0000	0.00	Q				
15+25	0.0000	0.00	Q				
15+30	0.0000	0.00	Q				
15+35	0.0000	0.00	Q				
15+40	0.0000	0.00	Q				
15+45	0.0000	0.00	Q				
15+50	0.0000	0.00	Q				
15+55	0.0000	0.00	Q				
16+ 0	0.0000	0.00	Q				
16+ 5	0.0080	1.17	Q			V	
16+10	0.0127	0.67	Q				V
16+15	0.0128	0.02	Q				V
16+20	0.0128	0.00	Q				V
16+25	0.0128	0.00	Q				V
16+30	0.0128	0.00	Q				V
16+35	0.0128	0.00	Q				V
16+40	0.0128	0.00	Q				V
16+45	0.0128	0.00	Q				V
16+50	0.0128	0.00	Q				V
16+55	0.0128	0.00	Q				V
17+ 0	0.0128	0.00	Q				V
17+ 5	0.0128	0.00	Q				V
17+10	0.0128	0.00	Q				V
17+15	0.0128	0.00	Q				V

17+20	0.0128	0.00	Q				V
17+25	0.0128	0.00	Q				V
17+30	0.0128	0.00	Q				V
17+35	0.0128	0.00	Q				V
17+40	0.0128	0.00	Q				V
17+45	0.0128	0.00	Q				V
17+50	0.0128	0.00	Q				V
17+55	0.0128	0.00	Q				V
18+ 0	0.0128	0.00	Q				V
18+ 5	0.0128	0.00	Q				V
18+10	0.0128	0.00	Q				V
18+15	0.0128	0.00	Q				V
18+20	0.0128	0.00	Q				V
18+25	0.0128	0.00	Q				V
18+30	0.0128	0.00	Q				V
18+35	0.0128	0.00	Q				V
18+40	0.0128	0.00	Q				V
18+45	0.0128	0.00	Q				V
18+50	0.0128	0.00	Q				V
18+55	0.0128	0.00	Q				V
19+ 0	0.0128	0.00	Q				V
19+ 5	0.0128	0.00	Q				V
19+10	0.0128	0.00	Q				V
19+15	0.0128	0.00	Q				V
19+20	0.0128	0.00	Q				V
19+25	0.0128	0.00	Q				V
19+30	0.0128	0.00	Q				V
19+35	0.0128	0.00	Q				V
19+40	0.0128	0.00	Q				V
19+45	0.0128	0.00	Q				V
19+50	0.0128	0.00	Q				V
19+55	0.0128	0.00	Q				V
20+ 0	0.0128	0.00	Q				V
20+ 5	0.0128	0.00	Q				V
20+10	0.0128	0.00	Q				V
20+15	0.0128	0.00	Q				V
20+20	0.0128	0.00	Q				V
20+25	0.0128	0.00	Q				V
20+30	0.0128	0.00	Q				V
20+35	0.0128	0.00	Q				V
20+40	0.0128	0.00	Q				V
20+45	0.0128	0.00	Q				V
20+50	0.0128	0.00	Q				V
20+55	0.0128	0.00	Q				V
21+ 0	0.0128	0.00	Q				V
21+ 5	0.0128	0.00	Q				V
21+10	0.0128	0.00	Q				V
21+15	0.0128	0.00	Q				V
21+20	0.0128	0.00	Q				V
21+25	0.0128	0.00	Q				V
21+30	0.0128	0.00	Q				V
21+35	0.0128	0.00	Q				V
21+40	0.0128	0.00	Q				V
21+45	0.0128	0.00	Q				V
21+50	0.0128	0.00	Q				V
21+55	0.0128	0.00	Q				V
22+ 0	0.0128	0.00	Q				V
22+ 5	0.0128	0.00	Q				V
22+10	0.0128	0.00	Q				V
22+15	0.0128	0.00	Q				V
22+20	0.0128	0.00	Q				V
22+25	0.0128	0.00	Q				V
22+30	0.0128	0.00	Q				V
22+35	0.0128	0.00	Q				V
22+40	0.0128	0.00	Q				V
22+45	0.0128	0.00	Q				V
22+50	0.0128	0.00	Q				V
22+55	0.0128	0.00	Q				V
23+ 0	0.0128	0.00	Q				V
23+ 5	0.0128	0.00	Q				V
23+10	0.0128	0.00	Q				V
23+15	0.0128	0.00	Q				V
23+20	0.0128	0.00	Q				V
23+25	0.0128	0.00	Q				V
23+30	0.0128	0.00	Q				V
23+35	0.0128	0.00	Q				V
23+40	0.0128	0.00	Q				V
23+45	0.0128	0.00	Q				V
23+50	0.0128	0.00	Q				V
23+55	0.0128	0.00	Q				V
24+ 0	0.0128	0.00	Q				V

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

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Study date 02/26/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA F
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
3.38	1	0.78
Rainfall data for year 2		
3.38	6	1.20
Rainfall data for year 2		
3.38	24	2.18
Rainfall data for year 100		
3.38	1	1.27
Rainfall data for year 100		
3.38	6	2.86
Rainfall data for year 100		
3.38	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
50.0	31.0	3.38	1.000	0.983	1.000	0.983

Area-averaged adjusted loss rate Fm (In/Hr) = 0.983

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
3.38	1.000	50.0	31.0	10.90	0.000

Area-averaged catchment yield fraction, Y = 0.000
Area-averaged low loss fraction, Yb = 1.000

++
Watercourse length = 940.00(Ft.)
Length from concentration point to centroid = 210.00(Ft.)
Elevation difference along watercourse = 102.80(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 3.38(Ac.)
Catchment Lag time = 0.033 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 254.1798
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.983(In/Hr)
Average low loss rate fraction (Yb) = 1.000 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 3.38(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.210(In)
30-minute factor = 1.000 Adjusted rainfall = 0.359(In)
1-hour factor = 1.000 Adjusted rainfall = 0.443(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 40.88 (CFS))	
1	51.621	21.101
2	96.265	18.249
3	100.000	1.527

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2100	0.2100
2	0.2585	0.0485
3	0.2920	0.0334
4	0.3183	0.0263
5	0.3403	0.0220
6	0.3594	0.0191
7	0.3765	0.0170
8	0.3918	0.0154
9	0.4059	0.0141
10	0.4190	0.0130
11	0.4311	0.0122
12	0.4425	0.0114
13	0.4627	0.0202
14	0.4822	0.0195
15	0.5011	0.0189
16	0.5194	0.0183
17	0.5372	0.0178
18	0.5546	0.0174
19	0.5716	0.0169
20	0.5881	0.0166
21	0.6043	0.0162
22	0.6202	0.0159
23	0.6357	0.0155
24	0.6510	0.0152
25	0.6659	0.0150
26	0.6806	0.0147
27	0.6951	0.0145
28	0.7093	0.0142
29	0.7233	0.0140
30	0.7371	0.0138
31	0.7507	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7903	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8284	0.0125
38	0.8408	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8771	0.0120
42	0.8889	0.0118
43	0.9007	0.0117
44	0.9123	0.0116
45	0.9237	0.0115
46	0.9351	0.0114
47	0.9464	0.0113

		AREAF
48	0.9575	0.0112
49	0.9686	0.0111
50	0.9795	0.0110
51	0.9904	0.0109
52	1.0012	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0537	0.0103
58	1.0639	0.0103
59	1.0741	0.0102
60	1.0842	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1336	0.0097
66	1.1432	0.0097
67	1.1529	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1907	0.0094
72	1.2000	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2213	0.0070
76	1.2283	0.0070
77	1.2352	0.0069
78	1.2421	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2758	0.0066
84	1.2824	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3019	0.0065
88	1.3083	0.0064
89	1.3147	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3336	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3583	0.0061
97	1.3643	0.0061
98	1.3704	0.0060
99	1.3764	0.0060
100	1.3823	0.0060
101	1.3883	0.0059
102	1.3942	0.0059
103	1.4001	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4175	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4403	0.0057
111	1.4459	0.0056
112	1.4515	0.0056
113	1.4571	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4736	0.0055
117	1.4790	0.0055
118	1.4845	0.0054
119	1.4899	0.0054
120	1.4953	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5218	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5426	0.0052
130	1.5477	0.0051
131	1.5528	0.0051

		AREAF
132	1.5579	0.0051
133	1.5630	0.0051
134	1.5680	0.0051
135	1.5731	0.0050
136	1.5781	0.0050
137	1.5831	0.0050
138	1.5880	0.0050
139	1.5930	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6077	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6461	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6602	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6925	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7061	0.0045
164	1.7106	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7240	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7504	0.0044
174	1.7547	0.0044
175	1.7591	0.0043
176	1.7634	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7763	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7933	0.0042
184	1.7975	0.0042
185	1.8017	0.0042
186	1.8059	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8225	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8430	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8592	0.0040
200	1.8632	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8752	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8871	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9183	0.0039
215	1.9221	0.0039

		AREAF
216	1.9260	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9564	0.0038
225	1.9601	0.0038
226	1.9639	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9751	0.0037
230	1.9788	0.0037
231	1.9825	0.0037
232	1.9862	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9972	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0118	0.0036
240	2.0154	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0298	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0405	0.0036
248	2.0440	0.0036
249	2.0476	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0582	0.0035
253	2.0617	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0722	0.0035
257	2.0757	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0861	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1067	0.0034
267	2.1101	0.0034
268	2.1135	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1371	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1471	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1735	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0033	0.0000
2	0.0033	0.0033	0.0000
3	0.0033	0.0033	0.0000
4	0.0033	0.0033	0.0000
5	0.0033	0.0033	0.0000
6	0.0033	0.0033	0.0000

		AREAF	
7	0.0033	0.0033	0.0000
8	0.0033	0.0033	0.0000
9	0.0033	0.0033	0.0000
10	0.0034	0.0034	0.0000
11	0.0034	0.0034	0.0000
12	0.0034	0.0034	0.0000
13	0.0034	0.0034	0.0000
14	0.0034	0.0034	0.0000
15	0.0034	0.0034	0.0000
16	0.0034	0.0034	0.0000
17	0.0034	0.0034	0.0000
18	0.0034	0.0034	0.0000
19	0.0035	0.0035	0.0000
20	0.0035	0.0035	0.0000
21	0.0035	0.0035	0.0000
22	0.0035	0.0035	0.0000
23	0.0035	0.0035	0.0000
24	0.0035	0.0035	0.0000
25	0.0035	0.0035	0.0000
26	0.0035	0.0035	0.0000
27	0.0035	0.0035	0.0000
28	0.0036	0.0036	0.0000
29	0.0036	0.0036	0.0000
30	0.0036	0.0036	0.0000
31	0.0036	0.0036	0.0000
32	0.0036	0.0036	0.0000
33	0.0036	0.0036	0.0000
34	0.0036	0.0036	0.0000
35	0.0036	0.0036	0.0000
36	0.0037	0.0037	0.0000
37	0.0037	0.0037	0.0000
38	0.0037	0.0037	0.0000
39	0.0037	0.0037	0.0000
40	0.0037	0.0037	0.0000
41	0.0037	0.0037	0.0000
42	0.0037	0.0037	0.0000
43	0.0038	0.0038	0.0000
44	0.0038	0.0038	0.0000
45	0.0038	0.0038	0.0000
46	0.0038	0.0038	0.0000
47	0.0038	0.0038	0.0000
48	0.0038	0.0038	0.0000
49	0.0038	0.0038	0.0000
50	0.0039	0.0039	0.0000
51	0.0039	0.0039	0.0000
52	0.0039	0.0039	0.0000
53	0.0039	0.0039	0.0000
54	0.0039	0.0039	0.0000
55	0.0039	0.0039	0.0000
56	0.0040	0.0040	0.0000
57	0.0040	0.0040	0.0000
58	0.0040	0.0040	0.0000
59	0.0040	0.0040	0.0000
60	0.0040	0.0040	0.0000
61	0.0040	0.0040	0.0000
62	0.0041	0.0041	0.0000
63	0.0041	0.0041	0.0000
64	0.0041	0.0041	0.0000
65	0.0041	0.0041	0.0000
66	0.0041	0.0041	0.0000
67	0.0041	0.0041	0.0000
68	0.0042	0.0042	0.0000
69	0.0042	0.0042	0.0000
70	0.0042	0.0042	0.0000
71	0.0042	0.0042	0.0000
72	0.0042	0.0042	0.0000
73	0.0043	0.0043	0.0000
74	0.0043	0.0043	0.0000
75	0.0043	0.0043	0.0000
76	0.0043	0.0043	0.0000
77	0.0044	0.0044	0.0000
78	0.0044	0.0044	0.0000
79	0.0044	0.0044	0.0000
80	0.0044	0.0044	0.0000
81	0.0044	0.0044	0.0000
82	0.0045	0.0045	0.0000
83	0.0045	0.0045	0.0000
84	0.0045	0.0045	0.0000
85	0.0045	0.0045	0.0000
86	0.0045	0.0045	0.0000
87	0.0046	0.0046	0.0000
88	0.0046	0.0046	0.0000
89	0.0046	0.0046	0.0000
90	0.0046	0.0046	0.0000

		AREAF	
91	0.0047	0.0047	0.0000
92	0.0047	0.0047	0.0000
93	0.0047	0.0047	0.0000
94	0.0048	0.0048	0.0000
95	0.0048	0.0048	0.0000
96	0.0048	0.0048	0.0000
97	0.0048	0.0048	0.0000
98	0.0049	0.0049	0.0000
99	0.0049	0.0049	0.0000
100	0.0049	0.0049	0.0000
101	0.0050	0.0050	0.0000
102	0.0050	0.0050	0.0000
103	0.0050	0.0050	0.0000
104	0.0051	0.0051	0.0000
105	0.0051	0.0051	0.0000
106	0.0051	0.0051	0.0000
107	0.0052	0.0052	0.0000
108	0.0052	0.0052	0.0000
109	0.0052	0.0052	0.0000
110	0.0053	0.0053	0.0000
111	0.0053	0.0053	0.0000
112	0.0053	0.0053	0.0000
113	0.0054	0.0054	0.0000
114	0.0054	0.0054	0.0000
115	0.0055	0.0055	0.0000
116	0.0055	0.0055	0.0000
117	0.0055	0.0055	0.0000
118	0.0056	0.0056	0.0000
119	0.0056	0.0056	0.0000
120	0.0057	0.0057	0.0000
121	0.0057	0.0057	0.0000
122	0.0057	0.0057	0.0000
123	0.0058	0.0058	0.0000
124	0.0058	0.0058	0.0000
125	0.0059	0.0059	0.0000
126	0.0059	0.0059	0.0000
127	0.0060	0.0060	0.0000
128	0.0060	0.0060	0.0000
129	0.0061	0.0061	0.0000
130	0.0061	0.0061	0.0000
131	0.0062	0.0062	0.0000
132	0.0063	0.0063	0.0000
133	0.0063	0.0063	0.0000
134	0.0064	0.0064	0.0000
135	0.0065	0.0065	0.0000
136	0.0065	0.0065	0.0000
137	0.0066	0.0066	0.0000
138	0.0066	0.0066	0.0000
139	0.0067	0.0067	0.0000
140	0.0068	0.0068	0.0000
141	0.0069	0.0069	0.0000
142	0.0069	0.0069	0.0000
143	0.0070	0.0070	0.0000
144	0.0071	0.0071	0.0000
145	0.0093	0.0093	0.0000
146	0.0094	0.0094	0.0000
147	0.0095	0.0095	0.0000
148	0.0095	0.0095	0.0000
149	0.0097	0.0097	0.0000
150	0.0097	0.0097	0.0000
151	0.0099	0.0099	0.0000
152	0.0099	0.0099	0.0000
153	0.0101	0.0101	0.0000
154	0.0102	0.0102	0.0000
155	0.0103	0.0103	0.0000
156	0.0104	0.0104	0.0000
157	0.0106	0.0106	0.0000
158	0.0107	0.0107	0.0000
159	0.0109	0.0109	0.0000
160	0.0110	0.0110	0.0000
161	0.0112	0.0112	0.0000
162	0.0113	0.0113	0.0000
163	0.0115	0.0115	0.0000
164	0.0116	0.0116	0.0000
165	0.0118	0.0118	0.0000
166	0.0120	0.0120	0.0000
167	0.0122	0.0122	0.0000
168	0.0124	0.0124	0.0000
169	0.0127	0.0127	0.0000
170	0.0129	0.0129	0.0000
171	0.0132	0.0132	0.0000
172	0.0134	0.0134	0.0000
173	0.0138	0.0138	0.0000
174	0.0140	0.0140	0.0000

175	0.0145	0.0145	0.0000
176	0.0147	0.0147	0.0000
177	0.0152	0.0152	0.0000
178	0.0155	0.0155	0.0000
179	0.0162	0.0162	0.0000
180	0.0166	0.0166	0.0000
181	0.0174	0.0174	0.0000
182	0.0178	0.0178	0.0000
183	0.0189	0.0189	0.0000
184	0.0195	0.0195	0.0000
185	0.0114	0.0114	0.0000
186	0.0122	0.0122	0.0000
187	0.0141	0.0141	0.0000
188	0.0154	0.0154	0.0000
189	0.0191	0.0191	0.0000
190	0.0220	0.0220	0.0000
191	0.0334	0.0334	0.0000
192	0.0485	0.0485	0.0000
193	0.2100	0.0819	0.1281
194	0.0263	0.0263	0.0000
195	0.0170	0.0170	0.0000
196	0.0130	0.0130	0.0000
197	0.0202	0.0202	0.0000
198	0.0183	0.0183	0.0000
199	0.0169	0.0169	0.0000
200	0.0159	0.0159	0.0000
201	0.0150	0.0150	0.0000
202	0.0142	0.0142	0.0000
203	0.0136	0.0136	0.0000
204	0.0130	0.0130	0.0000
205	0.0125	0.0125	0.0000
206	0.0121	0.0121	0.0000
207	0.0117	0.0117	0.0000
208	0.0114	0.0114	0.0000
209	0.0111	0.0111	0.0000
210	0.0108	0.0108	0.0000
211	0.0105	0.0105	0.0000
212	0.0103	0.0103	0.0000
213	0.0100	0.0100	0.0000
214	0.0098	0.0098	0.0000
215	0.0096	0.0096	0.0000
216	0.0094	0.0094	0.0000
217	0.0071	0.0071	0.0000
218	0.0070	0.0070	0.0000
219	0.0068	0.0068	0.0000
220	0.0067	0.0067	0.0000
221	0.0066	0.0066	0.0000
222	0.0064	0.0064	0.0000
223	0.0063	0.0063	0.0000
224	0.0062	0.0062	0.0000
225	0.0061	0.0061	0.0000
226	0.0060	0.0060	0.0000
227	0.0059	0.0059	0.0000
228	0.0058	0.0058	0.0000
229	0.0057	0.0057	0.0000
230	0.0056	0.0056	0.0000
231	0.0055	0.0055	0.0000
232	0.0054	0.0054	0.0000
233	0.0054	0.0054	0.0000
234	0.0053	0.0053	0.0000
235	0.0052	0.0052	0.0000
236	0.0051	0.0051	0.0000
237	0.0051	0.0051	0.0000
238	0.0050	0.0050	0.0000
239	0.0049	0.0049	0.0000
240	0.0049	0.0049	0.0000
241	0.0048	0.0048	0.0000
242	0.0048	0.0048	0.0000
243	0.0047	0.0047	0.0000
244	0.0047	0.0047	0.0000
245	0.0046	0.0046	0.0000
246	0.0046	0.0046	0.0000
247	0.0045	0.0045	0.0000
248	0.0045	0.0045	0.0000
249	0.0044	0.0044	0.0000
250	0.0044	0.0044	0.0000
251	0.0043	0.0043	0.0000
252	0.0043	0.0043	0.0000
253	0.0043	0.0043	0.0000
254	0.0042	0.0042	0.0000
255	0.0042	0.0042	0.0000
256	0.0041	0.0041	0.0000
257	0.0041	0.0041	0.0000
258	0.0041	0.0041	0.0000

		AREAF
259	0.0040	0.0040	0.0000
260	0.0040	0.0040	0.0000
261	0.0040	0.0040	0.0000
262	0.0039	0.0039	0.0000
263	0.0039	0.0039	0.0000
264	0.0039	0.0039	0.0000
265	0.0038	0.0038	0.0000
266	0.0038	0.0038	0.0000
267	0.0038	0.0038	0.0000
268	0.0037	0.0037	0.0000
269	0.0037	0.0037	0.0000
270	0.0037	0.0037	0.0000
271	0.0037	0.0037	0.0000
272	0.0036	0.0036	0.0000
273	0.0036	0.0036	0.0000
274	0.0036	0.0036	0.0000
275	0.0036	0.0036	0.0000
276	0.0035	0.0035	0.0000
277	0.0035	0.0035	0.0000
278	0.0035	0.0035	0.0000
279	0.0035	0.0035	0.0000
280	0.0034	0.0034	0.0000
281	0.0034	0.0034	0.0000
282	0.0034	0.0034	0.0000
283	0.0034	0.0034	0.0000
284	0.0034	0.0034	0.0000
285	0.0033	0.0033	0.0000
286	0.0033	0.0033	0.0000
287	0.0033	0.0033	0.0000
288	0.0033	0.0033	0.0000

Total soil rain loss = 2.05(In)
Total effective rainfall = 0.13(In)
Peak flow rate in flood hydrograph = 2.70(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	0.0000	0.00	Q				
0+35	0.0000	0.00	Q				
0+40	0.0000	0.00	Q				
0+45	0.0000	0.00	Q				
0+50	0.0000	0.00	Q				
0+55	0.0000	0.00	Q				
1+ 0	0.0000	0.00	Q				
1+ 5	0.0000	0.00	Q				
1+10	0.0000	0.00	Q				
1+15	0.0000	0.00	Q				
1+20	0.0000	0.00	Q				
1+25	0.0000	0.00	Q				
1+30	0.0000	0.00	Q				
1+35	0.0000	0.00	Q				
1+40	0.0000	0.00	Q				
1+45	0.0000	0.00	Q				
1+50	0.0000	0.00	Q				
1+55	0.0000	0.00	Q				
2+ 0	0.0000	0.00	Q				
2+ 5	0.0000	0.00	Q				
2+10	0.0000	0.00	Q				
2+15	0.0000	0.00	Q				
2+20	0.0000	0.00	Q				
2+25	0.0000	0.00	Q				
2+30	0.0000	0.00	Q				
2+35	0.0000	0.00	Q				
2+40	0.0000	0.00	Q				
2+45	0.0000	0.00	Q				
2+50	0.0000	0.00	Q				
2+55	0.0000	0.00	Q				
3+ 0	0.0000	0.00	Q				
3+ 5	0.0000	0.00	Q				
3+10	0.0000	0.00	Q				
3+15	0.0000	0.00	Q				

3+20	0.0000	0.00	Q				
3+25	0.0000	0.00	Q				
3+30	0.0000	0.00	Q				
3+35	0.0000	0.00	Q				
3+40	0.0000	0.00	Q				
3+45	0.0000	0.00	Q				
3+50	0.0000	0.00	Q				
3+55	0.0000	0.00	Q				
4+ 0	0.0000	0.00	Q				
4+ 5	0.0000	0.00	Q				
4+10	0.0000	0.00	Q				
4+15	0.0000	0.00	Q				
4+20	0.0000	0.00	Q				
4+25	0.0000	0.00	Q				
4+30	0.0000	0.00	Q				
4+35	0.0000	0.00	Q				
4+40	0.0000	0.00	Q				
4+45	0.0000	0.00	Q				
4+50	0.0000	0.00	Q				
4+55	0.0000	0.00	Q				
5+ 0	0.0000	0.00	Q				
5+ 5	0.0000	0.00	Q				
5+10	0.0000	0.00	Q				
5+15	0.0000	0.00	Q				
5+20	0.0000	0.00	Q				
5+25	0.0000	0.00	Q				
5+30	0.0000	0.00	Q				
5+35	0.0000	0.00	Q				
5+40	0.0000	0.00	Q				
5+45	0.0000	0.00	Q				
5+50	0.0000	0.00	Q				
5+55	0.0000	0.00	Q				
6+ 0	0.0000	0.00	Q				
6+ 5	0.0000	0.00	Q				
6+10	0.0000	0.00	Q				
6+15	0.0000	0.00	Q				
6+20	0.0000	0.00	Q				
6+25	0.0000	0.00	Q				
6+30	0.0000	0.00	Q				
6+35	0.0000	0.00	Q				
6+40	0.0000	0.00	Q				
6+45	0.0000	0.00	Q				
6+50	0.0000	0.00	Q				
6+55	0.0000	0.00	Q				
7+ 0	0.0000	0.00	Q				
7+ 5	0.0000	0.00	Q				
7+10	0.0000	0.00	Q				
7+15	0.0000	0.00	Q				
7+20	0.0000	0.00	Q				
7+25	0.0000	0.00	Q				
7+30	0.0000	0.00	Q				
7+35	0.0000	0.00	Q				
7+40	0.0000	0.00	Q				
7+45	0.0000	0.00	Q				
7+50	0.0000	0.00	Q				
7+55	0.0000	0.00	Q				
8+ 0	0.0000	0.00	Q				
8+ 5	0.0000	0.00	Q				
8+10	0.0000	0.00	Q				
8+15	0.0000	0.00	Q				
8+20	0.0000	0.00	Q				
8+25	0.0000	0.00	Q				
8+30	0.0000	0.00	Q				
8+35	0.0000	0.00	Q				
8+40	0.0000	0.00	Q				
8+45	0.0000	0.00	Q				
8+50	0.0000	0.00	Q				
8+55	0.0000	0.00	Q				
9+ 0	0.0000	0.00	Q				
9+ 5	0.0000	0.00	Q				
9+10	0.0000	0.00	Q				
9+15	0.0000	0.00	Q				
9+20	0.0000	0.00	Q				
9+25	0.0000	0.00	Q				
9+30	0.0000	0.00	Q				
9+35	0.0000	0.00	Q				
9+40	0.0000	0.00	Q				
9+45	0.0000	0.00	Q				
9+50	0.0000	0.00	Q				
9+55	0.0000	0.00	Q				
10+ 0	0.0000	0.00	Q				
10+ 5	0.0000	0.00	Q				
10+10	0.0000	0.00	Q				
10+15	0.0000	0.00	Q				

10+20	0.0000	0.00	Q				
10+25	0.0000	0.00	Q				
10+30	0.0000	0.00	Q				
10+35	0.0000	0.00	Q				
10+40	0.0000	0.00	Q				
10+45	0.0000	0.00	Q				
10+50	0.0000	0.00	Q				
10+55	0.0000	0.00	Q				
11+ 0	0.0000	0.00	Q				
11+ 5	0.0000	0.00	Q				
11+10	0.0000	0.00	Q				
11+15	0.0000	0.00	Q				
11+20	0.0000	0.00	Q				
11+25	0.0000	0.00	Q				
11+30	0.0000	0.00	Q				
11+35	0.0000	0.00	Q				
11+40	0.0000	0.00	Q				
11+45	0.0000	0.00	Q				
11+50	0.0000	0.00	Q				
11+55	0.0000	0.00	Q				
12+ 0	0.0000	0.00	Q				
12+ 5	0.0000	0.00	Q				
12+10	0.0000	0.00	Q				
12+15	0.0000	0.00	Q				
12+20	0.0000	0.00	Q				
12+25	0.0000	0.00	Q				
12+30	0.0000	0.00	Q				
12+35	0.0000	0.00	Q				
12+40	0.0000	0.00	Q				
12+45	0.0000	0.00	Q				
12+50	0.0000	0.00	Q				
12+55	0.0000	0.00	Q				
13+ 0	0.0000	0.00	Q				
13+ 5	0.0000	0.00	Q				
13+10	0.0000	0.00	Q				
13+15	0.0000	0.00	Q				
13+20	0.0000	0.00	Q				
13+25	0.0000	0.00	Q				
13+30	0.0000	0.00	Q				
13+35	0.0000	0.00	Q				
13+40	0.0000	0.00	Q				
13+45	0.0000	0.00	Q				
13+50	0.0000	0.00	Q				
13+55	0.0000	0.00	Q				
14+ 0	0.0000	0.00	Q				
14+ 5	0.0000	0.00	Q				
14+10	0.0000	0.00	Q				
14+15	0.0000	0.00	Q				
14+20	0.0000	0.00	Q				
14+25	0.0000	0.00	Q				
14+30	0.0000	0.00	Q				
14+35	0.0000	0.00	Q				
14+40	0.0000	0.00	Q				
14+45	0.0000	0.00	Q				
14+50	0.0000	0.00	Q				
14+55	0.0000	0.00	Q				
15+ 0	0.0000	0.00	Q				
15+ 5	0.0000	0.00	Q				
15+10	0.0000	0.00	Q				
15+15	0.0000	0.00	Q				
15+20	0.0000	0.00	Q				
15+25	0.0000	0.00	Q				
15+30	0.0000	0.00	Q				
15+35	0.0000	0.00	Q				
15+40	0.0000	0.00	Q				
15+45	0.0000	0.00	Q				
15+50	0.0000	0.00	Q				
15+55	0.0000	0.00	Q				
16+ 0	0.0000	0.00	Q				
16+ 5	0.0186	2.70	|	Q	V		
16+10	0.0347	2.34	|	Q|	|	|	V
16+15	0.0360	0.20	Q	|	|	|	V|
16+20	0.0360	0.00	Q	|	|	|	V|
16+25	0.0360	0.00	Q	|	|	|	V|
16+30	0.0360	0.00	Q	|	|	|	V|
16+35	0.0360	0.00	Q	|	|	|	V|
16+40	0.0360	0.00	Q	|	|	|	V|
16+45	0.0360	0.00	Q	|	|	|	V|
16+50	0.0360	0.00	Q	|	|	|	V|
16+55	0.0360	0.00	Q	|	|	|	V|
17+ 0	0.0360	0.00	Q	|	|	|	V|
17+ 5	0.0360	0.00	Q	|	|	|	V|
17+10	0.0360	0.00	Q	|	|	|	V|
17+15	0.0360	0.00	Q	|	|	|	V|

17+20	0.0360	0.00	Q	|	|	|	V|
17+25	0.0360	0.00	Q	|	|	|	V|
17+30	0.0360	0.00	Q	|	|	|	V|
17+35	0.0360	0.00	Q	|	|	|	V|
17+40	0.0360	0.00	Q	|	|	|	V|
17+45	0.0360	0.00	Q	|	|	|	V|
17+50	0.0360	0.00	Q	|	|	|	V|
17+55	0.0360	0.00	Q	|	|	|	V|
18+ 0	0.0360	0.00	Q	|	|	|	V|
18+ 5	0.0360	0.00	Q	|	|	|	V|
18+10	0.0360	0.00	Q	|	|	|	V|
18+15	0.0360	0.00	Q	|	|	|	V|
18+20	0.0360	0.00	Q	|	|	|	V|
18+25	0.0360	0.00	Q	|	|	|	V|
18+30	0.0360	0.00	Q	|	|	|	V|
18+35	0.0360	0.00	Q	|	|	|	V|
18+40	0.0360	0.00	Q	|	|	|	V|
18+45	0.0360	0.00	Q	|	|	|	V|
18+50	0.0360	0.00	Q	|	|	|	V|
18+55	0.0360	0.00	Q	|	|	|	V|
19+ 0	0.0360	0.00	Q	|	|	|	V|
19+ 5	0.0360	0.00	Q	|	|	|	V|
19+10	0.0360	0.00	Q	|	|	|	V|
19+15	0.0360	0.00	Q	|	|	|	V|
19+20	0.0360	0.00	Q	|	|	|	V|
19+25	0.0360	0.00	Q	|	|	|	V|
19+30	0.0360	0.00	Q	|	|	|	V|
19+35	0.0360	0.00	Q	|	|	|	V|
19+40	0.0360	0.00	Q	|	|	|	V|
19+45	0.0360	0.00	Q	|	|	|	V|
19+50	0.0360	0.00	Q	|	|	|	V|
19+55	0.0360	0.00	Q	|	|	|	V|
20+ 0	0.0360	0.00	Q	|	|	|	V|
20+ 5	0.0360	0.00	Q	|	|	|	V|
20+10	0.0360	0.00	Q	|	|	|	V|
20+15	0.0360	0.00	Q	|	|	|	V|
20+20	0.0360	0.00	Q	|	|	|	V|
20+25	0.0360	0.00	Q	|	|	|	V|
20+30	0.0360	0.00	Q	|	|	|	V|
20+35	0.0360	0.00	Q	|	|	|	V|
20+40	0.0360	0.00	Q	|	|	|	V|
20+45	0.0360	0.00	Q	|	|	|	V|
20+50	0.0360	0.00	Q	|	|	|	V|
20+55	0.0360	0.00	Q	|	|	|	V|
21+ 0	0.0360	0.00	Q	|	|	|	V|
21+ 5	0.0360	0.00	Q	|	|	|	V|
21+10	0.0360	0.00	Q	|	|	|	V|
21+15	0.0360	0.00	Q	|	|	|	V|
21+20	0.0360	0.00	Q	|	|	|	V|
21+25	0.0360	0.00	Q	|	|	|	V|
21+30	0.0360	0.00	Q	|	|	|	V|
21+35	0.0360	0.00	Q	|	|	|	V|
21+40	0.0360	0.00	Q	|	|	|	V|
21+45	0.0360	0.00	Q	|	|	|	V|
21+50	0.0360	0.00	Q	|	|	|	V|
21+55	0.0360	0.00	Q	|	|	|	V|
22+ 0	0.0360	0.00	Q	|	|	|	V|
22+ 5	0.0360	0.00	Q	|	|	|	V|
22+10	0.0360	0.00	Q	|	|	|	V|
22+15	0.0360	0.00	Q	|	|	|	V|
22+20	0.0360	0.00	Q	|	|	|	V|
22+25	0.0360	0.00	Q	|	|	|	V|
22+30	0.0360	0.00	Q	|	|	|	V|
22+35	0.0360	0.00	Q	|	|	|	V|
22+40	0.0360	0.00	Q	|	|	|	V|
22+45	0.0360	0.00	Q	|	|	|	V|
22+50	0.0360	0.00	Q	|	|	|	V|
22+55	0.0360	0.00	Q	|	|	|	V|
23+ 0	0.0360	0.00	Q	|	|	|	V|
23+ 5	0.0360	0.00	Q	|	|	|	V|
23+10	0.0360	0.00	Q	|	|	|	V|
23+15	0.0360	0.00	Q	|	|	|	V|
23+20	0.0360	0.00	Q	|	|	|	V|
23+25	0.0360	0.00	Q	|	|	|	V|
23+30	0.0360	0.00	Q	|	|	|	V|
23+35	0.0360	0.00	Q	|	|	|	V|
23+40	0.0360	0.00	Q	|	|	|	V|
23+45	0.0360	0.00	Q	|	|	|	V|
23+50	0.0360	0.00	Q	|	|	|	V|
23+55	0.0360	0.00	Q	|	|	|	V|
24+ 0	0.0360	0.00	Q	|	|	|	V|

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

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Study date 02/26/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA G
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1.36	1	0.78
Rainfall data for year 2		
1.36	6	2.18
Rainfall data for year 2		
1.36	24	2.86
Rainfall data for year 100		
1.36	1	1.20
Rainfall data for year 100		
1.36	6	1.27
Rainfall data for year 100		
1.36	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
50.0	31.0	1.36	1.000	0.983	1.000	0.983

Area-averaged adjusted loss rate Fm (In/Hr) = 0.983

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
1.36	1.000	50.0	31.0	14.30	0.000

Area-averaged catchment yield fraction, Y = 0.000
Area-averaged low loss fraction, Yb = 1.000

++
Watercourse length = 650.00(Ft.)
Length from concentration point to centroid = 200.00(Ft.)
Elevation difference along watercourse = 87.70(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 1.36(Ac.)
Catchment Lag time = 0.027 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 310.0319
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.983(In/Hr)
Average low loss rate fraction (Yb) = 1.000 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.233(In)
Computed peak 30-minute rainfall = 0.399(In)
Specified peak 1-hour rainfall = 0.492(In)
Computed peak 3-hour rainfall = 1.225(In)
Specified peak 6-hour rainfall = 2.180(In)
Specified peak 24-hour rainfall = 2.860(In)

Rainfall depth area reduction factors:
Using a total area of 1.36(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.233(In)
30-minute factor = 1.000 Adjusted rainfall = 0.399(In)
1-hour factor = 1.000 Adjusted rainfall = 0.491(In)
3-hour factor = 1.000 Adjusted rainfall = 1.225(In)
6-hour factor = 1.000 Adjusted rainfall = 2.180(In)
24-hour factor = 1.000 Adjusted rainfall = 2.860(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 16.45 (CFS))	
1	58.876	9.684
2	98.191	6.466
3	100.000	0.298

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2332	0.2332
2	0.2871	0.0539
3	0.3243	0.0371
4	0.3535	0.0292
5	0.3780	0.0245
6	0.3992	0.0212
7	0.4181	0.0189
8	0.4352	0.0171
9	0.4509	0.0157
10	0.4653	0.0145
11	0.4788	0.0135
12	0.4915	0.0127
13	0.5253	0.0338
14	0.5587	0.0334
15	0.5917	0.0330
16	0.6243	0.0326
17	0.6566	0.0323
18	0.6885	0.0320
19	0.7202	0.0317
20	0.7516	0.0314
21	0.7827	0.0311
22	0.8135	0.0309
23	0.8442	0.0306
24	0.8746	0.0304
25	0.9048	0.0302
26	0.9348	0.0300
27	0.9645	0.0298
28	0.9942	0.0296
29	1.0236	0.0294
30	1.0528	0.0293
31	1.0819	0.0291
32	1.1109	0.0289
33	1.1397	0.0288
34	1.1683	0.0286
35	1.1968	0.0285
36	1.2252	0.0284
37	1.2534	0.0282
38	1.2815	0.0281
39	1.3095	0.0280
40	1.3373	0.0279
41	1.3651	0.0277
42	1.3927	0.0276
43	1.4202	0.0275
44	1.4476	0.0274
45	1.4749	0.0273
46	1.5021	0.0272
47	1.5292	0.0271

		AREAG
48	1.5562	0.0270
49	1.5831	0.0269
50	1.6099	0.0268
51	1.6366	0.0267
52	1.6633	0.0266
53	1.6898	0.0265
54	1.7163	0.0265
55	1.7427	0.0264
56	1.7690	0.0263
57	1.7952	0.0262
58	1.8213	0.0261
59	1.8474	0.0261
60	1.8734	0.0260
61	1.8993	0.0259
62	1.9252	0.0258
63	1.9509	0.0258
64	1.9766	0.0257
65	2.0023	0.0256
66	2.0279	0.0256
67	2.0534	0.0255
68	2.0788	0.0254
69	2.1042	0.0254
70	2.1295	0.0253
71	2.1548	0.0253
72	2.1800	0.0252
73	2.1859	0.0059
74	2.1917	0.0058
75	2.1975	0.0058
76	2.2032	0.0057
77	2.2088	0.0056
78	2.2144	0.0056
79	2.2200	0.0055
80	2.2254	0.0055
81	2.2309	0.0054
82	2.2362	0.0054
83	2.2415	0.0053
84	2.2468	0.0053
85	2.2520	0.0052
86	2.2572	0.0052
87	2.2623	0.0051
88	2.2674	0.0051
89	2.2724	0.0050
90	2.2774	0.0050
91	2.2823	0.0049
92	2.2872	0.0049
93	2.2920	0.0048
94	2.2968	0.0048
95	2.3016	0.0048
96	2.3063	0.0047
97	2.3110	0.0047
98	2.3157	0.0046
99	2.3203	0.0046
100	2.3249	0.0046
101	2.3294	0.0045
102	2.3339	0.0045
103	2.3384	0.0045
104	2.3428	0.0044
105	2.3472	0.0044
106	2.3515	0.0044
107	2.3559	0.0043
108	2.3602	0.0043
109	2.3644	0.0043
110	2.3687	0.0042
111	2.3729	0.0042
112	2.3770	0.0042
113	2.3812	0.0041
114	2.3853	0.0041
115	2.3894	0.0041
116	2.3934	0.0041
117	2.3974	0.0040
118	2.4014	0.0040
119	2.4054	0.0040
120	2.4094	0.0039
121	2.4133	0.0039
122	2.4172	0.0039
123	2.4210	0.0039
124	2.4249	0.0038
125	2.4287	0.0038
126	2.4325	0.0038
127	2.4363	0.0038
128	2.4400	0.0037
129	2.4437	0.0037
130	2.4474	0.0037
131	2.4511	0.0037

		AREAG
132	2.4548	0.0037
133	2.4584	0.0036
134	2.4620	0.0036
135	2.4656	0.0036
136	2.4692	0.0036
137	2.4727	0.0035
138	2.4762	0.0035
139	2.4797	0.0035
140	2.4832	0.0035
141	2.4867	0.0035
142	2.4901	0.0034
143	2.4935	0.0034
144	2.4970	0.0034
145	2.5003	0.0034
146	2.5037	0.0034
147	2.5071	0.0033
148	2.5104	0.0033
149	2.5137	0.0033
150	2.5170	0.0033
151	2.5203	0.0033
152	2.5235	0.0033
153	2.5268	0.0032
154	2.5300	0.0032
155	2.5332	0.0032
156	2.5364	0.0032
157	2.5396	0.0032
158	2.5427	0.0032
159	2.5459	0.0031
160	2.5490	0.0031
161	2.5521	0.0031
162	2.5552	0.0031
163	2.5583	0.0031
164	2.5614	0.0031
165	2.5644	0.0031
166	2.5675	0.0030
167	2.5705	0.0030
168	2.5735	0.0030
169	2.5765	0.0030
170	2.5795	0.0030
171	2.5824	0.0030
172	2.5854	0.0030
173	2.5883	0.0029
174	2.5912	0.0029
175	2.5941	0.0029
176	2.5970	0.0029
177	2.5999	0.0029
178	2.6028	0.0029
179	2.6056	0.0029
180	2.6085	0.0028
181	2.6113	0.0028
182	2.6141	0.0028
183	2.6169	0.0028
184	2.6197	0.0028
185	2.6225	0.0028
186	2.6253	0.0028
187	2.6281	0.0028
188	2.6308	0.0027
189	2.6335	0.0027
190	2.6363	0.0027
191	2.6390	0.0027
192	2.6417	0.0027
193	2.6444	0.0027
194	2.6470	0.0027
195	2.6497	0.0027
196	2.6524	0.0027
197	2.6550	0.0026
198	2.6576	0.0026
199	2.6603	0.0026
200	2.6629	0.0026
201	2.6655	0.0026
202	2.6681	0.0026
203	2.6707	0.0026
204	2.6732	0.0026
205	2.6758	0.0026
206	2.6783	0.0026
207	2.6809	0.0025
208	2.6834	0.0025
209	2.6859	0.0025
210	2.6884	0.0025
211	2.6909	0.0025
212	2.6934	0.0025
213	2.6959	0.0025
214	2.6984	0.0025
215	2.7009	0.0025

		AREAG
216	2.7033	0.0025
217	2.7058	0.0024
218	2.7082	0.0024
219	2.7106	0.0024
220	2.7130	0.0024
221	2.7155	0.0024
222	2.7179	0.0024
223	2.7203	0.0024
224	2.7226	0.0024
225	2.7250	0.0024
226	2.7274	0.0024
227	2.7297	0.0024
228	2.7321	0.0024
229	2.7344	0.0023
230	2.7368	0.0023
231	2.7391	0.0023
232	2.7414	0.0023
233	2.7437	0.0023
234	2.7460	0.0023
235	2.7483	0.0023
236	2.7506	0.0023
237	2.7529	0.0023
238	2.7552	0.0023
239	2.7574	0.0023
240	2.7597	0.0023
241	2.7619	0.0022
242	2.7642	0.0022
243	2.7664	0.0022
244	2.7686	0.0022
245	2.7708	0.0022
246	2.7731	0.0022
247	2.7753	0.0022
248	2.7775	0.0022
249	2.7796	0.0022
250	2.7818	0.0022
251	2.7840	0.0022
252	2.7862	0.0022
253	2.7883	0.0022
254	2.7905	0.0022
255	2.7926	0.0021
256	2.7948	0.0021
257	2.7969	0.0021
258	2.7990	0.0021
259	2.8012	0.0021
260	2.8033	0.0021
261	2.8054	0.0021
262	2.8075	0.0021
263	2.8096	0.0021
264	2.8117	0.0021
265	2.8138	0.0021
266	2.8158	0.0021
267	2.8179	0.0021
268	2.8200	0.0021
269	2.8220	0.0021
270	2.8241	0.0021
271	2.8261	0.0020
272	2.8282	0.0020
273	2.8302	0.0020
274	2.8322	0.0020
275	2.8342	0.0020
276	2.8363	0.0020
277	2.8383	0.0020
278	2.8403	0.0020
279	2.8423	0.0020
280	2.8443	0.0020
281	2.8462	0.0020
282	2.8482	0.0020
283	2.8502	0.0020
284	2.8522	0.0020
285	2.8541	0.0020
286	2.8561	0.0020
287	2.8580	0.0020
288	2.8600	0.0019

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0019	0.0019	0.0000
2	0.0020	0.0020	0.0000
3	0.0020	0.0020	0.0000
4	0.0020	0.0020	0.0000
5	0.0020	0.0020	0.0000
6	0.0020	0.0020	0.0000

7	0.0020	0.0020	0.0000
8	0.0020	0.0020	0.0000
9	0.0020	0.0020	0.0000
10	0.0020	0.0020	0.0000
11	0.0020	0.0020	0.0000
12	0.0020	0.0020	0.0000
13	0.0021	0.0021	0.0000
14	0.0021	0.0021	0.0000
15	0.0021	0.0021	0.0000
16	0.0021	0.0021	0.0000
17	0.0021	0.0021	0.0000
18	0.0021	0.0021	0.0000
19	0.0021	0.0021	0.0000
20	0.0021	0.0021	0.0000
21	0.0021	0.0021	0.0000
22	0.0021	0.0021	0.0000
23	0.0021	0.0021	0.0000
24	0.0022	0.0022	0.0000
25	0.0022	0.0022	0.0000
26	0.0022	0.0022	0.0000
27	0.0022	0.0022	0.0000
28	0.0022	0.0022	0.0000
29	0.0022	0.0022	0.0000
30	0.0022	0.0022	0.0000
31	0.0022	0.0022	0.0000
32	0.0022	0.0022	0.0000
33	0.0023	0.0023	0.0000
34	0.0023	0.0023	0.0000
35	0.0023	0.0023	0.0000
36	0.0023	0.0023	0.0000
37	0.0023	0.0023	0.0000
38	0.0023	0.0023	0.0000
39	0.0023	0.0023	0.0000
40	0.0023	0.0023	0.0000
41	0.0024	0.0024	0.0000
42	0.0024	0.0024	0.0000
43	0.0024	0.0024	0.0000
44	0.0024	0.0024	0.0000
45	0.0024	0.0024	0.0000
46	0.0024	0.0024	0.0000
47	0.0024	0.0024	0.0000
48	0.0024	0.0024	0.0000
49	0.0025	0.0025	0.0000
50	0.0025	0.0025	0.0000
51	0.0025	0.0025	0.0000
52	0.0025	0.0025	0.0000
53	0.0025	0.0025	0.0000
54	0.0025	0.0025	0.0000
55	0.0025	0.0025	0.0000
56	0.0026	0.0026	0.0000
57	0.0026	0.0026	0.0000
58	0.0026	0.0026	0.0000
59	0.0026	0.0026	0.0000
60	0.0026	0.0026	0.0000
61	0.0026	0.0026	0.0000
62	0.0026	0.0026	0.0000
63	0.0027	0.0027	0.0000
64	0.0027	0.0027	0.0000
65	0.0027	0.0027	0.0000
66	0.0027	0.0027	0.0000
67	0.0027	0.0027	0.0000
68	0.0027	0.0027	0.0000
69	0.0028	0.0028	0.0000
70	0.0028	0.0028	0.0000
71	0.0028	0.0028	0.0000
72	0.0028	0.0028	0.0000
73	0.0028	0.0028	0.0000
74	0.0029	0.0029	0.0000
75	0.0029	0.0029	0.0000
76	0.0029	0.0029	0.0000
77	0.0029	0.0029	0.0000
78	0.0029	0.0029	0.0000
79	0.0030	0.0030	0.0000
80	0.0030	0.0030	0.0000
81	0.0030	0.0030	0.0000
82	0.0030	0.0030	0.0000
83	0.0031	0.0031	0.0000
84	0.0031	0.0031	0.0000
85	0.0031	0.0031	0.0000
86	0.0031	0.0031	0.0000
87	0.0031	0.0031	0.0000
88	0.0032	0.0032	0.0000
89	0.0032	0.0032	0.0000
90	0.0032	0.0032	0.0000

		AREAG	
91	0.0032	0.0032	0.0000
92	0.0033	0.0033	0.0000
93	0.0033	0.0033	0.0000
94	0.0033	0.0033	0.0000
95	0.0033	0.0033	0.0000
96	0.0034	0.0034	0.0000
97	0.0034	0.0034	0.0000
98	0.0034	0.0034	0.0000
99	0.0035	0.0035	0.0000
100	0.0035	0.0035	0.0000
101	0.0035	0.0035	0.0000
102	0.0035	0.0035	0.0000
103	0.0036	0.0036	0.0000
104	0.0036	0.0036	0.0000
105	0.0037	0.0037	0.0000
106	0.0037	0.0037	0.0000
107	0.0037	0.0037	0.0000
108	0.0037	0.0037	0.0000
109	0.0038	0.0038	0.0000
110	0.0038	0.0038	0.0000
111	0.0039	0.0039	0.0000
112	0.0039	0.0039	0.0000
113	0.0039	0.0039	0.0000
114	0.0040	0.0040	0.0000
115	0.0040	0.0040	0.0000
116	0.0041	0.0041	0.0000
117	0.0041	0.0041	0.0000
118	0.0041	0.0041	0.0000
119	0.0042	0.0042	0.0000
120	0.0042	0.0042	0.0000
121	0.0043	0.0043	0.0000
122	0.0043	0.0043	0.0000
123	0.0044	0.0044	0.0000
124	0.0044	0.0044	0.0000
125	0.0045	0.0045	0.0000
126	0.0045	0.0045	0.0000
127	0.0046	0.0046	0.0000
128	0.0046	0.0046	0.0000
129	0.0047	0.0047	0.0000
130	0.0048	0.0048	0.0000
131	0.0048	0.0048	0.0000
132	0.0049	0.0049	0.0000
133	0.0050	0.0050	0.0000
134	0.0050	0.0050	0.0000
135	0.0051	0.0051	0.0000
136	0.0052	0.0052	0.0000
137	0.0053	0.0053	0.0000
138	0.0053	0.0053	0.0000
139	0.0054	0.0054	0.0000
140	0.0055	0.0055	0.0000
141	0.0056	0.0056	0.0000
142	0.0056	0.0056	0.0000
143	0.0058	0.0058	0.0000
144	0.0058	0.0058	0.0000
145	0.0252	0.0252	0.0000
146	0.0253	0.0253	0.0000
147	0.0254	0.0254	0.0000
148	0.0254	0.0254	0.0000
149	0.0256	0.0256	0.0000
150	0.0256	0.0256	0.0000
151	0.0258	0.0258	0.0000
152	0.0258	0.0258	0.0000
153	0.0260	0.0260	0.0000
154	0.0261	0.0261	0.0000
155	0.0262	0.0262	0.0000
156	0.0263	0.0263	0.0000
157	0.0265	0.0265	0.0000
158	0.0265	0.0265	0.0000
159	0.0267	0.0267	0.0000
160	0.0268	0.0268	0.0000
161	0.0270	0.0270	0.0000
162	0.0271	0.0271	0.0000
163	0.0273	0.0273	0.0000
164	0.0274	0.0274	0.0000
165	0.0276	0.0276	0.0000
166	0.0277	0.0277	0.0000
167	0.0280	0.0280	0.0000
168	0.0281	0.0281	0.0000
169	0.0284	0.0284	0.0000
170	0.0285	0.0285	0.0000
171	0.0288	0.0288	0.0000
172	0.0289	0.0289	0.0000
173	0.0293	0.0293	0.0000
174	0.0294	0.0294	0.0000

175	0.0298	0.0298	0.0000
176	0.0300	0.0300	0.0000
177	0.0304	0.0304	0.0000
178	0.0306	0.0306	0.0000
179	0.0311	0.0311	0.0000
180	0.0314	0.0314	0.0000
181	0.0320	0.0320	0.0000
182	0.0323	0.0323	0.0000
183	0.0330	0.0330	0.0000
184	0.0334	0.0334	0.0000
185	0.0127	0.0127	0.0000
186	0.0135	0.0135	0.0000
187	0.0157	0.0157	0.0000
188	0.0171	0.0171	0.0000
189	0.0212	0.0212	0.0000
190	0.0245	0.0245	0.0000
191	0.0371	0.0371	0.0000
192	0.0539	0.0539	0.0000
193	0.2332	0.0819	0.1513
194	0.0292	0.0292	0.0000
195	0.0189	0.0189	0.0000
196	0.0145	0.0145	0.0000
197	0.0338	0.0338	0.0000
198	0.0326	0.0326	0.0000
199	0.0317	0.0317	0.0000
200	0.0309	0.0309	0.0000
201	0.0302	0.0302	0.0000
202	0.0296	0.0296	0.0000
203	0.0291	0.0291	0.0000
204	0.0286	0.0286	0.0000
205	0.0282	0.0282	0.0000
206	0.0279	0.0279	0.0000
207	0.0275	0.0275	0.0000
208	0.0272	0.0272	0.0000
209	0.0269	0.0269	0.0000
210	0.0266	0.0266	0.0000
211	0.0264	0.0264	0.0000
212	0.0261	0.0261	0.0000
213	0.0259	0.0259	0.0000
214	0.0257	0.0257	0.0000
215	0.0255	0.0255	0.0000
216	0.0253	0.0253	0.0000
217	0.0059	0.0059	0.0000
218	0.0057	0.0057	0.0000
219	0.0055	0.0055	0.0000
220	0.0054	0.0054	0.0000
221	0.0052	0.0052	0.0000
222	0.0051	0.0051	0.0000
223	0.0049	0.0049	0.0000
224	0.0048	0.0048	0.0000
225	0.0047	0.0047	0.0000
226	0.0046	0.0046	0.0000
227	0.0045	0.0045	0.0000
228	0.0044	0.0044	0.0000
229	0.0043	0.0043	0.0000
230	0.0042	0.0042	0.0000
231	0.0041	0.0041	0.0000
232	0.0040	0.0040	0.0000
233	0.0039	0.0039	0.0000
234	0.0038	0.0038	0.0000
235	0.0038	0.0038	0.0000
236	0.0037	0.0037	0.0000
237	0.0036	0.0036	0.0000
238	0.0036	0.0036	0.0000
239	0.0035	0.0035	0.0000
240	0.0034	0.0034	0.0000
241	0.0034	0.0034	0.0000
242	0.0033	0.0033	0.0000
243	0.0033	0.0033	0.0000
244	0.0032	0.0032	0.0000
245	0.0032	0.0032	0.0000
246	0.0031	0.0031	0.0000
247	0.0031	0.0031	0.0000
248	0.0030	0.0030	0.0000
249	0.0030	0.0030	0.0000
250	0.0030	0.0030	0.0000
251	0.0029	0.0029	0.0000
252	0.0029	0.0029	0.0000
253	0.0028	0.0028	0.0000
254	0.0028	0.0028	0.0000
255	0.0028	0.0028	0.0000
256	0.0027	0.0027	0.0000
257	0.0027	0.0027	0.0000
258	0.0027	0.0027	0.0000

259	0.0026	0.0026	0.0000
260	0.0026	0.0026	0.0000
261	0.0026	0.0026	0.0000
262	0.0025	0.0025	0.0000
263	0.0025	0.0025	0.0000
264	0.0025	0.0025	0.0000
265	0.0024	0.0024	0.0000
266	0.0024	0.0024	0.0000
267	0.0024	0.0024	0.0000
268	0.0024	0.0024	0.0000
269	0.0023	0.0023	0.0000
270	0.0023	0.0023	0.0000
271	0.0023	0.0023	0.0000
272	0.0023	0.0023	0.0000
273	0.0022	0.0022	0.0000
274	0.0022	0.0022	0.0000
275	0.0022	0.0022	0.0000
276	0.0022	0.0022	0.0000
277	0.0022	0.0022	0.0000
278	0.0021	0.0021	0.0000
279	0.0021	0.0021	0.0000
280	0.0021	0.0021	0.0000
281	0.0021	0.0021	0.0000
282	0.0021	0.0021	0.0000
283	0.0020	0.0020	0.0000
284	0.0020	0.0020	0.0000
285	0.0020	0.0020	0.0000
286	0.0020	0.0020	0.0000
287	0.0020	0.0020	0.0000
288	0.0020	0.0020	0.0000

Total soil rain loss = 2.71(In)
Total effective rainfall = 0.15(In)
Peak flow rate in flood hydrograph = 1.47(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	0.0000	0.00	Q	|	|	|	|
0+35	0.0000	0.00	Q	|	|	|	|
0+40	0.0000	0.00	Q	|	|	|	|
0+45	0.0000	0.00	Q	|	|	|	|
0+50	0.0000	0.00	Q	|	|	|	|
0+55	0.0000	0.00	Q	|	|	|	|
1+ 0	0.0000	0.00	Q	|	|	|	|
1+ 5	0.0000	0.00	Q	|	|	|	|
1+10	0.0000	0.00	Q	|	|	|	|
1+15	0.0000	0.00	Q	|	|	|	|
1+20	0.0000	0.00	Q	|	|	|	|
1+25	0.0000	0.00	Q	|	|	|	|
1+30	0.0000	0.00	Q	|	|	|	|
1+35	0.0000	0.00	Q	|	|	|	|
1+40	0.0000	0.00	Q	|	|	|	|
1+45	0.0000	0.00	Q	|	|	|	|
1+50	0.0000	0.00	Q	|	|	|	|
1+55	0.0000	0.00	Q	|	|	|	|
2+ 0	0.0000	0.00	Q	|	|	|	|
2+ 5	0.0000	0.00	Q	|	|	|	|
2+10	0.0000	0.00	Q	|	|	|	|
2+15	0.0000	0.00	Q	|	|	|	|
2+20	0.0000	0.00	Q	|	|	|	|
2+25	0.0000	0.00	Q	|	|	|	|
2+30	0.0000	0.00	Q	|	|	|	|
2+35	0.0000	0.00	Q	|	|	|	|
2+40	0.0000	0.00	Q	|	|	|	|
2+45	0.0000	0.00	Q	|	|	|	|
2+50	0.0000	0.00	Q	|	|	|	|
2+55	0.0000	0.00	Q	|	|	|	|
3+ 0	0.0000	0.00	Q	|	|	|	|
3+ 5	0.0000	0.00	Q	|	|	|	|
3+10	0.0000	0.00	Q	|	|	|	|
3+15	0.0000	0.00	Q	|	|	|	|

3+20	0.0000	0.00	Q				
3+25	0.0000	0.00	Q				
3+30	0.0000	0.00	Q				
3+35	0.0000	0.00	Q				
3+40	0.0000	0.00	Q				
3+45	0.0000	0.00	Q				
3+50	0.0000	0.00	Q				
3+55	0.0000	0.00	Q				
4+ 0	0.0000	0.00	Q				
4+ 5	0.0000	0.00	Q				
4+10	0.0000	0.00	Q				
4+15	0.0000	0.00	Q				
4+20	0.0000	0.00	Q				
4+25	0.0000	0.00	Q				
4+30	0.0000	0.00	Q				
4+35	0.0000	0.00	Q				
4+40	0.0000	0.00	Q				
4+45	0.0000	0.00	Q				
4+50	0.0000	0.00	Q				
4+55	0.0000	0.00	Q				
5+ 0	0.0000	0.00	Q				
5+ 5	0.0000	0.00	Q				
5+10	0.0000	0.00	Q				
5+15	0.0000	0.00	Q				
5+20	0.0000	0.00	Q				
5+25	0.0000	0.00	Q				
5+30	0.0000	0.00	Q				
5+35	0.0000	0.00	Q				
5+40	0.0000	0.00	Q				
5+45	0.0000	0.00	Q				
5+50	0.0000	0.00	Q				
5+55	0.0000	0.00	Q				
6+ 0	0.0000	0.00	Q				
6+ 5	0.0000	0.00	Q				
6+10	0.0000	0.00	Q				
6+15	0.0000	0.00	Q				
6+20	0.0000	0.00	Q				
6+25	0.0000	0.00	Q				
6+30	0.0000	0.00	Q				
6+35	0.0000	0.00	Q				
6+40	0.0000	0.00	Q				
6+45	0.0000	0.00	Q				
6+50	0.0000	0.00	Q				
6+55	0.0000	0.00	Q				
7+ 0	0.0000	0.00	Q				
7+ 5	0.0000	0.00	Q				
7+10	0.0000	0.00	Q				
7+15	0.0000	0.00	Q				
7+20	0.0000	0.00	Q				
7+25	0.0000	0.00	Q				
7+30	0.0000	0.00	Q				
7+35	0.0000	0.00	Q				
7+40	0.0000	0.00	Q				
7+45	0.0000	0.00	Q				
7+50	0.0000	0.00	Q				
7+55	0.0000	0.00	Q				
8+ 0	0.0000	0.00	Q				
8+ 5	0.0000	0.00	Q				
8+10	0.0000	0.00	Q				
8+15	0.0000	0.00	Q				
8+20	0.0000	0.00	Q				
8+25	0.0000	0.00	Q				
8+30	0.0000	0.00	Q				
8+35	0.0000	0.00	Q				
8+40	0.0000	0.00	Q				
8+45	0.0000	0.00	Q				
8+50	0.0000	0.00	Q				
8+55	0.0000	0.00	Q				
9+ 0	0.0000	0.00	Q				
9+ 5	0.0000	0.00	Q				
9+10	0.0000	0.00	Q				
9+15	0.0000	0.00	Q				
9+20	0.0000	0.00	Q				
9+25	0.0000	0.00	Q				
9+30	0.0000	0.00	Q				
9+35	0.0000	0.00	Q				
9+40	0.0000	0.00	Q				
9+45	0.0000	0.00	Q				
9+50	0.0000	0.00	Q				
9+55	0.0000	0.00	Q				
10+ 0	0.0000	0.00	Q				
10+ 5	0.0000	0.00	Q				
10+10	0.0000	0.00	Q				
10+15	0.0000	0.00	Q				

10+20	0.0000	0.00	Q				
10+25	0.0000	0.00	Q				
10+30	0.0000	0.00	Q				
10+35	0.0000	0.00	Q				
10+40	0.0000	0.00	Q				
10+45	0.0000	0.00	Q				
10+50	0.0000	0.00	Q				
10+55	0.0000	0.00	Q				
11+ 0	0.0000	0.00	Q				
11+ 5	0.0000	0.00	Q				
11+10	0.0000	0.00	Q				
11+15	0.0000	0.00	Q				
11+20	0.0000	0.00	Q				
11+25	0.0000	0.00	Q				
11+30	0.0000	0.00	Q				
11+35	0.0000	0.00	Q				
11+40	0.0000	0.00	Q				
11+45	0.0000	0.00	Q				
11+50	0.0000	0.00	Q				
11+55	0.0000	0.00	Q				
12+ 0	0.0000	0.00	Q				
12+ 5	0.0000	0.00	Q				
12+10	0.0000	0.00	Q				
12+15	0.0000	0.00	Q				
12+20	0.0000	0.00	Q				
12+25	0.0000	0.00	Q				
12+30	0.0000	0.00	Q				
12+35	0.0000	0.00	Q				
12+40	0.0000	0.00	Q				
12+45	0.0000	0.00	Q				
12+50	0.0000	0.00	Q				
12+55	0.0000	0.00	Q				
13+ 0	0.0000	0.00	Q				
13+ 5	0.0000	0.00	Q				
13+10	0.0000	0.00	Q				
13+15	0.0000	0.00	Q				
13+20	0.0000	0.00	Q				
13+25	0.0000	0.00	Q				
13+30	0.0000	0.00	Q				
13+35	0.0000	0.00	Q				
13+40	0.0000	0.00	Q				
13+45	0.0000	0.00	Q				
13+50	0.0000	0.00	Q				
13+55	0.0000	0.00	Q				
14+ 0	0.0000	0.00	Q				
14+ 5	0.0000	0.00	Q				
14+10	0.0000	0.00	Q				
14+15	0.0000	0.00	Q				
14+20	0.0000	0.00	Q				
14+25	0.0000	0.00	Q				
14+30	0.0000	0.00	Q				
14+35	0.0000	0.00	Q				
14+40	0.0000	0.00	Q				
14+45	0.0000	0.00	Q				
14+50	0.0000	0.00	Q				
14+55	0.0000	0.00	Q				
15+ 0	0.0000	0.00	Q				
15+ 5	0.0000	0.00	Q				
15+10	0.0000	0.00	Q				
15+15	0.0000	0.00	Q				
15+20	0.0000	0.00	Q				
15+25	0.0000	0.00	Q				
15+30	0.0000	0.00	Q				
15+35	0.0000	0.00	Q				
15+40	0.0000	0.00	Q				
15+45	0.0000	0.00	Q				
15+50	0.0000	0.00	Q				
15+55	0.0000	0.00	Q				
16+ 0	0.0000	0.00	Q				
16+ 5	0.0101	1.47		Q		V	
16+10	0.0168	0.98		Q			V
16+15	0.0171	0.05	Q				V
16+20	0.0171	0.00	Q				V
16+25	0.0171	0.00	Q				V
16+30	0.0171	0.00	Q				V
16+35	0.0171	0.00	Q				V
16+40	0.0171	0.00	Q				V
16+45	0.0171	0.00	Q				V
16+50	0.0171	0.00	Q				V
16+55	0.0171	0.00	Q				V
17+ 0	0.0171	0.00	Q				V
17+ 5	0.0171	0.00	Q				V
17+10	0.0171	0.00	Q				V
17+15	0.0171	0.00	Q				V

17+20	0.0171	0.00	Q	|	|	|	V|
17+25	0.0171	0.00	Q	|	|	|	V|
17+30	0.0171	0.00	Q	|	|	|	V|
17+35	0.0171	0.00	Q	|	|	|	V|
17+40	0.0171	0.00	Q	|	|	|	V|
17+45	0.0171	0.00	Q	|	|	|	V|
17+50	0.0171	0.00	Q	|	|	|	V|
17+55	0.0171	0.00	Q	|	|	|	V|
18+ 0	0.0171	0.00	Q	|	|	|	V|
18+ 5	0.0171	0.00	Q	|	|	|	V|
18+10	0.0171	0.00	Q	|	|	|	V|
18+15	0.0171	0.00	Q	|	|	|	V|
18+20	0.0171	0.00	Q	|	|	|	V|
18+25	0.0171	0.00	Q	|	|	|	V|
18+30	0.0171	0.00	Q	|	|	|	V|
18+35	0.0171	0.00	Q	|	|	|	V|
18+40	0.0171	0.00	Q	|	|	|	V|
18+45	0.0171	0.00	Q	|	|	|	V|
18+50	0.0171	0.00	Q	|	|	|	V|
18+55	0.0171	0.00	Q	|	|	|	V|
19+ 0	0.0171	0.00	Q	|	|	|	V|
19+ 5	0.0171	0.00	Q	|	|	|	V|
19+10	0.0171	0.00	Q	|	|	|	V|
19+15	0.0171	0.00	Q	|	|	|	V|
19+20	0.0171	0.00	Q	|	|	|	V|
19+25	0.0171	0.00	Q	|	|	|	V|
19+30	0.0171	0.00	Q	|	|	|	V|
19+35	0.0171	0.00	Q	|	|	|	V|
19+40	0.0171	0.00	Q	|	|	|	V|
19+45	0.0171	0.00	Q	|	|	|	V|
19+50	0.0171	0.00	Q	|	|	|	V|
19+55	0.0171	0.00	Q	|	|	|	V|
20+ 0	0.0171	0.00	Q	|	|	|	V|
20+ 5	0.0171	0.00	Q	|	|	|	V|
20+10	0.0171	0.00	Q	|	|	|	V|
20+15	0.0171	0.00	Q	|	|	|	V|
20+20	0.0171	0.00	Q	|	|	|	V|
20+25	0.0171	0.00	Q	|	|	|	V|
20+30	0.0171	0.00	Q	|	|	|	V|
20+35	0.0171	0.00	Q	|	|	|	V|
20+40	0.0171	0.00	Q	|	|	|	V|
20+45	0.0171	0.00	Q	|	|	|	V|
20+50	0.0171	0.00	Q	|	|	|	V|
20+55	0.0171	0.00	Q	|	|	|	V|
21+ 0	0.0171	0.00	Q	|	|	|	V|
21+ 5	0.0171	0.00	Q	|	|	|	V|
21+10	0.0171	0.00	Q	|	|	|	V|
21+15	0.0171	0.00	Q	|	|	|	V|
21+20	0.0171	0.00	Q	|	|	|	V|
21+25	0.0171	0.00	Q	|	|	|	V|
21+30	0.0171	0.00	Q	|	|	|	V|
21+35	0.0171	0.00	Q	|	|	|	V|
21+40	0.0171	0.00	Q	|	|	|	V|
21+45	0.0171	0.00	Q	|	|	|	V|
21+50	0.0171	0.00	Q	|	|	|	V|
21+55	0.0171	0.00	Q	|	|	|	V|
22+ 0	0.0171	0.00	Q	|	|	|	V|
22+ 5	0.0171	0.00	Q	|	|	|	V|
22+10	0.0171	0.00	Q	|	|	|	V|
22+15	0.0171	0.00	Q	|	|	|	V|
22+20	0.0171	0.00	Q	|	|	|	V|
22+25	0.0171	0.00	Q	|	|	|	V|
22+30	0.0171	0.00	Q	|	|	|	V|
22+35	0.0171	0.00	Q	|	|	|	V|
22+40	0.0171	0.00	Q	|	|	|	V|
22+45	0.0171	0.00	Q	|	|	|	V|
22+50	0.0171	0.00	Q	|	|	|	V|
22+55	0.0171	0.00	Q	|	|	|	V|
23+ 0	0.0171	0.00	Q	|	|	|	V|
23+ 5	0.0171	0.00	Q	|	|	|	V|
23+10	0.0171	0.00	Q	|	|	|	V|
23+15	0.0171	0.00	Q	|	|	|	V|
23+20	0.0171	0.00	Q	|	|	|	V|
23+25	0.0171	0.00	Q	|	|	|	V|
23+30	0.0171	0.00	Q	|	|	|	V|
23+35	0.0171	0.00	Q	|	|	|	V|
23+40	0.0171	0.00	Q	|	|	|	V|
23+45	0.0171	0.00	Q	|	|	|	V|
23+50	0.0171	0.00	Q	|	|	|	V|
23+55	0.0171	0.00	Q	|	|	|	V|
24+ 0	0.0171	0.00	Q	|	|	|	V|

APPENDIX C.2: 100-YEAR

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA A
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
7.47	1	0.78
Rainfall data for year 2		
7.47	6	1.20
Rainfall data for year 2		
7.47	24	2.18
Rainfall data for year 100		
7.47	1	1.27
Rainfall data for year 100		
7.47	6	2.86
Rainfall data for year 100		
7.47	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.1	86.2	7.47	1.000	0.261	1.000	0.261

Area-averaged adjusted loss rate Fm (In/Hr) = 0.261

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
7.47	1.000	69.1	86.2	1.60	0.705

Area-averaged catchment yield fraction, Y = 0.705
Area-averaged low loss fraction, Yb = 0.295

++
Watercourse length = 730.00(Ft.)
Length from concentration point to centroid = 280.00(Ft.)
Elevation difference along watercourse = 69.50(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 7.47(Ac.)
Catchment Lag time = 0.034 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 244.3158
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.261(In/Hr)
Average low loss rate fraction (Yb) = 0.295 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 7.47(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.602(In)
30-minute factor = 1.000 Adjusted rainfall = 1.031(In)
1-hour factor = 1.000 Adjusted rainfall = 1.270(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 90.34 (CFS))	
1	50.117	45.276
2	95.749	41.224
3	100.000	3.841

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6024	0.6024
2	0.7417	0.1392
3	0.8376	0.0959
4	0.9131	0.0755
5	0.9763	0.0632
6	1.0312	0.0549
7	1.0800	0.0488
8	1.1241	0.0441
9	1.1646	0.0404
10	1.2020	0.0374
11	1.2368	0.0349
12	1.2696	0.0327
13	1.3165	0.0469
14	1.3615	0.0450
15	1.4047	0.0433
16	1.4464	0.0417
17	1.4867	0.0403
18	1.5258	0.0390
19	1.5636	0.0379
20	1.6004	0.0368
21	1.6362	0.0358
22	1.6711	0.0349
23	1.7051	0.0340
24	1.7383	0.0332
25	1.7708	0.0325
26	1.8025	0.0318
27	1.8336	0.0311
28	1.8641	0.0305
29	1.8940	0.0299
30	1.9234	0.0293
31	1.9522	0.0288
32	1.9805	0.0283
33	2.0083	0.0278
34	2.0357	0.0274
35	2.0626	0.0269
36	2.0891	0.0265
37	2.1152	0.0261
38	2.1409	0.0257
39	2.1662	0.0253
40	2.1912	0.0250
41	2.2159	0.0247
42	2.2402	0.0243
43	2.2642	0.0240
44	2.2879	0.0237
45	2.3114	0.0234
46	2.3345	0.0231
47	2.3574	0.0229

		AREAA
48	2.3799	0.0226
49	2.4023	0.0223
50	2.4244	0.0221
51	2.4462	0.0219
52	2.4678	0.0216
53	2.4892	0.0214
54	2.5104	0.0212
55	2.5314	0.0210
56	2.5521	0.0208
57	2.5727	0.0205
58	2.5930	0.0204
59	2.6132	0.0202
60	2.6332	0.0200
61	2.6530	0.0198
62	2.6726	0.0196
63	2.6920	0.0194
64	2.7113	0.0193
65	2.7304	0.0191
66	2.7494	0.0190
67	2.7682	0.0188
68	2.7868	0.0186
69	2.8053	0.0185
70	2.8237	0.0183
71	2.8419	0.0182
72	2.8599	0.0181
73	2.8767	0.0168
74	2.8934	0.0167
75	2.9099	0.0165
76	2.9263	0.0164
77	2.9426	0.0163
78	2.9587	0.0162
79	2.9748	0.0160
80	2.9907	0.0159
81	3.0065	0.0158
82	3.0222	0.0157
83	3.0378	0.0156
84	3.0532	0.0155
85	3.0686	0.0154
86	3.0839	0.0153
87	3.0990	0.0152
88	3.1141	0.0151
89	3.1291	0.0150
90	3.1439	0.0149
91	3.1587	0.0148
92	3.1734	0.0147
93	3.1880	0.0146
94	3.2025	0.0145
95	3.2169	0.0144
96	3.2312	0.0143
97	3.2455	0.0142
98	3.2596	0.0142
99	3.2737	0.0141
100	3.2877	0.0140
101	3.3016	0.0139
102	3.3154	0.0138
103	3.3292	0.0138
104	3.3428	0.0137
105	3.3564	0.0136
106	3.3700	0.0135
107	3.3834	0.0135
108	3.3968	0.0134
109	3.4101	0.0133
110	3.4233	0.0132
111	3.4365	0.0132
112	3.4496	0.0131
113	3.4627	0.0130
114	3.4756	0.0130
115	3.4885	0.0129
116	3.5014	0.0128
117	3.5141	0.0128
118	3.5268	0.0127
119	3.5395	0.0127
120	3.5521	0.0126
121	3.5646	0.0125
122	3.5771	0.0125
123	3.5895	0.0124
124	3.6019	0.0124
125	3.6141	0.0123
126	3.6264	0.0122
127	3.6386	0.0122
128	3.6507	0.0121
129	3.6628	0.0121
130	3.6748	0.0120
131	3.6868	0.0120

		AREAA
132	3.6987	0.0119
133	3.7105	0.0119
134	3.7224	0.0118
135	3.7341	0.0118
136	3.7458	0.0117
137	3.7575	0.0117
138	3.7691	0.0116
139	3.7807	0.0116
140	3.7922	0.0115
141	3.8036	0.0115
142	3.8151	0.0114
143	3.8264	0.0114
144	3.8378	0.0113
145	3.8491	0.0113
146	3.8603	0.0112
147	3.8715	0.0112
148	3.8826	0.0112
149	3.8938	0.0111
150	3.9048	0.0111
151	3.9158	0.0110
152	3.9268	0.0110
153	3.9378	0.0109
154	3.9487	0.0109
155	3.9595	0.0109
156	3.9703	0.0108
157	3.9811	0.0108
158	3.9919	0.0107
159	4.0026	0.0107
160	4.0132	0.0107
161	4.0239	0.0106
162	4.0344	0.0106
163	4.0450	0.0105
164	4.0555	0.0105
165	4.0660	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0972	0.0104
169	4.1075	0.0103
170	4.1178	0.0103
171	4.1281	0.0103
172	4.1383	0.0102
173	4.1485	0.0102
174	4.1586	0.0102
175	4.1688	0.0101
176	4.1788	0.0101
177	4.1889	0.0101
178	4.1989	0.0100
179	4.2089	0.0100
180	4.2189	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2486	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2780	0.0098
187	4.2877	0.0097
188	4.2974	0.0097
189	4.3071	0.0097
190	4.3168	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3456	0.0096
194	4.3551	0.0095
195	4.3646	0.0095
196	4.3741	0.0095
197	4.3836	0.0095
198	4.3930	0.0094
199	4.4024	0.0094
200	4.4118	0.0094
201	4.4211	0.0093
202	4.4304	0.0093
203	4.4397	0.0093
204	4.4490	0.0093
205	4.4582	0.0092
206	4.4674	0.0092
207	4.4766	0.0092
208	4.4858	0.0092
209	4.4949	0.0091
210	4.5040	0.0091
211	4.5131	0.0091
212	4.5222	0.0091
213	4.5312	0.0090
214	4.5402	0.0090
215	4.5492	0.0090

		AREAA
216	4.5582	0.0090
217	4.5671	0.0089
218	4.5761	0.0089
219	4.5850	0.0089
220	4.5938	0.0089
221	4.6027	0.0088
222	4.6115	0.0088
223	4.6203	0.0088
224	4.6291	0.0088
225	4.6378	0.0088
226	4.6466	0.0087
227	4.6553	0.0087
228	4.6640	0.0087
229	4.6726	0.0087
230	4.6813	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7157	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7497	0.0085
239	4.7581	0.0085
240	4.7666	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7918	0.0084
244	4.8001	0.0084
245	4.8085	0.0083
246	4.8168	0.0083
247	4.8251	0.0083
248	4.8334	0.0083
249	4.8416	0.0083
250	4.8499	0.0082
251	4.8581	0.0082
252	4.8663	0.0082
253	4.8745	0.0082
254	4.8826	0.0082
255	4.8908	0.0081
256	4.8989	0.0081
257	4.9070	0.0081
258	4.9151	0.0081
259	4.9232	0.0081
260	4.9312	0.0081
261	4.9393	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9633	0.0080
265	4.9713	0.0080
266	4.9792	0.0080
267	4.9871	0.0079
268	4.9951	0.0079
269	5.0030	0.0079
270	5.0108	0.0079
271	5.0187	0.0079
272	5.0266	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0578	0.0078
277	5.0656	0.0078
278	5.0733	0.0078
279	5.0810	0.0077
280	5.0888	0.0077
281	5.0965	0.0077
282	5.1042	0.0077
283	5.1118	0.0077
284	5.1195	0.0077
285	5.1271	0.0076
286	5.1347	0.0076
287	5.1424	0.0076
288	5.1500	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0022	0.0054
2	0.0076	0.0022	0.0054
3	0.0076	0.0023	0.0054
4	0.0077	0.0023	0.0054
5	0.0077	0.0023	0.0054
6	0.0077	0.0023	0.0054

	AREAA		
7	0.0077	0.0023	0.0055
8	0.0078	0.0023	0.0055
9	0.0078	0.0023	0.0055
10	0.0078	0.0023	0.0055
11	0.0078	0.0023	0.0055
12	0.0078	0.0023	0.0055
13	0.0079	0.0023	0.0056
14	0.0079	0.0023	0.0056
15	0.0079	0.0023	0.0056
16	0.0080	0.0023	0.0056
17	0.0080	0.0024	0.0056
18	0.0080	0.0024	0.0056
19	0.0080	0.0024	0.0057
20	0.0081	0.0024	0.0057
21	0.0081	0.0024	0.0057
22	0.0081	0.0024	0.0057
23	0.0081	0.0024	0.0057
24	0.0082	0.0024	0.0058
25	0.0082	0.0024	0.0058
26	0.0082	0.0024	0.0058
27	0.0083	0.0024	0.0058
28	0.0083	0.0024	0.0058
29	0.0083	0.0025	0.0059
30	0.0083	0.0025	0.0059
31	0.0084	0.0025	0.0059
32	0.0084	0.0025	0.0059
33	0.0084	0.0025	0.0059
34	0.0085	0.0025	0.0060
35	0.0085	0.0025	0.0060
36	0.0085	0.0025	0.0060
37	0.0086	0.0025	0.0060
38	0.0086	0.0025	0.0061
39	0.0086	0.0025	0.0061
40	0.0086	0.0025	0.0061
41	0.0087	0.0026	0.0061
42	0.0087	0.0026	0.0061
43	0.0088	0.0026	0.0062
44	0.0088	0.0026	0.0062
45	0.0088	0.0026	0.0062
46	0.0088	0.0026	0.0062
47	0.0089	0.0026	0.0063
48	0.0089	0.0026	0.0063
49	0.0090	0.0026	0.0063
50	0.0090	0.0026	0.0063
51	0.0090	0.0027	0.0064
52	0.0091	0.0027	0.0064
53	0.0091	0.0027	0.0064
54	0.0091	0.0027	0.0064
55	0.0092	0.0027	0.0065
56	0.0092	0.0027	0.0065
57	0.0093	0.0027	0.0065
58	0.0093	0.0027	0.0066
59	0.0093	0.0028	0.0066
60	0.0094	0.0028	0.0066
61	0.0094	0.0028	0.0066
62	0.0095	0.0028	0.0067
63	0.0095	0.0028	0.0067
64	0.0095	0.0028	0.0067
65	0.0096	0.0028	0.0068
66	0.0096	0.0028	0.0068
67	0.0097	0.0029	0.0068
68	0.0097	0.0029	0.0069
69	0.0098	0.0029	0.0069
70	0.0098	0.0029	0.0069
71	0.0099	0.0029	0.0070
72	0.0099	0.0029	0.0070
73	0.0100	0.0029	0.0070
74	0.0100	0.0029	0.0070
75	0.0101	0.0030	0.0071
76	0.0101	0.0030	0.0071
77	0.0102	0.0030	0.0072
78	0.0102	0.0030	0.0072
79	0.0103	0.0030	0.0072
80	0.0103	0.0030	0.0073
81	0.0104	0.0031	0.0073
82	0.0104	0.0031	0.0073
83	0.0105	0.0031	0.0074
84	0.0105	0.0031	0.0074
85	0.0106	0.0031	0.0075
86	0.0106	0.0031	0.0075
87	0.0107	0.0032	0.0075
88	0.0107	0.0032	0.0076
89	0.0108	0.0032	0.0076
90	0.0109	0.0032	0.0077

91	0.0109	0.0032	0.0077
92	0.0110	0.0032	0.0077
93	0.0111	0.0033	0.0078
94	0.0111	0.0033	0.0078
95	0.0112	0.0033	0.0079
96	0.0112	0.0033	0.0079
97	0.0113	0.0033	0.0080
98	0.0114	0.0034	0.0080
99	0.0115	0.0034	0.0081
100	0.0115	0.0034	0.0081
101	0.0116	0.0034	0.0082
102	0.0117	0.0034	0.0082
103	0.0118	0.0035	0.0083
104	0.0118	0.0035	0.0083
105	0.0119	0.0035	0.0084
106	0.0120	0.0035	0.0084
107	0.0121	0.0036	0.0085
108	0.0121	0.0036	0.0086
109	0.0122	0.0036	0.0086
110	0.0123	0.0036	0.0087
111	0.0124	0.0037	0.0088
112	0.0125	0.0037	0.0088
113	0.0126	0.0037	0.0089
114	0.0127	0.0037	0.0089
115	0.0128	0.0038	0.0090
116	0.0128	0.0038	0.0091
117	0.0130	0.0038	0.0091
118	0.0130	0.0038	0.0092
119	0.0132	0.0039	0.0093
120	0.0132	0.0039	0.0093
121	0.0134	0.0039	0.0094
122	0.0135	0.0040	0.0095
123	0.0136	0.0040	0.0096
124	0.0137	0.0040	0.0096
125	0.0138	0.0041	0.0098
126	0.0139	0.0041	0.0098
127	0.0141	0.0041	0.0099
128	0.0142	0.0042	0.0100
129	0.0143	0.0042	0.0101
130	0.0144	0.0042	0.0102
131	0.0146	0.0043	0.0103
132	0.0147	0.0043	0.0104
133	0.0149	0.0044	0.0105
134	0.0150	0.0044	0.0106
135	0.0152	0.0045	0.0107
136	0.0153	0.0045	0.0108
137	0.0155	0.0046	0.0109
138	0.0156	0.0046	0.0110
139	0.0158	0.0047	0.0111
140	0.0159	0.0047	0.0112
141	0.0162	0.0048	0.0114
142	0.0163	0.0048	0.0115
143	0.0165	0.0049	0.0117
144	0.0167	0.0049	0.0117
145	0.0181	0.0053	0.0127
146	0.0182	0.0054	0.0128
147	0.0185	0.0055	0.0130
148	0.0186	0.0055	0.0131
149	0.0190	0.0056	0.0134
150	0.0191	0.0056	0.0135
151	0.0194	0.0057	0.0137
152	0.0196	0.0058	0.0138
153	0.0200	0.0059	0.0141
154	0.0202	0.0059	0.0142
155	0.0205	0.0061	0.0145
156	0.0208	0.0061	0.0146
157	0.0212	0.0062	0.0149
158	0.0214	0.0063	0.0151
159	0.0219	0.0064	0.0154
160	0.0221	0.0065	0.0156
161	0.0226	0.0067	0.0159
162	0.0229	0.0067	0.0161
163	0.0234	0.0069	0.0165
164	0.0237	0.0070	0.0167
165	0.0243	0.0072	0.0172
166	0.0247	0.0073	0.0174
167	0.0253	0.0075	0.0179
168	0.0257	0.0076	0.0181
169	0.0265	0.0078	0.0187
170	0.0269	0.0079	0.0190
171	0.0278	0.0082	0.0196
172	0.0283	0.0083	0.0200
173	0.0293	0.0086	0.0207
174	0.0299	0.0088	0.0211

175	0.0311	0.0092	0.0219
176	0.0318	0.0094	0.0224
177	0.0332	0.0098	0.0234
178	0.0340	0.0100	0.0240
179	0.0358	0.0106	0.0252
180	0.0368	0.0108	0.0259
181	0.0390	0.0115	0.0275
182	0.0403	0.0119	0.0284
183	0.0433	0.0128	0.0305
184	0.0450	0.0133	0.0317
185	0.0327	0.0096	0.0231
186	0.0349	0.0103	0.0246
187	0.0404	0.0119	0.0285
188	0.0441	0.0130	0.0311
189	0.0549	0.0162	0.0387
190	0.0632	0.0186	0.0446
191	0.0959	0.0217	0.0742
192	0.1392	0.0217	0.1175
193	0.6024	0.0217	0.5807
194	0.0755	0.0217	0.0538
195	0.0488	0.0144	0.0344
196	0.0374	0.0110	0.0264
197	0.0469	0.0138	0.0331
198	0.0417	0.0123	0.0294
199	0.0379	0.0112	0.0267
200	0.0349	0.0103	0.0246
201	0.0325	0.0096	0.0229
202	0.0305	0.0090	0.0215
203	0.0288	0.0085	0.0203
204	0.0274	0.0081	0.0193
205	0.0261	0.0077	0.0184
206	0.0250	0.0074	0.0176
207	0.0240	0.0071	0.0169
208	0.0231	0.0068	0.0163
209	0.0223	0.0066	0.0158
210	0.0216	0.0064	0.0152
211	0.0210	0.0062	0.0148
212	0.0204	0.0060	0.0144
213	0.0198	0.0058	0.0140
214	0.0193	0.0057	0.0136
215	0.0188	0.0055	0.0133
216	0.0183	0.0054	0.0129
217	0.0168	0.0049	0.0118
218	0.0164	0.0048	0.0116
219	0.0160	0.0047	0.0113
220	0.0157	0.0046	0.0111
221	0.0154	0.0045	0.0108
222	0.0151	0.0044	0.0106
223	0.0148	0.0044	0.0104
224	0.0145	0.0043	0.0102
225	0.0142	0.0042	0.0100
226	0.0140	0.0041	0.0099
227	0.0138	0.0041	0.0097
228	0.0135	0.0040	0.0095
229	0.0133	0.0039	0.0094
230	0.0131	0.0039	0.0092
231	0.0129	0.0038	0.0091
232	0.0127	0.0037	0.0090
233	0.0125	0.0037	0.0088
234	0.0124	0.0036	0.0087
235	0.0122	0.0036	0.0086
236	0.0120	0.0035	0.0085
237	0.0119	0.0035	0.0084
238	0.0117	0.0035	0.0083
239	0.0116	0.0034	0.0082
240	0.0114	0.0034	0.0081
241	0.0113	0.0033	0.0080
242	0.0112	0.0033	0.0079
243	0.0110	0.0032	0.0078
244	0.0109	0.0032	0.0077
245	0.0108	0.0032	0.0076
246	0.0107	0.0031	0.0075
247	0.0105	0.0031	0.0074
248	0.0104	0.0031	0.0074
249	0.0103	0.0030	0.0073
250	0.0102	0.0030	0.0072
251	0.0101	0.0030	0.0071
252	0.0100	0.0030	0.0071
253	0.0099	0.0029	0.0070
254	0.0098	0.0029	0.0069
255	0.0097	0.0029	0.0069
256	0.0097	0.0028	0.0068
257	0.0096	0.0028	0.0067
258	0.0095	0.0028	0.0067

259	0.0094	0.0028	0.0066
260	0.0093	0.0027	0.0066
261	0.0092	0.0027	0.0065
262	0.0092	0.0027	0.0065
263	0.0091	0.0027	0.0064
264	0.0090	0.0027	0.0064
265	0.0089	0.0026	0.0063
266	0.0089	0.0026	0.0063
267	0.0088	0.0026	0.0062
268	0.0087	0.0026	0.0062
269	0.0087	0.0026	0.0061
270	0.0086	0.0025	0.0061
271	0.0085	0.0025	0.0060
272	0.0085	0.0025	0.0060
273	0.0084	0.0025	0.0059
274	0.0084	0.0025	0.0059
275	0.0083	0.0024	0.0059
276	0.0082	0.0024	0.0058
277	0.0082	0.0024	0.0058
278	0.0081	0.0024	0.0057
279	0.0081	0.0024	0.0057
280	0.0080	0.0024	0.0057
281	0.0080	0.0023	0.0056
282	0.0079	0.0023	0.0056
283	0.0079	0.0023	0.0055
284	0.0078	0.0023	0.0055
285	0.0078	0.0023	0.0055
286	0.0077	0.0023	0.0054
287	0.0077	0.0023	0.0054
288	0.0076	0.0022	0.0054

Total soil rain loss = 1.34(In)
Total effective rainfall = 3.81(In)
Peak flow rate in flood hydrograph = 31.42(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	10.0	20.0	30.0	40.0
0+ 5	0.0017	0.24	Q				
0+10	0.0049	0.46	Q				
0+15	0.0082	0.49	Q				
0+20	0.0116	0.49	Q				
0+25	0.0149	0.49	Q				
0+30	0.0183	0.49	Q				
0+35	0.0217	0.49	Q				
0+40	0.0251	0.49	Q				
0+45	0.0285	0.49	Q				
0+50	0.0319	0.50	Q				
0+55	0.0353	0.50	Q				
1+ 0	0.0388	0.50	Q				
1+ 5	0.0422	0.50	Q				
1+10	0.0457	0.50	Q				
1+15	0.0492	0.50	Q				
1+20	0.0527	0.51	Q				
1+25	0.0562	0.51	Q				
1+30	0.0597	0.51	QV				
1+35	0.0632	0.51	QV				
1+40	0.0667	0.51	QV				
1+45	0.0702	0.51	QV				
1+50	0.0738	0.52	QV				
1+55	0.0774	0.52	QV				
2+ 0	0.0809	0.52	QV				
2+ 5	0.0845	0.52	QV				
2+10	0.0881	0.52	QV				
2+15	0.0918	0.52	QV				
2+20	0.0954	0.53	QV				
2+25	0.0990	0.53	QV				
2+30	0.1027	0.53	QV				
2+35	0.1063	0.53	QV				
2+40	0.1100	0.53	QV				
2+45	0.1137	0.54	QV				
2+50	0.1174	0.54	QV				
2+55	0.1211	0.54	Q V				
3+ 0	0.1249	0.54	Q V				
3+ 5	0.1286	0.54	Q V				
3+10	0.1324	0.55	Q V				
3+15	0.1362	0.55	Q V				

3+20	0.1399	0.55	Q V				
3+25	0.1437	0.55	Q V				
3+30	0.1476	0.55	Q V				
3+35	0.1514	0.56	Q V				
3+40	0.1552	0.56	Q V				
3+45	0.1591	0.56	Q V				
3+50	0.1630	0.56	Q V				
3+55	0.1669	0.57	Q V				
4+ 0	0.1708	0.57	Q V				
4+ 5	0.1747	0.57	Q V				
4+10	0.1786	0.57	Q V				
4+15	0.1826	0.57	Q V				
4+20	0.1866	0.58	Q V				
4+25	0.1906	0.58	Q V				
4+30	0.1946	0.58	Q V				
4+35	0.1986	0.58	Q V				
4+40	0.2026	0.59	Q V				
4+45	0.2067	0.59	Q V				
4+50	0.2107	0.59	Q V				
4+55	0.2148	0.59	Q V				
5+ 0	0.2189	0.60	Q V				
5+ 5	0.2231	0.60	Q V				
5+10	0.2272	0.60	Q V				
5+15	0.2314	0.60	Q V				
5+20	0.2355	0.61	Q V				
5+25	0.2397	0.61	Q V				
5+30	0.2439	0.61	Q V				
5+35	0.2482	0.62	Q V				
5+40	0.2524	0.62	Q V				
5+45	0.2567	0.62	Q V				
5+50	0.2610	0.62	Q V				
5+55	0.2653	0.63	Q V				
6+ 0	0.2697	0.63	Q V				
6+ 5	0.2740	0.63	Q V				
6+10	0.2784	0.64	Q V				
6+15	0.2828	0.64	Q V				
6+20	0.2872	0.64	Q V				
6+25	0.2916	0.64	Q V				
6+30	0.2961	0.65	Q V				
6+35	0.3006	0.65	Q V				
6+40	0.3051	0.65	Q V				
6+45	0.3096	0.66	Q V				
6+50	0.3142	0.66	Q V				
6+55	0.3188	0.66	Q V				
7+ 0	0.3234	0.67	Q V				
7+ 5	0.3280	0.67	Q V				
7+10	0.3327	0.68	Q V				
7+15	0.3373	0.68	Q V				
7+20	0.3420	0.68	Q V				
7+25	0.3468	0.69	Q V				
7+30	0.3515	0.69	Q V				
7+35	0.3563	0.69	Q V				
7+40	0.3611	0.70	Q V				
7+45	0.3659	0.70	Q V				
7+50	0.3708	0.71	Q V				
7+55	0.3757	0.71	Q V				
8+ 0	0.3806	0.71	Q V				
8+ 5	0.3856	0.72	Q V				
8+10	0.3905	0.72	Q V				
8+15	0.3956	0.73	Q V				
8+20	0.4006	0.73	Q V				
8+25	0.4057	0.74	Q V				
8+30	0.4108	0.74	Q V				
8+35	0.4159	0.75	Q V				
8+40	0.4211	0.75	Q V				
8+45	0.4263	0.76	Q V				
8+50	0.4315	0.76	Q V				
8+55	0.4368	0.77	Q V				
9+ 0	0.4421	0.77	Q V				
9+ 5	0.4475	0.78	Q V				
9+10	0.4528	0.78	Q V				
9+15	0.4583	0.79	Q V				
9+20	0.4637	0.79	Q V				
9+25	0.4692	0.80	Q V				
9+30	0.4747	0.80	Q V				
9+35	0.4803	0.81	Q V				
9+40	0.4859	0.82	Q V				
9+45	0.4916	0.82	Q V				
9+50	0.4973	0.83	Q V				
9+55	0.5030	0.83	Q V				
10+ 0	0.5088	0.84	Q V				
10+ 5	0.5147	0.85	Q V				
10+10	0.5206	0.85	Q V				
10+15	0.5265	0.86	Q V				

10+20	0.5325	0.87	Q V | | |
10+25	0.5385	0.88	Q V| | |
10+30	0.5446	0.88	Q V| | |
10+35	0.5507	0.89	Q V| | |
10+40	0.5569	0.90	Q V| | |
10+45	0.5632	0.91	Q V| | |
10+50	0.5695	0.91	Q V| | |
10+55	0.5758	0.92	Q V| | |
11+ 0	0.5822	0.93	Q V| | |
11+ 5	0.5887	0.94	Q V| | |
11+10	0.5953	0.95	Q V | |
11+15	0.6019	0.96	Q V | |
11+20	0.6085	0.97	Q V | |
11+25	0.6153	0.98	Q V | |
11+30	0.6221	0.99	Q V | |
11+35	0.6290	1.00	Q V | |
11+40	0.6359	1.01	|Q V | |
11+45	0.6430	1.02	|Q V | |
11+50	0.6501	1.03	|Q V | |
11+55	0.6573	1.04	|Q |V | |
12+ 0	0.6646	1.06	|Q |V | |
12+ 5	0.6722	1.11	|Q |V | |
12+10	0.6801	1.15	|Q |V | |
12+15	0.6882	1.17	|Q |V | |
12+20	0.6963	1.18	|Q |V | |
12+25	0.7045	1.20	|Q |V | |
12+30	0.7129	1.21	|Q | V | |
12+35	0.7213	1.23	|Q | V | |
12+40	0.7299	1.24	|Q | V | |
12+45	0.7386	1.26	|Q | V | |
12+50	0.7474	1.28	|Q | V | |
12+55	0.7563	1.30	|Q | V | |
13+ 0	0.7654	1.31	|Q | V | |
13+ 5	0.7746	1.33	|Q | V | |
13+10	0.7839	1.35	|Q | V | |
13+15	0.7934	1.38	|Q | V | |
13+20	0.8030	1.40	|Q | V | |
13+25	0.8128	1.42	|Q | V | |
13+30	0.8228	1.45	|Q | V | |
13+35	0.8329	1.47	|Q | V | |
13+40	0.8433	1.50	|Q | V | |
13+45	0.8538	1.53	|Q | V | |
13+50	0.8645	1.56	|Q | V | |
13+55	0.8755	1.59	|Q | V | |
14+ 0	0.8867	1.62	|Q | V | |
14+ 5	0.8981	1.66	|Q | V | |
14+10	0.9098	1.70	|Q | V | |
14+15	0.9218	1.74	|Q | V | |
14+20	0.9341	1.79	|Q | V | |
14+25	0.9468	1.83	|Q | V | |
14+30	0.9597	1.88	|Q | V | |
14+35	0.9731	1.94	|Q | V | |
14+40	0.9869	2.00	|Q | V | |
14+45	1.0011	2.07	| Q | V | |
14+50	1.0159	2.14	| Q | V | |
14+55	1.0312	2.22	| Q | V | |
15+ 0	1.0470	2.31	| Q | V | |
15+ 5	1.0637	2.41	| Q | V | |
15+10	1.0810	2.52	| Q | V | |
15+15	1.0993	2.66	| Q | V | |
15+20	1.1186	2.80	| Q | V | |
15+25	1.1356	2.47	| Q | V| |
15+30	1.1507	2.19	| Q | V| |
15+35	1.1672	2.39	| Q | V| |
15+40	1.1856	2.68	| Q | V| |
15+45	1.2073	3.15	| Q | V | |
15+50	1.2330	3.73	| Q | V | |
15+55	1.2698	5.35	| Q | |V | |
16+ 0	1.3287	8.55	| Q | | V | |
16+ 5	1.5451	31.42	| | | V |Q |
16+10	1.7299	26.82	| | | Q V| |
16+15	1.7712	6.01	| Q | | V| |
16+20	1.7906	2.82	| Q | | | V |
16+25	1.8094	2.72	| Q | | | V |
16+30	1.8286	2.80	| Q | | | V |
16+35	1.8462	2.55	| Q | | | |V |
16+40	1.8622	2.33	| Q | | | |V |
16+45	1.8770	2.15	| Q | | | |V |
16+50	1.8909	2.01	| Q | | | |V |
16+55	1.9039	1.89	|Q | | | | V |
17+ 0	1.9163	1.79	|Q | | | | V |
17+ 5	1.9280	1.71	|Q | | | | V |
17+10	1.9393	1.63	|Q | | | | V |
17+15	1.9500	1.56	|Q | | | | V |

17+20	1.9604	1.50	Q			V	
17+25	1.9704	1.45	Q			V	
17+30	1.9800	1.40	Q			V	
17+35	1.9894	1.36	Q			V	
17+40	1.9985	1.32	Q			V	
17+45	2.0073	1.28	Q			V	
17+50	2.0159	1.25	Q			V	
17+55	2.0242	1.21	Q			V	
18+ 0	2.0324	1.18	Q			V	
18+ 5	2.0401	1.12	Q			V	
18+10	2.0474	1.06	Q			V	
18+15	2.0545	1.03	Q			V	
18+20	2.0615	1.01	Q			V	
18+25	2.0683	0.99	Q			V	
18+30	2.0750	0.97	Q			V	
18+35	2.0816	0.95	Q			V	
18+40	2.0880	0.93	Q			V	
18+45	2.0943	0.92	Q			V	
18+50	2.1005	0.90	Q			V	
18+55	2.1066	0.88	Q			V	
19+ 0	2.1126	0.87	Q			V	
19+ 5	2.1185	0.86	Q			V	
19+10	2.1243	0.84	Q			V	
19+15	2.1300	0.83	Q			V	
19+20	2.1356	0.82	Q			V	
19+25	2.1411	0.80	Q			V	
19+30	2.1466	0.79	Q			V	
19+35	2.1520	0.78	Q			V	
19+40	2.1573	0.77	Q			V	
19+45	2.1625	0.76	Q			V	
19+50	2.1677	0.75	Q			V	
19+55	2.1728	0.74	Q			V	
20+ 0	2.1779	0.73	Q			V	
20+ 5	2.1829	0.72	Q			V	
20+10	2.1878	0.72	Q			V	
20+15	2.1927	0.71	Q			V	
20+20	2.1975	0.70	Q			V	
20+25	2.2022	0.69	Q			V	
20+30	2.2069	0.68	Q			V	
20+35	2.2116	0.68	Q			V	
20+40	2.2162	0.67	Q			V	
20+45	2.2208	0.66	Q			V	
20+50	2.2253	0.66	Q			V	
20+55	2.2297	0.65	Q			V	
21+ 0	2.2342	0.64	Q			V	
21+ 5	2.2385	0.64	Q			V	
21+10	2.2429	0.63	Q			V	
21+15	2.2472	0.62	Q			V	
21+20	2.2514	0.62	Q			V	
21+25	2.2556	0.61	Q			V	
21+30	2.2598	0.61	Q			V	
21+35	2.2640	0.60	Q			V	
21+40	2.2681	0.60	Q			V	
21+45	2.2721	0.59	Q			V	
21+50	2.2762	0.59	Q			V	
21+55	2.2802	0.58	Q			V	
22+ 0	2.2842	0.58	Q			V	
22+ 5	2.2881	0.57	Q			V	
22+10	2.2920	0.57	Q			V	
22+15	2.2959	0.56	Q			V	
22+20	2.2997	0.56	Q			V	
22+25	2.3036	0.55	Q			V	
22+30	2.3073	0.55	Q			V	
22+35	2.3111	0.55	Q			V	
22+40	2.3148	0.54	Q			V	
22+45	2.3186	0.54	Q			V	
22+50	2.3222	0.53	Q			V	
22+55	2.3259	0.53	Q			V	
23+ 0	2.3295	0.53	Q			V	
23+ 5	2.3331	0.52	Q			V	
23+10	2.3367	0.52	Q			V	
23+15	2.3403	0.52	Q			V	
23+20	2.3438	0.51	Q			V	
23+25	2.3473	0.51	Q			V	
23+30	2.3508	0.51	Q			V	
23+35	2.3542	0.50	Q			V	
23+40	2.3577	0.50	Q			V	
23+45	2.3611	0.50	Q			V	
23+50	2.3645	0.49	Q			V	
23+55	2.3679	0.49	Q			V	
24+ 0	2.3712	0.49	Q			V	

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

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Study date 06/19/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA B.1
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
13.74	1	0.78
Rainfall data for year 2		
13.74	6	1.20
Rainfall data for year 2		
13.74	24	2.18
Rainfall data for year 100		
13.74	1	1.27
Rainfall data for year 100		
13.74	6	2.86
Rainfall data for year 100		
13.74	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
79.0	93.4	13.74	1.000	0.129	1.000	0.129

Area-averaged adjusted loss rate Fm (In/Hr) = 0.129

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
13.74	1.000	79.0	93.4	0.71	0.852

Area-averaged catchment yield fraction, Y = 0.852
Area-averaged low loss fraction, Yb = 0.148

++
Watercourse length = 1775.00(Ft.)
Length from concentration point to centroid = 520.00(Ft.)
Elevation difference along watercourse = 65.20(Ft.)
Mannings friction factor along watercourse = 0.040
Watershed area = 13.74(Ac.)
Catchment Lag time = 0.097 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 86.2249
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.129(In/Hr)
Average low loss rate fraction (Yb) = 0.148 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 13.74(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.602(In)
30-minute factor = 0.999 Adjusted rainfall = 1.031(In)
1-hour factor = 0.999 Adjusted rainfall = 1.269(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 166.17 (CFS))	
1	10.357	17.210
2	62.193	86.134
3	84.295	36.726
4	93.294	14.955
5	97.410	6.839
6	98.731	2.195
7	99.396	1.104
8	99.868	0.785
9	100.000	0.219

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6022	0.6022
2	0.7414	0.1392
3	0.8373	0.0959
4	0.9128	0.0755
5	0.9760	0.0632
6	1.0309	0.0549
7	1.0797	0.0488
8	1.1238	0.0441
9	1.1642	0.0404
10	1.2016	0.0374
11	1.2365	0.0349
12	1.2692	0.0327
13	1.3161	0.0469
14	1.3611	0.0450
15	1.4044	0.0433
16	1.4461	0.0417
17	1.4864	0.0403
18	1.5254	0.0390
19	1.5633	0.0379
20	1.6001	0.0368
21	1.6359	0.0358
22	1.6708	0.0349
23	1.7048	0.0340
24	1.7381	0.0332
25	1.7706	0.0325
26	1.8023	0.0318
27	1.8335	0.0311
28	1.8639	0.0305
29	1.8939	0.0299
30	1.9232	0.0293
31	1.9520	0.0288
32	1.9803	0.0283
33	2.0082	0.0278
34	2.0355	0.0274
35	2.0625	0.0269
36	2.0890	0.0265
37	2.1151	0.0261
38	2.1408	0.0257
39	2.1662	0.0253
40	2.1912	0.0250
41	2.2158	0.0247

		AREAB1
42	2.2401	0.0243
43	2.2642	0.0240
44	2.2879	0.0237
45	2.3113	0.0234
46	2.3344	0.0231
47	2.3573	0.0229
48	2.3799	0.0226
49	2.4022	0.0223
50	2.4243	0.0221
51	2.4462	0.0219
52	2.4678	0.0216
53	2.4892	0.0214
54	2.5103	0.0212
55	2.5313	0.0210
56	2.5521	0.0208
57	2.5726	0.0206
58	2.5930	0.0204
59	2.6131	0.0202
60	2.6331	0.0200
61	2.6529	0.0198
62	2.6725	0.0196
63	2.6920	0.0194
64	2.7112	0.0193
65	2.7304	0.0191
66	2.7493	0.0190
67	2.7681	0.0188
68	2.7868	0.0186
69	2.8053	0.0185
70	2.8236	0.0184
71	2.8418	0.0182
72	2.8599	0.0181
73	2.8767	0.0168
74	2.8933	0.0167
75	2.9098	0.0165
76	2.9262	0.0164
77	2.9425	0.0163
78	2.9587	0.0162
79	2.9747	0.0160
80	2.9906	0.0159
81	3.0064	0.0158
82	3.0221	0.0157
83	3.0377	0.0156
84	3.0532	0.0155
85	3.0686	0.0154
86	3.0838	0.0153
87	3.0990	0.0152
88	3.1140	0.0151
89	3.1290	0.0150
90	3.1439	0.0149
91	3.1587	0.0148
92	3.1733	0.0147
93	3.1879	0.0146
94	3.2024	0.0145
95	3.2168	0.0144
96	3.2312	0.0143
97	3.2454	0.0142
98	3.2596	0.0142
99	3.2736	0.0141
100	3.2876	0.0140
101	3.3015	0.0139
102	3.3154	0.0138
103	3.3291	0.0138
104	3.3428	0.0137
105	3.3564	0.0136
106	3.3699	0.0135
107	3.3834	0.0135
108	3.3967	0.0134
109	3.4101	0.0133
110	3.4233	0.0132
111	3.4365	0.0132
112	3.4496	0.0131
113	3.4626	0.0130
114	3.4756	0.0130
115	3.4885	0.0129
116	3.5013	0.0128
117	3.5141	0.0128
118	3.5268	0.0127
119	3.5394	0.0127
120	3.5520	0.0126
121	3.5646	0.0125
122	3.5770	0.0125
123	3.5894	0.0124
124	3.6018	0.0124
125	3.6141	0.0123

		AREAB1
126	3.6263	0.0122
127	3.6385	0.0122
128	3.6506	0.0121
129	3.6627	0.0121
130	3.6747	0.0120
131	3.6867	0.0120
132	3.6986	0.0119
133	3.7105	0.0119
134	3.7223	0.0118
135	3.7341	0.0118
136	3.7458	0.0117
137	3.7574	0.0117
138	3.7690	0.0116
139	3.7806	0.0116
140	3.7921	0.0115
141	3.8036	0.0115
142	3.8150	0.0114
143	3.8264	0.0114
144	3.8377	0.0113
145	3.8490	0.0113
146	3.8602	0.0112
147	3.8714	0.0112
148	3.8826	0.0112
149	3.8937	0.0111
150	3.9048	0.0111
151	3.9158	0.0110
152	3.9268	0.0110
153	3.9377	0.0109
154	3.9486	0.0109
155	3.9595	0.0109
156	3.9703	0.0108
157	3.9811	0.0108
158	3.9918	0.0107
159	4.0025	0.0107
160	4.0132	0.0107
161	4.0238	0.0106
162	4.0344	0.0106
163	4.0449	0.0105
164	4.0554	0.0105
165	4.0659	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0971	0.0104
169	4.1075	0.0103
170	4.1177	0.0103
171	4.1280	0.0103
172	4.1382	0.0102
173	4.1484	0.0102
174	4.1586	0.0102
175	4.1687	0.0101
176	4.1788	0.0101
177	4.1889	0.0101
178	4.1989	0.0100
179	4.2089	0.0100
180	4.2188	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2485	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2779	0.0098
187	4.2877	0.0097
188	4.2974	0.0097
189	4.3071	0.0097
190	4.3167	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3455	0.0096
194	4.3551	0.0095
195	4.3646	0.0095
196	4.3741	0.0095
197	4.3835	0.0095
198	4.3929	0.0094
199	4.4023	0.0094
200	4.4117	0.0094
201	4.4211	0.0093
202	4.4304	0.0093
203	4.4397	0.0093
204	4.4489	0.0093
205	4.4582	0.0092
206	4.4674	0.0092
207	4.4766	0.0092
208	4.4857	0.0092
209	4.4949	0.0091

		AREAB1
210	4.5040	0.0091
211	4.5131	0.0091
212	4.5221	0.0091
213	4.5312	0.0090
214	4.5402	0.0090
215	4.5492	0.0090
216	4.5581	0.0090
217	4.5671	0.0089
218	4.5760	0.0089
219	4.5849	0.0089
220	4.5938	0.0089
221	4.6026	0.0088
222	4.6114	0.0088
223	4.6203	0.0088
224	4.6290	0.0088
225	4.6378	0.0088
226	4.6465	0.0087
227	4.6552	0.0087
228	4.6639	0.0087
229	4.6726	0.0087
230	4.6812	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7156	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7496	0.0085
239	4.7581	0.0085
240	4.7665	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7917	0.0084
244	4.8001	0.0084
245	4.8084	0.0083
246	4.8167	0.0083
247	4.8250	0.0083
248	4.8333	0.0083
249	4.8416	0.0083
250	4.8498	0.0082
251	4.8580	0.0082
252	4.8662	0.0082
253	4.8744	0.0082
254	4.8826	0.0082
255	4.8907	0.0081
256	4.8989	0.0081
257	4.9070	0.0081
258	4.9151	0.0081
259	4.9231	0.0081
260	4.9312	0.0081
261	4.9392	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9633	0.0080
265	4.9712	0.0080
266	4.9792	0.0080
267	4.9871	0.0079
268	4.9950	0.0079
269	5.0029	0.0079
270	5.0108	0.0079
271	5.0187	0.0079
272	5.0265	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0577	0.0078
277	5.0655	0.0078
278	5.0733	0.0078
279	5.0810	0.0077
280	5.0887	0.0077
281	5.0964	0.0077
282	5.1041	0.0077
283	5.1118	0.0077
284	5.1194	0.0077
285	5.1271	0.0076
286	5.1347	0.0076
287	5.1423	0.0076
288	5.1499	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)

	AREAB1		
1	0.0076	0.0011	0.0065
2	0.0076	0.0011	0.0065
3	0.0076	0.0011	0.0065
4	0.0077	0.0011	0.0065
5	0.0077	0.0011	0.0066
6	0.0077	0.0011	0.0066
7	0.0077	0.0011	0.0066
8	0.0078	0.0011	0.0066
9	0.0078	0.0011	0.0066
10	0.0078	0.0012	0.0066
11	0.0078	0.0012	0.0067
12	0.0078	0.0012	0.0067
13	0.0079	0.0012	0.0067
14	0.0079	0.0012	0.0067
15	0.0079	0.0012	0.0068
16	0.0080	0.0012	0.0068
17	0.0080	0.0012	0.0068
18	0.0080	0.0012	0.0068
19	0.0080	0.0012	0.0069
20	0.0081	0.0012	0.0069
21	0.0081	0.0012	0.0069
22	0.0081	0.0012	0.0069
23	0.0081	0.0012	0.0069
24	0.0082	0.0012	0.0070
25	0.0082	0.0012	0.0070
26	0.0082	0.0012	0.0070
27	0.0083	0.0012	0.0070
28	0.0083	0.0012	0.0071
29	0.0083	0.0012	0.0071
30	0.0083	0.0012	0.0071
31	0.0084	0.0012	0.0071
32	0.0084	0.0012	0.0072
33	0.0084	0.0012	0.0072
34	0.0085	0.0012	0.0072
35	0.0085	0.0013	0.0072
36	0.0085	0.0013	0.0073
37	0.0086	0.0013	0.0073
38	0.0086	0.0013	0.0073
39	0.0086	0.0013	0.0074
40	0.0086	0.0013	0.0074
41	0.0087	0.0013	0.0074
42	0.0087	0.0013	0.0074
43	0.0088	0.0013	0.0075
44	0.0088	0.0013	0.0075
45	0.0088	0.0013	0.0075
46	0.0088	0.0013	0.0075
47	0.0089	0.0013	0.0076
48	0.0089	0.0013	0.0076
49	0.0090	0.0013	0.0076
50	0.0090	0.0013	0.0077
51	0.0090	0.0013	0.0077
52	0.0091	0.0013	0.0077
53	0.0091	0.0013	0.0078
54	0.0091	0.0013	0.0078
55	0.0092	0.0014	0.0078
56	0.0092	0.0014	0.0079
57	0.0093	0.0014	0.0079
58	0.0093	0.0014	0.0079
59	0.0093	0.0014	0.0080
60	0.0094	0.0014	0.0080
61	0.0094	0.0014	0.0080
62	0.0095	0.0014	0.0081
63	0.0095	0.0014	0.0081
64	0.0095	0.0014	0.0081
65	0.0096	0.0014	0.0082
66	0.0096	0.0014	0.0082
67	0.0097	0.0014	0.0083
68	0.0097	0.0014	0.0083
69	0.0098	0.0014	0.0083
70	0.0098	0.0014	0.0084
71	0.0099	0.0015	0.0084
72	0.0099	0.0015	0.0084
73	0.0100	0.0015	0.0085
74	0.0100	0.0015	0.0085
75	0.0101	0.0015	0.0086
76	0.0101	0.0015	0.0086
77	0.0102	0.0015	0.0087
78	0.0102	0.0015	0.0087
79	0.0103	0.0015	0.0087
80	0.0103	0.0015	0.0088
81	0.0104	0.0015	0.0088
82	0.0104	0.0015	0.0089
83	0.0105	0.0015	0.0089
84	0.0105	0.0016	0.0090

85	0.0106	0.0016	0.0090
86	0.0106	0.0016	0.0091
87	0.0107	0.0016	0.0091
88	0.0107	0.0016	0.0092
89	0.0108	0.0016	0.0092
90	0.0109	0.0016	0.0093
91	0.0109	0.0016	0.0093
92	0.0110	0.0016	0.0094
93	0.0111	0.0016	0.0094
94	0.0111	0.0016	0.0095
95	0.0112	0.0017	0.0095
96	0.0112	0.0017	0.0096
97	0.0113	0.0017	0.0097
98	0.0114	0.0017	0.0097
99	0.0115	0.0017	0.0098
100	0.0115	0.0017	0.0098
101	0.0116	0.0017	0.0099
102	0.0117	0.0017	0.0099
103	0.0118	0.0017	0.0100
104	0.0118	0.0017	0.0101
105	0.0119	0.0018	0.0102
106	0.0120	0.0018	0.0102
107	0.0121	0.0018	0.0103
108	0.0121	0.0018	0.0103
109	0.0122	0.0018	0.0104
110	0.0123	0.0018	0.0105
111	0.0124	0.0018	0.0106
112	0.0125	0.0018	0.0106
113	0.0126	0.0019	0.0107
114	0.0127	0.0019	0.0108
115	0.0128	0.0019	0.0109
116	0.0128	0.0019	0.0109
117	0.0130	0.0019	0.0111
118	0.0130	0.0019	0.0111
119	0.0132	0.0019	0.0112
120	0.0132	0.0020	0.0113
121	0.0134	0.0020	0.0114
122	0.0135	0.0020	0.0115
123	0.0136	0.0020	0.0116
124	0.0137	0.0020	0.0117
125	0.0138	0.0020	0.0118
126	0.0139	0.0021	0.0119
127	0.0141	0.0021	0.0120
128	0.0142	0.0021	0.0121
129	0.0143	0.0021	0.0122
130	0.0144	0.0021	0.0123
131	0.0146	0.0022	0.0124
132	0.0147	0.0022	0.0125
133	0.0149	0.0022	0.0127
134	0.0150	0.0022	0.0128
135	0.0152	0.0022	0.0129
136	0.0153	0.0023	0.0130
137	0.0155	0.0023	0.0132
138	0.0156	0.0023	0.0133
139	0.0158	0.0023	0.0135
140	0.0159	0.0024	0.0136
141	0.0162	0.0024	0.0138
142	0.0163	0.0024	0.0139
143	0.0165	0.0024	0.0141
144	0.0167	0.0025	0.0142
145	0.0181	0.0027	0.0154
146	0.0182	0.0027	0.0155
147	0.0185	0.0027	0.0158
148	0.0186	0.0028	0.0159
149	0.0190	0.0028	0.0162
150	0.0191	0.0028	0.0163
151	0.0194	0.0029	0.0166
152	0.0196	0.0029	0.0167
153	0.0200	0.0030	0.0170
154	0.0202	0.0030	0.0172
155	0.0206	0.0030	0.0175
156	0.0208	0.0031	0.0177
157	0.0212	0.0031	0.0180
158	0.0214	0.0032	0.0182
159	0.0219	0.0032	0.0186
160	0.0221	0.0033	0.0188
161	0.0226	0.0033	0.0193
162	0.0229	0.0034	0.0195
163	0.0234	0.0035	0.0200
164	0.0237	0.0035	0.0202
165	0.0243	0.0036	0.0207
166	0.0247	0.0036	0.0210
167	0.0253	0.0037	0.0216
168	0.0257	0.0038	0.0219

169	0.0265	0.0039	0.0226
170	0.0269	0.0040	0.0230
171	0.0278	0.0041	0.0237
172	0.0283	0.0042	0.0241
173	0.0293	0.0043	0.0250
174	0.0299	0.0044	0.0255
175	0.0311	0.0046	0.0265
176	0.0318	0.0047	0.0271
177	0.0332	0.0049	0.0283
178	0.0340	0.0050	0.0290
179	0.0358	0.0053	0.0305
180	0.0368	0.0054	0.0314
181	0.0390	0.0058	0.0333
182	0.0403	0.0060	0.0344
183	0.0433	0.0064	0.0369
184	0.0450	0.0066	0.0383
185	0.0327	0.0048	0.0279
186	0.0349	0.0051	0.0297
187	0.0404	0.0060	0.0345
188	0.0441	0.0065	0.0376
189	0.0549	0.0081	0.0468
190	0.0632	0.0093	0.0539
191	0.0959	0.0107	0.0852
192	0.1392	0.0107	0.1285
193	0.6022	0.0107	0.5915
194	0.0755	0.0107	0.0648
195	0.0488	0.0072	0.0416
196	0.0374	0.0055	0.0319
197	0.0469	0.0069	0.0400
198	0.0417	0.0062	0.0356
199	0.0379	0.0056	0.0323
200	0.0349	0.0052	0.0297
201	0.0325	0.0048	0.0277
202	0.0305	0.0045	0.0260
203	0.0288	0.0043	0.0246
204	0.0274	0.0040	0.0233
205	0.0261	0.0039	0.0222
206	0.0250	0.0037	0.0213
207	0.0240	0.0035	0.0205
208	0.0231	0.0034	0.0197
209	0.0223	0.0033	0.0190
210	0.0216	0.0032	0.0184
211	0.0210	0.0031	0.0179
212	0.0204	0.0030	0.0173
213	0.0198	0.0029	0.0169
214	0.0193	0.0028	0.0164
215	0.0188	0.0028	0.0160
216	0.0184	0.0027	0.0156
217	0.0168	0.0025	0.0143
218	0.0164	0.0024	0.0140
219	0.0160	0.0024	0.0137
220	0.0157	0.0023	0.0134
221	0.0154	0.0023	0.0131
222	0.0151	0.0022	0.0128
223	0.0148	0.0022	0.0126
224	0.0145	0.0021	0.0124
225	0.0142	0.0021	0.0121
226	0.0140	0.0021	0.0119
227	0.0138	0.0020	0.0117
228	0.0135	0.0020	0.0115
229	0.0133	0.0020	0.0113
230	0.0131	0.0019	0.0112
231	0.0129	0.0019	0.0110
232	0.0127	0.0019	0.0108
233	0.0125	0.0019	0.0107
234	0.0124	0.0018	0.0105
235	0.0122	0.0018	0.0104
236	0.0120	0.0018	0.0102
237	0.0119	0.0018	0.0101
238	0.0117	0.0017	0.0100
239	0.0116	0.0017	0.0099
240	0.0114	0.0017	0.0097
241	0.0113	0.0017	0.0096
242	0.0112	0.0016	0.0095
243	0.0110	0.0016	0.0094
244	0.0109	0.0016	0.0093
245	0.0108	0.0016	0.0092
246	0.0107	0.0016	0.0091
247	0.0105	0.0016	0.0090
248	0.0104	0.0015	0.0089
249	0.0103	0.0015	0.0088
250	0.0102	0.0015	0.0087
251	0.0101	0.0015	0.0086
252	0.0100	0.0015	0.0085

253	0.0099	0.0015	0.0085
254	0.0098	0.0015	0.0084
255	0.0097	0.0014	0.0083
256	0.0097	0.0014	0.0082
257	0.0096	0.0014	0.0082
258	0.0095	0.0014	0.0081
259	0.0094	0.0014	0.0080
260	0.0093	0.0014	0.0079
261	0.0092	0.0014	0.0079
262	0.0092	0.0014	0.0078
263	0.0091	0.0013	0.0077
264	0.0090	0.0013	0.0077
265	0.0089	0.0013	0.0076
266	0.0089	0.0013	0.0076
267	0.0088	0.0013	0.0075
268	0.0087	0.0013	0.0074
269	0.0087	0.0013	0.0074
270	0.0086	0.0013	0.0073
271	0.0085	0.0013	0.0073
272	0.0085	0.0013	0.0072
273	0.0084	0.0012	0.0072
274	0.0084	0.0012	0.0071
275	0.0083	0.0012	0.0071
276	0.0082	0.0012	0.0070
277	0.0082	0.0012	0.0070
278	0.0081	0.0012	0.0069
279	0.0081	0.0012	0.0069
280	0.0080	0.0012	0.0068
281	0.0080	0.0012	0.0068
282	0.0079	0.0012	0.0067
283	0.0079	0.0012	0.0067
284	0.0078	0.0012	0.0067
285	0.0078	0.0011	0.0066
286	0.0077	0.0011	0.0066
287	0.0077	0.0011	0.0065
288	0.0076	0.0011	0.0065

Total soil rain loss = 0.67(In)
Total effective rainfall = 4.48(In)
Peak flow rate in flood hydrograph = 58.60(CFS)

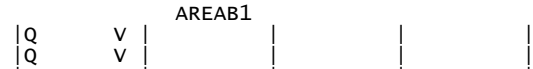
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0008	0.11	Q				
0+10	0.0054	0.67	Q				
0+15	0.0116	0.91	Q				
0+20	0.0186	1.01	Q				
0+25	0.0258	1.06	Q				
0+30	0.0332	1.07	Q				
0+35	0.0407	1.08	Q				
0+40	0.0482	1.09	Q				
0+45	0.0558	1.10	Q				
0+50	0.0633	1.10	Q				
0+55	0.0709	1.10	Q				
1+ 0	0.0786	1.11	Q				
1+ 5	0.0862	1.11	Q				
1+10	0.0939	1.11	Q				
1+15	0.1016	1.12	Q				
1+20	0.1093	1.12	Q				
1+25	0.1170	1.12	Q				
1+30	0.1248	1.13	Q				
1+35	0.1326	1.13	QV				
1+40	0.1404	1.14	QV				
1+45	0.1483	1.14	QV				
1+50	0.1562	1.14	QV				
1+55	0.1641	1.15	QV				
2+ 0	0.1720	1.15	QV				
2+ 5	0.1799	1.15	QV				
2+10	0.1879	1.16	QV				
2+15	0.1959	1.16	QV				
2+20	0.2040	1.17	QV				
2+25	0.2120	1.17	QV				
2+30	0.2201	1.18	QV				
2+35	0.2282	1.18	QV				
2+40	0.2364	1.18	QV				
2+45	0.2446	1.19	QV				

2+50	0.2528	1.19	QV				
2+55	0.2610	1.20	Q V				
3+ 0	0.2693	1.20	Q V				
3+ 5	0.2776	1.20	Q V				
3+10	0.2859	1.21	Q V				
3+15	0.2943	1.21	Q V				
3+20	0.3027	1.22	Q V				
3+25	0.3111	1.22	Q V				
3+30	0.3195	1.23	Q V				
3+35	0.3280	1.23	Q V				
3+40	0.3365	1.24	Q V				
3+45	0.3451	1.24	Q V				
3+50	0.3537	1.25	Q V				
3+55	0.3623	1.25	Q V				
4+ 0	0.3710	1.26	Q V				
4+ 5	0.3796	1.26	Q V				
4+10	0.3884	1.27	Q V				
4+15	0.3971	1.27	Q V				
4+20	0.4059	1.28	Q V				
4+25	0.4147	1.28	Q V				
4+30	0.4236	1.29	Q V				
4+35	0.4325	1.29	Q V				
4+40	0.4414	1.30	Q V				
4+45	0.4504	1.30	Q V				
4+50	0.4594	1.31	Q V				
4+55	0.4685	1.31	Q V				
5+ 0	0.4776	1.32	Q V				
5+ 5	0.4867	1.33	Q V				
5+10	0.4958	1.33	Q V				
5+15	0.5051	1.34	Q V				
5+20	0.5143	1.34	Q V				
5+25	0.5236	1.35	Q V				
5+30	0.5329	1.36	Q V				
5+35	0.5423	1.36	Q V				
5+40	0.5517	1.37	Q V				
5+45	0.5612	1.37	Q V				
5+50	0.5707	1.38	Q V				
5+55	0.5802	1.39	Q V				
6+ 0	0.5898	1.39	Q V				
6+ 5	0.5994	1.40	Q V				
6+10	0.6091	1.41	Q V				
6+15	0.6189	1.41	Q V				
6+20	0.6286	1.42	Q V				
6+25	0.6385	1.43	Q V				
6+30	0.6483	1.43	Q V				
6+35	0.6583	1.44	Q V				
6+40	0.6682	1.45	Q V				
6+45	0.6782	1.45	Q V				
6+50	0.6883	1.46	Q V				
6+55	0.6984	1.47	Q V				
7+ 0	0.7086	1.48	Q V				
7+ 5	0.7189	1.49	Q V				
7+10	0.7291	1.49	Q V				
7+15	0.7395	1.50	|Q V				
7+20	0.7499	1.51	|Q V				
7+25	0.7603	1.52	|Q V				
7+30	0.7709	1.53	|Q V				
7+35	0.7814	1.53	|Q V				
7+40	0.7921	1.54	|Q V				
7+45	0.8027	1.55	|Q V				
7+50	0.8135	1.56	|Q V				
7+55	0.8243	1.57	|Q V				
8+ 0	0.8352	1.58	|Q V				
8+ 5	0.8461	1.59	|Q V				
8+10	0.8571	1.60	|Q V				
8+15	0.8682	1.61	|Q V				
8+20	0.8793	1.62	|Q V				
8+25	0.8905	1.63	|Q V				
8+30	0.9018	1.64	|Q V				
8+35	0.9132	1.65	|Q V				
8+40	0.9246	1.66	|Q V				
8+45	0.9361	1.67	|Q V				
8+50	0.9477	1.68	|Q V				
8+55	0.9593	1.69	|Q V				
9+ 0	0.9710	1.70	|Q V				
9+ 5	0.9828	1.71	|Q V				
9+10	0.9947	1.73	|Q V				
9+15	1.0067	1.74	|Q V				
9+20	1.0187	1.75	|Q V				
9+25	1.0308	1.76	|Q V				
9+30	1.0431	1.77	|Q V				
9+35	1.0554	1.79	|Q V				
9+40	1.0678	1.80	|Q V				
9+45	1.0803	1.81	|Q V				

9+50	1.0928	1.83	
9+55	1.1055	1.84	
10+ 0	1.1183	1.86	
10+ 5	1.1312	1.87	
10+10	1.1441	1.89	
10+15	1.1572	1.90	
10+20	1.1704	1.92	
10+25	1.1837	1.93	
10+30	1.1971	1.95	
10+35	1.2107	1.96	
10+40	1.2243	1.98	
10+45	1.2381	2.00	
10+50	1.2519	2.02	
10+55	1.2660	2.03	
11+ 0	1.2801	2.05	
11+ 5	1.2944	2.07	
11+10	1.3088	2.09	
11+15	1.3233	2.11	
11+20	1.3380	2.13	
11+25	1.3528	2.15	
11+30	1.3678	2.18	
11+35	1.3830	2.20	
11+40	1.3983	2.22	
11+45	1.4137	2.24	
11+50	1.4294	2.27	
11+55	1.4452	2.29	
12+ 0	1.4612	2.32	
12+ 5	1.4775	2.36	
12+10	1.4945	2.48	
12+15	1.5120	2.54	
12+20	1.5299	2.59	
12+25	1.5479	2.62	
12+30	1.5663	2.66	
12+35	1.5848	2.69	
12+40	1.6036	2.73	
12+45	1.6227	2.76	
12+50	1.6420	2.80	
12+55	1.6615	2.84	
13+ 0	1.6814	2.88	
13+ 5	1.7015	2.92	
13+10	1.7220	2.97	
13+15	1.7427	3.01	
13+20	1.7638	3.06	
13+25	1.7852	3.11	
13+30	1.8070	3.17	
13+35	1.8292	3.22	
13+40	1.8517	3.28	
13+45	1.8747	3.33	
13+50	1.8981	3.40	
13+55	1.9220	3.46	
14+ 0	1.9464	3.54	
14+ 5	1.9713	3.61	
14+10	1.9968	3.70	
14+15	2.0228	3.78	
14+20	2.0495	3.88	
14+25	2.0769	3.97	
14+30	2.1050	4.09	
14+35	2.1339	4.19	
14+40	2.1637	4.33	
14+45	2.1943	4.45	
14+50	2.2261	4.61	
14+55	2.2589	4.76	
15+ 0	2.2930	4.95	
15+ 5	2.3284	5.14	
15+10	2.3654	5.38	
15+15	2.4041	5.62	
15+20	2.4450	5.94	
15+25	2.4864	6.01	
15+30	2.5225	5.24	
15+35	2.5579	5.14	
15+40	2.5961	5.54	
15+45	2.6381	6.10	
15+50	2.6877	7.20	
15+55	2.7480	8.76	
16+ 0	2.8349	12.62	
16+ 5	3.0115	25.65	
16+10	3.4152	58.60	
16+15	3.6268	30.73	
16+20	3.7406	16.52	
16+25	3.8122	10.40	
16+30	3.8660	7.81	
16+35	3.9126	6.76	
16+40	3.9544	6.07	
16+45	3.9911	5.32	

16+50	4.0243	4.82	Q			V
16+55	4.0553	4.50	Q			V
17+ 0	4.0844	4.24	Q			V
17+ 5	4.1121	4.01	Q			V
17+10	4.1383	3.81	Q			V
17+15	4.1634	3.64	Q			V
17+20	4.1874	3.49	Q			V
17+25	4.2105	3.35	Q			V
17+30	4.2328	3.23	Q			V
17+35	4.2543	3.12	Q			V
17+40	4.2751	3.02	Q			V
17+45	4.2953	2.93	Q			V
17+50	4.3149	2.85	Q			V
17+55	4.3340	2.77	Q			V
18+ 0	4.3527	2.70	Q			V
18+ 5	4.3707	2.62	Q			V
18+10	4.3877	2.47	Q			V
18+15	4.4041	2.38	Q			V
18+20	4.4200	2.31	Q			V
18+25	4.4356	2.25	Q			V
18+30	4.4508	2.21	Q			V
18+35	4.4656	2.16	Q			V
18+40	4.4802	2.12	Q			V
18+45	4.4945	2.08	Q			V
18+50	4.5085	2.04	Q			V
18+55	4.5223	2.00	Q			V
19+ 0	4.5359	1.97	Q			V
19+ 5	4.5492	1.93	Q			V
19+10	4.5623	1.90	Q			V
19+15	4.5752	1.87	Q			V
19+20	4.5879	1.84	Q			V
19+25	4.6004	1.82	Q			V
19+30	4.6127	1.79	Q			V
19+35	4.6249	1.76	Q			V
19+40	4.6368	1.74	Q			V
19+45	4.6487	1.72	Q			V
19+50	4.6603	1.69	Q			V
19+55	4.6718	1.67	Q			V
20+ 0	4.6832	1.65	Q			V
20+ 5	4.6944	1.63	Q			V
20+10	4.7055	1.61	Q			V
20+15	4.7164	1.59	Q			V
20+20	4.7273	1.57	Q			V
20+25	4.7380	1.55	Q			V
20+30	4.7485	1.54	Q			V
20+35	4.7590	1.52	Q			V
20+40	4.7694	1.50	Q			V
20+45	4.7796	1.49	Q			V
20+50	4.7897	1.47	Q			V
20+55	4.7998	1.46	Q			V
21+ 0	4.8097	1.44	Q			V
21+ 5	4.8195	1.43	Q			V
21+10	4.8293	1.41	Q			V
21+15	4.8389	1.40	Q			V
21+20	4.8485	1.39	Q			V
21+25	4.8579	1.37	Q			V
21+30	4.8673	1.36	Q			V
21+35	4.8766	1.35	Q			V
21+40	4.8858	1.34	Q			V
21+45	4.8949	1.33	Q			V
21+50	4.9040	1.31	Q			V
21+55	4.9130	1.30	Q			V
22+ 0	4.9219	1.29	Q			V
22+ 5	4.9307	1.28	Q			V
22+10	4.9395	1.27	Q			V
22+15	4.9482	1.26	Q			V
22+20	4.9568	1.25	Q			V
22+25	4.9653	1.24	Q			V
22+30	4.9738	1.23	Q			V
22+35	4.9823	1.22	Q			V
22+40	4.9906	1.21	Q			V
22+45	4.9989	1.21	Q			V
22+50	5.0072	1.20	Q			V
22+55	5.0154	1.19	Q			V
23+ 0	5.0235	1.18	Q			V
23+ 5	5.0316	1.17	Q			V
23+10	5.0396	1.16	Q			V
23+15	5.0475	1.16	Q			V
23+20	5.0554	1.15	Q			V
23+25	5.0633	1.14	Q			V
23+30	5.0711	1.13	Q			V
23+35	5.0788	1.13	Q			V
23+40	5.0865	1.12	Q			V
23+45	5.0942	1.11	Q			V

23+50	5.1018	1.10	Q	|	|	|	V|
23+55	5.1093	1.10	Q	|	|	|	V|
24+ 0	5.1169	1.09	Q	|	|	|	V|

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

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Study date 06/19/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA B.2
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
12.45	1	0.78
Rainfall data for year 2		
12.45	6	1.20
Rainfall data for year 2		
12.45	24	2.18
Rainfall data for year 100		
12.45	1	1.27
Rainfall data for year 100		
12.45	6	2.86
Rainfall data for year 100		
12.45	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
75.7	91.4	12.45	1.000	0.166	1.000	0.166

Area-averaged adjusted loss rate Fm (In/Hr) = 0.166

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
12.45	1.000	75.7	91.4	0.94	0.811

Area-averaged catchment yield fraction, Y = 0.811
Area-averaged low loss fraction, Yb = 0.189

++
Watercourse length = 1380.00(Ft.)
Length from concentration point to centroid = 320.00(Ft.)
Elevation difference along watercourse = 108.60(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 12.45(Ac.)
Catchment Lag time = 0.047 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 175.8361
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.166(In/Hr)
Average low loss rate fraction (Yb) = 0.189 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 12.45(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.602(In)
30-minute factor = 0.999 Adjusted rainfall = 1.031(In)
1-hour factor = 0.999 Adjusted rainfall = 1.269(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 150.57 (CFS))	
1	37.071	55.816
2	89.292	78.629
3	98.207	13.423
4	100.000	2.699

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6023	0.6023
2	0.7415	0.1392
3	0.8374	0.0959
4	0.9129	0.0755
5	0.9761	0.0632
6	1.0310	0.0549
7	1.0798	0.0488
8	1.1239	0.0441
9	1.1643	0.0404
10	1.2017	0.0374
11	1.2366	0.0349
12	1.2693	0.0327
13	1.3162	0.0469
14	1.3612	0.0450
15	1.4044	0.0433
16	1.4462	0.0417
17	1.4865	0.0403
18	1.5255	0.0390
19	1.5634	0.0379
20	1.6002	0.0368
21	1.6360	0.0358
22	1.6709	0.0349
23	1.7049	0.0340
24	1.7381	0.0332
25	1.7706	0.0325
26	1.8024	0.0318
27	1.8335	0.0311
28	1.8640	0.0305
29	1.8939	0.0299
30	1.9232	0.0293
31	1.9520	0.0288
32	1.9804	0.0283
33	2.0082	0.0278
34	2.0356	0.0274
35	2.0625	0.0269
36	2.0890	0.0265
37	2.1151	0.0261
38	2.1408	0.0257
39	2.1662	0.0253
40	2.1912	0.0250
41	2.2158	0.0247
42	2.2402	0.0243
43	2.2642	0.0240
44	2.2879	0.0237
45	2.3113	0.0234
46	2.3344	0.0231

		AREAB2
47	2.3573	0.0229
48	2.3799	0.0226
49	2.4022	0.0223
50	2.4243	0.0221
51	2.4462	0.0219
52	2.4678	0.0216
53	2.4892	0.0214
54	2.5104	0.0212
55	2.5313	0.0210
56	2.5521	0.0208
57	2.5726	0.0206
58	2.5930	0.0204
59	2.6131	0.0202
60	2.6331	0.0200
61	2.6529	0.0198
62	2.6725	0.0196
63	2.6920	0.0194
64	2.7113	0.0193
65	2.7304	0.0191
66	2.7493	0.0190
67	2.7681	0.0188
68	2.7868	0.0186
69	2.8053	0.0185
70	2.8236	0.0183
71	2.8418	0.0182
72	2.8599	0.0181
73	2.8767	0.0168
74	2.8933	0.0167
75	2.9099	0.0165
76	2.9263	0.0164
77	2.9425	0.0163
78	2.9587	0.0162
79	2.9747	0.0160
80	2.9906	0.0159
81	3.0064	0.0158
82	3.0221	0.0157
83	3.0377	0.0156
84	3.0532	0.0155
85	3.0686	0.0154
86	3.0838	0.0153
87	3.0990	0.0152
88	3.1141	0.0151
89	3.1290	0.0150
90	3.1439	0.0149
91	3.1587	0.0148
92	3.1733	0.0147
93	3.1879	0.0146
94	3.2024	0.0145
95	3.2168	0.0144
96	3.2312	0.0143
97	3.2454	0.0142
98	3.2596	0.0142
99	3.2736	0.0141
100	3.2876	0.0140
101	3.3015	0.0139
102	3.3154	0.0138
103	3.3291	0.0138
104	3.3428	0.0137
105	3.3564	0.0136
106	3.3699	0.0135
107	3.3834	0.0135
108	3.3968	0.0134
109	3.4101	0.0133
110	3.4233	0.0132
111	3.4365	0.0132
112	3.4496	0.0131
113	3.4626	0.0130
114	3.4756	0.0130
115	3.4885	0.0129
116	3.5013	0.0128
117	3.5141	0.0128
118	3.5268	0.0127
119	3.5395	0.0127
120	3.5520	0.0126
121	3.5646	0.0125
122	3.5770	0.0125
123	3.5895	0.0124
124	3.6018	0.0124
125	3.6141	0.0123
126	3.6263	0.0122
127	3.6385	0.0122
128	3.6507	0.0121
129	3.6627	0.0121
130	3.6748	0.0120

		AREAB2
131	3.6867	0.0120
132	3.6986	0.0119
133	3.7105	0.0119
134	3.7223	0.0118
135	3.7341	0.0118
136	3.7458	0.0117
137	3.7574	0.0117
138	3.7691	0.0116
139	3.7806	0.0116
140	3.7921	0.0115
141	3.8036	0.0115
142	3.8150	0.0114
143	3.8264	0.0114
144	3.8377	0.0113
145	3.8490	0.0113
146	3.8603	0.0112
147	3.8715	0.0112
148	3.8826	0.0112
149	3.8937	0.0111
150	3.9048	0.0111
151	3.9158	0.0110
152	3.9268	0.0110
153	3.9377	0.0109
154	3.9486	0.0109
155	3.9595	0.0109
156	3.9703	0.0108
157	3.9811	0.0108
158	3.9918	0.0107
159	4.0025	0.0107
160	4.0132	0.0107
161	4.0238	0.0106
162	4.0344	0.0106
163	4.0449	0.0105
164	4.0555	0.0105
165	4.0659	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0971	0.0104
169	4.1075	0.0103
170	4.1178	0.0103
171	4.1280	0.0103
172	4.1382	0.0102
173	4.1484	0.0102
174	4.1586	0.0102
175	4.1687	0.0101
176	4.1788	0.0101
177	4.1889	0.0101
178	4.1989	0.0100
179	4.2089	0.0100
180	4.2188	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2485	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2779	0.0098
187	4.2877	0.0097
188	4.2974	0.0097
189	4.3071	0.0097
190	4.3167	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3455	0.0096
194	4.3551	0.0095
195	4.3646	0.0095
196	4.3741	0.0095
197	4.3835	0.0095
198	4.3929	0.0094
199	4.4023	0.0094
200	4.4117	0.0094
201	4.4211	0.0093
202	4.4304	0.0093
203	4.4397	0.0093
204	4.4489	0.0093
205	4.4582	0.0092
206	4.4674	0.0092
207	4.4766	0.0092
208	4.4858	0.0092
209	4.4949	0.0091
210	4.5040	0.0091
211	4.5131	0.0091
212	4.5222	0.0091
213	4.5312	0.0090
214	4.5402	0.0090

		AREAB2
215	4.5492	0.0090
216	4.5582	0.0090
217	4.5671	0.0089
218	4.5760	0.0089
219	4.5849	0.0089
220	4.5938	0.0089
221	4.6026	0.0088
222	4.6115	0.0088
223	4.6203	0.0088
224	4.6290	0.0088
225	4.6378	0.0088
226	4.6465	0.0087
227	4.6552	0.0087
228	4.6639	0.0087
229	4.6726	0.0087
230	4.6812	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7156	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7497	0.0085
239	4.7581	0.0085
240	4.7666	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7917	0.0084
244	4.8001	0.0084
245	4.8084	0.0083
246	4.8168	0.0083
247	4.8251	0.0083
248	4.8333	0.0083
249	4.8416	0.0083
250	4.8498	0.0082
251	4.8581	0.0082
252	4.8663	0.0082
253	4.8744	0.0082
254	4.8826	0.0082
255	4.8908	0.0081
256	4.8989	0.0081
257	4.9070	0.0081
258	4.9151	0.0081
259	4.9232	0.0081
260	4.9312	0.0081
261	4.9392	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9633	0.0080
265	4.9712	0.0080
266	4.9792	0.0080
267	4.9871	0.0079
268	4.9950	0.0079
269	5.0029	0.0079
270	5.0108	0.0079
271	5.0187	0.0079
272	5.0265	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0578	0.0078
277	5.0655	0.0078
278	5.0733	0.0078
279	5.0810	0.0077
280	5.0887	0.0077
281	5.0964	0.0077
282	5.1041	0.0077
283	5.1118	0.0077
284	5.1194	0.0077
285	5.1271	0.0076
286	5.1347	0.0076
287	5.1423	0.0076
288	5.1499	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0014	0.0062
2	0.0076	0.0014	0.0062
3	0.0076	0.0014	0.0062
4	0.0077	0.0015	0.0062
5	0.0077	0.0015	0.0062

		AREAB2	
6	0.0077	0.0015	0.0062
7	0.0077	0.0015	0.0063
8	0.0078	0.0015	0.0063
9	0.0078	0.0015	0.0063
10	0.0078	0.0015	0.0063
11	0.0078	0.0015	0.0063
12	0.0078	0.0015	0.0064
13	0.0079	0.0015	0.0064
14	0.0079	0.0015	0.0064
15	0.0079	0.0015	0.0064
16	0.0080	0.0015	0.0064
17	0.0080	0.0015	0.0065
18	0.0080	0.0015	0.0065
19	0.0080	0.0015	0.0065
20	0.0081	0.0015	0.0065
21	0.0081	0.0015	0.0066
22	0.0081	0.0015	0.0066
23	0.0081	0.0015	0.0066
24	0.0082	0.0015	0.0066
25	0.0082	0.0016	0.0066
26	0.0082	0.0016	0.0067
27	0.0083	0.0016	0.0067
28	0.0083	0.0016	0.0067
29	0.0083	0.0016	0.0067
30	0.0083	0.0016	0.0068
31	0.0084	0.0016	0.0068
32	0.0084	0.0016	0.0068
33	0.0084	0.0016	0.0068
34	0.0085	0.0016	0.0069
35	0.0085	0.0016	0.0069
36	0.0085	0.0016	0.0069
37	0.0086	0.0016	0.0069
38	0.0086	0.0016	0.0070
39	0.0086	0.0016	0.0070
40	0.0086	0.0016	0.0070
41	0.0087	0.0016	0.0070
42	0.0087	0.0017	0.0071
43	0.0088	0.0017	0.0071
44	0.0088	0.0017	0.0071
45	0.0088	0.0017	0.0072
46	0.0088	0.0017	0.0072
47	0.0089	0.0017	0.0072
48	0.0089	0.0017	0.0072
49	0.0090	0.0017	0.0073
50	0.0090	0.0017	0.0073
51	0.0090	0.0017	0.0073
52	0.0091	0.0017	0.0073
53	0.0091	0.0017	0.0074
54	0.0091	0.0017	0.0074
55	0.0092	0.0017	0.0074
56	0.0092	0.0017	0.0075
57	0.0093	0.0018	0.0075
58	0.0093	0.0018	0.0075
59	0.0093	0.0018	0.0076
60	0.0094	0.0018	0.0076
61	0.0094	0.0018	0.0076
62	0.0095	0.0018	0.0077
63	0.0095	0.0018	0.0077
64	0.0095	0.0018	0.0077
65	0.0096	0.0018	0.0078
66	0.0096	0.0018	0.0078
67	0.0097	0.0018	0.0078
68	0.0097	0.0018	0.0079
69	0.0098	0.0019	0.0079
70	0.0098	0.0019	0.0079
71	0.0099	0.0019	0.0080
72	0.0099	0.0019	0.0080
73	0.0100	0.0019	0.0081
74	0.0100	0.0019	0.0081
75	0.0101	0.0019	0.0082
76	0.0101	0.0019	0.0082
77	0.0102	0.0019	0.0082
78	0.0102	0.0019	0.0083
79	0.0103	0.0019	0.0083
80	0.0103	0.0020	0.0083
81	0.0104	0.0020	0.0084
82	0.0104	0.0020	0.0084
83	0.0105	0.0020	0.0085
84	0.0105	0.0020	0.0085
85	0.0106	0.0020	0.0086
86	0.0106	0.0020	0.0086
87	0.0107	0.0020	0.0087
88	0.0107	0.0020	0.0087
89	0.0108	0.0020	0.0088

		AREAB2	
90	0.0109	0.0021	0.0088
91	0.0109	0.0021	0.0089
92	0.0110	0.0021	0.0089
93	0.0111	0.0021	0.0090
94	0.0111	0.0021	0.0090
95	0.0112	0.0021	0.0091
96	0.0112	0.0021	0.0091
97	0.0113	0.0021	0.0092
98	0.0114	0.0022	0.0092
99	0.0115	0.0022	0.0093
100	0.0115	0.0022	0.0093
101	0.0116	0.0022	0.0094
102	0.0117	0.0022	0.0095
103	0.0118	0.0022	0.0095
104	0.0118	0.0022	0.0096
105	0.0119	0.0023	0.0097
106	0.0120	0.0023	0.0097
107	0.0121	0.0023	0.0098
108	0.0121	0.0023	0.0098
109	0.0122	0.0023	0.0099
110	0.0123	0.0023	0.0100
111	0.0124	0.0024	0.0101
112	0.0125	0.0024	0.0101
113	0.0126	0.0024	0.0102
114	0.0127	0.0024	0.0103
115	0.0128	0.0024	0.0104
116	0.0128	0.0024	0.0104
117	0.0130	0.0025	0.0105
118	0.0130	0.0025	0.0106
119	0.0132	0.0025	0.0107
120	0.0132	0.0025	0.0107
121	0.0134	0.0025	0.0108
122	0.0135	0.0025	0.0109
123	0.0136	0.0026	0.0110
124	0.0137	0.0026	0.0111
125	0.0138	0.0026	0.0112
126	0.0139	0.0026	0.0113
127	0.0141	0.0027	0.0114
128	0.0142	0.0027	0.0115
129	0.0143	0.0027	0.0116
130	0.0144	0.0027	0.0117
131	0.0146	0.0028	0.0118
132	0.0147	0.0028	0.0119
133	0.0149	0.0028	0.0121
134	0.0150	0.0028	0.0121
135	0.0152	0.0029	0.0123
136	0.0153	0.0029	0.0124
137	0.0155	0.0029	0.0125
138	0.0156	0.0030	0.0126
139	0.0158	0.0030	0.0128
140	0.0159	0.0030	0.0129
141	0.0162	0.0031	0.0131
142	0.0163	0.0031	0.0132
143	0.0165	0.0031	0.0134
144	0.0167	0.0032	0.0135
145	0.0181	0.0034	0.0146
146	0.0182	0.0035	0.0148
147	0.0185	0.0035	0.0150
148	0.0186	0.0035	0.0151
149	0.0190	0.0036	0.0154
150	0.0191	0.0036	0.0155
151	0.0194	0.0037	0.0158
152	0.0196	0.0037	0.0159
153	0.0200	0.0038	0.0162
154	0.0202	0.0038	0.0163
155	0.0206	0.0039	0.0167
156	0.0208	0.0039	0.0168
157	0.0212	0.0040	0.0172
158	0.0214	0.0041	0.0173
159	0.0219	0.0041	0.0177
160	0.0221	0.0042	0.0179
161	0.0226	0.0043	0.0183
162	0.0229	0.0043	0.0185
163	0.0234	0.0044	0.0190
164	0.0237	0.0045	0.0192
165	0.0243	0.0046	0.0197
166	0.0247	0.0047	0.0200
167	0.0253	0.0048	0.0205
168	0.0257	0.0049	0.0208
169	0.0265	0.0050	0.0215
170	0.0269	0.0051	0.0218
171	0.0278	0.0053	0.0226
172	0.0283	0.0054	0.0229
173	0.0293	0.0056	0.0238

		AREAB2	
174	0.0299	0.0057	0.0242
175	0.0311	0.0059	0.0252
176	0.0318	0.0060	0.0258
177	0.0332	0.0063	0.0269
178	0.0340	0.0064	0.0276
179	0.0358	0.0068	0.0290
180	0.0368	0.0070	0.0298
181	0.0390	0.0074	0.0316
182	0.0403	0.0076	0.0327
183	0.0433	0.0082	0.0351
184	0.0450	0.0085	0.0365
185	0.0327	0.0062	0.0265
186	0.0349	0.0066	0.0283
187	0.0404	0.0077	0.0328
188	0.0441	0.0084	0.0358
189	0.0549	0.0104	0.0445
190	0.0632	0.0120	0.0512
191	0.0959	0.0138	0.0821
192	0.1392	0.0138	0.1254
193	0.6023	0.0138	0.5885
194	0.0755	0.0138	0.0617
195	0.0488	0.0092	0.0396
196	0.0374	0.0071	0.0303
197	0.0469	0.0089	0.0380
198	0.0417	0.0079	0.0338
199	0.0379	0.0072	0.0307
200	0.0349	0.0066	0.0283
201	0.0325	0.0062	0.0263
202	0.0305	0.0058	0.0247
203	0.0288	0.0055	0.0234
204	0.0274	0.0052	0.0222
205	0.0261	0.0049	0.0212
206	0.0250	0.0047	0.0203
207	0.0240	0.0046	0.0195
208	0.0231	0.0044	0.0188
209	0.0223	0.0042	0.0181
210	0.0216	0.0041	0.0175
211	0.0210	0.0040	0.0170
212	0.0204	0.0039	0.0165
213	0.0198	0.0038	0.0160
214	0.0193	0.0037	0.0156
215	0.0188	0.0036	0.0152
216	0.0183	0.0035	0.0149
217	0.0168	0.0032	0.0136
218	0.0164	0.0031	0.0133
219	0.0160	0.0030	0.0130
220	0.0157	0.0030	0.0127
221	0.0154	0.0029	0.0125
222	0.0151	0.0029	0.0122
223	0.0148	0.0028	0.0120
224	0.0145	0.0027	0.0118
225	0.0142	0.0027	0.0115
226	0.0140	0.0027	0.0113
227	0.0138	0.0026	0.0111
228	0.0135	0.0026	0.0110
229	0.0133	0.0025	0.0108
230	0.0131	0.0025	0.0106
231	0.0129	0.0024	0.0105
232	0.0127	0.0024	0.0103
233	0.0125	0.0024	0.0102
234	0.0124	0.0023	0.0100
235	0.0122	0.0023	0.0099
236	0.0120	0.0023	0.0097
237	0.0119	0.0022	0.0096
238	0.0117	0.0022	0.0095
239	0.0116	0.0022	0.0094
240	0.0114	0.0022	0.0093
241	0.0113	0.0021	0.0091
242	0.0112	0.0021	0.0090
243	0.0110	0.0021	0.0089
244	0.0109	0.0021	0.0088
245	0.0108	0.0020	0.0087
246	0.0107	0.0020	0.0086
247	0.0105	0.0020	0.0085
248	0.0104	0.0020	0.0085
249	0.0103	0.0020	0.0084
250	0.0102	0.0019	0.0083
251	0.0101	0.0019	0.0082
252	0.0100	0.0019	0.0081
253	0.0099	0.0019	0.0080
254	0.0098	0.0019	0.0080
255	0.0097	0.0018	0.0079
256	0.0097	0.0018	0.0078
257	0.0096	0.0018	0.0078

258	0.0095	0.0018	0.0077
259	0.0094	0.0018	0.0076
260	0.0093	0.0018	0.0076
261	0.0092	0.0018	0.0075
262	0.0092	0.0017	0.0074
263	0.0091	0.0017	0.0074
264	0.0090	0.0017	0.0073
265	0.0089	0.0017	0.0072
266	0.0089	0.0017	0.0072
267	0.0088	0.0017	0.0071
268	0.0087	0.0017	0.0071
269	0.0087	0.0016	0.0070
270	0.0086	0.0016	0.0070
271	0.0085	0.0016	0.0069
272	0.0085	0.0016	0.0069
273	0.0084	0.0016	0.0068
274	0.0084	0.0016	0.0068
275	0.0083	0.0016	0.0067
276	0.0082	0.0016	0.0067
277	0.0082	0.0016	0.0066
278	0.0081	0.0015	0.0066
279	0.0081	0.0015	0.0065
280	0.0080	0.0015	0.0065
281	0.0080	0.0015	0.0065
282	0.0079	0.0015	0.0064
283	0.0079	0.0015	0.0064
284	0.0078	0.0015	0.0063
285	0.0078	0.0015	0.0063
286	0.0077	0.0015	0.0063
287	0.0077	0.0015	0.0062
288	0.0076	0.0014	0.0062

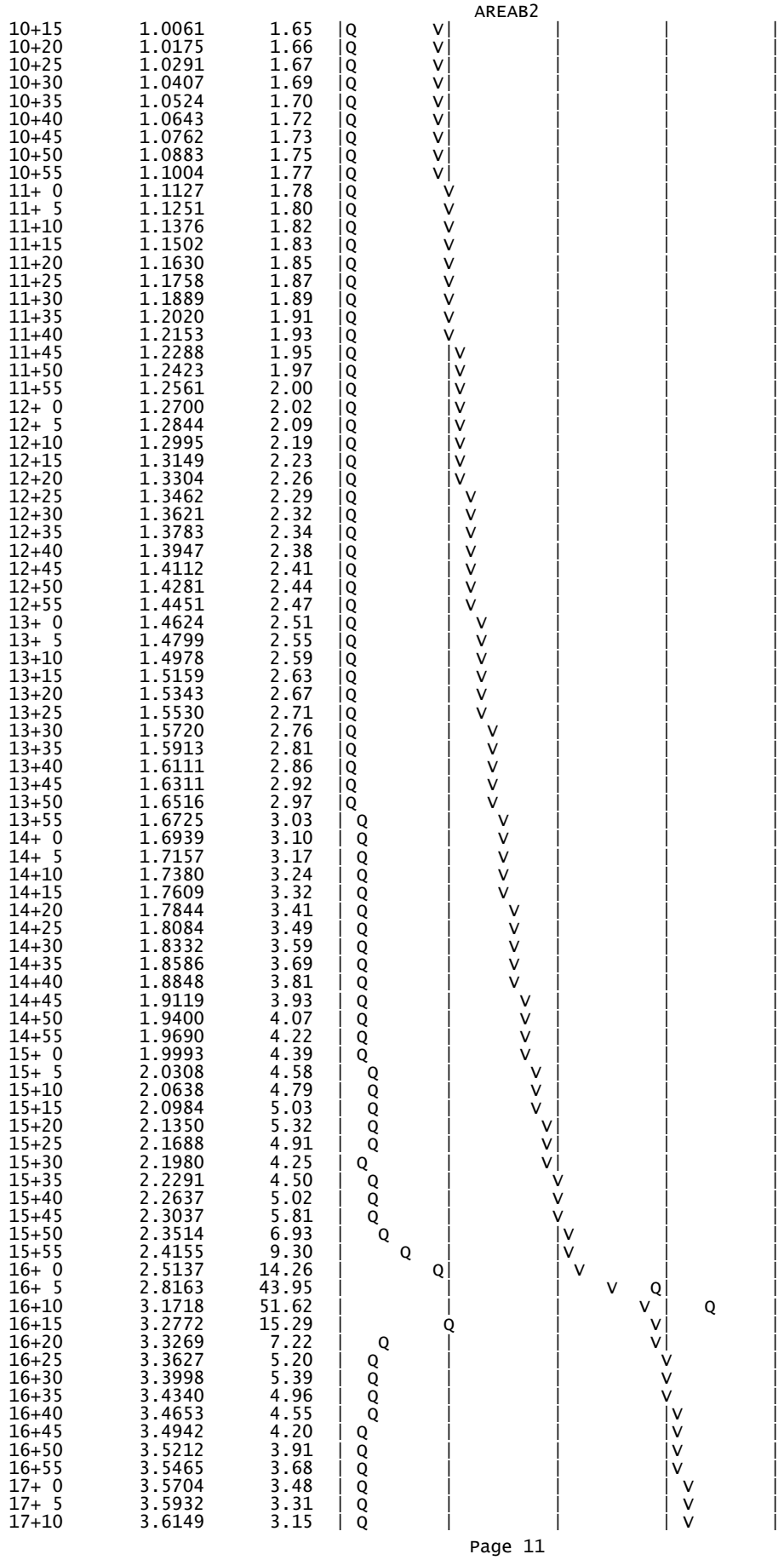
Total soil rain loss = 0.86(In)
Total effective rainfall = 4.29(In)
Peak flow rate in flood hydrograph = 51.62(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0024	0.34	Q				
0+10	0.0081	0.83	Q				
0+15	0.0144	0.91	Q				
0+20	0.0208	0.93	Q				
0+25	0.0272	0.94	Q				
0+30	0.0337	0.94	Q				
0+35	0.0402	0.94	Q				
0+40	0.0467	0.94	Q				
0+45	0.0532	0.95	Q				
0+50	0.0597	0.95	Q				
0+55	0.0663	0.95	Q				
1+ 0	0.0729	0.96	Q				
1+ 5	0.0795	0.96	Q				
1+10	0.0861	0.96	Q				
1+15	0.0928	0.97	Q				
1+20	0.0994	0.97	Q				
1+25	0.1061	0.97	Q				
1+30	0.1128	0.97	QV				
1+35	0.1196	0.98	QV				
1+40	0.1263	0.98	QV				
1+45	0.1331	0.98	QV				
1+50	0.1399	0.99	QV				
1+55	0.1467	0.99	QV				
2+ 0	0.1536	0.99	QV				
2+ 5	0.1605	1.00	QV				
2+10	0.1674	1.00	QV				
2+15	0.1743	1.00	QV				
2+20	0.1812	1.01	QV				
2+25	0.1882	1.01	QV				
2+30	0.1952	1.02	QV				
2+35	0.2022	1.02	QV				
2+40	0.2093	1.02	QV				
2+45	0.2163	1.03	QV				
2+50	0.2234	1.03	Q V				
2+55	0.2305	1.03	Q V				
3+ 0	0.2377	1.04	Q V				
3+ 5	0.2448	1.04	Q V				
3+10	0.2520	1.05	Q V				

3+15	0.2593	1.05	Q V	|	|	|	|
3+20	0.2665	1.05	Q V	|	|	|	|
3+25	0.2738	1.06	Q V	|	|	|	|
3+30	0.2811	1.06	Q V	|	|	|	|
3+35	0.2884	1.06	Q V	|	|	|	|
3+40	0.2958	1.07	Q V	|	|	|	|
3+45	0.3032	1.07	Q V	|	|	|	|
3+50	0.3106	1.08	Q V	|	|	|	|
3+55	0.3181	1.08	Q V	|	|	|	|
4+ 0	0.3255	1.09	Q V	|	|	|	|
4+ 5	0.3330	1.09	Q V	|	|	|	|
4+10	0.3406	1.09	Q V	|	|	|	|
4+15	0.3482	1.10	Q V	|	|	|	|
4+20	0.3558	1.10	Q V	|	|	|	|
4+25	0.3634	1.11	Q V	|	|	|	|
4+30	0.3710	1.11	Q V	|	|	|	|
4+35	0.3787	1.12	Q V	|	|	|	|
4+40	0.3865	1.12	Q V	|	|	|	|
4+45	0.3942	1.13	Q V	|	|	|	|
4+50	0.4020	1.13	Q V	|	|	|	|
4+55	0.4098	1.14	Q V	|	|	|	|
5+ 0	0.4177	1.14	Q V	|	|	|	|
5+ 5	0.4256	1.15	Q V	|	|	|	|
5+10	0.4335	1.15	Q V	|	|	|	|
5+15	0.4415	1.16	Q V	|	|	|	|
5+20	0.4495	1.16	Q V	|	|	|	|
5+25	0.4575	1.17	Q V	|	|	|	|
5+30	0.4656	1.17	Q V	|	|	|	|
5+35	0.4737	1.18	Q V	|	|	|	|
5+40	0.4818	1.18	Q V	|	|	|	|
5+45	0.4900	1.19	Q V	|	|	|	|
5+50	0.4982	1.19	Q V	|	|	|	|
5+55	0.5065	1.20	Q V	|	|	|	|
6+ 0	0.5148	1.20	Q V	|	|	|	|
6+ 5	0.5231	1.21	Q V	|	|	|	|
6+10	0.5315	1.22	Q V	|	|	|	|
6+15	0.5399	1.22	Q V	|	|	|	|
6+20	0.5483	1.23	Q V	|	|	|	|
6+25	0.5568	1.23	Q V	|	|	|	|
6+30	0.5654	1.24	Q V	|	|	|	|
6+35	0.5740	1.25	Q V	|	|	|	|
6+40	0.5826	1.25	Q V	|	|	|	|
6+45	0.5913	1.26	Q V	|	|	|	|
6+50	0.6000	1.27	Q V	|	|	|	|
6+55	0.6087	1.27	Q V	|	|	|	|
7+ 0	0.6176	1.28	Q V	|	|	|	|
7+ 5	0.6264	1.29	Q V	|	|	|	|
7+10	0.6353	1.29	Q V	|	|	|	|
7+15	0.6443	1.30	Q V	|	|	|	|
7+20	0.6533	1.31	Q V	|	|	|	|
7+25	0.6623	1.31	Q V	|	|	|	|
7+30	0.6714	1.32	Q V	|	|	|	|
7+35	0.6805	1.33	Q V	|	|	|	|
7+40	0.6897	1.34	Q V	|	|	|	|
7+45	0.6990	1.34	Q V	|	|	|	|
7+50	0.7083	1.35	Q V	|	|	|	|
7+55	0.7177	1.36	Q V	|	|	|	|
8+ 0	0.7271	1.37	Q V	|	|	|	|
8+ 5	0.7365	1.38	Q V	|	|	|	|
8+10	0.7461	1.38	Q V	|	|	|	|
8+15	0.7557	1.39	Q V	|	|	|	|
8+20	0.7653	1.40	Q V	|	|	|	|
8+25	0.7750	1.41	Q V	|	|	|	|
8+30	0.7848	1.42	Q V	|	|	|	|
8+35	0.7946	1.43	Q V	|	|	|	|
8+40	0.8045	1.44	Q V	|	|	|	|
8+45	0.8144	1.45	Q V	|	|	|	|
8+50	0.8245	1.45	Q V	|	|	|	|
8+55	0.8345	1.46	Q V	|	|	|	|
9+ 0	0.8447	1.47	Q V	|	|	|	|
9+ 5	0.8549	1.48	Q V	|	|	|	|
9+10	0.8652	1.49	Q V	|	|	|	|
9+15	0.8756	1.50	|Q V	|	|	|	|
9+20	0.8860	1.52	|Q V	|	|	|	|
9+25	0.8965	1.53	|Q V	|	|	|	|
9+30	0.9071	1.54	|Q V	|	|	|	|
9+35	0.9178	1.55	|Q V	|	|	|	|
9+40	0.9285	1.56	|Q V	|	|	|	|
9+45	0.9394	1.57	|Q V	|	|	|	|
9+50	0.9503	1.58	|Q V	|	|	|	|
9+55	0.9612	1.60	|Q V	|	|	|	|
10+ 0	0.9723	1.61	|Q V	|	|	|	|
10+ 5	0.9835	1.62	|Q V	|	|	|	|
10+10	0.9947	1.63	|Q V	|	|	|	|



10+15	1.0061	1.65	
10+20	1.0175	1.66	
10+25	1.0291	1.67	
10+30	1.0407	1.69	
10+35	1.0524	1.70	
10+40	1.0643	1.72	
10+45	1.0762	1.73	
10+50	1.0883	1.75	
10+55	1.1004	1.77	
11+ 0	1.1127	1.78	
11+ 5	1.1251	1.80	
11+10	1.1376	1.82	
11+15	1.1502	1.83	
11+20	1.1630	1.85	
11+25	1.1758	1.87	
11+30	1.1889	1.89	
11+35	1.2020	1.91	
11+40	1.2153	1.93	
11+45	1.2288	1.95	
11+50	1.2423	1.97	
11+55	1.2561	2.00	
12+ 0	1.2700	2.02	
12+ 5	1.2844	2.09	
12+10	1.2995	2.19	
12+15	1.3149	2.23	
12+20	1.3304	2.26	
12+25	1.3462	2.29	
12+30	1.3621	2.32	
12+35	1.3783	2.34	
12+40	1.3947	2.38	
12+45	1.4112	2.41	
12+50	1.4281	2.44	
12+55	1.4451	2.47	
13+ 0	1.4624	2.51	
13+ 5	1.4799	2.55	
13+10	1.4978	2.59	
13+15	1.5159	2.63	
13+20	1.5343	2.67	
13+25	1.5530	2.71	
13+30	1.5720	2.76	
13+35	1.5913	2.81	
13+40	1.6111	2.86	
13+45	1.6311	2.92	
13+50	1.6516	2.97	
13+55	1.6725	3.03	
14+ 0	1.6939	3.10	
14+ 5	1.7157	3.17	
14+10	1.7380	3.24	
14+15	1.7609	3.32	
14+20	1.7844	3.41	
14+25	1.8084	3.49	
14+30	1.8332	3.59	
14+35	1.8586	3.69	
14+40	1.8848	3.81	
14+45	1.9119	3.93	
14+50	1.9400	4.07	
14+55	1.9690	4.22	
15+ 0	1.9993	4.39	
15+ 5	2.0308	4.58	
15+10	2.0638	4.79	
15+15	2.0984	5.03	
15+20	2.1350	5.32	
15+25	2.1688	4.91	
15+30	2.1980	4.25	
15+35	2.2291	4.50	
15+40	2.2637	5.02	
15+45	2.3037	5.81	
15+50	2.3514	6.93	
15+55	2.4155	9.30	
16+ 0	2.5137	14.26	
16+ 5	2.8163	43.95	
16+10	3.1718	51.62	
16+15	3.2772	15.29	
16+20	3.3269	7.22	
16+25	3.3627	5.20	
16+30	3.3998	5.39	
16+35	3.4340	4.96	
16+40	3.4653	4.55	
16+45	3.4942	4.20	
16+50	3.5212	3.91	
16+55	3.5465	3.68	
17+ 0	3.5704	3.48	
17+ 5	3.5932	3.31	
17+10	3.6149	3.15	

17+15	3.6358	3.02	Q			V
17+20	3.6558	2.91	Q			V
17+25	3.6751	2.80	Q			V
17+30	3.6937	2.71	Q			V
17+35	3.7117	2.62	Q			V
17+40	3.7292	2.54	Q			V
17+45	3.7462	2.47	Q			V
17+50	3.7628	2.40	Q			V
17+55	3.7789	2.34	Q			V
18+ 0	3.7946	2.28	Q			V
18+ 5	3.8096	2.18	Q			V
18+10	3.8237	2.05	Q			V
18+15	3.8374	1.99	Q			V
18+20	3.8508	1.95	Q			V
18+25	3.8640	1.91	Q			V
18+30	3.8768	1.87	Q			V
18+35	3.8894	1.83	Q			V
18+40	3.9018	1.80	Q			V
18+45	3.9139	1.76	Q			V
18+50	3.9258	1.73	Q			V
18+55	3.9375	1.70	Q			V
19+ 0	3.9491	1.67	Q			V
19+ 5	3.9604	1.64	Q			V
19+10	3.9715	1.62	Q			V
19+15	3.9825	1.59	Q			V
19+20	3.9933	1.57	Q			V
19+25	4.0040	1.55	Q			V
19+30	4.0145	1.52	Q			V
19+35	4.0248	1.50	Q			V
19+40	4.0350	1.48	Q			V
19+45	4.0451	1.46	Q			V
19+50	4.0550	1.44	Q			V
19+55	4.0648	1.42	Q			V
20+ 0	4.0745	1.41	Q			V
20+ 5	4.0841	1.39	Q			V
20+10	4.0936	1.37	Q			V
20+15	4.1029	1.36	Q			V
20+20	4.1121	1.34	Q			V
20+25	4.1213	1.33	Q			V
20+30	4.1303	1.31	Q			V
20+35	4.1392	1.30	Q			V
20+40	4.1481	1.28	Q			V
20+45	4.1568	1.27	Q			V
20+50	4.1655	1.26	Q			V
20+55	4.1741	1.24	Q			V
21+ 0	4.1826	1.23	Q			V
21+ 5	4.1910	1.22	Q			V
21+10	4.1993	1.21	Q			V
21+15	4.2075	1.20	Q			V
21+20	4.2157	1.19	Q			V
21+25	4.2238	1.18	Q			V
21+30	4.2318	1.17	Q			V
21+35	4.2398	1.15	Q			V
21+40	4.2477	1.14	Q			V
21+45	4.2555	1.13	Q			V
21+50	4.2632	1.13	Q			V
21+55	4.2709	1.12	Q			V
22+ 0	4.2786	1.11	Q			V
22+ 5	4.2861	1.10	Q			V
22+10	4.2936	1.09	Q			V
22+15	4.3011	1.08	Q			V
22+20	4.3084	1.07	Q			V
22+25	4.3158	1.06	Q			V
22+30	4.3230	1.06	Q			V
22+35	4.3303	1.05	Q			V
22+40	4.3374	1.04	Q			V
22+45	4.3445	1.03	Q			V
22+50	4.3516	1.03	Q			V
22+55	4.3586	1.02	Q			V
23+ 0	4.3656	1.01	Q			V
23+ 5	4.3725	1.00	Q			V
23+10	4.3794	1.00	Q			V
23+15	4.3862	0.99	Q			V
23+20	4.3929	0.98	Q			V
23+25	4.3997	0.98	Q			V
23+30	4.4064	0.97	Q			V
23+35	4.4130	0.96	Q			V
23+40	4.4196	0.96	Q			V
23+45	4.4262	0.95	Q			V
23+50	4.4327	0.95	Q			V
23+55	4.4392	0.94	Q			V
24+ 0	4.4456	0.93	Q			V

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA C
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
13.87	1	0.78
Rainfall data for year 2		
13.87	6	1.20
Rainfall data for year 2		
13.87	24	2.18
Rainfall data for year 100		
13.87	1	1.27
Rainfall data for year 100		
13.87	6	2.86
Rainfall data for year 100		
13.87	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
65.2	83.2	13.87	1.000	0.315	1.000	0.315

Area-averaged adjusted loss rate Fm (In/Hr) = 0.315

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
13.87	1.000	65.2	83.2	2.03	0.646

Area-averaged catchment yield fraction, Y = 0.646
Area-averaged low loss fraction, Yb = 0.354

++
Watercourse length = 1690.00(Ft.)
Length from concentration point to centroid = 755.00(Ft.)
Elevation difference along watercourse = 102.90(Ft.)
Mannings friction factor along watercourse = 0.040
Watershed area = 13.87(Ac.)
Catchment Lag time = 0.099 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 83.9254
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.315(In/Hr)
Average low loss rate fraction (Yb) = 0.354 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 13.87(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.602(In)
30-minute factor = 0.999 Adjusted rainfall = 1.031(In)
1-hour factor = 0.999 Adjusted rainfall = 1.269(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 167.74 (CFS))	
1	9.842	16.509
2	60.495	84.965
3	83.448	38.502
4	92.715	15.545
5	97.118	7.385
6	98.605	2.494
7	99.290	1.149
8	99.809	0.870
9	100.000	0.321

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6022	0.6022
2	0.7414	0.1392
3	0.8373	0.0959
4	0.9128	0.0755
5	0.9760	0.0632
6	1.0309	0.0549
7	1.0797	0.0488
8	1.1238	0.0441
9	1.1642	0.0404
10	1.2016	0.0374
11	1.2365	0.0349
12	1.2692	0.0327
13	1.3161	0.0469
14	1.3611	0.0450
15	1.4044	0.0433
16	1.4461	0.0417
17	1.4864	0.0403
18	1.5254	0.0390
19	1.5633	0.0379
20	1.6001	0.0368
21	1.6359	0.0358
22	1.6708	0.0349
23	1.7048	0.0340
24	1.7381	0.0332
25	1.7706	0.0325
26	1.8023	0.0318
27	1.8335	0.0311
28	1.8639	0.0305
29	1.8939	0.0299
30	1.9232	0.0293
31	1.9520	0.0288
32	1.9803	0.0283
33	2.0082	0.0278
34	2.0355	0.0274
35	2.0625	0.0269
36	2.0890	0.0265
37	2.1151	0.0261
38	2.1408	0.0257
39	2.1662	0.0253
40	2.1912	0.0250
41	2.2158	0.0247

		AREAC
42	2.2401	0.0243
43	2.2642	0.0240
44	2.2879	0.0237
45	2.3113	0.0234
46	2.3344	0.0231
47	2.3573	0.0229
48	2.3799	0.0226
49	2.4022	0.0223
50	2.4243	0.0221
51	2.4462	0.0219
52	2.4678	0.0216
53	2.4892	0.0214
54	2.5103	0.0212
55	2.5313	0.0210
56	2.5521	0.0208
57	2.5726	0.0206
58	2.5930	0.0204
59	2.6131	0.0202
60	2.6331	0.0200
61	2.6529	0.0198
62	2.6725	0.0196
63	2.6920	0.0194
64	2.7112	0.0193
65	2.7304	0.0191
66	2.7493	0.0190
67	2.7681	0.0188
68	2.7868	0.0186
69	2.8053	0.0185
70	2.8236	0.0184
71	2.8418	0.0182
72	2.8599	0.0181
73	2.8767	0.0168
74	2.8933	0.0167
75	2.9098	0.0165
76	2.9262	0.0164
77	2.9425	0.0163
78	2.9587	0.0162
79	2.9747	0.0160
80	2.9906	0.0159
81	3.0064	0.0158
82	3.0221	0.0157
83	3.0377	0.0156
84	3.0532	0.0155
85	3.0686	0.0154
86	3.0838	0.0153
87	3.0990	0.0152
88	3.1140	0.0151
89	3.1290	0.0150
90	3.1439	0.0149
91	3.1587	0.0148
92	3.1733	0.0147
93	3.1879	0.0146
94	3.2024	0.0145
95	3.2168	0.0144
96	3.2312	0.0143
97	3.2454	0.0142
98	3.2596	0.0142
99	3.2736	0.0141
100	3.2876	0.0140
101	3.3015	0.0139
102	3.3154	0.0138
103	3.3291	0.0138
104	3.3428	0.0137
105	3.3564	0.0136
106	3.3699	0.0135
107	3.3834	0.0135
108	3.3967	0.0134
109	3.4100	0.0133
110	3.4233	0.0132
111	3.4365	0.0132
112	3.4496	0.0131
113	3.4626	0.0130
114	3.4756	0.0130
115	3.4885	0.0129
116	3.5013	0.0128
117	3.5141	0.0128
118	3.5268	0.0127
119	3.5394	0.0127
120	3.5520	0.0126
121	3.5646	0.0125
122	3.5770	0.0125
123	3.5894	0.0124
124	3.6018	0.0124
125	3.6141	0.0123

		AREAC
126	3.6263	0.0122
127	3.6385	0.0122
128	3.6506	0.0121
129	3.6627	0.0121
130	3.6747	0.0120
131	3.6867	0.0120
132	3.6986	0.0119
133	3.7105	0.0119
134	3.7223	0.0118
135	3.7341	0.0118
136	3.7458	0.0117
137	3.7574	0.0117
138	3.7690	0.0116
139	3.7806	0.0116
140	3.7921	0.0115
141	3.8036	0.0115
142	3.8150	0.0114
143	3.8264	0.0114
144	3.8377	0.0113
145	3.8490	0.0113
146	3.8602	0.0112
147	3.8714	0.0112
148	3.8826	0.0112
149	3.8937	0.0111
150	3.9048	0.0111
151	3.9158	0.0110
152	3.9268	0.0110
153	3.9377	0.0109
154	3.9486	0.0109
155	3.9595	0.0109
156	3.9703	0.0108
157	3.9811	0.0108
158	3.9918	0.0107
159	4.0025	0.0107
160	4.0132	0.0107
161	4.0238	0.0106
162	4.0344	0.0106
163	4.0449	0.0105
164	4.0554	0.0105
165	4.0659	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0971	0.0104
169	4.1075	0.0103
170	4.1177	0.0103
171	4.1280	0.0103
172	4.1382	0.0102
173	4.1484	0.0102
174	4.1586	0.0102
175	4.1687	0.0101
176	4.1788	0.0101
177	4.1889	0.0101
178	4.1989	0.0100
179	4.2089	0.0100
180	4.2188	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2485	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2779	0.0098
187	4.2877	0.0097
188	4.2974	0.0097
189	4.3071	0.0097
190	4.3167	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3455	0.0096
194	4.3551	0.0095
195	4.3646	0.0095
196	4.3741	0.0095
197	4.3835	0.0095
198	4.3929	0.0094
199	4.4023	0.0094
200	4.4117	0.0094
201	4.4211	0.0093
202	4.4304	0.0093
203	4.4397	0.0093
204	4.4489	0.0093
205	4.4582	0.0092
206	4.4674	0.0092
207	4.4766	0.0092
208	4.4857	0.0092
209	4.4949	0.0091

		AREAC
210	4.5040	0.0091
211	4.5131	0.0091
212	4.5221	0.0091
213	4.5312	0.0090
214	4.5402	0.0090
215	4.5492	0.0090
216	4.5581	0.0090
217	4.5671	0.0089
218	4.5760	0.0089
219	4.5849	0.0089
220	4.5938	0.0089
221	4.6026	0.0088
222	4.6114	0.0088
223	4.6203	0.0088
224	4.6290	0.0088
225	4.6378	0.0088
226	4.6465	0.0087
227	4.6552	0.0087
228	4.6639	0.0087
229	4.6726	0.0087
230	4.6812	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7156	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7496	0.0085
239	4.7581	0.0085
240	4.7665	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7917	0.0084
244	4.8001	0.0084
245	4.8084	0.0083
246	4.8167	0.0083
247	4.8250	0.0083
248	4.8333	0.0083
249	4.8416	0.0083
250	4.8498	0.0082
251	4.8580	0.0082
252	4.8662	0.0082
253	4.8744	0.0082
254	4.8826	0.0082
255	4.8907	0.0081
256	4.8989	0.0081
257	4.9070	0.0081
258	4.9151	0.0081
259	4.9231	0.0081
260	4.9312	0.0081
261	4.9392	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9632	0.0080
265	4.9712	0.0080
266	4.9792	0.0080
267	4.9871	0.0079
268	4.9950	0.0079
269	5.0029	0.0079
270	5.0108	0.0079
271	5.0187	0.0079
272	5.0265	0.0078
273	5.0343	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0577	0.0078
277	5.0655	0.0078
278	5.0733	0.0078
279	5.0810	0.0077
280	5.0887	0.0077
281	5.0964	0.0077
282	5.1041	0.0077
283	5.1118	0.0077
284	5.1194	0.0077
285	5.1271	0.0076
286	5.1347	0.0076
287	5.1423	0.0076
288	5.1499	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)

	AREAC		
1	0.0076	0.0027	0.0049
2	0.0076	0.0027	0.0049
3	0.0076	0.0027	0.0049
4	0.0077	0.0027	0.0049
5	0.0077	0.0027	0.0050
6	0.0077	0.0027	0.0050
7	0.0077	0.0027	0.0050
8	0.0078	0.0027	0.0050
9	0.0078	0.0028	0.0050
10	0.0078	0.0028	0.0050
11	0.0078	0.0028	0.0051
12	0.0078	0.0028	0.0051
13	0.0079	0.0028	0.0051
14	0.0079	0.0028	0.0051
15	0.0079	0.0028	0.0051
16	0.0080	0.0028	0.0051
17	0.0080	0.0028	0.0052
18	0.0080	0.0028	0.0052
19	0.0080	0.0028	0.0052
20	0.0081	0.0029	0.0052
21	0.0081	0.0029	0.0052
22	0.0081	0.0029	0.0052
23	0.0081	0.0029	0.0053
24	0.0082	0.0029	0.0053
25	0.0082	0.0029	0.0053
26	0.0082	0.0029	0.0053
27	0.0083	0.0029	0.0053
28	0.0083	0.0029	0.0053
29	0.0083	0.0029	0.0054
30	0.0083	0.0030	0.0054
31	0.0084	0.0030	0.0054
32	0.0084	0.0030	0.0054
33	0.0084	0.0030	0.0054
34	0.0085	0.0030	0.0055
35	0.0085	0.0030	0.0055
36	0.0085	0.0030	0.0055
37	0.0086	0.0030	0.0055
38	0.0086	0.0030	0.0055
39	0.0086	0.0031	0.0056
40	0.0086	0.0031	0.0056
41	0.0087	0.0031	0.0056
42	0.0087	0.0031	0.0056
43	0.0088	0.0031	0.0057
44	0.0088	0.0031	0.0057
45	0.0088	0.0031	0.0057
46	0.0088	0.0031	0.0057
47	0.0089	0.0032	0.0057
48	0.0089	0.0032	0.0058
49	0.0090	0.0032	0.0058
50	0.0090	0.0032	0.0058
51	0.0090	0.0032	0.0058
52	0.0091	0.0032	0.0059
53	0.0091	0.0032	0.0059
54	0.0091	0.0032	0.0059
55	0.0092	0.0033	0.0059
56	0.0092	0.0033	0.0060
57	0.0093	0.0033	0.0060
58	0.0093	0.0033	0.0060
59	0.0093	0.0033	0.0060
60	0.0094	0.0033	0.0061
61	0.0094	0.0033	0.0061
62	0.0095	0.0033	0.0061
63	0.0095	0.0034	0.0061
64	0.0095	0.0034	0.0062
65	0.0096	0.0034	0.0062
66	0.0096	0.0034	0.0062
67	0.0097	0.0034	0.0063
68	0.0097	0.0034	0.0063
69	0.0098	0.0035	0.0063
70	0.0098	0.0035	0.0063
71	0.0099	0.0035	0.0064
72	0.0099	0.0035	0.0064
73	0.0100	0.0035	0.0064
74	0.0100	0.0035	0.0065
75	0.0101	0.0036	0.0065
76	0.0101	0.0036	0.0065
77	0.0102	0.0036	0.0066
78	0.0102	0.0036	0.0066
79	0.0103	0.0036	0.0066
80	0.0103	0.0036	0.0066
81	0.0104	0.0037	0.0067
82	0.0104	0.0037	0.0067
83	0.0105	0.0037	0.0068
84	0.0105	0.0037	0.0068

85	0.0106	0.0037	0.0068
86	0.0106	0.0038	0.0069
87	0.0107	0.0038	0.0069
88	0.0107	0.0038	0.0069
89	0.0108	0.0038	0.0070
90	0.0109	0.0038	0.0070
91	0.0109	0.0039	0.0071
92	0.0110	0.0039	0.0071
93	0.0111	0.0039	0.0071
94	0.0111	0.0039	0.0072
95	0.0112	0.0040	0.0072
96	0.0112	0.0040	0.0073
97	0.0113	0.0040	0.0073
98	0.0114	0.0040	0.0073
99	0.0115	0.0041	0.0074
100	0.0115	0.0041	0.0074
101	0.0116	0.0041	0.0075
102	0.0117	0.0041	0.0075
103	0.0118	0.0042	0.0076
104	0.0118	0.0042	0.0076
105	0.0119	0.0042	0.0077
106	0.0120	0.0042	0.0077
107	0.0121	0.0043	0.0078
108	0.0121	0.0043	0.0078
109	0.0122	0.0043	0.0079
110	0.0123	0.0044	0.0079
111	0.0124	0.0044	0.0080
112	0.0125	0.0044	0.0081
113	0.0126	0.0045	0.0081
114	0.0127	0.0045	0.0082
115	0.0128	0.0045	0.0082
116	0.0128	0.0045	0.0083
117	0.0130	0.0046	0.0084
118	0.0130	0.0046	0.0084
119	0.0132	0.0047	0.0085
120	0.0132	0.0047	0.0085
121	0.0134	0.0047	0.0086
122	0.0135	0.0048	0.0087
123	0.0136	0.0048	0.0088
124	0.0137	0.0048	0.0088
125	0.0138	0.0049	0.0089
126	0.0139	0.0049	0.0090
127	0.0141	0.0050	0.0091
128	0.0142	0.0050	0.0091
129	0.0143	0.0051	0.0092
130	0.0144	0.0051	0.0093
131	0.0146	0.0052	0.0094
132	0.0147	0.0052	0.0095
133	0.0149	0.0053	0.0096
134	0.0150	0.0053	0.0097
135	0.0152	0.0054	0.0098
136	0.0153	0.0054	0.0099
137	0.0155	0.0055	0.0100
138	0.0156	0.0055	0.0101
139	0.0158	0.0056	0.0102
140	0.0159	0.0056	0.0103
141	0.0162	0.0057	0.0104
142	0.0163	0.0058	0.0105
143	0.0165	0.0059	0.0107
144	0.0167	0.0059	0.0108
145	0.0181	0.0064	0.0117
146	0.0182	0.0064	0.0118
147	0.0185	0.0066	0.0119
148	0.0186	0.0066	0.0120
149	0.0190	0.0067	0.0122
150	0.0191	0.0068	0.0123
151	0.0194	0.0069	0.0126
152	0.0196	0.0069	0.0127
153	0.0200	0.0071	0.0129
154	0.0202	0.0071	0.0130
155	0.0206	0.0073	0.0133
156	0.0208	0.0074	0.0134
157	0.0212	0.0075	0.0137
158	0.0214	0.0076	0.0138
159	0.0219	0.0077	0.0141
160	0.0221	0.0078	0.0143
161	0.0226	0.0080	0.0146
162	0.0229	0.0081	0.0148
163	0.0234	0.0083	0.0151
164	0.0237	0.0084	0.0153
165	0.0243	0.0086	0.0157
166	0.0247	0.0087	0.0159
167	0.0253	0.0090	0.0164
168	0.0257	0.0091	0.0166

169	0.0265	0.0094	0.0171
170	0.0269	0.0095	0.0174
171	0.0278	0.0099	0.0180
172	0.0283	0.0100	0.0183
173	0.0293	0.0104	0.0190
174	0.0299	0.0106	0.0193
175	0.0311	0.0110	0.0201
176	0.0318	0.0113	0.0205
177	0.0332	0.0118	0.0215
178	0.0340	0.0121	0.0220
179	0.0358	0.0127	0.0231
180	0.0368	0.0130	0.0238
181	0.0390	0.0138	0.0252
182	0.0403	0.0143	0.0260
183	0.0433	0.0153	0.0279
184	0.0450	0.0159	0.0291
185	0.0327	0.0116	0.0211
186	0.0349	0.0123	0.0225
187	0.0404	0.0143	0.0261
188	0.0441	0.0156	0.0285
189	0.0549	0.0194	0.0354
190	0.0632	0.0224	0.0408
191	0.0959	0.0263	0.0696
192	0.1392	0.0263	0.1129
193	0.6022	0.0263	0.5760
194	0.0755	0.0263	0.0492
195	0.0488	0.0173	0.0315
196	0.0374	0.0132	0.0241
197	0.0469	0.0166	0.0303
198	0.0417	0.0148	0.0269
199	0.0379	0.0134	0.0245
200	0.0349	0.0124	0.0225
201	0.0325	0.0115	0.0210
202	0.0305	0.0108	0.0197
203	0.0288	0.0102	0.0186
204	0.0274	0.0097	0.0177
205	0.0261	0.0092	0.0169
206	0.0250	0.0089	0.0161
207	0.0240	0.0085	0.0155
208	0.0231	0.0082	0.0149
209	0.0223	0.0079	0.0144
210	0.0216	0.0077	0.0140
211	0.0210	0.0074	0.0135
212	0.0204	0.0072	0.0131
213	0.0198	0.0070	0.0128
214	0.0193	0.0068	0.0124
215	0.0188	0.0067	0.0121
216	0.0184	0.0065	0.0118
217	0.0168	0.0059	0.0108
218	0.0164	0.0058	0.0106
219	0.0160	0.0057	0.0104
220	0.0157	0.0056	0.0101
221	0.0154	0.0054	0.0099
222	0.0151	0.0053	0.0097
223	0.0148	0.0052	0.0095
224	0.0145	0.0051	0.0094
225	0.0142	0.0050	0.0092
226	0.0140	0.0050	0.0090
227	0.0138	0.0049	0.0089
228	0.0135	0.0048	0.0087
229	0.0133	0.0047	0.0086
230	0.0131	0.0046	0.0085
231	0.0129	0.0046	0.0083
232	0.0127	0.0045	0.0082
233	0.0125	0.0044	0.0081
234	0.0124	0.0044	0.0080
235	0.0122	0.0043	0.0079
236	0.0120	0.0043	0.0078
237	0.0119	0.0042	0.0077
238	0.0117	0.0041	0.0076
239	0.0116	0.0041	0.0075
240	0.0114	0.0040	0.0074
241	0.0113	0.0040	0.0073
242	0.0112	0.0040	0.0072
243	0.0110	0.0039	0.0071
244	0.0109	0.0039	0.0070
245	0.0108	0.0038	0.0070
246	0.0107	0.0038	0.0069
247	0.0105	0.0037	0.0068
248	0.0104	0.0037	0.0067
249	0.0103	0.0037	0.0067
250	0.0102	0.0036	0.0066
251	0.0101	0.0036	0.0065
252	0.0100	0.0036	0.0065

253	0.0099	0.0035	0.0064
254	0.0098	0.0035	0.0064
255	0.0097	0.0035	0.0063
256	0.0097	0.0034	0.0062
257	0.0096	0.0034	0.0062
258	0.0095	0.0034	0.0061
259	0.0094	0.0033	0.0061
260	0.0093	0.0033	0.0060
261	0.0092	0.0033	0.0060
262	0.0092	0.0032	0.0059
263	0.0091	0.0032	0.0059
264	0.0090	0.0032	0.0058
265	0.0089	0.0032	0.0058
266	0.0089	0.0031	0.0057
267	0.0088	0.0031	0.0057
268	0.0087	0.0031	0.0056
269	0.0087	0.0031	0.0056
270	0.0086	0.0030	0.0056
271	0.0085	0.0030	0.0055
272	0.0085	0.0030	0.0055
273	0.0084	0.0030	0.0054
274	0.0084	0.0030	0.0054
275	0.0083	0.0029	0.0054
276	0.0082	0.0029	0.0053
277	0.0082	0.0029	0.0053
278	0.0081	0.0029	0.0052
279	0.0081	0.0029	0.0052
280	0.0080	0.0028	0.0052
281	0.0080	0.0028	0.0051
282	0.0079	0.0028	0.0051
283	0.0079	0.0028	0.0051
284	0.0078	0.0028	0.0050
285	0.0078	0.0028	0.0050
286	0.0077	0.0027	0.0050
287	0.0077	0.0027	0.0050
288	0.0076	0.0027	0.0049

Total soil rain loss = 1.61(In)
Total effective rainfall = 3.54(In)
Peak flow rate in flood hydrograph = 55.63(CFS)

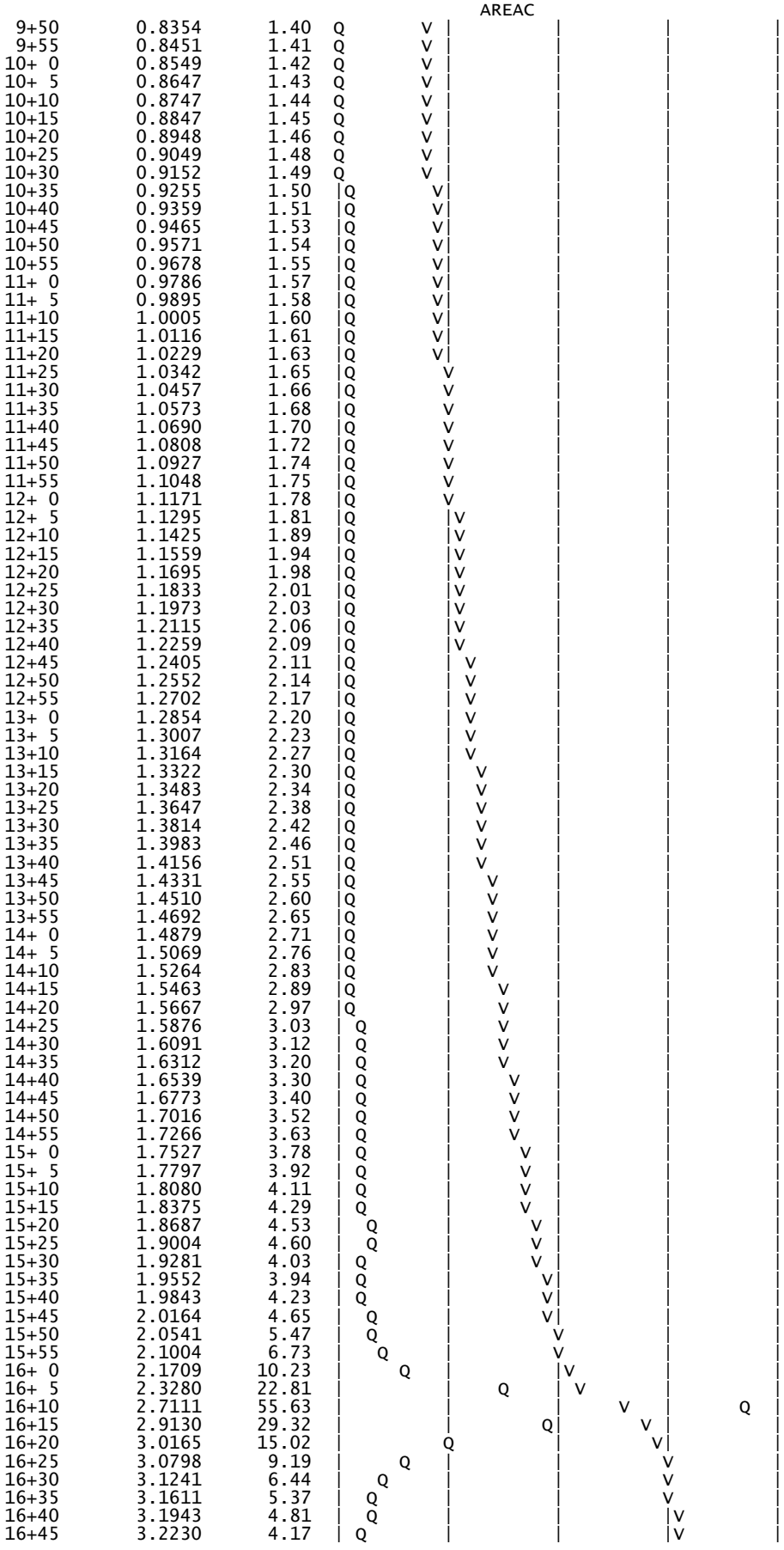
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0006	0.08	Q				
0+10	0.0040	0.50	Q				
0+15	0.0087	0.69	Q				
0+20	0.0140	0.77	Q				
0+25	0.0195	0.80	Q				
0+30	0.0252	0.82	Q				
0+35	0.0309	0.83	Q				
0+40	0.0366	0.83	Q				
0+45	0.0424	0.84	Q				
0+50	0.0482	0.84	Q				
0+55	0.0540	0.84	Q				
1+ 0	0.0598	0.85	Q				
1+ 5	0.0657	0.85	Q				
1+10	0.0716	0.85	Q				
1+15	0.0774	0.85	Q				
1+20	0.0833	0.86	Q				
1+25	0.0893	0.86	Q				
1+30	0.0952	0.86	Q				
1+35	0.1012	0.87	Q				
1+40	0.1072	0.87	QV				
1+45	0.1132	0.87	QV				
1+50	0.1192	0.87	QV				
1+55	0.1252	0.88	QV				
2+ 0	0.1313	0.88	QV				
2+ 5	0.1374	0.88	QV				
2+10	0.1435	0.89	QV				
2+15	0.1496	0.89	QV				
2+20	0.1557	0.89	QV				
2+25	0.1619	0.90	QV				
2+30	0.1681	0.90	QV				
2+35	0.1743	0.90	QV				
2+40	0.1805	0.91	QV				
2+45	0.1868	0.91	QV				

2+50	0.1931	0.91	QV				
2+55	0.1994	0.91	QV				
3+ 0	0.2057	0.92	Q V				
3+ 5	0.2120	0.92	Q V				
3+10	0.2184	0.92	Q V				
3+15	0.2248	0.93	Q V				
3+20	0.2312	0.93	Q V				
3+25	0.2377	0.94	Q V				
3+30	0.2441	0.94	Q V				
3+35	0.2506	0.94	Q V				
3+40	0.2571	0.95	Q V				
3+45	0.2637	0.95	Q V				
3+50	0.2702	0.95	Q V				
3+55	0.2768	0.96	Q V				
4+ 0	0.2834	0.96	Q V				
4+ 5	0.2901	0.96	Q V				
4+10	0.2967	0.97	Q V				
4+15	0.3034	0.97	Q V				
4+20	0.3102	0.98	Q V				
4+25	0.3169	0.98	Q V				
4+30	0.3237	0.98	Q V				
4+35	0.3305	0.99	Q V				
4+40	0.3373	0.99	Q V				
4+45	0.3442	1.00	Q V				
4+50	0.3511	1.00	Q V				
4+55	0.3580	1.00	Q V				
5+ 0	0.3650	1.01	Q V				
5+ 5	0.3719	1.01	Q V				
5+10	0.3789	1.02	Q V				
5+15	0.3860	1.02	Q V				
5+20	0.3931	1.03	Q V				
5+25	0.4002	1.03	Q V				
5+30	0.4073	1.04	Q V				
5+35	0.4145	1.04	Q V				
5+40	0.4217	1.05	Q V				
5+45	0.4289	1.05	Q V				
5+50	0.4362	1.06	Q V				
5+55	0.4435	1.06	Q V				
6+ 0	0.4508	1.07	Q V				
6+ 5	0.4582	1.07	Q V				
6+10	0.4656	1.08	Q V				
6+15	0.4730	1.08	Q V				
6+20	0.4805	1.09	Q V				
6+25	0.4880	1.09	Q V				
6+30	0.4955	1.10	Q V				
6+35	0.5031	1.10	Q V				
6+40	0.5108	1.11	Q V				
6+45	0.5184	1.11	Q V				
6+50	0.5261	1.12	Q V				
6+55	0.5339	1.12	Q V				
7+ 0	0.5417	1.13	Q V				
7+ 5	0.5495	1.14	Q V				
7+10	0.5573	1.14	Q V				
7+15	0.5653	1.15	Q V				
7+20	0.5732	1.15	Q V				
7+25	0.5812	1.16	Q V				
7+30	0.5892	1.17	Q V				
7+35	0.5973	1.17	Q V				
7+40	0.6054	1.18	Q V				
7+45	0.6136	1.19	Q V				
7+50	0.6218	1.19	Q V				
7+55	0.6301	1.20	Q V				
8+ 0	0.6384	1.21	Q V				
8+ 5	0.6468	1.21	Q V				
8+10	0.6552	1.22	Q V				
8+15	0.6637	1.23	Q V				
8+20	0.6722	1.24	Q V				
8+25	0.6808	1.24	Q V				
8+30	0.6894	1.25	Q V				
8+35	0.6981	1.26	Q V				
8+40	0.7068	1.27	Q V				
8+45	0.7156	1.28	Q V				
8+50	0.7244	1.28	Q V				
8+55	0.7333	1.29	Q V				
9+ 0	0.7423	1.30	Q V				
9+ 5	0.7513	1.31	Q V				
9+10	0.7604	1.32	Q V				
9+15	0.7695	1.33	Q V				
9+20	0.7788	1.34	Q V				
9+25	0.7880	1.35	Q V				
9+30	0.7974	1.36	Q V				
9+35	0.8068	1.37	Q V				
9+40	0.8163	1.38	Q V				
9+45	0.8258	1.39	Q V				



9+50	0.8354	1.40	Q V
9+55	0.8451	1.41	Q V
10+ 0	0.8549	1.42	Q V
10+ 5	0.8647	1.43	Q V
10+10	0.8747	1.44	Q V
10+15	0.8847	1.45	Q V
10+20	0.8948	1.46	Q V
10+25	0.9049	1.48	Q V
10+30	0.9152	1.49	Q V
10+35	0.9255	1.50	Q V
10+40	0.9359	1.51	Q V
10+45	0.9465	1.53	Q V
10+50	0.9571	1.54	Q V
10+55	0.9678	1.55	Q V
11+ 0	0.9786	1.57	Q V
11+ 5	0.9895	1.58	Q V
11+10	1.0005	1.60	Q V
11+15	1.0116	1.61	Q V
11+20	1.0229	1.63	Q V
11+25	1.0342	1.65	Q V
11+30	1.0457	1.66	Q V
11+35	1.0573	1.68	Q V
11+40	1.0690	1.70	Q V
11+45	1.0808	1.72	Q V
11+50	1.0927	1.74	Q V
11+55	1.1048	1.75	Q V
12+ 0	1.1171	1.78	Q V
12+ 5	1.1295	1.81	Q V
12+10	1.1425	1.89	Q V
12+15	1.1559	1.94	Q V
12+20	1.1695	1.98	Q V
12+25	1.1833	2.01	Q V
12+30	1.1973	2.03	Q V
12+35	1.2115	2.06	Q V
12+40	1.2259	2.09	Q V
12+45	1.2405	2.11	Q V
12+50	1.2552	2.14	Q V
12+55	1.2702	2.17	Q V
13+ 0	1.2854	2.20	Q V
13+ 5	1.3007	2.23	Q V
13+10	1.3164	2.27	Q V
13+15	1.3322	2.30	Q V
13+20	1.3483	2.34	Q V
13+25	1.3647	2.38	Q V
13+30	1.3814	2.42	Q V
13+35	1.3983	2.46	Q V
13+40	1.4156	2.51	Q V
13+45	1.4331	2.55	Q V
13+50	1.4510	2.60	Q V
13+55	1.4692	2.65	Q V
14+ 0	1.4879	2.71	Q V
14+ 5	1.5069	2.76	Q V
14+10	1.5264	2.83	Q V
14+15	1.5463	2.89	Q V
14+20	1.5667	2.97	Q V
14+25	1.5876	3.03	Q V
14+30	1.6091	3.12	Q V
14+35	1.6312	3.20	Q V
14+40	1.6539	3.30	Q V
14+45	1.6773	3.40	Q V
14+50	1.7016	3.52	Q V
14+55	1.7266	3.63	Q V
15+ 0	1.7527	3.78	Q V
15+ 5	1.7797	3.92	Q V
15+10	1.8080	4.11	Q V
15+15	1.8375	4.29	Q V
15+20	1.8687	4.53	Q V
15+25	1.9004	4.60	Q V
15+30	1.9281	4.03	Q V
15+35	1.9552	3.94	Q V
15+40	1.9843	4.23	Q V
15+45	2.0164	4.65	Q V
15+50	2.0541	5.47	Q V
15+55	2.1004	6.73	Q V
16+ 0	2.1709	10.23	Q V
16+ 5	2.3280	22.81	Q V
16+10	2.7111	55.63	Q V
16+15	2.9130	29.32	Q V
16+20	3.0165	15.02	Q V
16+25	3.0798	9.19	Q V
16+30	3.1241	6.44	Q V
16+35	3.1611	5.37	Q V
16+40	3.1943	4.81	Q V
16+45	3.2230	4.17	Q V

16+50	3.2485	3.70	| Q	|	|	|V |
16+55	3.2722	3.45	| Q	|	|	|V |
17+ 0	3.2946	3.25	| Q	|	|	| V |
17+ 5	3.3158	3.08	| Q	|	|	| V |
17+10	3.3359	2.92	|Q	|	|	| V |
17+15	3.3551	2.79	|Q	|	|	| V |
17+20	3.3735	2.67	|Q	|	|	| V |
17+25	3.3912	2.57	|Q	|	|	| V |
17+30	3.4083	2.48	|Q	|	|	| V |
17+35	3.4248	2.39	|Q	|	|	| V |
17+40	3.4407	2.32	|Q	|	|	| V |
17+45	3.4562	2.25	|Q	|	|	| V |
17+50	3.4712	2.18	|Q	|	|	| V |
17+55	3.4859	2.12	|Q	|	|	| V |
18+ 0	3.5001	2.07	|Q	|	|	| V |
18+ 5	3.5139	2.01	|Q	|	|	| V |
18+10	3.5270	1.90	|Q	|	|	| V |
18+15	3.5395	1.82	|Q	|	|	| V |
18+20	3.5517	1.77	|Q	|	|	| V |
18+25	3.5636	1.73	|Q	|	|	| V |
18+30	3.5753	1.69	|Q	|	|	| V |
18+35	3.5866	1.65	|Q	|	|	| V |
18+40	3.5978	1.62	|Q	|	|	| V |
18+45	3.6087	1.59	|Q	|	|	| V |
18+50	3.6195	1.56	|Q	|	|	| V |
18+55	3.6300	1.53	|Q	|	|	| V |
19+ 0	3.6404	1.51	|Q	|	|	| V |
19+ 5	3.6506	1.48	Q	|	|	| V |
19+10	3.6606	1.46	Q	|	|	| V |
19+15	3.6705	1.43	Q	|	|	| V |
19+20	3.6802	1.41	Q	|	|	| V |
19+25	3.6898	1.39	Q	|	|	| V |
19+30	3.6992	1.37	Q	|	|	| V |
19+35	3.7085	1.35	Q	|	|	| V |
19+40	3.7177	1.33	Q	|	|	| V |
19+45	3.7267	1.31	Q	|	|	| V |
19+50	3.7356	1.30	Q	|	|	| V |
19+55	3.7445	1.28	Q	|	|	| V |
20+ 0	3.7531	1.26	Q	|	|	| V |
20+ 5	3.7617	1.25	Q	|	|	| V |
20+10	3.7702	1.23	Q	|	|	| V |
20+15	3.7786	1.22	Q	|	|	| V |
20+20	3.7869	1.20	Q	|	|	| V |
20+25	3.7951	1.19	Q	|	|	| V |
20+30	3.8032	1.18	Q	|	|	| V |
20+35	3.8112	1.16	Q	|	|	| V |
20+40	3.8191	1.15	Q	|	|	| V |
20+45	3.8269	1.14	Q	|	|	| V |
20+50	3.8347	1.13	Q	|	|	| V |
20+55	3.8424	1.11	Q	|	|	| V |
21+ 0	3.8500	1.10	Q	|	|	| V |
21+ 5	3.8575	1.09	Q	|	|	| V |
21+10	3.8649	1.08	Q	|	|	| V |
21+15	3.8723	1.07	Q	|	|	| V |
21+20	3.8796	1.06	Q	|	|	| V |
21+25	3.8869	1.05	Q	|	|	| V |
21+30	3.8940	1.04	Q	|	|	| V |
21+35	3.9011	1.03	Q	|	|	| V |
21+40	3.9082	1.02	Q	|	|	| V |
21+45	3.9152	1.01	Q	|	|	| V |
21+50	3.9221	1.01	Q	|	|	| V |
21+55	3.9290	1.00	Q	|	|	| V |
22+ 0	3.9358	0.99	Q	|	|	| V |
22+ 5	3.9426	0.98	Q	|	|	| V |
22+10	3.9493	0.97	Q	|	|	| V |
22+15	3.9559	0.97	Q	|	|	| V |
22+20	3.9625	0.96	Q	|	|	| V |
22+25	3.9691	0.95	Q	|	|	| V |
22+30	3.9755	0.94	Q	|	|	| V |
22+35	3.9820	0.94	Q	|	|	| V |
22+40	3.9884	0.93	Q	|	|	| V |
22+45	3.9947	0.92	Q	|	|	| V|
22+50	4.0011	0.92	Q	|	|	| V|
22+55	4.0073	0.91	Q	|	|	| V|
23+ 0	4.0135	0.90	Q	|	|	| V|
23+ 5	4.0197	0.90	Q	|	|	| V|
23+10	4.0258	0.89	Q	|	|	| V|
23+15	4.0319	0.88	Q	|	|	| V|
23+20	4.0380	0.88	Q	|	|	| V|
23+25	4.0440	0.87	Q	|	|	| V|
23+30	4.0499	0.87	Q	|	|	| V|
23+35	4.0559	0.86	Q	|	|	| V|
23+40	4.0618	0.86	Q	|	|	| V|
23+45	4.0676	0.85	Q	|	|	| V|

```
                                                                AREAC
   23+50       4.0734      0.84  Q          |           |           |         V|
   23+55       4.0792      0.84  Q          |           |           |         V|
   24+ 0       4.0850      0.83  Q          |           |           |         V|
-------------------------------------------------------------------------------
```

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

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Study date 02/26/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA D
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
4.42	1	0.78
Rainfall data for year 2		
4.42	6	1.20
Rainfall data for year 2		
4.42	24	2.18
Rainfall data for year 100		
4.42	1	1.27
Rainfall data for year 100		
4.42	6	2.86
Rainfall data for year 100		
4.42	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
71.9	88.5	4.42	1.000	0.220	1.000	0.220

Area-averaged adjusted loss rate Fm (In/Hr) = 0.220

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
4.42	1.000	71.9	88.5	1.30	0.751

Area-averaged catchment yield fraction, Y = 0.751
Area-averaged low loss fraction, Yb = 0.249

++
Watercourse length = 1155.00(Ft.)
Length from concentration point to centroid = 490.00(Ft.)
Elevation difference along watercourse = 108.50(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 4.42(Ac.)
Catchment Lag time = 0.050 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 165.4908
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.220(In/Hr)
Average low loss rate fraction (Yb) = 0.249 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 4.42(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.603(In)
30-minute factor = 1.000 Adjusted rainfall = 1.031(In)
1-hour factor = 1.000 Adjusted rainfall = 1.270(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 53.45 (CFS))	
1	34.589	18.489
2	87.698	28.389
3	97.742	5.369
4	99.504	0.941
5	100.000	0.265

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6025	0.6025
2	0.7418	0.1393
3	0.8377	0.0959
4	0.9132	0.0755
5	0.9765	0.0632
6	1.0313	0.0549
7	1.0802	0.0488
8	1.1243	0.0441
9	1.1647	0.0404
10	1.2022	0.0374
11	1.2370	0.0349
12	1.2697	0.0327
13	1.3166	0.0469
14	1.3616	0.0450
15	1.4049	0.0433
16	1.4466	0.0417
17	1.4869	0.0403
18	1.5259	0.0390
19	1.5638	0.0379
20	1.6005	0.0368
21	1.6363	0.0358
22	1.6712	0.0349
23	1.7052	0.0340
24	1.7384	0.0332
25	1.7709	0.0325
26	1.8026	0.0318
27	1.8337	0.0311
28	1.8642	0.0305
29	1.8941	0.0299
30	1.9234	0.0293
31	1.9522	0.0288
32	1.9805	0.0283
33	2.0083	0.0278
34	2.0357	0.0274
35	2.0626	0.0269
36	2.0891	0.0265
37	2.1152	0.0261
38	2.1409	0.0257
39	2.1663	0.0253
40	2.1913	0.0250
41	2.2159	0.0247
42	2.2403	0.0243
43	2.2643	0.0240
44	2.2880	0.0237
45	2.3114	0.0234

		AREAD
46	2.3345	0.0231
47	2.3574	0.0229
48	2.3800	0.0226
49	2.4023	0.0223
50	2.4244	0.0221
51	2.4463	0.0219
52	2.4679	0.0216
53	2.4893	0.0214
54	2.5104	0.0212
55	2.5314	0.0210
56	2.5522	0.0208
57	2.5727	0.0205
58	2.5931	0.0204
59	2.6132	0.0202
60	2.6332	0.0200
61	2.6530	0.0198
62	2.6726	0.0196
63	2.6921	0.0194
64	2.7113	0.0193
65	2.7304	0.0191
66	2.7494	0.0190
67	2.7682	0.0188
68	2.7868	0.0186
69	2.8053	0.0185
70	2.8237	0.0183
71	2.8419	0.0182
72	2.8600	0.0181
73	2.8767	0.0168
74	2.8934	0.0167
75	2.9099	0.0165
76	2.9263	0.0164
77	2.9426	0.0163
78	2.9588	0.0162
79	2.9748	0.0160
80	2.9907	0.0159
81	3.0065	0.0158
82	3.0222	0.0157
83	3.0378	0.0156
84	3.0533	0.0155
85	3.0686	0.0154
86	3.0839	0.0153
87	3.0991	0.0152
88	3.1141	0.0151
89	3.1291	0.0150
90	3.1440	0.0149
91	3.1587	0.0148
92	3.1734	0.0147
93	3.1880	0.0146
94	3.2025	0.0145
95	3.2169	0.0144
96	3.2312	0.0143
97	3.2455	0.0142
98	3.2596	0.0142
99	3.2737	0.0141
100	3.2877	0.0140
101	3.3016	0.0139
102	3.3154	0.0138
103	3.3292	0.0138
104	3.3429	0.0137
105	3.3565	0.0136
106	3.3700	0.0135
107	3.3834	0.0135
108	3.3968	0.0134
109	3.4101	0.0133
110	3.4234	0.0132
111	3.4365	0.0132
112	3.4496	0.0131
113	3.4627	0.0130
114	3.4756	0.0130
115	3.4885	0.0129
116	3.5014	0.0128
117	3.5142	0.0128
118	3.5269	0.0127
119	3.5395	0.0127
120	3.5521	0.0126
121	3.5646	0.0125
122	3.5771	0.0125
123	3.5895	0.0124
124	3.6019	0.0124
125	3.6142	0.0123
126	3.6264	0.0122
127	3.6386	0.0122
128	3.6507	0.0121
129	3.6628	0.0121

		AREAD
130	3.6748	0.0120
131	3.6868	0.0120
132	3.6987	0.0119
133	3.7106	0.0119
134	3.7224	0.0118
135	3.7341	0.0118
136	3.7458	0.0117
137	3.7575	0.0117
138	3.7691	0.0116
139	3.7807	0.0116
140	3.7922	0.0115
141	3.8037	0.0115
142	3.8151	0.0114
143	3.8265	0.0114
144	3.8378	0.0113
145	3.8491	0.0113
146	3.8603	0.0112
147	3.8715	0.0112
148	3.8827	0.0112
149	3.8938	0.0111
150	3.9049	0.0111
151	3.9159	0.0110
152	3.9269	0.0110
153	3.9378	0.0109
154	3.9487	0.0109
155	3.9596	0.0109
156	3.9704	0.0108
157	3.9812	0.0108
158	3.9919	0.0107
159	4.0026	0.0107
160	4.0133	0.0107
161	4.0239	0.0106
162	4.0345	0.0106
163	4.0450	0.0105
164	4.0555	0.0105
165	4.0660	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0972	0.0104
169	4.1075	0.0103
170	4.1178	0.0103
171	4.1281	0.0103
172	4.1383	0.0102
173	4.1485	0.0102
174	4.1587	0.0102
175	4.1688	0.0101
176	4.1789	0.0101
177	4.1889	0.0101
178	4.1990	0.0100
179	4.2089	0.0100
180	4.2189	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2486	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2780	0.0098
187	4.2878	0.0097
188	4.2975	0.0097
189	4.3072	0.0097
190	4.3168	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3456	0.0096
194	4.3551	0.0095
195	4.3646	0.0095
196	4.3741	0.0095
197	4.3836	0.0095
198	4.3930	0.0094
199	4.4024	0.0094
200	4.4118	0.0094
201	4.4211	0.0093
202	4.4304	0.0093
203	4.4397	0.0093
204	4.4490	0.0093
205	4.4582	0.0092
206	4.4675	0.0092
207	4.4766	0.0092
208	4.4858	0.0092
209	4.4949	0.0091
210	4.5041	0.0091
211	4.5131	0.0091
212	4.5222	0.0091
213	4.5313	0.0090

		AREAD
214	4.5403	0.0090
215	4.5493	0.0090
216	4.5582	0.0090
217	4.5672	0.0089
218	4.5761	0.0089
219	4.5850	0.0089
220	4.5938	0.0089
221	4.6027	0.0088
222	4.6115	0.0088
223	4.6203	0.0088
224	4.6291	0.0088
225	4.6379	0.0088
226	4.6466	0.0087
227	4.6553	0.0087
228	4.6640	0.0087
229	4.6727	0.0087
230	4.6813	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7157	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7497	0.0085
239	4.7582	0.0085
240	4.7666	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7918	0.0084
244	4.8002	0.0084
245	4.8085	0.0083
246	4.8168	0.0083
247	4.8251	0.0083
248	4.8334	0.0083
249	4.8416	0.0083
250	4.8499	0.0082
251	4.8581	0.0082
252	4.8663	0.0082
253	4.8745	0.0082
254	4.8827	0.0082
255	4.8908	0.0081
256	4.8989	0.0081
257	4.9070	0.0081
258	4.9151	0.0081
259	4.9232	0.0081
260	4.9313	0.0081
261	4.9393	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9633	0.0080
265	4.9713	0.0080
266	4.9792	0.0080
267	4.9872	0.0079
268	4.9951	0.0079
269	5.0030	0.0079
270	5.0109	0.0079
271	5.0187	0.0079
272	5.0266	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0578	0.0078
277	5.0656	0.0078
278	5.0733	0.0078
279	5.0811	0.0077
280	5.0888	0.0077
281	5.0965	0.0077
282	5.1042	0.0077
283	5.1118	0.0077
284	5.1195	0.0077
285	5.1271	0.0076
286	5.1348	0.0076
287	5.1424	0.0076
288	5.1500	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0019	0.0057
2	0.0076	0.0019	0.0057
3	0.0076	0.0019	0.0057
4	0.0077	0.0019	0.0057

5	0.0077	0.0019	0.0058
6	0.0077	0.0019	0.0058
7	0.0077	0.0019	0.0058
8	0.0078	0.0019	0.0058
9	0.0078	0.0019	0.0058
10	0.0078	0.0019	0.0059
11	0.0078	0.0020	0.0059
12	0.0078	0.0020	0.0059
13	0.0079	0.0020	0.0059
14	0.0079	0.0020	0.0059
15	0.0079	0.0020	0.0060
16	0.0080	0.0020	0.0060
17	0.0080	0.0020	0.0060
18	0.0080	0.0020	0.0060
19	0.0080	0.0020	0.0060
20	0.0081	0.0020	0.0060
21	0.0081	0.0020	0.0061
22	0.0081	0.0020	0.0061
23	0.0081	0.0020	0.0061
24	0.0082	0.0020	0.0061
25	0.0082	0.0020	0.0062
26	0.0082	0.0021	0.0062
27	0.0083	0.0021	0.0062
28	0.0083	0.0021	0.0062
29	0.0083	0.0021	0.0062
30	0.0083	0.0021	0.0063
31	0.0084	0.0021	0.0063
32	0.0084	0.0021	0.0063
33	0.0084	0.0021	0.0063
34	0.0085	0.0021	0.0063
35	0.0085	0.0021	0.0064
36	0.0085	0.0021	0.0064
37	0.0086	0.0021	0.0064
38	0.0086	0.0021	0.0064
39	0.0086	0.0022	0.0065
40	0.0086	0.0022	0.0065
41	0.0087	0.0022	0.0065
42	0.0087	0.0022	0.0065
43	0.0088	0.0022	0.0066
44	0.0088	0.0022	0.0066
45	0.0088	0.0022	0.0066
46	0.0088	0.0022	0.0066
47	0.0089	0.0022	0.0067
48	0.0089	0.0022	0.0067
49	0.0090	0.0022	0.0067
50	0.0090	0.0022	0.0067
51	0.0090	0.0023	0.0068
52	0.0091	0.0023	0.0068
53	0.0091	0.0023	0.0068
54	0.0091	0.0023	0.0069
55	0.0092	0.0023	0.0069
56	0.0092	0.0023	0.0069
57	0.0093	0.0023	0.0070
58	0.0093	0.0023	0.0070
59	0.0093	0.0023	0.0070
60	0.0094	0.0023	0.0070
61	0.0094	0.0024	0.0071
62	0.0095	0.0024	0.0071
63	0.0095	0.0024	0.0071
64	0.0095	0.0024	0.0072
65	0.0096	0.0024	0.0072
66	0.0096	0.0024	0.0072
67	0.0097	0.0024	0.0073
68	0.0097	0.0024	0.0073
69	0.0098	0.0024	0.0073
70	0.0098	0.0024	0.0074
71	0.0099	0.0025	0.0074
72	0.0099	0.0025	0.0074
73	0.0100	0.0025	0.0075
74	0.0100	0.0025	0.0075
75	0.0101	0.0025	0.0075
76	0.0101	0.0025	0.0076
77	0.0102	0.0025	0.0076
78	0.0102	0.0025	0.0076
79	0.0103	0.0026	0.0077
80	0.0103	0.0026	0.0077
81	0.0104	0.0026	0.0078
82	0.0104	0.0026	0.0078
83	0.0105	0.0026	0.0079
84	0.0105	0.0026	0.0079
85	0.0106	0.0026	0.0079
86	0.0106	0.0026	0.0080
87	0.0107	0.0027	0.0080
88	0.0107	0.0027	0.0081

89	0.0108	0.0027	0.0081
90	0.0109	0.0027	0.0082
91	0.0109	0.0027	0.0082
92	0.0110	0.0027	0.0082
93	0.0111	0.0028	0.0083
94	0.0111	0.0028	0.0083
95	0.0112	0.0028	0.0084
96	0.0112	0.0028	0.0084
97	0.0113	0.0028	0.0085
98	0.0114	0.0028	0.0085
99	0.0115	0.0029	0.0086
100	0.0115	0.0029	0.0086
101	0.0116	0.0029	0.0087
102	0.0117	0.0029	0.0088
103	0.0118	0.0029	0.0088
104	0.0118	0.0029	0.0089
105	0.0119	0.0030	0.0089
106	0.0120	0.0030	0.0090
107	0.0121	0.0030	0.0091
108	0.0121	0.0030	0.0091
109	0.0122	0.0031	0.0092
110	0.0123	0.0031	0.0092
111	0.0124	0.0031	0.0093
112	0.0125	0.0031	0.0094
113	0.0126	0.0031	0.0094
114	0.0127	0.0032	0.0095
115	0.0128	0.0032	0.0096
116	0.0128	0.0032	0.0096
117	0.0130	0.0032	0.0097
118	0.0130	0.0033	0.0098
119	0.0132	0.0033	0.0099
120	0.0132	0.0033	0.0099
121	0.0134	0.0033	0.0100
122	0.0135	0.0034	0.0101
123	0.0136	0.0034	0.0102
124	0.0137	0.0034	0.0103
125	0.0138	0.0034	0.0104
126	0.0139	0.0035	0.0104
127	0.0141	0.0035	0.0106
128	0.0142	0.0035	0.0106
129	0.0143	0.0036	0.0108
130	0.0144	0.0036	0.0108
131	0.0146	0.0036	0.0110
132	0.0147	0.0037	0.0110
133	0.0149	0.0037	0.0112
134	0.0150	0.0037	0.0112
135	0.0152	0.0038	0.0114
136	0.0153	0.0038	0.0115
137	0.0155	0.0039	0.0116
138	0.0156	0.0039	0.0117
139	0.0158	0.0039	0.0119
140	0.0159	0.0040	0.0119
141	0.0162	0.0040	0.0121
142	0.0163	0.0041	0.0122
143	0.0165	0.0041	0.0124
144	0.0167	0.0042	0.0125
145	0.0181	0.0045	0.0136
146	0.0182	0.0045	0.0137
147	0.0185	0.0046	0.0139
148	0.0186	0.0047	0.0140
149	0.0190	0.0047	0.0142
150	0.0191	0.0048	0.0143
151	0.0194	0.0048	0.0146
152	0.0196	0.0049	0.0147
153	0.0200	0.0050	0.0150
154	0.0202	0.0050	0.0151
155	0.0205	0.0051	0.0154
156	0.0208	0.0052	0.0156
157	0.0212	0.0053	0.0159
158	0.0214	0.0053	0.0161
159	0.0219	0.0054	0.0164
160	0.0221	0.0055	0.0166
161	0.0226	0.0056	0.0170
162	0.0229	0.0057	0.0172
163	0.0234	0.0058	0.0176
164	0.0237	0.0059	0.0178
165	0.0243	0.0061	0.0183
166	0.0247	0.0061	0.0185
167	0.0253	0.0063	0.0190
168	0.0257	0.0064	0.0193
169	0.0265	0.0066	0.0199
170	0.0269	0.0067	0.0202
171	0.0278	0.0069	0.0209
172	0.0283	0.0071	0.0212

173	0.0293	0.0073	0.0220
174	0.0299	0.0075	0.0224
175	0.0311	0.0078	0.0233
176	0.0318	0.0079	0.0238
177	0.0332	0.0083	0.0249
178	0.0340	0.0085	0.0255
179	0.0358	0.0089	0.0269
180	0.0368	0.0092	0.0276
181	0.0390	0.0097	0.0293
182	0.0403	0.0101	0.0302
183	0.0433	0.0108	0.0325
184	0.0450	0.0112	0.0338
185	0.0327	0.0082	0.0246
186	0.0349	0.0087	0.0262
187	0.0404	0.0101	0.0304
188	0.0441	0.0110	0.0331
189	0.0549	0.0137	0.0412
190	0.0632	0.0158	0.0475
191	0.0959	0.0183	0.0777
192	0.1393	0.0183	0.1210
193	0.6025	0.0183	0.5842
194	0.0755	0.0183	0.0572
195	0.0488	0.0122	0.0366
196	0.0374	0.0093	0.0281
197	0.0469	0.0117	0.0352
198	0.0417	0.0104	0.0313
199	0.0379	0.0094	0.0284
200	0.0349	0.0087	0.0262
201	0.0325	0.0081	0.0244
202	0.0305	0.0076	0.0229
203	0.0288	0.0072	0.0216
204	0.0274	0.0068	0.0205
205	0.0261	0.0065	0.0196
206	0.0250	0.0062	0.0188
207	0.0240	0.0060	0.0180
208	0.0231	0.0058	0.0174
209	0.0223	0.0056	0.0168
210	0.0216	0.0054	0.0162
211	0.0210	0.0052	0.0157
212	0.0204	0.0051	0.0153
213	0.0198	0.0049	0.0149
214	0.0193	0.0048	0.0145
215	0.0188	0.0047	0.0141
216	0.0183	0.0046	0.0138
217	0.0168	0.0042	0.0126
218	0.0164	0.0041	0.0123
219	0.0160	0.0040	0.0120
220	0.0157	0.0039	0.0118
221	0.0154	0.0038	0.0115
222	0.0151	0.0038	0.0113
223	0.0148	0.0037	0.0111
224	0.0145	0.0036	0.0109
225	0.0142	0.0036	0.0107
226	0.0140	0.0035	0.0105
227	0.0138	0.0034	0.0103
228	0.0135	0.0034	0.0102
229	0.0133	0.0033	0.0100
230	0.0131	0.0033	0.0098
231	0.0129	0.0032	0.0097
232	0.0127	0.0032	0.0095
233	0.0125	0.0031	0.0094
234	0.0124	0.0031	0.0093
235	0.0122	0.0030	0.0091
236	0.0120	0.0030	0.0090
237	0.0119	0.0030	0.0089
238	0.0117	0.0029	0.0088
239	0.0116	0.0029	0.0087
240	0.0114	0.0028	0.0086
241	0.0113	0.0028	0.0085
242	0.0112	0.0028	0.0084
243	0.0110	0.0027	0.0083
244	0.0109	0.0027	0.0082
245	0.0108	0.0027	0.0081
246	0.0107	0.0027	0.0080
247	0.0105	0.0026	0.0079
248	0.0104	0.0026	0.0078
249	0.0103	0.0026	0.0078
250	0.0102	0.0026	0.0077
251	0.0101	0.0025	0.0076
252	0.0100	0.0025	0.0075
253	0.0099	0.0025	0.0075
254	0.0098	0.0025	0.0074
255	0.0097	0.0024	0.0073
256	0.0097	0.0024	0.0072

257	0.0096	0.0024	0.0072
258	0.0095	0.0024	0.0071
259	0.0094	0.0023	0.0071
260	0.0093	0.0023	0.0070
261	0.0092	0.0023	0.0069
262	0.0092	0.0023	0.0069
263	0.0091	0.0023	0.0068
264	0.0090	0.0022	0.0068
265	0.0089	0.0022	0.0067
266	0.0089	0.0022	0.0067
267	0.0088	0.0022	0.0066
268	0.0087	0.0022	0.0066
269	0.0087	0.0022	0.0065
270	0.0086	0.0021	0.0065
271	0.0085	0.0021	0.0064
272	0.0085	0.0021	0.0064
273	0.0084	0.0021	0.0063
274	0.0084	0.0021	0.0063
275	0.0083	0.0021	0.0062
276	0.0082	0.0021	0.0062
277	0.0082	0.0020	0.0061
278	0.0081	0.0020	0.0061
279	0.0081	0.0020	0.0061
280	0.0080	0.0020	0.0060
281	0.0080	0.0020	0.0060
282	0.0079	0.0020	0.0059
283	0.0079	0.0020	0.0059
284	0.0078	0.0019	0.0059
285	0.0078	0.0019	0.0058
286	0.0077	0.0019	0.0058
287	0.0077	0.0019	0.0058
288	0.0076	0.0019	0.0057

Total soil rain loss = 1.13(In)
Total effective rainfall = 4.02(In)
Peak flow rate in flood hydrograph = 18.38(CFS)

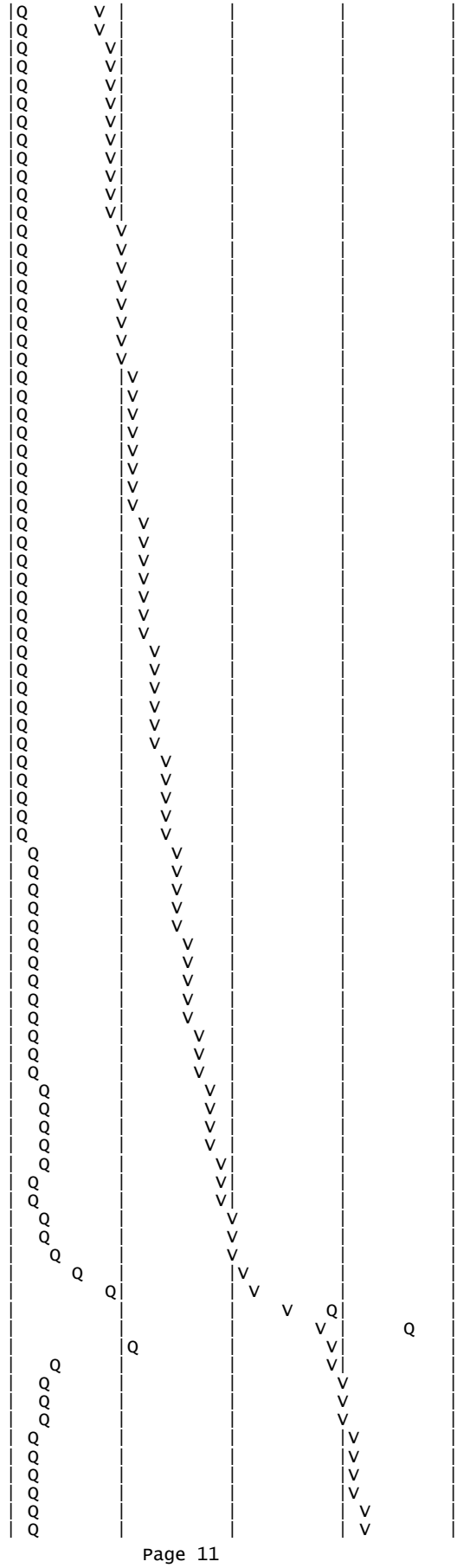
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0007	0.11	Q				
0+10	0.0026	0.27	Q				
0+15	0.0046	0.30	Q				
0+20	0.0067	0.31	Q				
0+25	0.0088	0.31	Q				
0+30	0.0110	0.31	Q				
0+35	0.0131	0.31	Q				
0+40	0.0152	0.31	Q				
0+45	0.0174	0.31	Q				
0+50	0.0195	0.31	Q				
0+55	0.0217	0.31	Q				
1+ 0	0.0239	0.31	Q				
1+ 5	0.0260	0.32	Q				
1+10	0.0282	0.32	Q				
1+15	0.0304	0.32	Q				
1+20	0.0326	0.32	Q				
1+25	0.0348	0.32	Q				
1+30	0.0370	0.32	Q				
1+35	0.0392	0.32	QV				
1+40	0.0414	0.32	QV				
1+45	0.0437	0.32	QV				
1+50	0.0459	0.32	QV				
1+55	0.0481	0.33	QV				
2+ 0	0.0504	0.33	QV				
2+ 5	0.0526	0.33	QV				
2+10	0.0549	0.33	QV				
2+15	0.0572	0.33	QV				
2+20	0.0595	0.33	QV				
2+25	0.0618	0.33	QV				
2+30	0.0641	0.33	QV				
2+35	0.0664	0.33	QV				
2+40	0.0687	0.34	QV				
2+45	0.0710	0.34	QV				
2+50	0.0733	0.34	QV				
2+55	0.0757	0.34	Q V				
3+ 0	0.0780	0.34	Q V				
3+ 5	0.0804	0.34	Q V				

3+10	0.0827	0.34	Q V	|	|	|	|
3+15	0.0851	0.34	Q V	|	|	|	|
3+20	0.0875	0.35	Q V	|	|	|	|
3+25	0.0899	0.35	Q V	|	|	|	|
3+30	0.0923	0.35	Q V	|	|	|	|
3+35	0.0947	0.35	Q V	|	|	|	|
3+40	0.0971	0.35	Q V	|	|	|	|
3+45	0.0996	0.35	Q V	|	|	|	|
3+50	0.1020	0.35	Q V	|	|	|	|
3+55	0.1044	0.36	Q V	|	|	|	|
4+ 0	0.1069	0.36	Q V	|	|	|	|
4+ 5	0.1094	0.36	Q V	|	|	|	|
4+10	0.1118	0.36	Q V	|	|	|	|
4+15	0.1143	0.36	Q V	|	|	|	|
4+20	0.1168	0.36	Q V	|	|	|	|
4+25	0.1193	0.36	Q V	|	|	|	|
4+30	0.1219	0.37	Q V	|	|	|	|
4+35	0.1244	0.37	Q V	|	|	|	|
4+40	0.1269	0.37	Q V	|	|	|	|
4+45	0.1295	0.37	Q V	|	|	|	|
4+50	0.1320	0.37	Q V	|	|	|	|
4+55	0.1346	0.37	Q V	|	|	|	|
5+ 0	0.1372	0.38	Q V	|	|	|	|
5+ 5	0.1398	0.38	Q V	|	|	|	|
5+10	0.1424	0.38	Q V	|	|	|	|
5+15	0.1450	0.38	Q V	|	|	|	|
5+20	0.1476	0.38	Q V	|	|	|	|
5+25	0.1503	0.38	Q V	|	|	|	|
5+30	0.1529	0.39	Q V	|	|	|	|
5+35	0.1556	0.39	Q V	|	|	|	|
5+40	0.1583	0.39	Q V	|	|	|	|
5+45	0.1610	0.39	Q V	|	|	|	|
5+50	0.1637	0.39	Q V	|	|	|	|
5+55	0.1664	0.39	Q V	|	|	|	|
6+ 0	0.1691	0.40	Q V	|	|	|	|
6+ 5	0.1718	0.40	Q V	|	|	|	|
6+10	0.1746	0.40	Q V	|	|	|	|
6+15	0.1774	0.40	Q V	|	|	|	|
6+20	0.1801	0.40	Q V	|	|	|	|
6+25	0.1829	0.41	Q V	|	|	|	|
6+30	0.1857	0.41	Q V	|	|	|	|
6+35	0.1886	0.41	Q V	|	|	|	|
6+40	0.1914	0.41	Q V	|	|	|	|
6+45	0.1942	0.41	Q V	|	|	|	|
6+50	0.1971	0.42	Q V	|	|	|	|
6+55	0.2000	0.42	Q V	|	|	|	|
7+ 0	0.2029	0.42	Q V	|	|	|	|
7+ 5	0.2058	0.42	Q V	|	|	|	|
7+10	0.2087	0.42	Q V	|	|	|	|
7+15	0.2117	0.43	Q V	|	|	|	|
7+20	0.2146	0.43	Q V	|	|	|	|
7+25	0.2176	0.43	Q V	|	|	|	|
7+30	0.2206	0.43	Q V	|	|	|	|
7+35	0.2236	0.44	Q V	|	|	|	|
7+40	0.2266	0.44	Q V	|	|	|	|
7+45	0.2297	0.44	Q V	|	|	|	|
7+50	0.2327	0.44	Q V	|	|	|	|
7+55	0.2358	0.45	Q V	|	|	|	|
8+ 0	0.2389	0.45	Q V	|	|	|	|
8+ 5	0.2420	0.45	Q V	|	|	|	|
8+10	0.2451	0.45	Q V	|	|	|	|
8+15	0.2483	0.46	Q V	|	|	|	|
8+20	0.2514	0.46	Q V	|	|	|	|
8+25	0.2546	0.46	Q V	|	|	|	|
8+30	0.2578	0.47	Q V	|	|	|	|
8+35	0.2611	0.47	Q V	|	|	|	|
8+40	0.2643	0.47	Q V	|	|	|	|
8+45	0.2676	0.47	Q V	|	|	|	|
8+50	0.2709	0.48	Q V	|	|	|	|
8+55	0.2742	0.48	Q V	|	|	|	|
9+ 0	0.2775	0.48	Q V	|	|	|	|
9+ 5	0.2809	0.49	Q V	|	|	|	|
9+10	0.2843	0.49	Q V	|	|	|	|
9+15	0.2877	0.49	Q V	|	|	|	|
9+20	0.2911	0.50	Q V	|	|	|	|
9+25	0.2946	0.50	|Q V	|	|	|	|
9+30	0.2981	0.51	|Q V	|	|	|	|
9+35	0.3016	0.51	|Q V	|	|	|	|
9+40	0.3051	0.51	|Q V	|	|	|	|
9+45	0.3087	0.52	|Q V	|	|	|	|
9+50	0.3122	0.52	|Q V	|	|	|	|
9+55	0.3158	0.52	|Q V	|	|	|	|
10+ 0	0.3195	0.53	|Q V	|	|	|	|
10+ 5	0.3232	0.53	|Q V	|	|	|	|

10+10	0.3269	0.54	
10+15	0.3306	0.54	
10+20	0.3343	0.55	
10+25	0.3381	0.55	
10+30	0.3420	0.56	
10+35	0.3458	0.56	
10+40	0.3497	0.56	
10+45	0.3536	0.57	
10+50	0.3576	0.57	
10+55	0.3616	0.58	
11+ 0	0.3656	0.59	
11+ 5	0.3697	0.59	
11+10	0.3738	0.60	
11+15	0.3779	0.60	
11+20	0.3821	0.61	
11+25	0.3864	0.61	
11+30	0.3907	0.62	
11+35	0.3950	0.63	
11+40	0.3993	0.63	
11+45	0.4038	0.64	
11+50	0.4082	0.65	
11+55	0.4127	0.66	
12+ 0	0.4173	0.66	
12+ 5	0.4220	0.69	
12+10	0.4270	0.72	
12+15	0.4320	0.73	
12+20	0.4372	0.74	
12+25	0.4423	0.75	
12+30	0.4476	0.76	
12+35	0.4529	0.77	
12+40	0.4583	0.78	
12+45	0.4637	0.79	
12+50	0.4692	0.80	
12+55	0.4748	0.81	
13+ 0	0.4805	0.83	
13+ 5	0.4863	0.84	
13+10	0.4921	0.85	
13+15	0.4981	0.86	
13+20	0.5041	0.88	
13+25	0.5103	0.89	
13+30	0.5165	0.91	
13+35	0.5229	0.92	
13+40	0.5293	0.94	
13+45	0.5359	0.96	
13+50	0.5427	0.98	
13+55	0.5495	1.00	
14+ 0	0.5565	1.02	
14+ 5	0.5637	1.04	
14+10	0.5710	1.06	
14+15	0.5785	1.09	
14+20	0.5862	1.12	
14+25	0.5941	1.15	
14+30	0.6023	1.18	
14+35	0.6106	1.21	
14+40	0.6192	1.25	
14+45	0.6281	1.29	
14+50	0.6373	1.34	
14+55	0.6468	1.38	
15+ 0	0.6567	1.44	
15+ 5	0.6671	1.50	
15+10	0.6779	1.57	
15+15	0.6893	1.65	
15+20	0.7013	1.74	
15+25	0.7124	1.62	
15+30	0.7221	1.40	
15+35	0.7323	1.48	
15+40	0.7436	1.65	
15+45	0.7567	1.90	
15+50	0.7722	2.26	
15+55	0.7932	3.04	
16+ 0	0.8259	4.74	
16+ 5	0.9272	14.71	
16+10	1.0537	18.38	
16+15	1.0921	5.57	
16+20	1.1090	2.45	
16+25	1.1217	1.85	
16+30	1.1340	1.78	
16+35	1.1453	1.64	
16+40	1.1556	1.50	
16+45	1.1651	1.38	
16+50	1.1740	1.29	
16+55	1.1824	1.21	
17+ 0	1.1903	1.15	
17+ 5	1.1978	1.09	

17+10	1.2049	1.04	Q			V
17+15	1.2118	1.00	Q			V
17+20	1.2184	0.96	Q			V
17+25	1.2247	0.92	Q			V
17+30	1.2309	0.89	Q			V
17+35	1.2368	0.86	Q			V
17+40	1.2426	0.84	Q			V
17+45	1.2482	0.81	Q			V
17+50	1.2536	0.79	Q			V
17+55	1.2589	0.77	Q			V
18+ 0	1.2641	0.75	Q			V
18+ 5	1.2690	0.72	Q			V
18+10	1.2737	0.68	Q			V
18+15	1.2782	0.66	Q			V
18+20	1.2826	0.64	Q			V
18+25	1.2869	0.63	Q			V
18+30	1.2912	0.61	Q			V
18+35	1.2953	0.60	Q			V
18+40	1.2994	0.59	Q			V
18+45	1.3034	0.58	Q			V
18+50	1.3073	0.57	Q			V
18+55	1.3112	0.56	Q			V
19+ 0	1.3150	0.55	Q			V
19+ 5	1.3187	0.54	Q			V
19+10	1.3223	0.53	Q			V
19+15	1.3260	0.52	Q			V
19+20	1.3295	0.52	Q			V
19+25	1.3330	0.51	Q			V
19+30	1.3365	0.50	Q			V
19+35	1.3399	0.49	Q			V
19+40	1.3432	0.49	Q			V
19+45	1.3465	0.48	Q			V
19+50	1.3498	0.47	Q			V
19+55	1.3530	0.47	Q			V
20+ 0	1.3562	0.46	Q			V
20+ 5	1.3594	0.46	Q			V
20+10	1.3625	0.45	Q			V
20+15	1.3656	0.45	Q			V
20+20	1.3686	0.44	Q			V
20+25	1.3716	0.44	Q			V
20+30	1.3746	0.43	Q			V
20+35	1.3775	0.43	Q			V
20+40	1.3804	0.42	Q			V
20+45	1.3833	0.42	Q			V
20+50	1.3862	0.41	Q			V
20+55	1.3890	0.41	Q			V
21+ 0	1.3918	0.41	Q			V
21+ 5	1.3945	0.40	Q			V
21+10	1.3973	0.40	Q			V
21+15	1.4000	0.39	Q			V
21+20	1.4027	0.39	Q			V
21+25	1.4053	0.39	Q			V
21+30	1.4080	0.38	Q			V
21+35	1.4106	0.38	Q			V
21+40	1.4132	0.38	Q			V
21+45	1.4158	0.37	Q			V
21+50	1.4183	0.37	Q			V
21+55	1.4208	0.37	Q			V
22+ 0	1.4233	0.36	Q			V
22+ 5	1.4258	0.36	Q			V
22+10	1.4283	0.36	Q			V
22+15	1.4307	0.36	Q			V
22+20	1.4332	0.35	Q			V
22+25	1.4356	0.35	Q			V
22+30	1.4380	0.35	Q			V
22+35	1.4403	0.34	Q			V
22+40	1.4427	0.34	Q			V
22+45	1.4450	0.34	Q			V
22+50	1.4474	0.34	Q			V
22+55	1.4497	0.33	Q			V
23+ 0	1.4520	0.33	Q			V
23+ 5	1.4542	0.33	Q			V
23+10	1.4565	0.33	Q			V
23+15	1.4587	0.33	Q			V
23+20	1.4610	0.32	Q			V
23+25	1.4632	0.32	Q			V
23+30	1.4654	0.32	Q			V
23+35	1.4676	0.32	Q			V
23+40	1.4697	0.32	Q			V
23+45	1.4719	0.31	Q			V
23+50	1.4740	0.31	Q			V
23+55	1.4762	0.31	Q			V
24+ 0	1.4783	0.31	Q			V

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

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Study date 02/26/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA E
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1.20	1	0.78
Rainfall data for year 2		
1.20	6	1.20
Rainfall data for year 2		
1.20	24	2.18
Rainfall data for year 100		
1.20	1	1.27
Rainfall data for year 100		
1.20	6	2.86
Rainfall data for year 100		
1.20	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
50.0	70.0	1.20	1.000	0.532	1.000	0.532

Area-averaged adjusted loss rate Fm (In/Hr) = 0.532

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
1.20	1.000	50.0	70.0	4.29	0.417

Area-averaged catchment yield fraction, Y = 0.417
Area-averaged low loss fraction, Yb = 0.583

++
Watercourse length = 650.00(Ft.)
Length from concentration point to centroid = 120.00(Ft.)
Elevation difference along watercourse = 57.30(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 1.20(Ac.)
Catchment Lag time = 0.024 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 347.2069
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.532(In/Hr)
Average low loss rate fraction (Yb) = 0.583 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 1.20(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.603(In)
30-minute factor = 1.000 Adjusted rainfall = 1.032(In)
1-hour factor = 1.000 Adjusted rainfall = 1.270(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 14.51 (CFS))	
1	62.757	9.108
2	98.885	5.243
3	100.000	0.162

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6026	0.6026
2	0.7419	0.1393
3	0.8378	0.0960
4	0.9134	0.0755
5	0.9766	0.0632
6	1.0315	0.0549
7	1.0803	0.0488
8	1.1245	0.0442
9	1.1649	0.0404
10	1.2023	0.0374
11	1.2372	0.0349
12	1.2699	0.0327
13	1.3168	0.0469
14	1.3618	0.0450
15	1.4050	0.0432
16	1.4467	0.0417
17	1.4870	0.0403
18	1.5261	0.0390
19	1.5639	0.0378
20	1.6007	0.0368
21	1.6365	0.0358
22	1.6713	0.0349
23	1.7053	0.0340
24	1.7385	0.0332
25	1.7710	0.0325
26	1.8027	0.0318
27	1.8338	0.0311
28	1.8643	0.0305
29	1.8942	0.0299
30	1.9235	0.0293
31	1.9523	0.0288
32	1.9806	0.0283
33	2.0084	0.0278
34	2.0358	0.0274
35	2.0627	0.0269
36	2.0892	0.0265
37	2.1153	0.0261
38	2.1410	0.0257
39	2.1663	0.0253
40	2.1913	0.0250
41	2.2160	0.0247
42	2.2403	0.0243
43	2.2643	0.0240
44	2.2880	0.0237
45	2.3114	0.0234
46	2.3346	0.0231
47	2.3574	0.0229

		AREAE
48	2.3800	0.0226
49	2.4024	0.0223
50	2.4245	0.0221
51	2.4463	0.0219
52	2.4679	0.0216
53	2.4893	0.0214
54	2.5105	0.0212
55	2.5314	0.0210
56	2.5522	0.0208
57	2.5727	0.0205
58	2.5931	0.0204
59	2.6133	0.0202
60	2.6332	0.0200
61	2.6530	0.0198
62	2.6726	0.0196
63	2.6921	0.0194
64	2.7114	0.0193
65	2.7305	0.0191
66	2.7494	0.0190
67	2.7682	0.0188
68	2.7869	0.0186
69	2.8054	0.0185
70	2.8237	0.0183
71	2.8419	0.0182
72	2.8600	0.0181
73	2.8768	0.0168
74	2.8934	0.0167
75	2.9100	0.0165
76	2.9264	0.0164
77	2.9426	0.0163
78	2.9588	0.0162
79	2.9748	0.0160
80	2.9907	0.0159
81	3.0065	0.0158
82	3.0222	0.0157
83	3.0378	0.0156
84	3.0533	0.0155
85	3.0687	0.0154
86	3.0839	0.0153
87	3.0991	0.0152
88	3.1142	0.0151
89	3.1291	0.0150
90	3.1440	0.0149
91	3.1588	0.0148
92	3.1734	0.0147
93	3.1880	0.0146
94	3.2025	0.0145
95	3.2169	0.0144
96	3.2313	0.0143
97	3.2455	0.0142
98	3.2597	0.0142
99	3.2737	0.0141
100	3.2877	0.0140
101	3.3016	0.0139
102	3.3155	0.0138
103	3.3292	0.0138
104	3.3429	0.0137
105	3.3565	0.0136
106	3.3700	0.0135
107	3.3835	0.0135
108	3.3969	0.0134
109	3.4102	0.0133
110	3.4234	0.0132
111	3.4366	0.0132
112	3.4497	0.0131
113	3.4627	0.0130
114	3.4757	0.0130
115	3.4886	0.0129
116	3.5014	0.0128
117	3.5142	0.0128
118	3.5269	0.0127
119	3.5396	0.0127
120	3.5521	0.0126
121	3.5647	0.0125
122	3.5771	0.0125
123	3.5896	0.0124
124	3.6019	0.0124
125	3.6142	0.0123
126	3.6264	0.0122
127	3.6386	0.0122
128	3.6508	0.0121
129	3.6628	0.0121
130	3.6748	0.0120
131	3.6868	0.0120

		AREAE
132	3.6987	0.0119
133	3.7106	0.0119
134	3.7224	0.0118
135	3.7342	0.0118
136	3.7459	0.0117
137	3.7575	0.0117
138	3.7691	0.0116
139	3.7807	0.0116
140	3.7922	0.0115
141	3.8037	0.0115
142	3.8151	0.0114
143	3.8265	0.0114
144	3.8378	0.0113
145	3.8491	0.0113
146	3.8604	0.0112
147	3.8715	0.0112
148	3.8827	0.0112
149	3.8938	0.0111
150	3.9049	0.0111
151	3.9159	0.0110
152	3.9269	0.0110
153	3.9378	0.0109
154	3.9487	0.0109
155	3.9596	0.0109
156	3.9704	0.0108
157	3.9812	0.0108
158	3.9919	0.0107
159	4.0026	0.0107
160	4.0133	0.0107
161	4.0239	0.0106
162	4.0345	0.0106
163	4.0450	0.0105
164	4.0555	0.0105
165	4.0660	0.0105
166	4.0765	0.0104
167	4.0869	0.0104
168	4.0972	0.0104
169	4.1076	0.0103
170	4.1178	0.0103
171	4.1281	0.0103
172	4.1383	0.0102
173	4.1485	0.0102
174	4.1587	0.0102
175	4.1688	0.0101
176	4.1789	0.0101
177	4.1890	0.0101
178	4.1990	0.0100
179	4.2090	0.0100
180	4.2189	0.0100
181	4.2289	0.0099
182	4.2388	0.0099
183	4.2486	0.0099
184	4.2585	0.0098
185	4.2683	0.0098
186	4.2780	0.0098
187	4.2878	0.0097
188	4.2975	0.0097
189	4.3072	0.0097
190	4.3168	0.0097
191	4.3265	0.0096
192	4.3361	0.0096
193	4.3456	0.0096
194	4.3552	0.0095
195	4.3647	0.0095
196	4.3742	0.0095
197	4.3836	0.0095
198	4.3930	0.0094
199	4.4024	0.0094
200	4.4118	0.0094
201	4.4212	0.0093
202	4.4305	0.0093
203	4.4398	0.0093
204	4.4490	0.0093
205	4.4583	0.0092
206	4.4675	0.0092
207	4.4767	0.0092
208	4.4858	0.0092
209	4.4950	0.0091
210	4.5041	0.0091
211	4.5132	0.0091
212	4.5222	0.0091
213	4.5313	0.0090
214	4.5403	0.0090
215	4.5493	0.0090

		AREAE
216	4.5582	0.0090
217	4.5672	0.0089
218	4.5761	0.0089
219	4.5850	0.0089
220	4.5939	0.0089
221	4.6027	0.0088
222	4.6115	0.0088
223	4.6203	0.0088
224	4.6291	0.0088
225	4.6379	0.0088
226	4.6466	0.0087
227	4.6553	0.0087
228	4.6640	0.0087
229	4.6727	0.0087
230	4.6813	0.0086
231	4.6900	0.0086
232	4.6986	0.0086
233	4.7071	0.0086
234	4.7157	0.0086
235	4.7242	0.0085
236	4.7328	0.0085
237	4.7413	0.0085
238	4.7497	0.0085
239	4.7582	0.0085
240	4.7666	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7918	0.0084
244	4.8002	0.0084
245	4.8085	0.0083
246	4.8168	0.0083
247	4.8251	0.0083
248	4.8334	0.0083
249	4.8417	0.0083
250	4.8499	0.0082
251	4.8581	0.0082
252	4.8663	0.0082
253	4.8745	0.0082
254	4.8827	0.0082
255	4.8908	0.0081
256	4.8990	0.0081
257	4.9071	0.0081
258	4.9152	0.0081
259	4.9232	0.0081
260	4.9313	0.0081
261	4.9393	0.0080
262	4.9473	0.0080
263	4.9554	0.0080
264	4.9633	0.0080
265	4.9713	0.0080
266	4.9793	0.0080
267	4.9872	0.0079
268	4.9951	0.0079
269	5.0030	0.0079
270	5.0109	0.0079
271	5.0188	0.0079
272	5.0266	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0578	0.0078
277	5.0656	0.0078
278	5.0734	0.0078
279	5.0811	0.0077
280	5.0888	0.0077
281	5.0965	0.0077
282	5.1042	0.0077
283	5.1119	0.0077
284	5.1195	0.0077
285	5.1272	0.0076
286	5.1348	0.0076
287	5.1424	0.0076
288	5.1500	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0044	0.0032
2	0.0076	0.0044	0.0032
3	0.0076	0.0045	0.0032
4	0.0077	0.0045	0.0032
5	0.0077	0.0045	0.0032
6	0.0077	0.0045	0.0032

		AREAE	
7	0.0077	0.0045	0.0032
8	0.0078	0.0045	0.0032
9	0.0078	0.0045	0.0032
10	0.0078	0.0045	0.0033
11	0.0078	0.0046	0.0033
12	0.0078	0.0046	0.0033
13	0.0079	0.0046	0.0033
14	0.0079	0.0046	0.0033
15	0.0079	0.0046	0.0033
16	0.0080	0.0046	0.0033
17	0.0080	0.0047	0.0033
18	0.0080	0.0047	0.0033
19	0.0080	0.0047	0.0034
20	0.0081	0.0047	0.0034
21	0.0081	0.0047	0.0034
22	0.0081	0.0047	0.0034
23	0.0081	0.0047	0.0034
24	0.0082	0.0048	0.0034
25	0.0082	0.0048	0.0034
26	0.0082	0.0048	0.0034
27	0.0083	0.0048	0.0034
28	0.0083	0.0048	0.0035
29	0.0083	0.0048	0.0035
30	0.0083	0.0049	0.0035
31	0.0084	0.0049	0.0035
32	0.0084	0.0049	0.0035
33	0.0084	0.0049	0.0035
34	0.0085	0.0049	0.0035
35	0.0085	0.0050	0.0035
36	0.0085	0.0050	0.0036
37	0.0086	0.0050	0.0036
38	0.0086	0.0050	0.0036
39	0.0086	0.0050	0.0036
40	0.0086	0.0050	0.0036
41	0.0087	0.0051	0.0036
42	0.0087	0.0051	0.0036
43	0.0088	0.0051	0.0037
44	0.0088	0.0051	0.0037
45	0.0088	0.0051	0.0037
46	0.0088	0.0052	0.0037
47	0.0089	0.0052	0.0037
48	0.0089	0.0052	0.0037
49	0.0090	0.0052	0.0037
50	0.0090	0.0052	0.0037
51	0.0090	0.0053	0.0038
52	0.0091	0.0053	0.0038
53	0.0091	0.0053	0.0038
54	0.0091	0.0053	0.0038
55	0.0092	0.0054	0.0038
56	0.0092	0.0054	0.0038
57	0.0093	0.0054	0.0039
58	0.0093	0.0054	0.0039
59	0.0093	0.0054	0.0039
60	0.0094	0.0055	0.0039
61	0.0094	0.0055	0.0039
62	0.0095	0.0055	0.0039
63	0.0095	0.0055	0.0040
64	0.0095	0.0056	0.0040
65	0.0096	0.0056	0.0040
66	0.0096	0.0056	0.0040
67	0.0097	0.0056	0.0040
68	0.0097	0.0057	0.0041
69	0.0098	0.0057	0.0041
70	0.0098	0.0057	0.0041
71	0.0099	0.0058	0.0041
72	0.0099	0.0058	0.0041
73	0.0100	0.0058	0.0042
74	0.0100	0.0058	0.0042
75	0.0101	0.0059	0.0042
76	0.0101	0.0059	0.0042
77	0.0102	0.0059	0.0042
78	0.0102	0.0059	0.0043
79	0.0103	0.0060	0.0043
80	0.0103	0.0060	0.0043
81	0.0104	0.0060	0.0043
82	0.0104	0.0061	0.0043
83	0.0105	0.0061	0.0044
84	0.0105	0.0061	0.0044
85	0.0106	0.0062	0.0044
86	0.0106	0.0062	0.0044
87	0.0107	0.0062	0.0045
88	0.0107	0.0063	0.0045
89	0.0108	0.0063	0.0045
90	0.0109	0.0063	0.0045

91	0.0109	0.0064	0.0046
92	0.0110	0.0064	0.0046
93	0.0111	0.0065	0.0046
94	0.0111	0.0065	0.0046
95	0.0112	0.0065	0.0047
96	0.0112	0.0066	0.0047
97	0.0113	0.0066	0.0047
98	0.0114	0.0066	0.0047
99	0.0115	0.0067	0.0048
100	0.0115	0.0067	0.0048
101	0.0116	0.0068	0.0048
102	0.0117	0.0068	0.0049
103	0.0118	0.0069	0.0049
104	0.0118	0.0069	0.0049
105	0.0119	0.0069	0.0050
106	0.0120	0.0070	0.0050
107	0.0121	0.0070	0.0050
108	0.0121	0.0071	0.0051
109	0.0122	0.0071	0.0051
110	0.0123	0.0072	0.0051
111	0.0124	0.0072	0.0052
112	0.0125	0.0073	0.0052
113	0.0126	0.0073	0.0053
114	0.0127	0.0074	0.0053
115	0.0128	0.0074	0.0053
116	0.0128	0.0075	0.0054
117	0.0130	0.0076	0.0054
118	0.0130	0.0076	0.0054
119	0.0132	0.0077	0.0055
120	0.0132	0.0077	0.0055
121	0.0134	0.0078	0.0056
122	0.0135	0.0078	0.0056
123	0.0136	0.0079	0.0057
124	0.0137	0.0080	0.0057
125	0.0138	0.0081	0.0058
126	0.0139	0.0081	0.0058
127	0.0141	0.0082	0.0059
128	0.0142	0.0082	0.0059
129	0.0143	0.0083	0.0060
130	0.0144	0.0084	0.0060
131	0.0146	0.0085	0.0061
132	0.0147	0.0086	0.0061
133	0.0149	0.0087	0.0062
134	0.0150	0.0087	0.0062
135	0.0152	0.0088	0.0063
136	0.0153	0.0089	0.0064
137	0.0155	0.0090	0.0065
138	0.0156	0.0091	0.0065
139	0.0158	0.0092	0.0066
140	0.0159	0.0093	0.0066
141	0.0162	0.0094	0.0067
142	0.0163	0.0095	0.0068
143	0.0165	0.0096	0.0069
144	0.0167	0.0097	0.0069
145	0.0181	0.0105	0.0075
146	0.0182	0.0106	0.0076
147	0.0185	0.0108	0.0077
148	0.0186	0.0109	0.0078
149	0.0190	0.0110	0.0079
150	0.0191	0.0111	0.0080
151	0.0194	0.0113	0.0081
152	0.0196	0.0114	0.0082
153	0.0200	0.0116	0.0083
154	0.0202	0.0118	0.0084
155	0.0205	0.0120	0.0086
156	0.0208	0.0121	0.0087
157	0.0212	0.0123	0.0088
158	0.0214	0.0125	0.0089
159	0.0219	0.0127	0.0091
160	0.0221	0.0129	0.0092
161	0.0226	0.0132	0.0094
162	0.0229	0.0133	0.0095
163	0.0234	0.0136	0.0098
164	0.0237	0.0138	0.0099
165	0.0243	0.0142	0.0101
166	0.0247	0.0144	0.0103
167	0.0253	0.0148	0.0106
168	0.0257	0.0150	0.0107
169	0.0265	0.0154	0.0111
170	0.0269	0.0157	0.0112
171	0.0278	0.0162	0.0116
172	0.0283	0.0165	0.0118
173	0.0293	0.0171	0.0122
174	0.0299	0.0174	0.0125

175	0.0311	0.0181	0.0130
176	0.0318	0.0185	0.0132
177	0.0332	0.0194	0.0139
178	0.0340	0.0198	0.0142
179	0.0358	0.0209	0.0149
180	0.0368	0.0214	0.0153
181	0.0390	0.0227	0.0163
182	0.0403	0.0235	0.0168
183	0.0432	0.0252	0.0180
184	0.0450	0.0262	0.0188
185	0.0327	0.0191	0.0136
186	0.0349	0.0203	0.0145
187	0.0404	0.0236	0.0169
188	0.0442	0.0257	0.0184
189	0.0549	0.0320	0.0229
190	0.0632	0.0369	0.0264
191	0.0960	0.0444	0.0516
192	0.1393	0.0444	0.0949
193	0.6026	0.0444	0.5582
194	0.0755	0.0440	0.0315
195	0.0488	0.0285	0.0204
196	0.0374	0.0218	0.0156
197	0.0469	0.0273	0.0196
198	0.0417	0.0243	0.0174
199	0.0378	0.0221	0.0158
200	0.0349	0.0203	0.0145
201	0.0325	0.0189	0.0135
202	0.0305	0.0178	0.0127
203	0.0288	0.0168	0.0120
204	0.0274	0.0159	0.0114
205	0.0261	0.0152	0.0109
206	0.0250	0.0146	0.0104
207	0.0240	0.0140	0.0100
208	0.0231	0.0135	0.0096
209	0.0223	0.0130	0.0093
210	0.0216	0.0126	0.0090
211	0.0210	0.0122	0.0087
212	0.0204	0.0119	0.0085
213	0.0198	0.0115	0.0083
214	0.0193	0.0112	0.0080
215	0.0188	0.0110	0.0078
216	0.0183	0.0107	0.0077
217	0.0168	0.0098	0.0070
218	0.0164	0.0096	0.0068
219	0.0160	0.0093	0.0067
220	0.0157	0.0091	0.0065
221	0.0154	0.0090	0.0064
222	0.0151	0.0088	0.0063
223	0.0148	0.0086	0.0062
224	0.0145	0.0085	0.0060
225	0.0142	0.0083	0.0059
226	0.0140	0.0082	0.0058
227	0.0138	0.0080	0.0057
228	0.0135	0.0079	0.0056
229	0.0133	0.0078	0.0056
230	0.0131	0.0076	0.0055
231	0.0129	0.0075	0.0054
232	0.0127	0.0074	0.0053
233	0.0125	0.0073	0.0052
234	0.0124	0.0072	0.0052
235	0.0122	0.0071	0.0051
236	0.0120	0.0070	0.0050
237	0.0119	0.0069	0.0049
238	0.0117	0.0068	0.0049
239	0.0116	0.0067	0.0048
240	0.0114	0.0067	0.0048
241	0.0113	0.0066	0.0047
242	0.0112	0.0065	0.0047
243	0.0110	0.0064	0.0046
244	0.0109	0.0064	0.0045
245	0.0108	0.0063	0.0045
246	0.0107	0.0062	0.0044
247	0.0105	0.0061	0.0044
248	0.0104	0.0061	0.0044
249	0.0103	0.0060	0.0043
250	0.0102	0.0060	0.0043
251	0.0101	0.0059	0.0042
252	0.0100	0.0058	0.0042
253	0.0099	0.0058	0.0041
254	0.0098	0.0057	0.0041
255	0.0097	0.0057	0.0041
256	0.0097	0.0056	0.0040
257	0.0096	0.0056	0.0040
258	0.0095	0.0055	0.0040

259	0.0094	0.0055	0.0039
260	0.0093	0.0054	0.0039
261	0.0092	0.0054	0.0039
262	0.0092	0.0053	0.0038
263	0.0091	0.0053	0.0038
264	0.0090	0.0053	0.0038
265	0.0089	0.0052	0.0037
266	0.0089	0.0052	0.0037
267	0.0088	0.0051	0.0037
268	0.0087	0.0051	0.0036
269	0.0087	0.0051	0.0036
270	0.0086	0.0050	0.0036
271	0.0085	0.0050	0.0036
272	0.0085	0.0049	0.0035
273	0.0084	0.0049	0.0035
274	0.0084	0.0049	0.0035
275	0.0083	0.0048	0.0035
276	0.0082	0.0048	0.0034
277	0.0082	0.0048	0.0034
278	0.0081	0.0047	0.0034
279	0.0081	0.0047	0.0034
280	0.0080	0.0047	0.0033
281	0.0080	0.0046	0.0033
282	0.0079	0.0046	0.0033
283	0.0079	0.0046	0.0033
284	0.0078	0.0046	0.0033
285	0.0078	0.0045	0.0032
286	0.0077	0.0045	0.0032
287	0.0077	0.0045	0.0032
288	0.0076	0.0044	0.0032

Total soil rain loss = 2.65(In)
Total effective rainfall = 2.50(In)
Peak flow rate in flood hydrograph = 5.59(CFS)

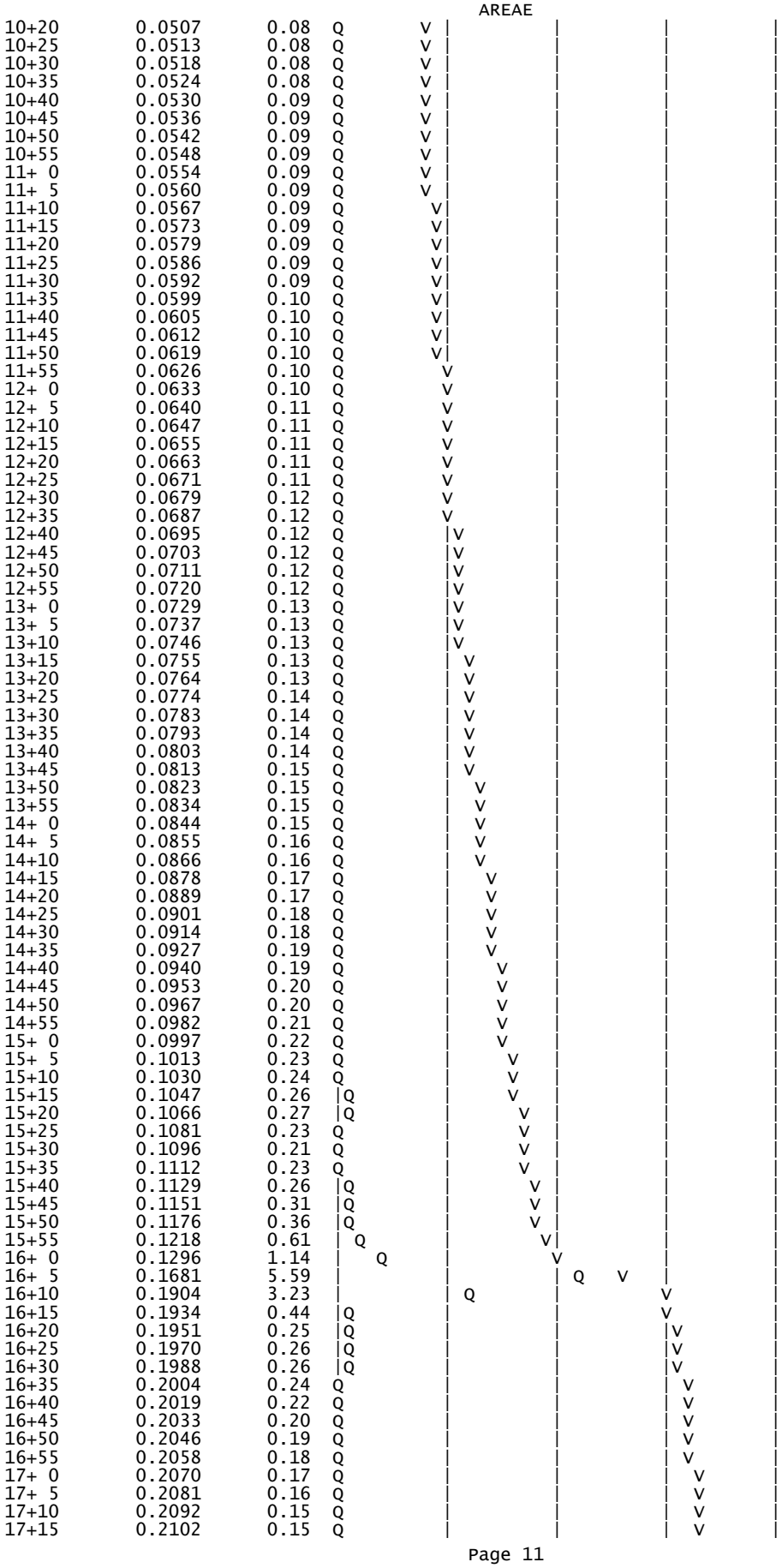
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0002	0.03	Q				
0+10	0.0005	0.05	Q				
0+15	0.0008	0.05	Q				
0+20	0.0011	0.05	Q				
0+25	0.0015	0.05	Q				
0+30	0.0018	0.05	Q				
0+35	0.0021	0.05	Q				
0+40	0.0024	0.05	Q				
0+45	0.0028	0.05	Q				
0+50	0.0031	0.05	Q				
0+55	0.0034	0.05	Q				
1+ 0	0.0037	0.05	Q				
1+ 5	0.0041	0.05	Q				
1+10	0.0044	0.05	Q				
1+15	0.0047	0.05	Q				
1+20	0.0051	0.05	Q				
1+25	0.0054	0.05	Q				
1+30	0.0057	0.05	Q				
1+35	0.0061	0.05	Q				
1+40	0.0064	0.05	QV				
1+45	0.0067	0.05	QV				
1+50	0.0071	0.05	QV				
1+55	0.0074	0.05	QV				
2+ 0	0.0077	0.05	QV				
2+ 5	0.0081	0.05	QV				
2+10	0.0084	0.05	QV				
2+15	0.0088	0.05	QV				
2+20	0.0091	0.05	QV				
2+25	0.0095	0.05	QV				
2+30	0.0098	0.05	QV				
2+35	0.0102	0.05	QV				
2+40	0.0105	0.05	QV				
2+45	0.0109	0.05	QV				
2+50	0.0112	0.05	QV				
2+55	0.0116	0.05	QV				
3+ 0	0.0119	0.05	QV				
3+ 5	0.0123	0.05	QV				
3+10	0.0126	0.05	Q V				
3+15	0.0130	0.05	Q V				

3+20	0.0134	0.05	Q V				
3+25	0.0137	0.05	Q V				
3+30	0.0141	0.05	Q V				
3+35	0.0144	0.05	Q V				
3+40	0.0148	0.05	Q V				
3+45	0.0152	0.05	Q V				
3+50	0.0155	0.05	Q V				
3+55	0.0159	0.05	Q V				
4+ 0	0.0163	0.05	Q V				
4+ 5	0.0167	0.05	Q V				
4+10	0.0170	0.05	Q V				
4+15	0.0174	0.05	Q V				
4+20	0.0178	0.05	Q V				
4+25	0.0182	0.06	Q V				
4+30	0.0185	0.06	Q V				
4+35	0.0189	0.06	Q V				
4+40	0.0193	0.06	Q V				
4+45	0.0197	0.06	Q V				
4+50	0.0201	0.06	Q V				
4+55	0.0205	0.06	Q V				
5+ 0	0.0209	0.06	Q V				
5+ 5	0.0213	0.06	Q V				
5+10	0.0216	0.06	Q V				
5+15	0.0220	0.06	Q V				
5+20	0.0224	0.06	Q V				
5+25	0.0228	0.06	Q V				
5+30	0.0232	0.06	Q V				
5+35	0.0236	0.06	Q V				
5+40	0.0240	0.06	Q V				
5+45	0.0245	0.06	Q V				
5+50	0.0249	0.06	Q V				
5+55	0.0253	0.06	Q V				
6+ 0	0.0257	0.06	Q V				
6+ 5	0.0261	0.06	Q V				
6+10	0.0265	0.06	Q V				
6+15	0.0269	0.06	Q V				
6+20	0.0274	0.06	Q V				
6+25	0.0278	0.06	Q V				
6+30	0.0282	0.06	Q V				
6+35	0.0286	0.06	Q V				
6+40	0.0291	0.06	Q V				
6+45	0.0295	0.06	Q V				
6+50	0.0299	0.06	Q V				
6+55	0.0304	0.06	Q V				
7+ 0	0.0308	0.06	Q V				
7+ 5	0.0312	0.06	Q V				
7+10	0.0317	0.06	Q V				
7+15	0.0321	0.06	Q V				
7+20	0.0326	0.06	Q V				
7+25	0.0330	0.07	Q V				
7+30	0.0335	0.07	Q V				
7+35	0.0339	0.07	Q V				
7+40	0.0344	0.07	Q V				
7+45	0.0348	0.07	Q V				
7+50	0.0353	0.07	Q V				
7+55	0.0358	0.07	Q V				
8+ 0	0.0362	0.07	Q V				
8+ 5	0.0367	0.07	Q V				
8+10	0.0372	0.07	Q V				
8+15	0.0377	0.07	Q V				
8+20	0.0381	0.07	Q V				
8+25	0.0386	0.07	Q V				
8+30	0.0391	0.07	Q V				
8+35	0.0396	0.07	Q V				
8+40	0.0401	0.07	Q V				
8+45	0.0406	0.07	Q V				
8+50	0.0411	0.07	Q V				
8+55	0.0416	0.07	Q V				
9+ 0	0.0421	0.07	Q V				
9+ 5	0.0426	0.07	Q V				
9+10	0.0431	0.07	Q V				
9+15	0.0436	0.07	Q V				
9+20	0.0441	0.08	Q V				
9+25	0.0447	0.08	Q V				
9+30	0.0452	0.08	Q V				
9+35	0.0457	0.08	Q V				
9+40	0.0463	0.08	Q V				
9+45	0.0468	0.08	Q V				
9+50	0.0473	0.08	Q V				
9+55	0.0479	0.08	Q V				
10+ 0	0.0484	0.08	Q V				
10+ 5	0.0490	0.08	Q V				
10+10	0.0496	0.08	Q V				
10+15	0.0501	0.08	Q V				



10+20	0.0507	0.08	Q V
10+25	0.0513	0.08	Q V
10+30	0.0518	0.08	Q V
10+35	0.0524	0.08	Q V
10+40	0.0530	0.09	Q V
10+45	0.0536	0.09	Q V
10+50	0.0542	0.09	Q V
10+55	0.0548	0.09	Q V
11+ 0	0.0554	0.09	Q V
11+ 5	0.0560	0.09	Q V
11+10	0.0567	0.09	Q V
11+15	0.0573	0.09	Q V
11+20	0.0579	0.09	Q V
11+25	0.0586	0.09	Q V
11+30	0.0592	0.09	Q V
11+35	0.0599	0.10	Q V
11+40	0.0605	0.10	Q V
11+45	0.0612	0.10	Q V
11+50	0.0619	0.10	Q V
11+55	0.0626	0.10	Q V
12+ 0	0.0633	0.10	Q V
12+ 5	0.0640	0.11	Q V
12+10	0.0647	0.11	Q V
12+15	0.0655	0.11	Q V
12+20	0.0663	0.11	Q V
12+25	0.0671	0.11	Q V
12+30	0.0679	0.12	Q V
12+35	0.0687	0.12	Q V
12+40	0.0695	0.12	Q V
12+45	0.0703	0.12	Q V
12+50	0.0711	0.12	Q V
12+55	0.0720	0.12	Q V
13+ 0	0.0729	0.13	Q V
13+ 5	0.0737	0.13	Q V
13+10	0.0746	0.13	Q V
13+15	0.0755	0.13	Q V
13+20	0.0764	0.13	Q V
13+25	0.0774	0.14	Q V
13+30	0.0783	0.14	Q V
13+35	0.0793	0.14	Q V
13+40	0.0803	0.14	Q V
13+45	0.0813	0.15	Q V
13+50	0.0823	0.15	Q V
13+55	0.0834	0.15	Q V
14+ 0	0.0844	0.15	Q V
14+ 5	0.0855	0.16	Q V
14+10	0.0866	0.16	Q V
14+15	0.0878	0.17	Q V
14+20	0.0889	0.17	Q V
14+25	0.0901	0.18	Q V
14+30	0.0914	0.18	Q V
14+35	0.0927	0.19	Q V
14+40	0.0940	0.19	Q V
14+45	0.0953	0.20	Q V
14+50	0.0967	0.20	Q V
14+55	0.0982	0.21	Q V
15+ 0	0.0997	0.22	Q V
15+ 5	0.1013	0.23	Q V
15+10	0.1030	0.24	Q V
15+15	0.1047	0.26	Q V
15+20	0.1066	0.27	Q V
15+25	0.1081	0.23	Q V
15+30	0.1096	0.21	Q V
15+35	0.1112	0.23	Q V
15+40	0.1129	0.26	Q V
15+45	0.1151	0.31	Q V
15+50	0.1176	0.36	Q V
15+55	0.1218	0.61	Q V
16+ 0	0.1296	1.14	Q V
16+ 5	0.1681	5.59	Q V
16+10	0.1904	3.23	Q V
16+15	0.1934	0.44	Q V
16+20	0.1951	0.25	Q V
16+25	0.1970	0.26	Q V
16+30	0.1988	0.26	Q V
16+35	0.2004	0.24	Q V
16+40	0.2019	0.22	Q V
16+45	0.2033	0.20	Q V
16+50	0.2046	0.19	Q V
16+55	0.2058	0.18	Q V
17+ 0	0.2070	0.17	Q V
17+ 5	0.2081	0.16	Q V
17+10	0.2092	0.15	Q V
17+15	0.2102	0.15	Q V

AREAE

17+20	0.2112	0.14	Q	|	|	| V	|
17+25	0.2121	0.14	Q	|	|	| V	|
17+30	0.2130	0.13	Q	|	|	| V	|
17+35	0.2139	0.13	Q	|	|	| V	|
17+40	0.2148	0.12	Q	|	|	| V	|
17+45	0.2156	0.12	Q	|	|	| V	|
17+50	0.2164	0.12	Q	|	|	| V	|
17+55	0.2172	0.11	Q	|	|	| V	|
18+ 0	0.2180	0.11	Q	|	|	| V	|
18+ 5	0.2187	0.11	Q	|	|	| V	|
18+10	0.2194	0.10	Q	|	|	| V	|
18+15	0.2201	0.10	Q	|	|	| V	|
18+20	0.2207	0.10	Q	|	|	| V	|
18+25	0.2214	0.09	Q	|	|	| V	|
18+30	0.2220	0.09	Q	|	|	| V	|
18+35	0.2226	0.09	Q	|	|	| V	|
18+40	0.2232	0.09	Q	|	|	| V	|
18+45	0.2238	0.09	Q	|	|	| V	|
18+50	0.2244	0.09	Q	|	|	| V	|
18+55	0.2250	0.08	Q	|	|	| V	|
19+ 0	0.2256	0.08	Q	|	|	| V	|
19+ 5	0.2261	0.08	Q	|	|	| V	|
19+10	0.2267	0.08	Q	|	|	| V	|
19+15	0.2272	0.08	Q	|	|	| V	|
19+20	0.2277	0.08	Q	|	|	| V	|
19+25	0.2283	0.08	Q	|	|	| V	|
19+30	0.2288	0.08	Q	|	|	| V	|
19+35	0.2293	0.07	Q	|	|	| V	|
19+40	0.2298	0.07	Q	|	|	| V	|
19+45	0.2303	0.07	Q	|	|	| V	|
19+50	0.2308	0.07	Q	|	|	| V	|
19+55	0.2313	0.07	Q	|	|	| V	|
20+ 0	0.2317	0.07	Q	|	|	| V	|
20+ 5	0.2322	0.07	Q	|	|	| V	|
20+10	0.2327	0.07	Q	|	|	| V	|
20+15	0.2331	0.07	Q	|	|	| V	|
20+20	0.2336	0.07	Q	|	|	| V	|
20+25	0.2341	0.07	Q	|	|	| V	|
20+30	0.2345	0.06	Q	|	|	| V	|
20+35	0.2349	0.06	Q	|	|	| V	|
20+40	0.2354	0.06	Q	|	|	| V	|
20+45	0.2358	0.06	Q	|	|	| V	|
20+50	0.2362	0.06	Q	|	|	| V	|
20+55	0.2367	0.06	Q	|	|	| V	|
21+ 0	0.2371	0.06	Q	|	|	| V	|
21+ 5	0.2375	0.06	Q	|	|	| V	|
21+10	0.2379	0.06	Q	|	|	| V	|
21+15	0.2383	0.06	Q	|	|	| V	|
21+20	0.2387	0.06	Q	|	|	| V	|
21+25	0.2391	0.06	Q	|	|	| V	|
21+30	0.2395	0.06	Q	|	|	| V	|
21+35	0.2399	0.06	Q	|	|	| V	|
21+40	0.2403	0.06	Q	|	|	| V	|
21+45	0.2407	0.06	Q	|	|	| V	|
21+50	0.2411	0.06	Q	|	|	| V	|
21+55	0.2415	0.06	Q	|	|	| V	|
22+ 0	0.2418	0.05	Q	|	|	| V	|
22+ 5	0.2422	0.05	Q	|	|	| V	|
22+10	0.2426	0.05	Q	|	|	| V	|
22+15	0.2429	0.05	Q	|	|	| V	|
22+20	0.2433	0.05	Q	|	|	| V	|
22+25	0.2437	0.05	Q	|	|	| V	|
22+30	0.2440	0.05	Q	|	|	| V	|
22+35	0.2444	0.05	Q	|	|	| V	|
22+40	0.2447	0.05	Q	|	|	| V	|
22+45	0.2451	0.05	Q	|	|	| V	|
22+50	0.2454	0.05	Q	|	|	| V	|
22+55	0.2458	0.05	Q	|	|	| V	|
23+ 0	0.2461	0.05	Q	|	|	| V	|
23+ 5	0.2465	0.05	Q	|	|	| V	|
23+10	0.2468	0.05	Q	|	|	| V	|
23+15	0.2472	0.05	Q	|	|	| V	|
23+20	0.2475	0.05	Q	|	|	| V	|
23+25	0.2478	0.05	Q	|	|	| V	|
23+30	0.2482	0.05	Q	|	|	| V	|
23+35	0.2485	0.05	Q	|	|	| V	|
23+40	0.2488	0.05	Q	|	|	| V	|
23+45	0.2491	0.05	Q	|	|	| V	|
23+50	0.2495	0.05	Q	|	|	| V	|
23+55	0.2498	0.05	Q	|	|	| V	|
24+ 0	0.2501	0.05	Q	|	|	| V	|

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

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Study date 02/26/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA F
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
3.38	1	0.78
Rainfall data for year 2		
3.38	6	1.20
Rainfall data for year 2		
3.38	24	2.18
Rainfall data for year 100		
3.38	1	1.27
Rainfall data for year 100		
3.38	6	2.86
Rainfall data for year 100		
3.38	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
50.0	70.0	3.38	1.000	0.532	1.000	0.532

Area-averaged adjusted loss rate Fm (In/Hr) = 0.532

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
3.38	1.000	50.0	70.0	4.29	0.417

Area-averaged catchment yield fraction, Y = 0.417
Area-averaged low loss fraction, Yb = 0.583

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Watercourse length = 940.00(Ft.)
Length from concentration point to centroid = 210.00(Ft.)
Elevation difference along watercourse = 102.80(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 3.38(Ac.)
Catchment Lag time = 0.033 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 254.1798
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.532(In/Hr)
Average low loss rate fraction (Yb) = 0.583 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 3.38(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.603(In)
30-minute factor = 1.000 Adjusted rainfall = 1.031(In)
1-hour factor = 1.000 Adjusted rainfall = 1.270(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 40.88 (CFS))	
1	51.621	21.101
2	96.265	18.249
3	100.000	1.527

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6025	0.6025
2	0.7418	0.1393
3	0.8378	0.0960
4	0.9133	0.0755
5	0.9765	0.0632
6	1.0314	0.0549
7	1.0802	0.0488
8	1.1244	0.0442
9	1.1648	0.0404
10	1.2022	0.0374
11	1.2371	0.0349
12	1.2698	0.0327
13	1.3167	0.0469
14	1.3617	0.0450
15	1.4049	0.0432
16	1.4466	0.0417
17	1.4869	0.0403
18	1.5259	0.0390
19	1.5638	0.0379
20	1.6006	0.0368
21	1.6364	0.0358
22	1.6712	0.0349
23	1.7052	0.0340
24	1.7385	0.0332
25	1.7709	0.0325
26	1.8027	0.0318
27	1.8338	0.0311
28	1.8642	0.0305
29	1.8941	0.0299
30	1.9235	0.0293
31	1.9523	0.0288
32	1.9805	0.0283
33	2.0084	0.0278
34	2.0357	0.0274
35	2.0626	0.0269
36	2.0891	0.0265
37	2.1152	0.0261
38	2.1410	0.0257
39	2.1663	0.0253
40	2.1913	0.0250
41	2.2159	0.0247
42	2.2403	0.0243
43	2.2643	0.0240
44	2.2880	0.0237
45	2.3114	0.0234
46	2.3345	0.0231
47	2.3574	0.0229

		AREAF
48	2.3800	0.0226
49	2.4023	0.0223
50	2.4244	0.0221
51	2.4463	0.0219
52	2.4679	0.0216
53	2.4893	0.0214
54	2.5105	0.0212
55	2.5314	0.0210
56	2.5522	0.0208
57	2.5727	0.0205
58	2.5931	0.0204
59	2.6132	0.0202
60	2.6332	0.0200
61	2.6530	0.0198
62	2.6726	0.0196
63	2.6921	0.0194
64	2.7113	0.0193
65	2.7305	0.0191
66	2.7494	0.0190
67	2.7682	0.0188
68	2.7869	0.0186
69	2.8053	0.0185
70	2.8237	0.0183
71	2.8419	0.0182
72	2.8600	0.0181
73	2.8768	0.0168
74	2.8934	0.0167
75	2.9099	0.0165
76	2.9263	0.0164
77	2.9426	0.0163
78	2.9588	0.0162
79	2.9748	0.0160
80	2.9907	0.0159
81	3.0065	0.0158
82	3.0222	0.0157
83	3.0378	0.0156
84	3.0533	0.0155
85	3.0686	0.0154
86	3.0839	0.0153
87	3.0991	0.0152
88	3.1141	0.0151
89	3.1291	0.0150
90	3.1440	0.0149
91	3.1587	0.0148
92	3.1734	0.0147
93	3.1880	0.0146
94	3.2025	0.0145
95	3.2169	0.0144
96	3.2313	0.0143
97	3.2455	0.0142
98	3.2596	0.0142
99	3.2737	0.0141
100	3.2877	0.0140
101	3.3016	0.0139
102	3.3154	0.0138
103	3.3292	0.0138
104	3.3429	0.0137
105	3.3565	0.0136
106	3.3700	0.0135
107	3.3835	0.0135
108	3.3968	0.0134
109	3.4101	0.0133
110	3.4234	0.0132
111	3.4365	0.0132
112	3.4497	0.0131
113	3.4627	0.0130
114	3.4757	0.0130
115	3.4886	0.0129
116	3.5014	0.0128
117	3.5142	0.0128
118	3.5269	0.0127
119	3.5395	0.0127
120	3.5521	0.0126
121	3.5647	0.0125
122	3.5771	0.0125
123	3.5895	0.0124
124	3.6019	0.0124
125	3.6142	0.0123
126	3.6264	0.0122
127	3.6386	0.0122
128	3.6507	0.0121
129	3.6628	0.0121
130	3.6748	0.0120
131	3.6868	0.0120

		AREAF
132	3.6987	0.0119
133	3.7106	0.0119
134	3.7224	0.0118
135	3.7341	0.0118
136	3.7459	0.0117
137	3.7575	0.0117
138	3.7691	0.0116
139	3.7807	0.0116
140	3.7922	0.0115
141	3.8037	0.0115
142	3.8151	0.0114
143	3.8265	0.0114
144	3.8378	0.0113
145	3.8491	0.0113
146	3.8603	0.0112
147	3.8715	0.0112
148	3.8827	0.0112
149	3.8938	0.0111
150	3.9049	0.0111
151	3.9159	0.0110
152	3.9269	0.0110
153	3.9378	0.0109
154	3.9487	0.0109
155	3.9596	0.0109
156	3.9704	0.0108
157	3.9812	0.0108
158	3.9919	0.0107
159	4.0026	0.0107
160	4.0133	0.0107
161	4.0239	0.0106
162	4.0345	0.0106
163	4.0450	0.0105
164	4.0555	0.0105
165	4.0660	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0972	0.0104
169	4.1075	0.0103
170	4.1178	0.0103
171	4.1281	0.0103
172	4.1383	0.0102
173	4.1485	0.0102
174	4.1587	0.0102
175	4.1688	0.0101
176	4.1789	0.0101
177	4.1889	0.0101
178	4.1990	0.0100
179	4.2090	0.0100
180	4.2189	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2486	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2780	0.0098
187	4.2878	0.0097
188	4.2975	0.0097
189	4.3072	0.0097
190	4.3168	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3456	0.0096
194	4.3551	0.0095
195	4.3647	0.0095
196	4.3741	0.0095
197	4.3836	0.0095
198	4.3930	0.0094
199	4.4024	0.0094
200	4.4118	0.0094
201	4.4211	0.0093
202	4.4305	0.0093
203	4.4397	0.0093
204	4.4490	0.0093
205	4.4583	0.0092
206	4.4675	0.0092
207	4.4767	0.0092
208	4.4858	0.0092
209	4.4950	0.0091
210	4.5041	0.0091
211	4.5132	0.0091
212	4.5222	0.0091
213	4.5313	0.0090
214	4.5403	0.0090
215	4.5493	0.0090

		AREAF
216	4.5582	0.0090
217	4.5672	0.0089
218	4.5761	0.0089
219	4.5850	0.0089
220	4.5939	0.0089
221	4.6027	0.0088
222	4.6115	0.0088
223	4.6203	0.0088
224	4.6291	0.0088
225	4.6379	0.0088
226	4.6466	0.0087
227	4.6553	0.0087
228	4.6640	0.0087
229	4.6727	0.0087
230	4.6813	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7157	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7497	0.0085
239	4.7582	0.0085
240	4.7666	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7918	0.0084
244	4.8002	0.0084
245	4.8085	0.0083
246	4.8168	0.0083
247	4.8251	0.0083
248	4.8334	0.0083
249	4.8417	0.0083
250	4.8499	0.0082
251	4.8581	0.0082
252	4.8663	0.0082
253	4.8745	0.0082
254	4.8827	0.0082
255	4.8908	0.0081
256	4.8989	0.0081
257	4.9071	0.0081
258	4.9151	0.0081
259	4.9232	0.0081
260	4.9313	0.0081
261	4.9393	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9633	0.0080
265	4.9713	0.0080
266	4.9792	0.0080
267	4.9872	0.0079
268	4.9951	0.0079
269	5.0030	0.0079
270	5.0109	0.0079
271	5.0187	0.0079
272	5.0266	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0578	0.0078
277	5.0656	0.0078
278	5.0733	0.0078
279	5.0811	0.0077
280	5.0888	0.0077
281	5.0965	0.0077
282	5.1042	0.0077
283	5.1119	0.0077
284	5.1195	0.0077
285	5.1271	0.0076
286	5.1348	0.0076
287	5.1424	0.0076
288	5.1500	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0044	0.0032
2	0.0076	0.0044	0.0032
3	0.0076	0.0045	0.0032
4	0.0077	0.0045	0.0032
5	0.0077	0.0045	0.0032
6	0.0077	0.0045	0.0032

	AREAF		
7	0.0077	0.0045	0.0032
8	0.0078	0.0045	0.0032
9	0.0078	0.0045	0.0032
10	0.0078	0.0045	0.0033
11	0.0078	0.0046	0.0033
12	0.0078	0.0046	0.0033
13	0.0079	0.0046	0.0033
14	0.0079	0.0046	0.0033
15	0.0079	0.0046	0.0033
16	0.0080	0.0046	0.0033
17	0.0080	0.0047	0.0033
18	0.0080	0.0047	0.0033
19	0.0080	0.0047	0.0034
20	0.0081	0.0047	0.0034
21	0.0081	0.0047	0.0034
22	0.0081	0.0047	0.0034
23	0.0081	0.0047	0.0034
24	0.0082	0.0048	0.0034
25	0.0082	0.0048	0.0034
26	0.0082	0.0048	0.0034
27	0.0083	0.0048	0.0034
28	0.0083	0.0048	0.0035
29	0.0083	0.0048	0.0035
30	0.0083	0.0049	0.0035
31	0.0084	0.0049	0.0035
32	0.0084	0.0049	0.0035
33	0.0084	0.0049	0.0035
34	0.0085	0.0049	0.0035
35	0.0085	0.0050	0.0035
36	0.0085	0.0050	0.0036
37	0.0086	0.0050	0.0036
38	0.0086	0.0050	0.0036
39	0.0086	0.0050	0.0036
40	0.0086	0.0050	0.0036
41	0.0087	0.0051	0.0036
42	0.0087	0.0051	0.0036
43	0.0088	0.0051	0.0037
44	0.0088	0.0051	0.0037
45	0.0088	0.0051	0.0037
46	0.0088	0.0052	0.0037
47	0.0089	0.0052	0.0037
48	0.0089	0.0052	0.0037
49	0.0090	0.0052	0.0037
50	0.0090	0.0052	0.0037
51	0.0090	0.0053	0.0038
52	0.0091	0.0053	0.0038
53	0.0091	0.0053	0.0038
54	0.0091	0.0053	0.0038
55	0.0092	0.0054	0.0038
56	0.0092	0.0054	0.0038
57	0.0093	0.0054	0.0039
58	0.0093	0.0054	0.0039
59	0.0093	0.0054	0.0039
60	0.0094	0.0055	0.0039
61	0.0094	0.0055	0.0039
62	0.0095	0.0055	0.0039
63	0.0095	0.0055	0.0040
64	0.0095	0.0056	0.0040
65	0.0096	0.0056	0.0040
66	0.0096	0.0056	0.0040
67	0.0097	0.0056	0.0040
68	0.0097	0.0057	0.0041
69	0.0098	0.0057	0.0041
70	0.0098	0.0057	0.0041
71	0.0099	0.0058	0.0041
72	0.0099	0.0058	0.0041
73	0.0100	0.0058	0.0042
74	0.0100	0.0058	0.0042
75	0.0101	0.0059	0.0042
76	0.0101	0.0059	0.0042
77	0.0102	0.0059	0.0042
78	0.0102	0.0059	0.0043
79	0.0103	0.0060	0.0043
80	0.0103	0.0060	0.0043
81	0.0104	0.0060	0.0043
82	0.0104	0.0061	0.0043
83	0.0105	0.0061	0.0044
84	0.0105	0.0061	0.0044
85	0.0106	0.0062	0.0044
86	0.0106	0.0062	0.0044
87	0.0107	0.0062	0.0045
88	0.0107	0.0063	0.0045
89	0.0108	0.0063	0.0045
90	0.0109	0.0063	0.0045

91	0.0109	0.0064	0.0046
92	0.0110	0.0064	0.0046
93	0.0111	0.0065	0.0046
94	0.0111	0.0065	0.0046
95	0.0112	0.0065	0.0047
96	0.0112	0.0066	0.0047
97	0.0113	0.0066	0.0047
98	0.0114	0.0066	0.0047
99	0.0115	0.0067	0.0048
100	0.0115	0.0067	0.0048
101	0.0116	0.0068	0.0048
102	0.0117	0.0068	0.0049
103	0.0118	0.0069	0.0049
104	0.0118	0.0069	0.0049
105	0.0119	0.0069	0.0050
106	0.0120	0.0070	0.0050
107	0.0121	0.0070	0.0050
108	0.0121	0.0071	0.0051
109	0.0122	0.0071	0.0051
110	0.0123	0.0072	0.0051
111	0.0124	0.0072	0.0052
112	0.0125	0.0073	0.0052
113	0.0126	0.0073	0.0053
114	0.0127	0.0074	0.0053
115	0.0128	0.0074	0.0053
116	0.0128	0.0075	0.0054
117	0.0130	0.0076	0.0054
118	0.0130	0.0076	0.0054
119	0.0132	0.0077	0.0055
120	0.0132	0.0077	0.0055
121	0.0134	0.0078	0.0056
122	0.0135	0.0078	0.0056
123	0.0136	0.0079	0.0057
124	0.0137	0.0080	0.0057
125	0.0138	0.0081	0.0058
126	0.0139	0.0081	0.0058
127	0.0141	0.0082	0.0059
128	0.0142	0.0082	0.0059
129	0.0143	0.0083	0.0060
130	0.0144	0.0084	0.0060
131	0.0146	0.0085	0.0061
132	0.0147	0.0086	0.0061
133	0.0149	0.0087	0.0062
134	0.0150	0.0087	0.0062
135	0.0152	0.0088	0.0063
136	0.0153	0.0089	0.0064
137	0.0155	0.0090	0.0065
138	0.0156	0.0091	0.0065
139	0.0158	0.0092	0.0066
140	0.0159	0.0093	0.0066
141	0.0162	0.0094	0.0067
142	0.0163	0.0095	0.0068
143	0.0165	0.0096	0.0069
144	0.0167	0.0097	0.0069
145	0.0181	0.0105	0.0075
146	0.0182	0.0106	0.0076
147	0.0185	0.0108	0.0077
148	0.0186	0.0109	0.0078
149	0.0190	0.0110	0.0079
150	0.0191	0.0111	0.0080
151	0.0194	0.0113	0.0081
152	0.0196	0.0114	0.0082
153	0.0200	0.0116	0.0083
154	0.0202	0.0118	0.0084
155	0.0205	0.0120	0.0086
156	0.0208	0.0121	0.0087
157	0.0212	0.0123	0.0088
158	0.0214	0.0125	0.0089
159	0.0219	0.0127	0.0091
160	0.0221	0.0129	0.0092
161	0.0226	0.0132	0.0094
162	0.0229	0.0133	0.0095
163	0.0234	0.0136	0.0098
164	0.0237	0.0138	0.0099
165	0.0243	0.0142	0.0101
166	0.0247	0.0144	0.0103
167	0.0253	0.0148	0.0106
168	0.0257	0.0150	0.0107
169	0.0265	0.0154	0.0111
170	0.0269	0.0157	0.0112
171	0.0278	0.0162	0.0116
172	0.0283	0.0165	0.0118
173	0.0293	0.0171	0.0122
174	0.0299	0.0174	0.0125

175	0.0311	0.0181	0.0130
176	0.0318	0.0185	0.0132
177	0.0332	0.0194	0.0139
178	0.0340	0.0198	0.0142
179	0.0358	0.0209	0.0149
180	0.0368	0.0214	0.0153
181	0.0390	0.0227	0.0163
182	0.0403	0.0235	0.0168
183	0.0432	0.0252	0.0180
184	0.0450	0.0262	0.0188
185	0.0327	0.0191	0.0136
186	0.0349	0.0203	0.0145
187	0.0404	0.0236	0.0169
188	0.0442	0.0257	0.0184
189	0.0549	0.0320	0.0229
190	0.0632	0.0369	0.0264
191	0.0960	0.0444	0.0516
192	0.1393	0.0444	0.0949
193	0.6025	0.0444	0.5582
194	0.0755	0.0440	0.0315
195	0.0488	0.0285	0.0204
196	0.0374	0.0218	0.0156
197	0.0469	0.0273	0.0196
198	0.0417	0.0243	0.0174
199	0.0379	0.0221	0.0158
200	0.0349	0.0203	0.0145
201	0.0325	0.0189	0.0135
202	0.0305	0.0178	0.0127
203	0.0288	0.0168	0.0120
204	0.0274	0.0159	0.0114
205	0.0261	0.0152	0.0109
206	0.0250	0.0146	0.0104
207	0.0240	0.0140	0.0100
208	0.0231	0.0135	0.0096
209	0.0223	0.0130	0.0093
210	0.0216	0.0126	0.0090
211	0.0210	0.0122	0.0087
212	0.0204	0.0119	0.0085
213	0.0198	0.0115	0.0083
214	0.0193	0.0112	0.0080
215	0.0188	0.0110	0.0078
216	0.0183	0.0107	0.0077
217	0.0168	0.0098	0.0070
218	0.0164	0.0096	0.0068
219	0.0160	0.0093	0.0067
220	0.0157	0.0091	0.0065
221	0.0154	0.0090	0.0064
222	0.0151	0.0088	0.0063
223	0.0148	0.0086	0.0062
224	0.0145	0.0085	0.0060
225	0.0142	0.0083	0.0059
226	0.0140	0.0082	0.0058
227	0.0138	0.0080	0.0057
228	0.0135	0.0079	0.0056
229	0.0133	0.0078	0.0056
230	0.0131	0.0076	0.0055
231	0.0129	0.0075	0.0054
232	0.0127	0.0074	0.0053
233	0.0125	0.0073	0.0052
234	0.0124	0.0072	0.0052
235	0.0122	0.0071	0.0051
236	0.0120	0.0070	0.0050
237	0.0119	0.0069	0.0049
238	0.0117	0.0068	0.0049
239	0.0116	0.0067	0.0048
240	0.0114	0.0067	0.0048
241	0.0113	0.0066	0.0047
242	0.0112	0.0065	0.0047
243	0.0110	0.0064	0.0046
244	0.0109	0.0064	0.0045
245	0.0108	0.0063	0.0045
246	0.0107	0.0062	0.0044
247	0.0105	0.0061	0.0044
248	0.0104	0.0061	0.0044
249	0.0103	0.0060	0.0043
250	0.0102	0.0060	0.0043
251	0.0101	0.0059	0.0042
252	0.0100	0.0058	0.0042
253	0.0099	0.0058	0.0041
254	0.0098	0.0057	0.0041
255	0.0097	0.0057	0.0041
256	0.0097	0.0056	0.0040
257	0.0096	0.0056	0.0040
258	0.0095	0.0055	0.0040

		AREAF	
259	0.0094	0.0055	0.0039
260	0.0093	0.0054	0.0039
261	0.0092	0.0054	0.0039
262	0.0092	0.0053	0.0038
263	0.0091	0.0053	0.0038
264	0.0090	0.0053	0.0038
265	0.0089	0.0052	0.0037
266	0.0089	0.0052	0.0037
267	0.0088	0.0051	0.0037
268	0.0087	0.0051	0.0036
269	0.0087	0.0051	0.0036
270	0.0086	0.0050	0.0036
271	0.0085	0.0050	0.0036
272	0.0085	0.0049	0.0035
273	0.0084	0.0049	0.0035
274	0.0084	0.0049	0.0035
275	0.0083	0.0048	0.0035
276	0.0082	0.0048	0.0034
277	0.0082	0.0048	0.0034
278	0.0081	0.0047	0.0034
279	0.0081	0.0047	0.0034
280	0.0080	0.0047	0.0033
281	0.0080	0.0046	0.0033
282	0.0079	0.0046	0.0033
283	0.0079	0.0046	0.0033
284	0.0078	0.0046	0.0033
285	0.0078	0.0045	0.0032
286	0.0077	0.0045	0.0032
287	0.0077	0.0045	0.0032
288	0.0076	0.0044	0.0032

Total soil rain loss = 2.65(In)
Total effective rainfall = 2.50(In)
Peak flow rate in flood hydrograph = 13.59(CFS)

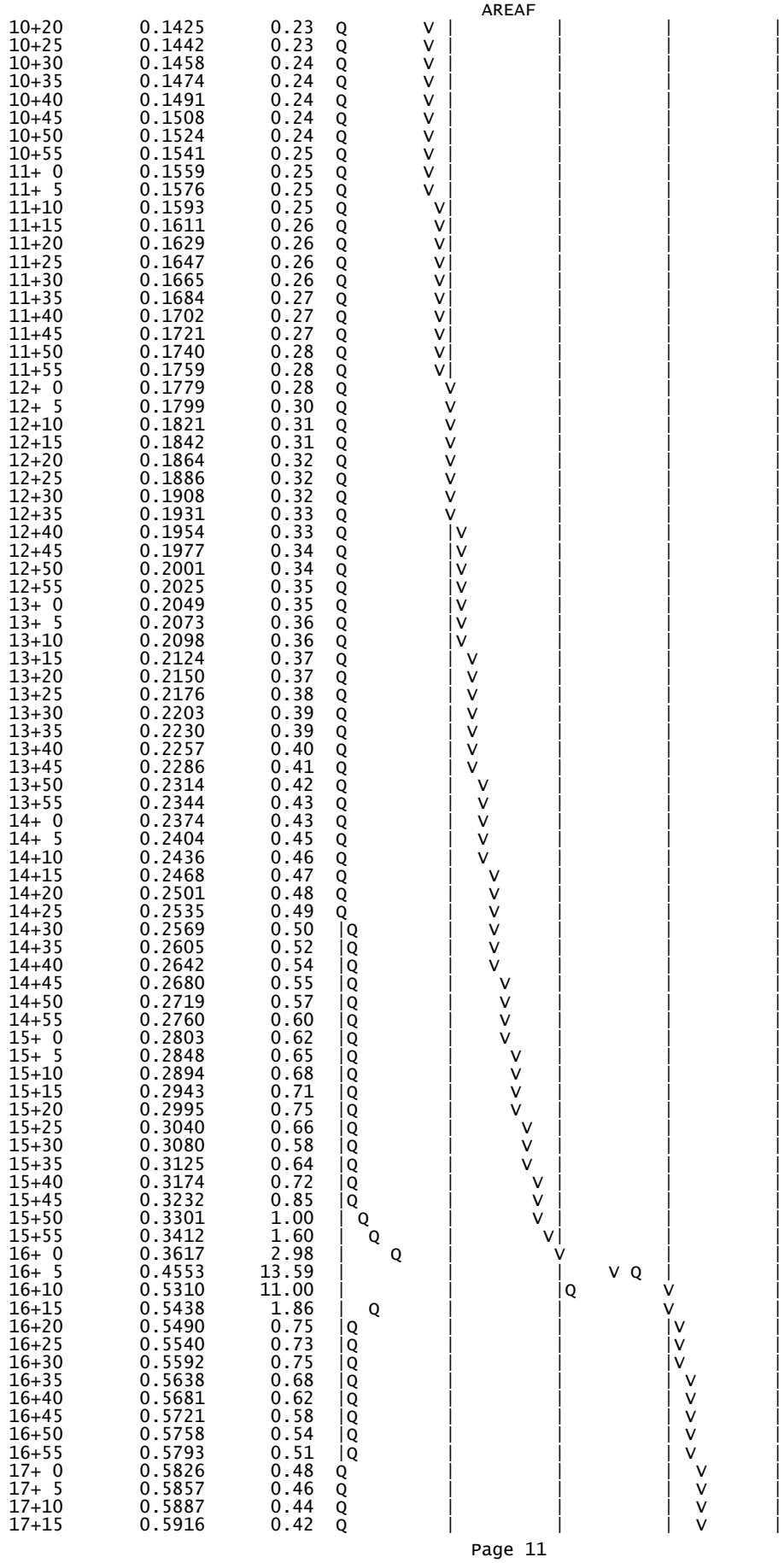
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0005	0.07	Q	|	|	|	|
0+10	0.0013	0.12	Q	|	|	|	|
0+15	0.0022	0.13	Q	|	|	|	|
0+20	0.0031	0.13	Q	|	|	|	|
0+25	0.0040	0.13	Q	|	|	|	|
0+30	0.0049	0.13	Q	|	|	|	|
0+35	0.0058	0.13	Q	|	|	|	|
0+40	0.0067	0.13	Q	|	|	|	|
0+45	0.0076	0.13	Q	|	|	|	|
0+50	0.0086	0.13	Q	|	|	|	|
0+55	0.0095	0.13	Q	|	|	|	|
1+ 0	0.0104	0.13	Q	|	|	|	|
1+ 5	0.0113	0.13	Q	|	|	|	|
1+10	0.0122	0.13	Q	|	|	|	|
1+15	0.0132	0.13	Q	|	|	|	|
1+20	0.0141	0.14	Q	|	|	|	|
1+25	0.0150	0.14	Q	|	|	|	|
1+30	0.0160	0.14	Q	|	|	|	|
1+35	0.0169	0.14	Q	|	|	|	|
1+40	0.0179	0.14	QV	|	|	|	|
1+45	0.0188	0.14	QV	|	|	|	|
1+50	0.0198	0.14	QV	|	|	|	|
1+55	0.0207	0.14	QV	|	|	|	|
2+ 0	0.0217	0.14	QV	|	|	|	|
2+ 5	0.0226	0.14	QV	|	|	|	|
2+10	0.0236	0.14	QV	|	|	|	|
2+15	0.0246	0.14	QV	|	|	|	|
2+20	0.0255	0.14	QV	|	|	|	|
2+25	0.0265	0.14	QV	|	|	|	|
2+30	0.0275	0.14	QV	|	|	|	|
2+35	0.0285	0.14	QV	|	|	|	|
2+40	0.0295	0.14	QV	|	|	|	|
2+45	0.0305	0.14	QV	|	|	|	|
2+50	0.0314	0.14	QV	|	|	|	|
2+55	0.0324	0.14	QV	|	|	|	|
3+ 0	0.0334	0.15	QV	|	|	|	|
3+ 5	0.0344	0.15	QV	|	|	|	|
3+10	0.0354	0.15	Q V	|	|	|	|
3+15	0.0365	0.15	Q V	|	|	|	|

3+20	0.0375	0.15	Q V				
3+25	0.0385	0.15	Q V				
3+30	0.0395	0.15	Q V				
3+35	0.0405	0.15	Q V				
3+40	0.0416	0.15	Q V				
3+45	0.0426	0.15	Q V				
3+50	0.0436	0.15	Q V				
3+55	0.0447	0.15	Q V				
4+ 0	0.0457	0.15	Q V				
4+ 5	0.0468	0.15	Q V				
4+10	0.0478	0.15	Q V				
4+15	0.0489	0.15	Q V				
4+20	0.0500	0.15	Q V				
4+25	0.0510	0.15	Q V				
4+30	0.0521	0.16	Q V				
4+35	0.0532	0.16	Q V				
4+40	0.0542	0.16	Q V				
4+45	0.0553	0.16	Q V				
4+50	0.0564	0.16	Q V				
4+55	0.0575	0.16	Q V				
5+ 0	0.0586	0.16	Q V				
5+ 5	0.0597	0.16	Q V				
5+10	0.0608	0.16	Q V				
5+15	0.0619	0.16	Q V				
5+20	0.0631	0.16	Q V				
5+25	0.0642	0.16	Q V				
5+30	0.0653	0.16	Q V				
5+35	0.0664	0.16	Q V				
5+40	0.0676	0.17	Q V				
5+45	0.0687	0.17	Q V				
5+50	0.0699	0.17	Q V				
5+55	0.0710	0.17	Q V				
6+ 0	0.0722	0.17	Q V				
6+ 5	0.0734	0.17	Q V				
6+10	0.0745	0.17	Q V				
6+15	0.0757	0.17	Q V				
6+20	0.0769	0.17	Q V				
6+25	0.0781	0.17	Q V				
6+30	0.0793	0.17	Q V				
6+35	0.0805	0.17	Q V				
6+40	0.0817	0.18	Q V				
6+45	0.0829	0.18	Q V				
6+50	0.0841	0.18	Q V				
6+55	0.0853	0.18	Q V				
7+ 0	0.0866	0.18	Q V				
7+ 5	0.0878	0.18	Q V				
7+10	0.0891	0.18	Q V				
7+15	0.0903	0.18	Q V				
7+20	0.0916	0.18	Q V				
7+25	0.0928	0.18	Q V				
7+30	0.0941	0.18	Q V				
7+35	0.0954	0.19	Q V				
7+40	0.0967	0.19	Q V				
7+45	0.0980	0.19	Q V				
7+50	0.0993	0.19	Q V				
7+55	0.1006	0.19	Q V				
8+ 0	0.1019	0.19	Q V				
8+ 5	0.1032	0.19	Q V				
8+10	0.1046	0.19	Q V				
8+15	0.1059	0.19	Q V				
8+20	0.1072	0.20	Q V				
8+25	0.1086	0.20	Q V				
8+30	0.1100	0.20	Q V				
8+35	0.1113	0.20	Q V				
8+40	0.1127	0.20	Q V				
8+45	0.1141	0.20	Q V				
8+50	0.1155	0.20	Q V				
8+55	0.1169	0.20	Q V				
9+ 0	0.1184	0.21	Q V				
9+ 5	0.1198	0.21	Q V				
9+10	0.1212	0.21	Q V				
9+15	0.1227	0.21	Q V				
9+20	0.1241	0.21	Q V				
9+25	0.1256	0.21	Q V				
9+30	0.1271	0.22	Q V				
9+35	0.1286	0.22	Q V				
9+40	0.1301	0.22	Q V				
9+45	0.1316	0.22	Q V				
9+50	0.1331	0.22	Q V				
9+55	0.1347	0.22	Q V				
10+ 0	0.1362	0.23	Q V				
10+ 5	0.1378	0.23	Q V				
10+10	0.1394	0.23	Q V				
10+15	0.1409	0.23	Q V				



10+20	0.1425	0.23	Q V
10+25	0.1442	0.23	Q V
10+30	0.1458	0.24	Q V
10+35	0.1474	0.24	Q V
10+40	0.1491	0.24	Q V
10+45	0.1508	0.24	Q V
10+50	0.1524	0.24	Q V
10+55	0.1541	0.25	Q V
11+ 0	0.1559	0.25	Q V
11+ 5	0.1576	0.25	Q V
11+10	0.1593	0.25	Q V
11+15	0.1611	0.26	Q V
11+20	0.1629	0.26	Q V
11+25	0.1647	0.26	Q V
11+30	0.1665	0.26	Q V
11+35	0.1684	0.27	Q V
11+40	0.1702	0.27	Q V
11+45	0.1721	0.27	Q V
11+50	0.1740	0.28	Q V
11+55	0.1759	0.28	Q V
12+ 0	0.1779	0.28	Q V
12+ 5	0.1799	0.30	Q V
12+10	0.1821	0.31	Q V
12+15	0.1842	0.31	Q V
12+20	0.1864	0.32	Q V
12+25	0.1886	0.32	Q V
12+30	0.1908	0.32	Q V
12+35	0.1931	0.33	Q V
12+40	0.1954	0.33	Q V
12+45	0.1977	0.34	Q V
12+50	0.2001	0.34	Q V
12+55	0.2025	0.35	Q V
13+ 0	0.2049	0.35	Q V
13+ 5	0.2073	0.36	Q V
13+10	0.2098	0.36	Q V
13+15	0.2124	0.37	Q V
13+20	0.2150	0.37	Q V
13+25	0.2176	0.38	Q V
13+30	0.2203	0.39	Q V
13+35	0.2230	0.39	Q V
13+40	0.2257	0.40	Q V
13+45	0.2286	0.41	Q V
13+50	0.2314	0.42	Q V
13+55	0.2344	0.43	Q V
14+ 0	0.2374	0.43	Q V
14+ 5	0.2404	0.45	Q V
14+10	0.2436	0.46	Q V
14+15	0.2468	0.47	Q V
14+20	0.2501	0.48	Q V
14+25	0.2535	0.49	Q V
14+30	0.2569	0.50	Q V
14+35	0.2605	0.52	Q V
14+40	0.2642	0.54	Q V
14+45	0.2680	0.55	Q V
14+50	0.2719	0.57	Q V
14+55	0.2760	0.60	Q V
15+ 0	0.2803	0.62	Q V
15+ 5	0.2848	0.65	Q V
15+10	0.2894	0.68	Q V
15+15	0.2943	0.71	Q V
15+20	0.2995	0.75	Q V
15+25	0.3040	0.66	Q V
15+30	0.3080	0.58	Q V
15+35	0.3125	0.64	Q V
15+40	0.3174	0.72	Q V
15+45	0.3232	0.85	Q V
15+50	0.3301	1.00	Q V
15+55	0.3412	1.60	Q V
16+ 0	0.3617	2.98	Q V
16+ 5	0.4553	13.59	V Q
16+10	0.5310	11.00	Q V
16+15	0.5438	1.86	Q V
16+20	0.5490	0.75	Q V
16+25	0.5540	0.73	Q V
16+30	0.5592	0.75	Q V
16+35	0.5638	0.68	Q V
16+40	0.5681	0.62	Q V
16+45	0.5721	0.58	Q V
16+50	0.5758	0.54	Q V
16+55	0.5793	0.51	Q V
17+ 0	0.5826	0.48	Q V
17+ 5	0.5857	0.46	Q V
17+10	0.5887	0.44	Q V
17+15	0.5916	0.42	Q V

17+20	0.5944	0.40	Q				V
17+25	0.5970	0.39	Q				V
17+30	0.5996	0.38	Q				V
17+35	0.6021	0.36	Q				V
17+40	0.6046	0.35	Q				V
17+45	0.6069	0.34	Q				V
17+50	0.6092	0.33	Q				V
17+55	0.6114	0.32	Q				V
18+ 0	0.6136	0.32	Q				V
18+ 5	0.6157	0.30	Q				V
18+10	0.6176	0.28	Q				V
18+15	0.6196	0.28	Q				V
18+20	0.6214	0.27	Q				V
18+25	0.6232	0.26	Q				V
18+30	0.6250	0.26	Q				V
18+35	0.6268	0.25	Q				V
18+40	0.6285	0.25	Q				V
18+45	0.6302	0.25	Q				V
18+50	0.6318	0.24	Q				V
18+55	0.6335	0.24	Q				V
19+ 0	0.6351	0.23	Q				V
19+ 5	0.6367	0.23	Q				V
19+10	0.6382	0.23	Q				V
19+15	0.6397	0.22	Q				V
19+20	0.6412	0.22	Q				V
19+25	0.6427	0.22	Q				V
19+30	0.6442	0.21	Q				V
19+35	0.6456	0.21	Q				V
19+40	0.6470	0.21	Q				V
19+45	0.6484	0.20	Q				V
19+50	0.6498	0.20	Q				V
19+55	0.6512	0.20	Q				V
20+ 0	0.6525	0.20	Q				V
20+ 5	0.6539	0.19	Q				V
20+10	0.6552	0.19	Q				V
20+15	0.6565	0.19	Q				V
20+20	0.6578	0.19	Q				V
20+25	0.6591	0.18	Q				V
20+30	0.6603	0.18	Q				V
20+35	0.6616	0.18	Q				V
20+40	0.6628	0.18	Q				V
20+45	0.6640	0.18	Q				V
20+50	0.6652	0.18	Q				V
20+55	0.6664	0.17	Q				V
21+ 0	0.6676	0.17	Q				V
21+ 5	0.6688	0.17	Q				V
21+10	0.6699	0.17	Q				V
21+15	0.6711	0.17	Q				V
21+20	0.6722	0.17	Q				V
21+25	0.6734	0.16	Q				V
21+30	0.6745	0.16	Q				V
21+35	0.6756	0.16	Q				V
21+40	0.6767	0.16	Q				V
21+45	0.6778	0.16	Q				V
21+50	0.6789	0.16	Q				V
21+55	0.6799	0.16	Q				V
22+ 0	0.6810	0.15	Q				V
22+ 5	0.6820	0.15	Q				V
22+10	0.6831	0.15	Q				V
22+15	0.6841	0.15	Q				V
22+20	0.6852	0.15	Q				V
22+25	0.6862	0.15	Q				V
22+30	0.6872	0.15	Q				V
22+35	0.6882	0.15	Q				V
22+40	0.6892	0.15	Q				V
22+45	0.6902	0.14	Q				V
22+50	0.6912	0.14	Q				V
22+55	0.6922	0.14	Q				V
23+ 0	0.6931	0.14	Q				V
23+ 5	0.6941	0.14	Q				V
23+10	0.6950	0.14	Q				V
23+15	0.6960	0.14	Q				V
23+20	0.6969	0.14	Q				V
23+25	0.6979	0.14	Q				V
23+30	0.6988	0.14	Q				V
23+35	0.6997	0.13	Q				V
23+40	0.7007	0.13	Q				V
23+45	0.7016	0.13	Q				V
23+50	0.7025	0.13	Q				V
23+55	0.7034	0.13	Q				V
24+ 0	0.7043	0.13	Q				V

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

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Study date 02/26/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-EXISTING CONDITION
AREA G
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1.36	1	0.78
Rainfall data for year 2		
1.36	6	2.18
Rainfall data for year 2		
1.36	24	2.86
Rainfall data for year 100		
1.36	1	1.20
Rainfall data for year 100		
1.36	6	1.27
Rainfall data for year 100		
1.36	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
50.0	70.0	1.36	1.000	0.532	1.000	0.532

Area-averaged adjusted loss rate Fm (In/Hr) = 0.532

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
1.36	1.000	50.0	70.0	4.29	0.417

Area-averaged catchment yield fraction, Y = 0.417
Area-averaged low loss fraction, Yb = 0.583

++
Watercourse length = 650.00(Ft.)
Length from concentration point to centroid = 200.00(Ft.)
Elevation difference along watercourse = 87.70(Ft.)
Mannings friction factor along watercourse = 0.030
Watershed area = 1.36(Ac.)
Catchment Lag time = 0.027 hours
Unit interval = 5.000 minutes

Unit interval percentage of lag time = 310.0319
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.532(In/Hr)
Average low loss rate fraction (Yb) = 0.583 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.569(In)
Computed peak 30-minute rainfall = 0.975(In)
Specified peak 1-hour rainfall = 1.200(In)
Computed peak 3-hour rainfall = 1.242(In)
Specified peak 6-hour rainfall = 1.270(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 1.36(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.569(In)
30-minute factor = 1.000 Adjusted rainfall = 0.975(In)
1-hour factor = 1.000 Adjusted rainfall = 1.200(In)
3-hour factor = 1.000 Adjusted rainfall = 1.242(In)
6-hour factor = 1.000 Adjusted rainfall = 1.270(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 16.45 (CFS))	
1	58.876	9.684
2	98.191	6.466
3	100.000	0.298

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5694	0.5694
2	0.7010	0.1316
3	0.7917	0.0907
4	0.8630	0.0714
5	0.9228	0.0598
6	0.9746	0.0519
7	1.0208	0.0461
8	1.0625	0.0417
9	1.1007	0.0382
10	1.1361	0.0353
11	1.1690	0.0330
12	1.1999	0.0309
13	1.2030	0.0030
14	1.2058	0.0028
15	1.2084	0.0026
16	1.2109	0.0025
17	1.2132	0.0023
18	1.2154	0.0022
19	1.2175	0.0021
20	1.2195	0.0020
21	1.2214	0.0019
22	1.2232	0.0018
23	1.2249	0.0017
24	1.2266	0.0017
25	1.2282	0.0016
26	1.2297	0.0015
27	1.2312	0.0015
28	1.2326	0.0014
29	1.2340	0.0014
30	1.2353	0.0013
31	1.2366	0.0013
32	1.2378	0.0012
33	1.2390	0.0012
34	1.2402	0.0012
35	1.2413	0.0011
36	1.2424	0.0011
37	1.2435	0.0011
38	1.2446	0.0010
39	1.2456	0.0010
40	1.2466	0.0010
41	1.2476	0.0010
42	1.2485	0.0010
43	1.2494	0.0009
44	1.2504	0.0009
45	1.2512	0.0009
46	1.2521	0.0009
47	1.2530	0.0009

		AREAG
48	1.2538	0.0008
49	1.2546	0.0008
50	1.2554	0.0008
51	1.2562	0.0008
52	1.2570	0.0008
53	1.2577	0.0008
54	1.2585	0.0007
55	1.2592	0.0007
56	1.2599	0.0007
57	1.2606	0.0007
58	1.2613	0.0007
59	1.2620	0.0007
60	1.2627	0.0007
61	1.2633	0.0007
62	1.2640	0.0007
63	1.2646	0.0006
64	1.2653	0.0006
65	1.2659	0.0006
66	1.2665	0.0006
67	1.2671	0.0006
68	1.2677	0.0006
69	1.2683	0.0006
70	1.2689	0.0006
71	1.2694	0.0006
72	1.2700	0.0006
73	1.2878	0.0178
74	1.3056	0.0178
75	1.3234	0.0178
76	1.3413	0.0178
77	1.3591	0.0178
78	1.3769	0.0178
79	1.3947	0.0178
80	1.4126	0.0178
81	1.4304	0.0178
82	1.4482	0.0178
83	1.4661	0.0178
84	1.4839	0.0178
85	1.5018	0.0178
86	1.5196	0.0178
87	1.5374	0.0178
88	1.5553	0.0178
89	1.5731	0.0178
90	1.5910	0.0179
91	1.6088	0.0179
92	1.6267	0.0179
93	1.6446	0.0179
94	1.6624	0.0179
95	1.6803	0.0179
96	1.6981	0.0179
97	1.7160	0.0179
98	1.7339	0.0179
99	1.7517	0.0179
100	1.7696	0.0179
101	1.7875	0.0179
102	1.8054	0.0179
103	1.8232	0.0179
104	1.8411	0.0179
105	1.8590	0.0179
106	1.8769	0.0179
107	1.8948	0.0179
108	1.9126	0.0179
109	1.9305	0.0179
110	1.9484	0.0179
111	1.9663	0.0179
112	1.9842	0.0179
113	2.0021	0.0179
114	2.0200	0.0179
115	2.0379	0.0179
116	2.0558	0.0179
117	2.0737	0.0179
118	2.0916	0.0179
119	2.1095	0.0179
120	2.1274	0.0179
121	2.1453	0.0179
122	2.1632	0.0179
123	2.1811	0.0179
124	2.1990	0.0179
125	2.2169	0.0179
126	2.2348	0.0179
127	2.2527	0.0179
128	2.2706	0.0179
129	2.2885	0.0179
130	2.3065	0.0179
131	2.3244	0.0179

		AREAG
132	2.3423	0.0179
133	2.3602	0.0179
134	2.3781	0.0179
135	2.3961	0.0179
136	2.4140	0.0179
137	2.4319	0.0179
138	2.4498	0.0179
139	2.4678	0.0179
140	2.4857	0.0179
141	2.5036	0.0179
142	2.5216	0.0179
143	2.5395	0.0179
144	2.5574	0.0179
145	2.5754	0.0179
146	2.5933	0.0179
147	2.6112	0.0179
148	2.6292	0.0179
149	2.6471	0.0179
150	2.6651	0.0179
151	2.6830	0.0179
152	2.7010	0.0179
153	2.7189	0.0179
154	2.7368	0.0179
155	2.7548	0.0179
156	2.7727	0.0179
157	2.7907	0.0180
158	2.8086	0.0180
159	2.8266	0.0180
160	2.8445	0.0180
161	2.8625	0.0180
162	2.8805	0.0180
163	2.8984	0.0180
164	2.9164	0.0180
165	2.9343	0.0180
166	2.9523	0.0180
167	2.9703	0.0180
168	2.9882	0.0180
169	3.0062	0.0180
170	3.0241	0.0180
171	3.0421	0.0180
172	3.0601	0.0180
173	3.0780	0.0180
174	3.0960	0.0180
175	3.1140	0.0180
176	3.1320	0.0180
177	3.1499	0.0180
178	3.1679	0.0180
179	3.1859	0.0180
180	3.2038	0.0180
181	3.2218	0.0180
182	3.2398	0.0180
183	3.2578	0.0180
184	3.2757	0.0180
185	3.2937	0.0180
186	3.3117	0.0180
187	3.3297	0.0180
188	3.3477	0.0180
189	3.3657	0.0180
190	3.3836	0.0180
191	3.4016	0.0180
192	3.4196	0.0180
193	3.4376	0.0180
194	3.4556	0.0180
195	3.4736	0.0180
196	3.4916	0.0180
197	3.5096	0.0180
198	3.5275	0.0180
199	3.5455	0.0180
200	3.5635	0.0180
201	3.5815	0.0180
202	3.5995	0.0180
203	3.6175	0.0180
204	3.6355	0.0180
205	3.6535	0.0180
206	3.6715	0.0180
207	3.6895	0.0180
208	3.7075	0.0180
209	3.7255	0.0180
210	3.7435	0.0180
211	3.7615	0.0180
212	3.7795	0.0180
213	3.7975	0.0180
214	3.8155	0.0180
215	3.8335	0.0180

		AREAG
216	3.8515	0.0180
217	3.8695	0.0180
218	3.8876	0.0180
219	3.9056	0.0180
220	3.9236	0.0180
221	3.9416	0.0180
222	3.9596	0.0180
223	3.9776	0.0180
224	3.9956	0.0180
225	4.0136	0.0180
226	4.0317	0.0180
227	4.0497	0.0180
228	4.0677	0.0180
229	4.0857	0.0180
230	4.1037	0.0180
231	4.1217	0.0180
232	4.1398	0.0180
233	4.1578	0.0180
234	4.1758	0.0180
235	4.1938	0.0180
236	4.2118	0.0180
237	4.2299	0.0180
238	4.2479	0.0180
239	4.2659	0.0180
240	4.2839	0.0180
241	4.3020	0.0180
242	4.3200	0.0180
243	4.3380	0.0180
244	4.3561	0.0180
245	4.3741	0.0180
246	4.3921	0.0180
247	4.4101	0.0180
248	4.4282	0.0180
249	4.4462	0.0180
250	4.4642	0.0180
251	4.4823	0.0180
252	4.5003	0.0180
253	4.5183	0.0180
254	4.5364	0.0180
255	4.5544	0.0180
256	4.5724	0.0180
257	4.5905	0.0180
258	4.6085	0.0180
259	4.6266	0.0180
260	4.6446	0.0180
261	4.6626	0.0180
262	4.6807	0.0180
263	4.6987	0.0180
264	4.7168	0.0180
265	4.7348	0.0180
266	4.7529	0.0180
267	4.7709	0.0180
268	4.7889	0.0180
269	4.8070	0.0180
270	4.8250	0.0180
271	4.8431	0.0180
272	4.8611	0.0180
273	4.8792	0.0180
274	4.8972	0.0180
275	4.9153	0.0180
276	4.9333	0.0181
277	4.9514	0.0181
278	4.9694	0.0181
279	4.9875	0.0181
280	5.0055	0.0181
281	5.0236	0.0181
282	5.0417	0.0181
283	5.0597	0.0181
284	5.0778	0.0181
285	5.0958	0.0181
286	5.1139	0.0181
287	5.1319	0.0181
288	5.1500	0.0181

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0181	0.0105	0.0075
2	0.0181	0.0105	0.0075
3	0.0181	0.0105	0.0075
4	0.0181	0.0105	0.0075
5	0.0181	0.0105	0.0075
6	0.0181	0.0105	0.0075

7	0.0181	0.0105	0.0075
8	0.0181	0.0105	0.0075
9	0.0181	0.0105	0.0075
10	0.0180	0.0105	0.0075
11	0.0180	0.0105	0.0075
12	0.0180	0.0105	0.0075
13	0.0180	0.0105	0.0075
14	0.0180	0.0105	0.0075
15	0.0180	0.0105	0.0075
16	0.0180	0.0105	0.0075
17	0.0180	0.0105	0.0075
18	0.0180	0.0105	0.0075
19	0.0180	0.0105	0.0075
20	0.0180	0.0105	0.0075
21	0.0180	0.0105	0.0075
22	0.0180	0.0105	0.0075
23	0.0180	0.0105	0.0075
24	0.0180	0.0105	0.0075
25	0.0180	0.0105	0.0075
26	0.0180	0.0105	0.0075
27	0.0180	0.0105	0.0075
28	0.0180	0.0105	0.0075
29	0.0180	0.0105	0.0075
30	0.0180	0.0105	0.0075
31	0.0180	0.0105	0.0075
32	0.0180	0.0105	0.0075
33	0.0180	0.0105	0.0075
34	0.0180	0.0105	0.0075
35	0.0180	0.0105	0.0075
36	0.0180	0.0105	0.0075
37	0.0180	0.0105	0.0075
38	0.0180	0.0105	0.0075
39	0.0180	0.0105	0.0075
40	0.0180	0.0105	0.0075
41	0.0180	0.0105	0.0075
42	0.0180	0.0105	0.0075
43	0.0180	0.0105	0.0075
44	0.0180	0.0105	0.0075
45	0.0180	0.0105	0.0075
46	0.0180	0.0105	0.0075
47	0.0180	0.0105	0.0075
48	0.0180	0.0105	0.0075
49	0.0180	0.0105	0.0075
50	0.0180	0.0105	0.0075
51	0.0180	0.0105	0.0075
52	0.0180	0.0105	0.0075
53	0.0180	0.0105	0.0075
54	0.0180	0.0105	0.0075
55	0.0180	0.0105	0.0075
56	0.0180	0.0105	0.0075
57	0.0180	0.0105	0.0075
58	0.0180	0.0105	0.0075
59	0.0180	0.0105	0.0075
60	0.0180	0.0105	0.0075
61	0.0180	0.0105	0.0075
62	0.0180	0.0105	0.0075
63	0.0180	0.0105	0.0075
64	0.0180	0.0105	0.0075
65	0.0180	0.0105	0.0075
66	0.0180	0.0105	0.0075
67	0.0180	0.0105	0.0075
68	0.0180	0.0105	0.0075
69	0.0180	0.0105	0.0075
70	0.0180	0.0105	0.0075
71	0.0180	0.0105	0.0075
72	0.0180	0.0105	0.0075
73	0.0180	0.0105	0.0075
74	0.0180	0.0105	0.0075
75	0.0180	0.0105	0.0075
76	0.0180	0.0105	0.0075
77	0.0180	0.0105	0.0075
78	0.0180	0.0105	0.0075
79	0.0180	0.0105	0.0075
80	0.0180	0.0105	0.0075
81	0.0180	0.0105	0.0075
82	0.0180	0.0105	0.0075
83	0.0180	0.0105	0.0075
84	0.0180	0.0105	0.0075
85	0.0180	0.0105	0.0075
86	0.0180	0.0105	0.0075
87	0.0180	0.0105	0.0075
88	0.0180	0.0105	0.0075
89	0.0179	0.0105	0.0075
90	0.0179	0.0105	0.0075

91	0.0179	0.0105	0.0075
92	0.0179	0.0105	0.0075
93	0.0179	0.0105	0.0075
94	0.0179	0.0105	0.0075
95	0.0179	0.0105	0.0075
96	0.0179	0.0105	0.0075
97	0.0179	0.0105	0.0075
98	0.0179	0.0105	0.0075
99	0.0179	0.0105	0.0075
100	0.0179	0.0105	0.0075
101	0.0179	0.0104	0.0075
102	0.0179	0.0104	0.0075
103	0.0179	0.0104	0.0075
104	0.0179	0.0104	0.0075
105	0.0179	0.0104	0.0075
106	0.0179	0.0104	0.0075
107	0.0179	0.0104	0.0075
108	0.0179	0.0104	0.0075
108	0.0179	0.0104	0.0075
109	0.0179	0.0104	0.0075
110	0.0179	0.0104	0.0075
111	0.0179	0.0104	0.0075
112	0.0179	0.0104	0.0075
113	0.0179	0.0104	0.0075
114	0.0179	0.0104	0.0075
115	0.0179	0.0104	0.0075
116	0.0179	0.0104	0.0075
117	0.0179	0.0104	0.0075
118	0.0179	0.0104	0.0075
119	0.0179	0.0104	0.0075
120	0.0179	0.0104	0.0075
121	0.0179	0.0104	0.0075
122	0.0179	0.0104	0.0075
123	0.0179	0.0104	0.0075
124	0.0179	0.0104	0.0075
125	0.0179	0.0104	0.0075
126	0.0179	0.0104	0.0075
127	0.0179	0.0104	0.0075
128	0.0179	0.0104	0.0075
129	0.0179	0.0104	0.0075
130	0.0179	0.0104	0.0075
131	0.0179	0.0104	0.0074
132	0.0179	0.0104	0.0074
133	0.0179	0.0104	0.0074
134	0.0178	0.0104	0.0074
135	0.0178	0.0104	0.0074
136	0.0178	0.0104	0.0074
137	0.0178	0.0104	0.0074
138	0.0178	0.0104	0.0074
139	0.0178	0.0104	0.0074
140	0.0178	0.0104	0.0074
141	0.0178	0.0104	0.0074
142	0.0178	0.0104	0.0074
143	0.0178	0.0104	0.0074
144	0.0178	0.0104	0.0074
145	0.0006	0.0003	0.0002
146	0.0006	0.0003	0.0002
147	0.0006	0.0003	0.0002
148	0.0006	0.0003	0.0002
149	0.0006	0.0004	0.0003
150	0.0006	0.0004	0.0003
151	0.0006	0.0004	0.0003
152	0.0007	0.0004	0.0003
153	0.0007	0.0004	0.0003
154	0.0007	0.0004	0.0003
155	0.0007	0.0004	0.0003
156	0.0007	0.0004	0.0003
157	0.0007	0.0004	0.0003
158	0.0008	0.0004	0.0003
159	0.0008	0.0005	0.0003
160	0.0008	0.0005	0.0003
161	0.0008	0.0005	0.0003
162	0.0009	0.0005	0.0004
163	0.0009	0.0005	0.0004
164	0.0009	0.0005	0.0004
165	0.0010	0.0006	0.0004
166	0.0010	0.0006	0.0004
167	0.0010	0.0006	0.0004
168	0.0010	0.0006	0.0004
169	0.0011	0.0006	0.0005
170	0.0011	0.0007	0.0005
171	0.0012	0.0007	0.0005
172	0.0012	0.0007	0.0005
173	0.0013	0.0008	0.0006
174	0.0014	0.0008	0.0006

175	0.0015	0.0009	0.0006
176	0.0015	0.0009	0.0006
177	0.0017	0.0010	0.0007
178	0.0017	0.0010	0.0007
179	0.0019	0.0011	0.0008
180	0.0020	0.0012	0.0008
181	0.0022	0.0013	0.0009
182	0.0023	0.0014	0.0010
183	0.0026	0.0015	0.0011
184	0.0028	0.0016	0.0012
185	0.0309	0.0180	0.0129
186	0.0330	0.0192	0.0137
187	0.0382	0.0223	0.0159
188	0.0417	0.0243	0.0174
189	0.0519	0.0302	0.0216
190	0.0598	0.0348	0.0249
191	0.0907	0.0444	0.0463
192	0.1316	0.0444	0.0872
193	0.5694	0.0444	0.5250
194	0.0714	0.0416	0.0298
195	0.0461	0.0269	0.0192
196	0.0353	0.0206	0.0147
197	0.0030	0.0018	0.0013
198	0.0025	0.0014	0.0010
199	0.0021	0.0012	0.0009
200	0.0018	0.0011	0.0008
201	0.0016	0.0009	0.0007
202	0.0014	0.0008	0.0006
203	0.0013	0.0007	0.0005
204	0.0012	0.0007	0.0005
205	0.0011	0.0006	0.0004
206	0.0010	0.0006	0.0004
207	0.0009	0.0005	0.0004
208	0.0009	0.0005	0.0004
209	0.0008	0.0005	0.0003
210	0.0008	0.0005	0.0003
211	0.0007	0.0004	0.0003
212	0.0007	0.0004	0.0003
213	0.0007	0.0004	0.0003
214	0.0006	0.0004	0.0003
215	0.0006	0.0004	0.0003
216	0.0006	0.0003	0.0002
217	0.0178	0.0104	0.0074
218	0.0178	0.0104	0.0074
219	0.0178	0.0104	0.0074
220	0.0178	0.0104	0.0074
221	0.0178	0.0104	0.0074
222	0.0178	0.0104	0.0074
223	0.0179	0.0104	0.0074
224	0.0179	0.0104	0.0074
225	0.0179	0.0104	0.0075
226	0.0179	0.0104	0.0075
227	0.0179	0.0104	0.0075
228	0.0179	0.0104	0.0075
229	0.0179	0.0104	0.0075
230	0.0179	0.0104	0.0075
231	0.0179	0.0104	0.0075
232	0.0179	0.0104	0.0075
233	0.0179	0.0104	0.0075
234	0.0179	0.0104	0.0075
235	0.0179	0.0104	0.0075
236	0.0179	0.0104	0.0075
237	0.0179	0.0104	0.0075
238	0.0179	0.0104	0.0075
239	0.0179	0.0104	0.0075
240	0.0179	0.0105	0.0075
241	0.0179	0.0105	0.0075
242	0.0179	0.0105	0.0075
243	0.0179	0.0105	0.0075
244	0.0179	0.0105	0.0075
245	0.0180	0.0105	0.0075
246	0.0180	0.0105	0.0075
247	0.0180	0.0105	0.0075
248	0.0180	0.0105	0.0075
249	0.0180	0.0105	0.0075
250	0.0180	0.0105	0.0075
251	0.0180	0.0105	0.0075
252	0.0180	0.0105	0.0075
253	0.0180	0.0105	0.0075
254	0.0180	0.0105	0.0075
255	0.0180	0.0105	0.0075
256	0.0180	0.0105	0.0075
257	0.0180	0.0105	0.0075
258	0.0180	0.0105	0.0075

259	0.0180	0.0105	0.0075
260	0.0180	0.0105	0.0075
261	0.0180	0.0105	0.0075
262	0.0180	0.0105	0.0075
263	0.0180	0.0105	0.0075
264	0.0180	0.0105	0.0075
265	0.0180	0.0105	0.0075
266	0.0180	0.0105	0.0075
267	0.0180	0.0105	0.0075
268	0.0180	0.0105	0.0075
269	0.0180	0.0105	0.0075
270	0.0180	0.0105	0.0075
271	0.0180	0.0105	0.0075
272	0.0180	0.0105	0.0075
273	0.0180	0.0105	0.0075
274	0.0180	0.0105	0.0075
275	0.0180	0.0105	0.0075
276	0.0180	0.0105	0.0075
277	0.0180	0.0105	0.0075
278	0.0180	0.0105	0.0075
279	0.0180	0.0105	0.0075
280	0.0180	0.0105	0.0075
281	0.0180	0.0105	0.0075
282	0.0180	0.0105	0.0075
283	0.0180	0.0105	0.0075
284	0.0180	0.0105	0.0075
285	0.0181	0.0105	0.0075
286	0.0181	0.0105	0.0075
287	0.0181	0.0105	0.0075
288	0.0181	0.0105	0.0075

Total soil rain loss = 2.67(In)
Total effective rainfall = 2.48(In)
Peak flow rate in flood hydrograph = 5.66(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	0.0005	0.07	Q				
0+10	0.0013	0.12	Q				
0+15	0.0022	0.12	Q				
0+20	0.0030	0.12	Q				
0+25	0.0039	0.12	Q				
0+30	0.0048	0.12	Q				
0+35	0.0056	0.12	Q				
0+40	0.0065	0.12	Q				
0+45	0.0073	0.12	QV				
0+50	0.0082	0.12	QV				
0+55	0.0090	0.12	QV				
1+ 0	0.0099	0.12	QV				
1+ 5	0.0107	0.12	QV				
1+10	0.0116	0.12	QV				
1+15	0.0124	0.12	QV				
1+20	0.0133	0.12	QV				
1+25	0.0141	0.12	Q V				
1+30	0.0150	0.12	Q V				
1+35	0.0158	0.12	Q V				
1+40	0.0167	0.12	Q V				
1+45	0.0175	0.12	Q V				
1+50	0.0184	0.12	Q V				
1+55	0.0192	0.12	Q V				
2+ 0	0.0201	0.12	Q V				
2+ 5	0.0210	0.12	Q V				
2+10	0.0218	0.12	Q V				
2+15	0.0227	0.12	Q V				
2+20	0.0235	0.12	Q V				
2+25	0.0244	0.12	Q V				
2+30	0.0252	0.12	Q V				
2+35	0.0261	0.12	Q V				
2+40	0.0269	0.12	Q V				
2+45	0.0278	0.12	Q V				
2+50	0.0286	0.12	Q V				
2+55	0.0295	0.12	Q V				
3+ 0	0.0303	0.12	Q V				
3+ 5	0.0312	0.12	Q V				
3+10	0.0320	0.12	Q V				
3+15	0.0329	0.12	Q V				

3+20	0.0337	0.12	Q	V				
3+25	0.0346	0.12	Q	V				
3+30	0.0354	0.12	Q	V				
3+35	0.0363	0.12	Q	V				
3+40	0.0371	0.12	Q	V				
3+45	0.0380	0.12	Q	V				
3+50	0.0388	0.12	Q	V				
3+55	0.0397	0.12	Q	V				
4+ 0	0.0405	0.12	Q	V				
4+ 5	0.0414	0.12	Q	V				
4+10	0.0422	0.12	Q	V				
4+15	0.0431	0.12	Q	V				
4+20	0.0439	0.12	Q	V				
4+25	0.0448	0.12	Q	V				
4+30	0.0456	0.12	Q	V				
4+35	0.0465	0.12	Q	V				
4+40	0.0473	0.12	Q	V				
4+45	0.0482	0.12	Q	V				
4+50	0.0490	0.12	Q	V				
4+55	0.0499	0.12	Q	V				
5+ 0	0.0507	0.12	Q	V				
5+ 5	0.0516	0.12	Q	V				
5+10	0.0524	0.12	Q	V				
5+15	0.0533	0.12	Q	V				
5+20	0.0541	0.12	Q	V				
5+25	0.0550	0.12	Q	V				
5+30	0.0558	0.12	Q	V				
5+35	0.0567	0.12	Q	V				
5+40	0.0575	0.12	Q	V				
5+45	0.0584	0.12	Q	V				
5+50	0.0592	0.12	Q	V				
5+55	0.0601	0.12	Q	V				
6+ 0	0.0609	0.12	Q	V				
6+ 5	0.0618	0.12	Q	V				
6+10	0.0626	0.12	Q	V				
6+15	0.0635	0.12	Q	V				
6+20	0.0643	0.12	Q	V				
6+25	0.0652	0.12	Q	V				
6+30	0.0660	0.12	Q	V				
6+35	0.0669	0.12	Q	V				
6+40	0.0677	0.12	Q	V				
6+45	0.0686	0.12	Q	V				
6+50	0.0694	0.12	Q	V				
6+55	0.0703	0.12	Q	V				
7+ 0	0.0711	0.12	Q	V				
7+ 5	0.0720	0.12	Q	V				
7+10	0.0728	0.12	Q	V				
7+15	0.0737	0.12	Q	V				
7+20	0.0745	0.12	Q	V				
7+25	0.0754	0.12	Q	V				
7+30	0.0762	0.12	Q	V				
7+35	0.0771	0.12	Q	V				
7+40	0.0779	0.12	Q	V				
7+45	0.0788	0.12	Q	V				
7+50	0.0796	0.12	Q	V				
7+55	0.0805	0.12	Q	V				
8+ 0	0.0813	0.12	Q	V				
8+ 5	0.0822	0.12	Q	V				
8+10	0.0830	0.12	Q	V				
8+15	0.0838	0.12	Q	V				
8+20	0.0847	0.12	Q	V				
8+25	0.0855	0.12	Q	V				
8+30	0.0864	0.12	Q	V				
8+35	0.0872	0.12	Q	V				
8+40	0.0881	0.12	Q	V				
8+45	0.0889	0.12	Q	V				
8+50	0.0898	0.12	Q	V				
8+55	0.0906	0.12	Q	V				
9+ 0	0.0915	0.12	Q	V				
9+ 5	0.0923	0.12	Q	V				
9+10	0.0932	0.12	Q	V				
9+15	0.0940	0.12	Q	V				
9+20	0.0949	0.12	Q	V				
9+25	0.0957	0.12	Q	V				
9+30	0.0965	0.12	Q	V				
9+35	0.0974	0.12	Q	V				
9+40	0.0982	0.12	Q	V				
9+45	0.0991	0.12	Q	V				
9+50	0.0999	0.12	Q	V				
9+55	0.1008	0.12	Q	V				
10+ 0	0.1016	0.12	Q	V				
10+ 5	0.1025	0.12	Q	V				
10+10	0.1033	0.12	Q	V				
10+15	0.1042	0.12	Q	V				

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                                                AREAG
10+20       0.1050      0.12  Q          |    V       |          |          |
10+25       0.1058      0.12  Q          |     V      |          |          |
10+30       0.1067      0.12  Q          |     V      |          |          |
10+35       0.1075      0.12  Q          |     V      |          |          |
10+40       0.1084      0.12  Q          |     V      |          |          |
10+45       0.1092      0.12  Q          |     V      |          |          |
10+50       0.1101      0.12  Q          |     V      |          |          |
10+55       0.1109      0.12  Q          |     V      |          |          |
11+ 0       0.1117      0.12  Q          |     V      |          |          |
11+ 5       0.1126      0.12  Q          |      V     |          |          |
11+10       0.1134      0.12  Q          |      V     |          |          |
11+15       0.1143      0.12  Q          |      V     |          |          |
11+20       0.1151      0.12  Q          |      V     |          |          |
11+25       0.1160      0.12  Q          |      V     |          |          |
11+30       0.1168      0.12  Q          |      V     |          |          |
11+35       0.1177      0.12  Q          |      V     |          |          |
11+40       0.1185      0.12  Q          |      V     |          |          |
11+45       0.1193      0.12  Q          |       V    |          |          |
11+50       0.1202      0.12  Q          |       V    |          |          |
11+55       0.1210      0.12  Q          |       V    |          |          |
12+ 0       0.1219      0.12  Q          |       V    |          |          |
12+ 5       0.1222      0.05  Q          |       V    |          |          |
12+10       0.1223      0.01  Q          |       V    |          |          |
12+15       0.1223      0.00  Q          |       V    |          |          |
12+20       0.1223      0.00  Q          |       V    |          |          |
12+25       0.1224      0.00  Q          |       V    |          |          |
12+30       0.1224      0.00  Q          |       V    |          |          |
12+35       0.1224      0.00  Q          |       V    |          |          |
12+40       0.1224      0.00  Q          |       V    |          |          |
12+45       0.1225      0.00  Q          |       V    |          |          |
12+50       0.1225      0.00  Q          |       V    |          |          |
12+55       0.1225      0.00  Q          |       V    |          |          |
13+ 0       0.1226      0.00  Q          |       V    |          |          |
13+ 5       0.1226      0.01  Q          |       V    |          |          |
13+10       0.1226      0.01  Q          |       V    |          |          |
13+15       0.1227      0.01  Q          |       V    |          |          |
13+20       0.1227      0.01  Q          |       V    |          |          |
13+25       0.1228      0.01  Q          |       V    |          |          |
13+30       0.1228      0.01  Q          |       V    |          |          |
13+35       0.1228      0.01  Q          |       V    |          |          |
13+40       0.1229      0.01  Q          |       V    |          |          |
13+45       0.1229      0.01  Q          |       V    |          |          |
13+50       0.1230      0.01  Q          |       V    |          |          |
13+55       0.1230      0.01  Q          |       V    |          |          |
14+ 0       0.1231      0.01  Q          |       V    |          |          |
14+ 5       0.1231      0.01  Q          |       V    |          |          |
14+10       0.1232      0.01  Q          |       V    |          |          |
14+15       0.1232      0.01  Q          |       V    |          |          |
14+20       0.1233      0.01  Q          |       V    |          |          |
14+25       0.1233      0.01  Q          |       V    |          |          |
14+30       0.1234      0.01  Q          |       V    |          |          |
14+35       0.1235      0.01  Q          |       V    |          |          |
14+40       0.1235      0.01  Q          |       V    |          |          |
14+45       0.1236      0.01  Q          |       V    |          |          |
14+50       0.1237      0.01  Q          |       V    |          |          |
14+55       0.1238      0.01  Q          |       V    |          |          |
15+ 0       0.1239      0.01  Q          |       V    |          |          |
15+ 5       0.1240      0.01  Q          |       V    |          |          |
15+10       0.1241      0.02  Q          |       V    |          |          |
15+15       0.1242      0.02  Q          |       V    |          |          |
15+20       0.1243      0.02  Q          |       V    |          |          |
15+25       0.1252      0.13  Q          |       V    |          |          |
15+30       0.1267      0.22  Q          |        V   |          |          |
15+35       0.1284      0.25  Q          |        V   |          |          |
15+40       0.1303      0.28  |Q         |        V   |          |          |
15+45       0.1326      0.33  |Q         |        V   |          |          |
15+50       0.1353      0.39  |Q         |         V  |          |          |
15+55       0.1395      0.62  | Q        |         V  |          |          |
16+ 0       0.1474      1.15  |   Q      |            V          |          |
16+ 5       0.1864      5.66  |          |            | Q   V    |          |
16+10       0.2120      3.71  |          |    Q       |          V          |
16+15       0.2156      0.54  | Q        |            |          V          |
16+20       0.2176      0.28  |Q         |            |          |V         |
16+25       0.2183      0.11  Q          |            |          |V         |
16+30       0.2185      0.02  Q          |            |          |V         |
16+35       0.2186      0.02  Q          |            |          |V         |
16+40       0.2187      0.01  Q          |            |          |V         |
16+45       0.2188      0.01  Q          |            |          |V         |
16+50       0.2188      0.01  Q          |            |          |V         |
16+55       0.2189      0.01  Q          |            |          |V         |
17+ 0       0.2190      0.01  Q          |            |          |V         |
17+ 5       0.2190      0.01  Q          |            |          |V         |
17+10       0.2191      0.01  Q          |            |          |V         |
17+15       0.2191      0.01  Q          |            |          |V         |
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17+20	0.2191	0.01	Q			V	
17+25	0.2192	0.01	Q			V	
17+30	0.2192	0.01	Q			V	
17+35	0.2193	0.01	Q			V	
17+40	0.2193	0.00	Q			V	
17+45	0.2193	0.00	Q			V	
17+50	0.2194	0.00	Q			V	
17+55	0.2194	0.00	Q			V	
18+ 0	0.2194	0.00	Q			V	
18+ 5	0.2199	0.07	Q			V	
18+10	0.2207	0.12	Q			V	
18+15	0.2216	0.12	Q			V	
18+20	0.2224	0.12	Q			V	
18+25	0.2233	0.12	Q			V	
18+30	0.2241	0.12	Q			V	
18+35	0.2250	0.12	Q			V	
18+40	0.2258	0.12	Q			V	
18+45	0.2266	0.12	Q			V	
18+50	0.2275	0.12	Q			V	
18+55	0.2283	0.12	Q			V	
19+ 0	0.2292	0.12	Q			V	
19+ 5	0.2300	0.12	Q			V	
19+10	0.2309	0.12	Q			V	
19+15	0.2317	0.12	Q			V	
19+20	0.2326	0.12	Q			V	
19+25	0.2334	0.12	Q			V	
19+30	0.2343	0.12	Q			V	
19+35	0.2351	0.12	Q			V	
19+40	0.2359	0.12	Q			V	
19+45	0.2368	0.12	Q			V	
19+50	0.2376	0.12	Q			V	
19+55	0.2385	0.12	Q			V	
20+ 0	0.2393	0.12	Q			V	
20+ 5	0.2402	0.12	Q			V	
20+10	0.2410	0.12	Q			V	
20+15	0.2419	0.12	Q			V	
20+20	0.2427	0.12	Q			V	
20+25	0.2436	0.12	Q			V	
20+30	0.2444	0.12	Q			V	
20+35	0.2453	0.12	Q			V	
20+40	0.2461	0.12	Q			V	
20+45	0.2470	0.12	Q			V	
20+50	0.2478	0.12	Q			V	
20+55	0.2487	0.12	Q			V	
21+ 0	0.2495	0.12	Q			V	
21+ 5	0.2504	0.12	Q			V	
21+10	0.2512	0.12	Q			V	
21+15	0.2521	0.12	Q			V	
21+20	0.2529	0.12	Q			V	
21+25	0.2538	0.12	Q			V	
21+30	0.2546	0.12	Q			V	
21+35	0.2555	0.12	Q			V	
21+40	0.2563	0.12	Q			V	
21+45	0.2572	0.12	Q			V	
21+50	0.2580	0.12	Q			V	
21+55	0.2589	0.12	Q			V	
22+ 0	0.2597	0.12	Q			V	
22+ 5	0.2606	0.12	Q			V	
22+10	0.2614	0.12	Q			V	
22+15	0.2623	0.12	Q			V	
22+20	0.2631	0.12	Q			V	
22+25	0.2640	0.12	Q			V	
22+30	0.2648	0.12	Q			V	
22+35	0.2657	0.12	Q			V	
22+40	0.2665	0.12	Q			V	
22+45	0.2674	0.12	Q			V	
22+50	0.2682	0.12	Q			V	
22+55	0.2691	0.12	Q			V	
23+ 0	0.2699	0.12	Q			V	
23+ 5	0.2708	0.12	Q			V	
23+10	0.2716	0.12	Q			V	
23+15	0.2725	0.12	Q			V	
23+20	0.2733	0.12	Q			V	
23+25	0.2742	0.12	Q			V	
23+30	0.2750	0.12	Q			V	
23+35	0.2759	0.12	Q			V	
23+40	0.2767	0.12	Q			V	
23+45	0.2776	0.12	Q			V	
23+50	0.2785	0.12	Q			V	
23+55	0.2793	0.12	Q			V	
24+ 0	0.2802	0.12	Q			V	

APPENDIX D: HYDROLOGY CALCULATIONS BASED ON PROPOSED CONDITION (UNIT HYDROGRAPH METHOD)

APPENDIX D.1: 2-YEAR

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

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 1999, Version 6.0

Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA A
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
7.47	1	0.78
Rainfall data for year 2		
7.47	6	1.20
Rainfall data for year 2		
7.47	24	2.18
Rainfall data for year 100		
7.47	1	1.27
Rainfall data for year 100		
7.47	6	2.86
Rainfall data for year 100		
7.47	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
58.9	38.9	7.47	1.000	0.927	0.486	0.450

Area-averaged adjusted loss rate Fm (In/Hr) = 0.450

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
3.63	0.486	58.9	38.9	10.90	0.000
3.84	0.514	98.0	98.0	0.20	0.896

Area-averaged catchment yield fraction, Y = 0.460
Area-averaged low loss fraction, Yb = 0.540

++
Watercourse length = 730.00(Ft.)
Length from concentration point to centroid = 280.00(Ft.)
Elevation difference along watercourse = 69.50(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 7.47(Ac.)
Catchment Lag time = 0.017 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 488.6316
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.450(In/Hr)
Average low loss rate fraction (Yb) = 0.540 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 7.47(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.210(In)
30-minute factor = 1.000 Adjusted rainfall = 0.359(In)
1-hour factor = 1.000 Adjusted rainfall = 0.442(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 90.34 (CFS))	
1	72.933	65.888
2	100.000	24.453

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2099	0.2099
2	0.2585	0.0485
3	0.2919	0.0334
4	0.3182	0.0263
5	0.3402	0.0220
6	0.3594	0.0191
7	0.3764	0.0170
8	0.3918	0.0154
9	0.4059	0.0141
10	0.4189	0.0130
11	0.4310	0.0122
12	0.4424	0.0114
13	0.4626	0.0202
14	0.4821	0.0195
15	0.5010	0.0189
16	0.5193	0.0183
17	0.5372	0.0178
18	0.5545	0.0174
19	0.5715	0.0170
20	0.5881	0.0166
21	0.6043	0.0162
22	0.6201	0.0159
23	0.6357	0.0155
24	0.6509	0.0152
25	0.6659	0.0150
26	0.6806	0.0147
27	0.6950	0.0145
28	0.7093	0.0142
29	0.7233	0.0140
30	0.7370	0.0138
31	0.7506	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7902	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8283	0.0125
38	0.8407	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8771	0.0120
42	0.8889	0.0118
43	0.9006	0.0117
44	0.9122	0.0116
45	0.9237	0.0115
46	0.9351	0.0114
47	0.9464	0.0113

		AREAA
48	0.9575	0.0112
49	0.9686	0.0111
50	0.9795	0.0110
51	0.9904	0.0109
52	1.0011	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0536	0.0103
58	1.0639	0.0103
59	1.0741	0.0102
60	1.0842	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1336	0.0097
66	1.1432	0.0097
67	1.1528	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1907	0.0094
72	1.2000	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2213	0.0070
76	1.2282	0.0070
77	1.2352	0.0069
78	1.2421	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2757	0.0066
84	1.2823	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3019	0.0065
88	1.3083	0.0064
89	1.3147	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3336	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3582	0.0061
97	1.3643	0.0061
98	1.3704	0.0060
99	1.3764	0.0060
100	1.3823	0.0060
101	1.3883	0.0059
102	1.3942	0.0059
103	1.4000	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4175	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4403	0.0057
111	1.4459	0.0056
112	1.4515	0.0056
113	1.4570	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4736	0.0055
117	1.4790	0.0055
118	1.4845	0.0054
119	1.4899	0.0054
120	1.4952	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5218	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5425	0.0052
130	1.5477	0.0051
131	1.5528	0.0051

		AREAA
132	1.5579	0.0051
133	1.5630	0.0051
134	1.5680	0.0051
135	1.5730	0.0050
136	1.5781	0.0050
137	1.5830	0.0050
138	1.5880	0.0050
139	1.5930	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6077	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6461	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6602	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6925	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7061	0.0045
164	1.7106	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7240	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7504	0.0044
174	1.7547	0.0044
175	1.7590	0.0043
176	1.7634	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7763	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7932	0.0042
184	1.7975	0.0042
185	1.8017	0.0042
186	1.8058	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8225	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8430	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8592	0.0040
200	1.8632	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8752	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8870	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9183	0.0039
215	1.9221	0.0039

		AREAA
216	1.9260	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9564	0.0038
225	1.9601	0.0038
226	1.9639	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9750	0.0037
230	1.9788	0.0037
231	1.9825	0.0037
232	1.9861	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9972	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0117	0.0036
240	2.0154	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0298	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0405	0.0036
248	2.0440	0.0036
249	2.0476	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0582	0.0035
253	2.0617	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0722	0.0035
257	2.0756	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0860	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1066	0.0034
267	2.1100	0.0034
268	2.1134	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1370	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1471	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1734	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0018	0.0015
2	0.0033	0.0018	0.0015
3	0.0033	0.0018	0.0015
4	0.0033	0.0018	0.0015
5	0.0033	0.0018	0.0015
6	0.0033	0.0018	0.0015

7	0.0033	0.0018	0.0015
8	0.0033	0.0018	0.0015
9	0.0033	0.0018	0.0015
10	0.0034	0.0018	0.0015
11	0.0034	0.0018	0.0015
12	0.0034	0.0018	0.0016
13	0.0034	0.0018	0.0016
14	0.0034	0.0018	0.0016
15	0.0034	0.0018	0.0016
16	0.0034	0.0018	0.0016
17	0.0034	0.0019	0.0016
18	0.0034	0.0019	0.0016
19	0.0035	0.0019	0.0016
20	0.0035	0.0019	0.0016
21	0.0035	0.0019	0.0016
22	0.0035	0.0019	0.0016
23	0.0035	0.0019	0.0016
24	0.0035	0.0019	0.0016
25	0.0035	0.0019	0.0016
26	0.0035	0.0019	0.0016
27	0.0035	0.0019	0.0016
28	0.0036	0.0019	0.0016
29	0.0036	0.0019	0.0016
30	0.0036	0.0019	0.0016
31	0.0036	0.0019	0.0017
32	0.0036	0.0019	0.0017
33	0.0036	0.0020	0.0017
34	0.0036	0.0020	0.0017
35	0.0036	0.0020	0.0017
36	0.0037	0.0020	0.0017
37	0.0037	0.0020	0.0017
38	0.0037	0.0020	0.0017
39	0.0037	0.0020	0.0017
40	0.0037	0.0020	0.0017
41	0.0037	0.0020	0.0017
42	0.0037	0.0020	0.0017
43	0.0038	0.0020	0.0017
44	0.0038	0.0020	0.0017
45	0.0038	0.0020	0.0017
46	0.0038	0.0020	0.0017
47	0.0038	0.0021	0.0018
48	0.0038	0.0021	0.0018
49	0.0038	0.0021	0.0018
50	0.0039	0.0021	0.0018
51	0.0039	0.0021	0.0018
52	0.0039	0.0021	0.0018
53	0.0039	0.0021	0.0018
54	0.0039	0.0021	0.0018
55	0.0039	0.0021	0.0018
56	0.0040	0.0021	0.0018
57	0.0040	0.0021	0.0018
58	0.0040	0.0021	0.0018
59	0.0040	0.0022	0.0018
60	0.0040	0.0022	0.0018
61	0.0040	0.0022	0.0019
62	0.0041	0.0022	0.0019
63	0.0041	0.0022	0.0019
64	0.0041	0.0022	0.0019
65	0.0041	0.0022	0.0019
66	0.0041	0.0022	0.0019
67	0.0041	0.0022	0.0019
68	0.0042	0.0022	0.0019
69	0.0042	0.0023	0.0019
70	0.0042	0.0023	0.0019
71	0.0042	0.0023	0.0019
72	0.0042	0.0023	0.0020
73	0.0043	0.0023	0.0020
74	0.0043	0.0023	0.0020
75	0.0043	0.0023	0.0020
76	0.0043	0.0023	0.0020
77	0.0044	0.0023	0.0020
78	0.0044	0.0024	0.0020
79	0.0044	0.0024	0.0020
80	0.0044	0.0024	0.0020
81	0.0044	0.0024	0.0020
82	0.0045	0.0024	0.0021
83	0.0045	0.0024	0.0021
84	0.0045	0.0024	0.0021
85	0.0045	0.0024	0.0021
86	0.0045	0.0025	0.0021
87	0.0046	0.0025	0.0021
88	0.0046	0.0025	0.0021
89	0.0046	0.0025	0.0021
90	0.0046	0.0025	0.0021

91	0.0047	0.0025	0.0022
92	0.0047	0.0025	0.0022
93	0.0047	0.0026	0.0022
94	0.0048	0.0026	0.0022
95	0.0048	0.0026	0.0022
96	0.0048	0.0026	0.0022
97	0.0048	0.0026	0.0022
98	0.0049	0.0026	0.0022
99	0.0049	0.0026	0.0023
100	0.0049	0.0027	0.0023
101	0.0050	0.0027	0.0023
102	0.0050	0.0027	0.0023
103	0.0050	0.0027	0.0023
104	0.0051	0.0027	0.0023
105	0.0051	0.0027	0.0023
106	0.0051	0.0028	0.0024
107	0.0052	0.0028	0.0024
108	0.0052	0.0028	0.0024
109	0.0052	0.0028	0.0024
110	0.0053	0.0028	0.0024
111	0.0053	0.0029	0.0024
112	0.0053	0.0029	0.0025
113	0.0054	0.0029	0.0025
114	0.0054	0.0029	0.0025
115	0.0055	0.0029	0.0025
116	0.0055	0.0030	0.0025
117	0.0055	0.0030	0.0026
118	0.0056	0.0030	0.0026
119	0.0056	0.0030	0.0026
120	0.0057	0.0031	0.0026
121	0.0057	0.0031	0.0026
122	0.0057	0.0031	0.0026
123	0.0058	0.0031	0.0027
124	0.0058	0.0031	0.0027
125	0.0059	0.0032	0.0027
126	0.0059	0.0032	0.0027
127	0.0060	0.0032	0.0028
128	0.0060	0.0033	0.0028
129	0.0061	0.0033	0.0028
130	0.0061	0.0033	0.0028
131	0.0062	0.0034	0.0029
132	0.0063	0.0034	0.0029
133	0.0063	0.0034	0.0029
134	0.0064	0.0034	0.0029
135	0.0065	0.0035	0.0030
136	0.0065	0.0035	0.0030
137	0.0066	0.0036	0.0030
138	0.0066	0.0036	0.0031
139	0.0067	0.0036	0.0031
140	0.0068	0.0037	0.0031
141	0.0069	0.0037	0.0032
142	0.0069	0.0037	0.0032
143	0.0070	0.0038	0.0032
144	0.0071	0.0038	0.0033
145	0.0093	0.0050	0.0043
146	0.0094	0.0051	0.0043
147	0.0095	0.0051	0.0044
148	0.0095	0.0052	0.0044
149	0.0097	0.0052	0.0045
150	0.0097	0.0053	0.0045
151	0.0099	0.0053	0.0045
152	0.0099	0.0054	0.0046
153	0.0101	0.0054	0.0046
154	0.0102	0.0055	0.0047
155	0.0103	0.0056	0.0048
156	0.0104	0.0056	0.0048
157	0.0106	0.0057	0.0049
158	0.0107	0.0058	0.0049
159	0.0109	0.0059	0.0050
160	0.0110	0.0059	0.0050
161	0.0112	0.0060	0.0051
162	0.0113	0.0061	0.0052
163	0.0115	0.0062	0.0053
164	0.0116	0.0063	0.0053
165	0.0118	0.0064	0.0055
166	0.0120	0.0065	0.0055
167	0.0122	0.0066	0.0056
168	0.0124	0.0067	0.0057
169	0.0127	0.0069	0.0058
170	0.0129	0.0069	0.0059
171	0.0132	0.0071	0.0061
172	0.0134	0.0072	0.0062
173	0.0138	0.0074	0.0063
174	0.0140	0.0076	0.0064

175	0.0145	0.0078	0.0067
176	0.0147	0.0079	0.0068
177	0.0152	0.0082	0.0070
178	0.0155	0.0084	0.0072
179	0.0162	0.0087	0.0075
180	0.0166	0.0089	0.0076
181	0.0174	0.0094	0.0080
182	0.0178	0.0096	0.0082
183	0.0189	0.0102	0.0087
184	0.0195	0.0105	0.0090
185	0.0114	0.0062	0.0052
186	0.0122	0.0066	0.0056
187	0.0141	0.0076	0.0065
188	0.0154	0.0083	0.0071
189	0.0191	0.0103	0.0088
190	0.0220	0.0119	0.0101
191	0.0334	0.0180	0.0154
192	0.0485	0.0262	0.0223
193	0.2099	0.0375	0.1724
194	0.0263	0.0142	0.0121
195	0.0170	0.0092	0.0078
196	0.0130	0.0070	0.0060
197	0.0202	0.0109	0.0093
198	0.0183	0.0099	0.0084
199	0.0170	0.0091	0.0078
200	0.0159	0.0086	0.0073
201	0.0150	0.0081	0.0069
202	0.0142	0.0077	0.0065
203	0.0136	0.0073	0.0063
204	0.0130	0.0070	0.0060
205	0.0125	0.0068	0.0058
206	0.0121	0.0065	0.0056
207	0.0117	0.0063	0.0054
208	0.0114	0.0061	0.0052
209	0.0111	0.0060	0.0051
210	0.0108	0.0058	0.0050
211	0.0105	0.0057	0.0048
212	0.0103	0.0055	0.0047
213	0.0100	0.0054	0.0046
214	0.0098	0.0053	0.0045
215	0.0096	0.0052	0.0044
216	0.0094	0.0051	0.0043
217	0.0071	0.0039	0.0033
218	0.0070	0.0038	0.0032
219	0.0068	0.0037	0.0031
220	0.0067	0.0036	0.0031
221	0.0066	0.0035	0.0030
222	0.0064	0.0035	0.0030
223	0.0063	0.0034	0.0029
224	0.0062	0.0033	0.0028
225	0.0061	0.0033	0.0028
226	0.0060	0.0032	0.0027
227	0.0059	0.0032	0.0027
228	0.0058	0.0031	0.0027
229	0.0057	0.0031	0.0026
230	0.0056	0.0030	0.0026
231	0.0055	0.0030	0.0025
232	0.0054	0.0029	0.0025
233	0.0054	0.0029	0.0025
234	0.0053	0.0028	0.0024
235	0.0052	0.0028	0.0024
236	0.0051	0.0028	0.0024
237	0.0051	0.0027	0.0023
238	0.0050	0.0027	0.0023
239	0.0049	0.0027	0.0023
240	0.0049	0.0026	0.0022
241	0.0048	0.0026	0.0022
242	0.0048	0.0026	0.0022
243	0.0047	0.0025	0.0022
244	0.0047	0.0025	0.0021
245	0.0046	0.0025	0.0021
246	0.0046	0.0025	0.0021
247	0.0045	0.0024	0.0021
248	0.0045	0.0024	0.0021
249	0.0044	0.0024	0.0020
250	0.0044	0.0024	0.0020
251	0.0043	0.0023	0.0020
252	0.0043	0.0023	0.0020
253	0.0043	0.0023	0.0020
254	0.0042	0.0023	0.0019
255	0.0042	0.0023	0.0019
256	0.0041	0.0022	0.0019
257	0.0041	0.0022	0.0019
258	0.0041	0.0022	0.0019

259	0.0040	0.0022	0.0019
260	0.0040	0.0022	0.0018
261	0.0040	0.0021	0.0018
262	0.0039	0.0021	0.0018
263	0.0039	0.0021	0.0018
264	0.0039	0.0021	0.0018
265	0.0038	0.0021	0.0018
266	0.0038	0.0021	0.0018
267	0.0038	0.0020	0.0017
268	0.0037	0.0020	0.0017
269	0.0037	0.0020	0.0017
270	0.0037	0.0020	0.0017
271	0.0037	0.0020	0.0017
272	0.0036	0.0020	0.0017
273	0.0036	0.0019	0.0017
274	0.0036	0.0019	0.0017
275	0.0036	0.0019	0.0016
276	0.0035	0.0019	0.0016
277	0.0035	0.0019	0.0016
278	0.0035	0.0019	0.0016
279	0.0035	0.0019	0.0016
280	0.0034	0.0019	0.0016
281	0.0034	0.0018	0.0016
282	0.0034	0.0018	0.0016
283	0.0034	0.0018	0.0016
284	0.0034	0.0018	0.0015
285	0.0033	0.0018	0.0015
286	0.0033	0.0018	0.0015
287	0.0033	0.0018	0.0015
288	0.0033	0.0018	0.0015

Total soil rain loss = 1.10(In)
Total effective rainfall = 1.08(In)
Peak flow rate in flood hydrograph = 11.91(CFS)

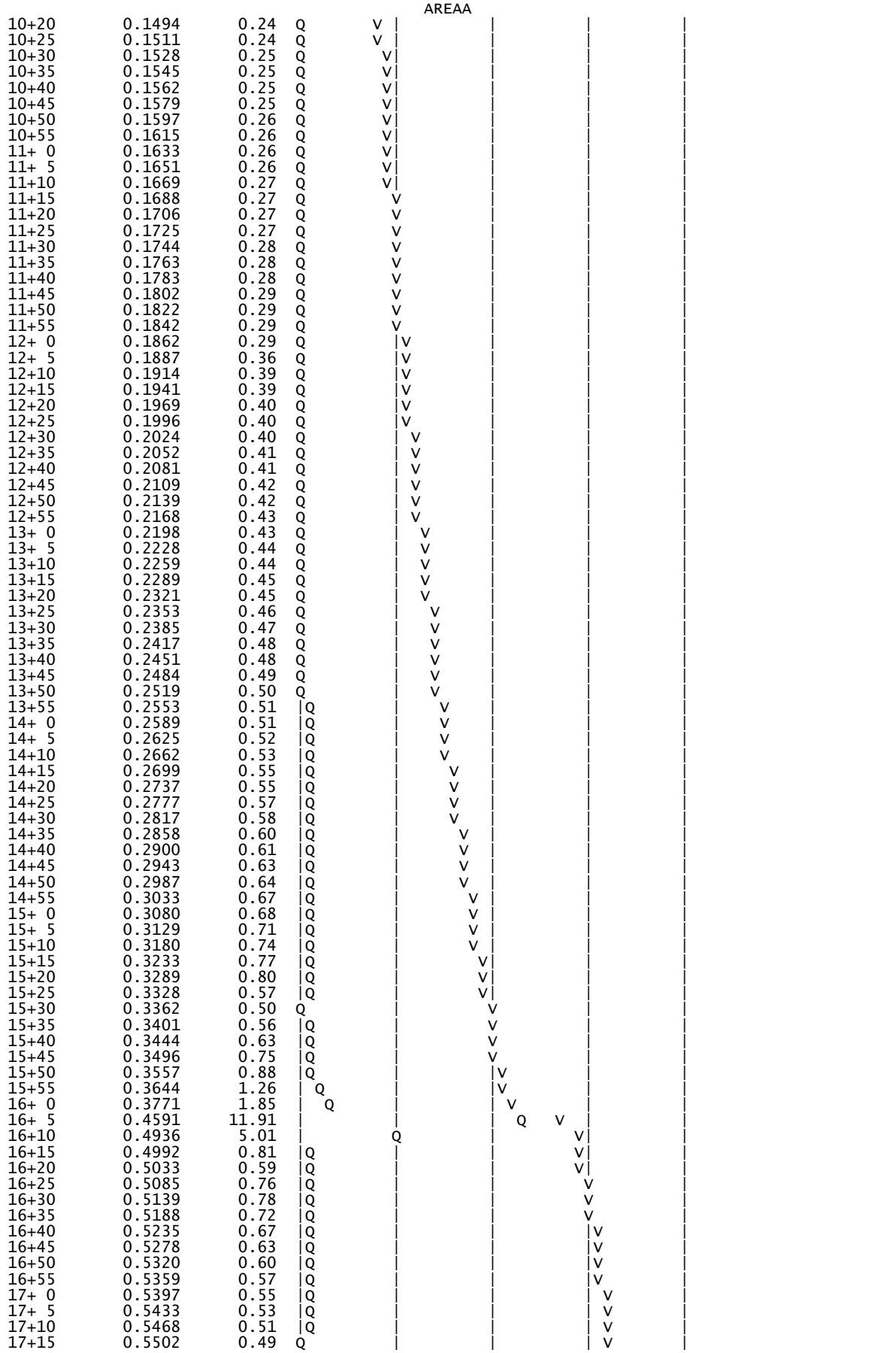
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0007	0.10	Q				
0+10	0.0016	0.14	Q				
0+15	0.0026	0.14	Q				
0+20	0.0035	0.14	Q				
0+25	0.0044	0.14	Q				
0+30	0.0054	0.14	Q				
0+35	0.0063	0.14	Q				
0+40	0.0073	0.14	Q				
0+45	0.0083	0.14	Q				
0+50	0.0092	0.14	Q				
0+55	0.0102	0.14	Q				
1+ 0	0.0111	0.14	Q				
1+ 5	0.0121	0.14	Q				
1+10	0.0131	0.14	Q				
1+15	0.0141	0.14	Q				
1+20	0.0150	0.14	Q				
1+25	0.0160	0.14	Q				
1+30	0.0170	0.14	QV				
1+35	0.0180	0.14	QV				
1+40	0.0190	0.14	QV				
1+45	0.0200	0.14	QV				
1+50	0.0210	0.14	QV				
1+55	0.0220	0.15	QV				
2+ 0	0.0230	0.15	QV				
2+ 5	0.0240	0.15	QV				
2+10	0.0250	0.15	QV				
2+15	0.0260	0.15	QV				
2+20	0.0270	0.15	QV				
2+25	0.0280	0.15	QV				
2+30	0.0291	0.15	QV				
2+35	0.0301	0.15	QV				
2+40	0.0311	0.15	QV				
2+45	0.0322	0.15	QV				
2+50	0.0332	0.15	QV				
2+55	0.0342	0.15	Q V				
3+ 0	0.0353	0.15	Q V				
3+ 5	0.0363	0.15	Q V				
3+10	0.0374	0.15	Q V				
3+15	0.0385	0.15	Q V				

3+20	0.0395	0.15	Q V				
3+25	0.0406	0.15	Q V				
3+30	0.0417	0.16	Q V				
3+35	0.0427	0.16	Q V				
3+40	0.0438	0.16	Q V				
3+45	0.0449	0.16	Q V				
3+50	0.0460	0.16	Q V				
3+55	0.0471	0.16	Q V				
4+ 0	0.0482	0.16	Q V				
4+ 5	0.0493	0.16	Q V				
4+10	0.0504	0.16	Q V				
4+15	0.0515	0.16	Q V				
4+20	0.0526	0.16	Q V				
4+25	0.0537	0.16	Q V				
4+30	0.0548	0.16	Q V				
4+35	0.0560	0.16	Q V				
4+40	0.0571	0.16	Q V				
4+45	0.0582	0.16	Q V				
4+50	0.0594	0.17	Q V				
4+55	0.0605	0.17	Q V				
5+ 0	0.0617	0.17	Q V				
5+ 5	0.0628	0.17	Q V				
5+10	0.0640	0.17	Q V				
5+15	0.0651	0.17	Q V				
5+20	0.0663	0.17	Q V				
5+25	0.0675	0.17	Q V				
5+30	0.0687	0.17	Q V				
5+35	0.0699	0.17	Q V				
5+40	0.0710	0.17	Q V				
5+45	0.0722	0.17	Q V				
5+50	0.0734	0.17	Q V				
5+55	0.0747	0.18	Q V				
6+ 0	0.0759	0.18	Q V				
6+ 5	0.0771	0.18	Q V				
6+10	0.0783	0.18	Q V				
6+15	0.0795	0.18	Q V				
6+20	0.0808	0.18	Q V				
6+25	0.0820	0.18	Q V				
6+30	0.0833	0.18	Q V				
6+35	0.0845	0.18	Q V				
6+40	0.0858	0.18	Q V				
6+45	0.0871	0.18	Q V				
6+50	0.0883	0.19	Q V				
6+55	0.0896	0.19	Q V				
7+ 0	0.0909	0.19	Q V				
7+ 5	0.0922	0.19	Q V				
7+10	0.0935	0.19	Q V				
7+15	0.0948	0.19	Q V				
7+20	0.0961	0.19	Q V				
7+25	0.0975	0.19	Q V				
7+30	0.0988	0.19	Q V				
7+35	0.1001	0.19	Q V				
7+40	0.1015	0.20	Q V				
7+45	0.1028	0.20	Q V				
7+50	0.1042	0.20	Q V				
7+55	0.1055	0.20	Q V				
8+ 0	0.1069	0.20	Q V				
8+ 5	0.1083	0.20	Q V				
8+10	0.1097	0.20	Q V				
8+15	0.1111	0.20	Q V				
8+20	0.1125	0.20	Q V				
8+25	0.1139	0.21	Q V				
8+30	0.1154	0.21	Q V				
8+35	0.1168	0.21	Q V				
8+40	0.1182	0.21	Q V				
8+45	0.1197	0.21	Q V				
8+50	0.1212	0.21	Q V				
8+55	0.1226	0.21	Q V				
9+ 0	0.1241	0.22	Q V				
9+ 5	0.1256	0.22	Q V				
9+10	0.1271	0.22	Q V				
9+15	0.1286	0.22	Q V				
9+20	0.1302	0.22	Q V				
9+25	0.1317	0.22	Q V				
9+30	0.1332	0.22	Q V				
9+35	0.1348	0.23	Q V				
9+40	0.1364	0.23	Q V				
9+45	0.1380	0.23	Q V				
9+50	0.1395	0.23	Q V				
9+55	0.1412	0.23	Q V				
10+ 0	0.1428	0.23	Q V				
10+ 5	0.1444	0.24	Q V				
10+10	0.1460	0.24	Q V				
10+15	0.1477	0.24	Q V				



10+20	0.1494	0.24	Q V
10+25	0.1511	0.24	Q V
10+30	0.1528	0.25	Q V
10+35	0.1545	0.25	Q V
10+40	0.1562	0.25	Q V
10+45	0.1579	0.25	Q V
10+50	0.1597	0.26	Q V
10+55	0.1615	0.26	Q V
11+ 0	0.1633	0.26	Q V
11+ 5	0.1651	0.26	Q V
11+10	0.1669	0.27	Q V
11+15	0.1688	0.27	Q V
11+20	0.1706	0.27	Q V
11+25	0.1725	0.27	Q V
11+30	0.1744	0.28	Q V
11+35	0.1763	0.28	Q V
11+40	0.1783	0.28	Q V
11+45	0.1802	0.29	Q V
11+50	0.1822	0.29	Q V
11+55	0.1842	0.29	Q V
12+ 0	0.1862	0.29	Q V
12+ 5	0.1887	0.36	Q V
12+10	0.1914	0.39	Q V
12+15	0.1941	0.39	Q V
12+20	0.1969	0.40	Q V
12+25	0.1996	0.40	Q V
12+30	0.2024	0.40	Q V
12+35	0.2052	0.41	Q V
12+40	0.2081	0.41	Q V
12+45	0.2109	0.42	Q V
12+50	0.2139	0.42	Q V
12+55	0.2168	0.43	Q V
13+ 0	0.2198	0.43	Q V
13+ 5	0.2228	0.44	Q V
13+10	0.2259	0.44	Q V
13+15	0.2289	0.45	Q V
13+20	0.2321	0.45	Q V
13+25	0.2353	0.46	Q V
13+30	0.2385	0.47	Q V
13+35	0.2417	0.48	Q V
13+40	0.2451	0.48	Q V
13+45	0.2484	0.49	Q V
13+50	0.2519	0.50	Q V
13+55	0.2553	0.51	Q V
14+ 0	0.2589	0.51	Q V
14+ 5	0.2625	0.52	Q V
14+10	0.2662	0.53	Q V
14+15	0.2699	0.55	Q V
14+20	0.2737	0.55	Q V
14+25	0.2777	0.57	Q V
14+30	0.2817	0.58	Q V
14+35	0.2858	0.60	Q V
14+40	0.2900	0.61	Q V
14+45	0.2943	0.63	Q V
14+50	0.2987	0.64	Q V
14+55	0.3033	0.67	Q V
15+ 0	0.3080	0.68	Q V
15+ 5	0.3129	0.71	Q V
15+10	0.3180	0.74	Q V
15+15	0.3233	0.77	Q V
15+20	0.3289	0.80	Q V
15+25	0.3328	0.57	Q V
15+30	0.3362	0.50	Q V
15+35	0.3401	0.56	Q V
15+40	0.3444	0.63	Q V
15+45	0.3496	0.75	Q V
15+50	0.3557	0.88	Q V
15+55	0.3644	1.26	Q V
16+ 0	0.3771	1.85	Q V
16+ 5	0.4591	11.91	Q V
16+10	0.4936	5.01	Q V
16+15	0.4992	0.81	Q V
16+20	0.5033	0.59	Q V
16+25	0.5085	0.76	Q V
16+30	0.5139	0.78	Q V
16+35	0.5188	0.72	Q V
16+40	0.5235	0.67	Q V
16+45	0.5278	0.63	Q V
16+50	0.5320	0.60	Q V
16+55	0.5359	0.57	Q V
17+ 0	0.5397	0.55	Q V
17+ 5	0.5433	0.53	Q V
17+10	0.5468	0.51	Q V
17+15	0.5502	0.49	Q V

				AREAA			
17+20	0.5535	0.48	Q	|	|	| V	|
17+25	0.5567	0.46	Q	|	|	| V	|
17+30	0.5598	0.45	Q	|	|	| V	|
17+35	0.5628	0.44	Q	|	|	| V	|
17+40	0.5658	0.43	Q	|	|	| V	|
17+45	0.5687	0.42	Q	|	|	| V	|
17+50	0.5715	0.41	Q	|	|	| V	|
17+55	0.5742	0.40	Q	|	|	| V	|
18+ 0	0.5770	0.39	Q	|	|	| V	|
18+ 5	0.5792	0.32	Q	|	|	| V	|
18+10	0.5812	0.29	Q	|	|	| V	|
18+15	0.5832	0.29	Q	|	|	| V	|
18+20	0.5851	0.28	Q	|	|	| V	|
18+25	0.5870	0.27	Q	|	|	| V	|
18+30	0.5888	0.27	Q	|	|	| V	|
18+35	0.5906	0.26	Q	|	|	| V	|
18+40	0.5924	0.26	Q	|	|	| V	|
18+45	0.5942	0.25	Q	|	|	| V	|
18+50	0.5959	0.25	Q	|	|	| V	|
18+55	0.5976	0.25	Q	|	|	| V	|
19+ 0	0.5992	0.24	Q	|	|	| V	|
19+ 5	0.6009	0.24	Q	|	|	| V	|
19+10	0.6025	0.23	Q	|	|	| V	|
19+15	0.6041	0.23	Q	|	|	| V	|
19+20	0.6056	0.23	Q	|	|	| V	|
19+25	0.6072	0.22	Q	|	|	| V	|
19+30	0.6087	0.22	Q	|	|	| V	|
19+35	0.6102	0.22	Q	|	|	| V	|
19+40	0.6117	0.21	Q	|	|	| V	|
19+45	0.6131	0.21	Q	|	|	| V	|
19+50	0.6146	0.21	Q	|	|	| V	|
19+55	0.6160	0.21	Q	|	|	| V	|
20+ 0	0.6174	0.20	Q	|	|	| V	|
20+ 5	0.6188	0.20	Q	|	|	| V	|
20+10	0.6202	0.20	Q	|	|	| V	|
20+15	0.6215	0.20	Q	|	|	| V	|
20+20	0.6229	0.19	Q	|	|	| V	|
20+25	0.6242	0.19	Q	|	|	| V	|
20+30	0.6255	0.19	Q	|	|	| V	|
20+35	0.6268	0.19	Q	|	|	| V	|
20+40	0.6281	0.19	Q	|	|	| V	|
20+45	0.6293	0.18	Q	|	|	| V	|
20+50	0.6306	0.18	Q	|	|	| V	|
20+55	0.6318	0.18	Q	|	|	| V	|
21+ 0	0.6331	0.18	Q	|	|	| V	|
21+ 5	0.6343	0.18	Q	|	|	| V	|
21+10	0.6355	0.18	Q	|	|	| V	|
21+15	0.6367	0.17	Q	|	|	| V	|
21+20	0.6379	0.17	Q	|	|	| V	|
21+25	0.6391	0.17	Q	|	|	| V	|
21+30	0.6402	0.17	Q	|	|	| V	|
21+35	0.6414	0.17	Q	|	|	| V	|
21+40	0.6425	0.17	Q	|	|	| V	|
21+45	0.6437	0.17	Q	|	|	| V	|
21+50	0.6448	0.16	Q	|	|	| V	|
21+55	0.6459	0.16	Q	|	|	| V	|
22+ 0	0.6470	0.16	Q	|	|	| V	|
22+ 5	0.6481	0.16	Q	|	|	| V	|
22+10	0.6492	0.16	Q	|	|	| V	|
22+15	0.6503	0.16	Q	|	|	| V	|
22+20	0.6514	0.16	Q	|	|	| V	|
22+25	0.6525	0.16	Q	|	|	| V	|
22+30	0.6535	0.15	Q	|	|	| V	|
22+35	0.6546	0.15	Q	|	|	| V	|
22+40	0.6556	0.15	Q	|	|	| V	|
22+45	0.6567	0.15	Q	|	|	| V	|
22+50	0.6577	0.15	Q	|	|	| V	|
22+55	0.6587	0.15	Q	|	|	| V	|
23+ 0	0.6597	0.15	Q	|	|	| V	|
23+ 5	0.6607	0.15	Q	|	|	| V	|
23+10	0.6617	0.15	Q	|	|	| V	|
23+15	0.6627	0.14	Q	|	|	| V	|
23+20	0.6637	0.14	Q	|	|	| V	|
23+25	0.6647	0.14	Q	|	|	| V	|
23+30	0.6657	0.14	Q	|	|	| V	|
23+35	0.6666	0.14	Q	|	|	| V	|
23+40	0.6676	0.14	Q	|	|	| V	|
23+45	0.6686	0.14	Q	|	|	| V	|
23+50	0.6695	0.14	Q	|	|	| V	|
23+55	0.6705	0.14	Q	|	|	| V	|
24+ 0	0.6714	0.14	Q	|	|	| V	|

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

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Study date 06/19/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA B.1
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	13.74	1	0.78
Rainfall data for year 2	13.74	6	1.20
Rainfall data for year 2	13.74	24	2.18
Rainfall data for year 100	13.74	1	1.27
Rainfall data for year 100	13.74	6	2.86
Rainfall data for year 100	13.74	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
77.0	59.4	13.74	1.000	0.688	0.652	0.449

Area-averaged adjusted loss rate Fm (In/Hr) = 0.449

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
8.96	0.652	77.0	59.4	6.84	0.040
4.78	0.348	98.0	98.0	0.20	0.896

Area-averaged catchment yield fraction, Y = 0.338
Area-averaged low loss fraction, Yb = 0.662

++
Watercourse length = 1775.00(Ft.)
Length from concentration point to centroid = 520.00(Ft.)
Elevation difference along watercourse = 65.20(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 13.74(Ac.)
Catchment Lag time = 0.036 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 229.9329
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.449(In/Hr)
Average low loss rate fraction (Yb) = 0.662 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 13.74(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.210(In)
30-minute factor = 0.999 Adjusted rainfall = 0.359(In)
1-hour factor = 0.999 Adjusted rainfall = 0.442(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 166.17 (CFS))		
1	47.781	79.397
2	94.855	78.222
3	99.443	7.623
4	100.000	0.926

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2099	0.2099
2	0.2584	0.0485
3	0.2918	0.0334
4	0.3181	0.0263
5	0.3401	0.0220
6	0.3593	0.0191
7	0.3763	0.0170
8	0.3917	0.0154
9	0.4057	0.0141
10	0.4188	0.0130
11	0.4309	0.0121
12	0.4423	0.0114
13	0.4625	0.0202
14	0.4820	0.0195
15	0.5009	0.0189
16	0.5192	0.0183
17	0.5371	0.0178
18	0.5544	0.0174
19	0.5714	0.0170
20	0.5880	0.0166
21	0.6042	0.0162
22	0.6200	0.0159
23	0.6356	0.0155
24	0.6508	0.0153
25	0.6658	0.0150
26	0.6805	0.0147
27	0.6950	0.0145
28	0.7092	0.0142
29	0.7232	0.0140
30	0.7370	0.0138
31	0.7506	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7902	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8283	0.0125
38	0.8407	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8770	0.0120
42	0.8889	0.0118
43	0.9006	0.0117
44	0.9122	0.0116
45	0.9237	0.0115

		AREAB1
46	0.9351	0.0114
47	0.9463	0.0113
48	0.9575	0.0112
49	0.9685	0.0111
50	0.9795	0.0110
51	0.9903	0.0109
52	1.0011	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0536	0.0103
58	1.0639	0.0103
59	1.0740	0.0102
60	1.0841	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1335	0.0097
66	1.1432	0.0097
67	1.1528	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1906	0.0094
72	1.1999	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2212	0.0070
76	1.2282	0.0070
77	1.2352	0.0069
78	1.2420	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2757	0.0066
84	1.2823	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3018	0.0065
88	1.3083	0.0064
89	1.3146	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3335	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3582	0.0061
97	1.3643	0.0061
98	1.3703	0.0060
99	1.3763	0.0060
100	1.3823	0.0060
101	1.3882	0.0059
102	1.3941	0.0059
103	1.4000	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4174	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4402	0.0057
111	1.4459	0.0056
112	1.4514	0.0056
113	1.4570	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4735	0.0055
117	1.4790	0.0055
118	1.4844	0.0054
119	1.4898	0.0054
120	1.4952	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5217	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5425	0.0052

		AREAB1
130	1.5477	0.0051
131	1.5528	0.0051
132	1.5579	0.0051
133	1.5629	0.0051
134	1.5680	0.0051
135	1.5730	0.0050
136	1.5780	0.0050
137	1.5830	0.0050
138	1.5880	0.0050
139	1.5929	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6076	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6460	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6601	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6924	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7060	0.0045
164	1.7105	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7239	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7503	0.0044
174	1.7547	0.0044
175	1.7590	0.0043
176	1.7633	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7762	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7932	0.0042
184	1.7974	0.0042
185	1.8016	0.0042
186	1.8058	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8224	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8429	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8591	0.0040
200	1.8631	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8751	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8870	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039

		AREAB1
214	1.9182	0.0039
215	1.9221	0.0039
216	1.9259	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9563	0.0038
225	1.9601	0.0038
226	1.9638	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9750	0.0037
230	1.9787	0.0037
231	1.9824	0.0037
232	1.9861	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9971	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0117	0.0036
240	2.0153	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0297	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0404	0.0036
248	2.0440	0.0036
249	2.0475	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0581	0.0035
253	2.0616	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0721	0.0035
257	2.0756	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0860	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1066	0.0034
267	2.1100	0.0034
268	2.1134	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1370	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1470	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1734	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0022	0.0011
2	0.0033	0.0022	0.0011
3	0.0033	0.0022	0.0011
4	0.0033	0.0022	0.0011

5	0.0033	0.0022	0.0011
6	0.0033	0.0022	0.0011
7	0.0033	0.0022	0.0011
8	0.0033	0.0022	0.0011
9	0.0033	0.0022	0.0011
10	0.0034	0.0022	0.0011
11	0.0034	0.0022	0.0011
12	0.0034	0.0022	0.0011
13	0.0034	0.0022	0.0011
14	0.0034	0.0022	0.0011
15	0.0034	0.0023	0.0012
16	0.0034	0.0023	0.0012
17	0.0034	0.0023	0.0012
18	0.0034	0.0023	0.0012
19	0.0035	0.0023	0.0012
20	0.0035	0.0023	0.0012
21	0.0035	0.0023	0.0012
22	0.0035	0.0023	0.0012
23	0.0035	0.0023	0.0012
24	0.0035	0.0023	0.0012
25	0.0035	0.0023	0.0012
26	0.0035	0.0023	0.0012
27	0.0035	0.0023	0.0012
28	0.0036	0.0024	0.0012
29	0.0036	0.0024	0.0012
30	0.0036	0.0024	0.0012
31	0.0036	0.0024	0.0012
32	0.0036	0.0024	0.0012
33	0.0036	0.0024	0.0012
34	0.0036	0.0024	0.0012
35	0.0036	0.0024	0.0012
36	0.0037	0.0024	0.0012
37	0.0037	0.0024	0.0012
38	0.0037	0.0024	0.0012
39	0.0037	0.0025	0.0012
40	0.0037	0.0025	0.0013
41	0.0037	0.0025	0.0013
42	0.0037	0.0025	0.0013
43	0.0038	0.0025	0.0013
44	0.0038	0.0025	0.0013
45	0.0038	0.0025	0.0013
46	0.0038	0.0025	0.0013
47	0.0038	0.0025	0.0013
48	0.0038	0.0025	0.0013
49	0.0038	0.0025	0.0013
50	0.0039	0.0026	0.0013
51	0.0039	0.0026	0.0013
52	0.0039	0.0026	0.0013
53	0.0039	0.0026	0.0013
54	0.0039	0.0026	0.0013
55	0.0039	0.0026	0.0013
56	0.0040	0.0026	0.0013
57	0.0040	0.0026	0.0013
58	0.0040	0.0026	0.0013
59	0.0040	0.0027	0.0014
60	0.0040	0.0027	0.0014
61	0.0040	0.0027	0.0014
62	0.0041	0.0027	0.0014
63	0.0041	0.0027	0.0014
64	0.0041	0.0027	0.0014
65	0.0041	0.0027	0.0014
66	0.0041	0.0027	0.0014
67	0.0041	0.0027	0.0014
68	0.0042	0.0028	0.0014
69	0.0042	0.0028	0.0014
70	0.0042	0.0028	0.0014
71	0.0042	0.0028	0.0014
72	0.0042	0.0028	0.0014
73	0.0043	0.0028	0.0014
74	0.0043	0.0028	0.0014
75	0.0043	0.0029	0.0015
76	0.0043	0.0029	0.0015
77	0.0044	0.0029	0.0015
78	0.0044	0.0029	0.0015
79	0.0044	0.0029	0.0015
80	0.0044	0.0029	0.0015
81	0.0044	0.0029	0.0015
82	0.0045	0.0029	0.0015
83	0.0045	0.0030	0.0015
84	0.0045	0.0030	0.0015
85	0.0045	0.0030	0.0015
86	0.0045	0.0030	0.0015
87	0.0046	0.0030	0.0015
88	0.0046	0.0030	0.0016

		AREAB1	
89	0.0046	0.0031	0.0016
90	0.0046	0.0031	0.0016
91	0.0047	0.0031	0.0016
92	0.0047	0.0031	0.0016
93	0.0047	0.0031	0.0016
94	0.0048	0.0031	0.0016
95	0.0048	0.0032	0.0016
96	0.0048	0.0032	0.0016
97	0.0048	0.0032	0.0016
98	0.0049	0.0032	0.0016
99	0.0049	0.0032	0.0017
100	0.0049	0.0033	0.0017
101	0.0050	0.0033	0.0017
102	0.0050	0.0033	0.0017
103	0.0050	0.0033	0.0017
104	0.0051	0.0033	0.0017
105	0.0051	0.0034	0.0017
106	0.0051	0.0034	0.0017
107	0.0052	0.0034	0.0017
108	0.0052	0.0034	0.0018
109	0.0052	0.0035	0.0018
110	0.0053	0.0035	0.0018
111	0.0053	0.0035	0.0018
112	0.0053	0.0035	0.0018
113	0.0054	0.0036	0.0018
114	0.0054	0.0036	0.0018
115	0.0055	0.0036	0.0018
116	0.0055	0.0036	0.0019
117	0.0055	0.0037	0.0019
118	0.0056	0.0037	0.0019
119	0.0056	0.0037	0.0019
120	0.0057	0.0037	0.0019
121	0.0057	0.0038	0.0019
122	0.0057	0.0038	0.0019
123	0.0058	0.0038	0.0020
124	0.0058	0.0039	0.0020
125	0.0059	0.0039	0.0020
126	0.0059	0.0039	0.0020
127	0.0060	0.0040	0.0020
128	0.0060	0.0040	0.0020
129	0.0061	0.0040	0.0021
130	0.0061	0.0041	0.0021
131	0.0062	0.0041	0.0021
132	0.0063	0.0041	0.0021
133	0.0063	0.0042	0.0021
134	0.0064	0.0042	0.0022
135	0.0065	0.0043	0.0022
136	0.0065	0.0043	0.0022
137	0.0066	0.0044	0.0022
138	0.0066	0.0044	0.0022
139	0.0067	0.0045	0.0023
140	0.0068	0.0045	0.0023
141	0.0069	0.0046	0.0023
142	0.0069	0.0046	0.0023
143	0.0070	0.0047	0.0024
144	0.0071	0.0047	0.0024
145	0.0093	0.0062	0.0031
146	0.0094	0.0062	0.0032
147	0.0095	0.0063	0.0032
148	0.0095	0.0063	0.0032
149	0.0097	0.0064	0.0033
150	0.0097	0.0065	0.0033
151	0.0099	0.0065	0.0033
152	0.0099	0.0066	0.0034
153	0.0101	0.0067	0.0034
154	0.0102	0.0067	0.0034
155	0.0103	0.0068	0.0035
156	0.0104	0.0069	0.0035
157	0.0106	0.0070	0.0036
158	0.0107	0.0071	0.0036
159	0.0109	0.0072	0.0037
160	0.0110	0.0073	0.0037
161	0.0112	0.0074	0.0038
162	0.0113	0.0075	0.0038
163	0.0115	0.0076	0.0039
164	0.0116	0.0077	0.0039
165	0.0118	0.0078	0.0040
166	0.0120	0.0079	0.0040
167	0.0122	0.0081	0.0041
168	0.0124	0.0082	0.0042
169	0.0127	0.0084	0.0043
170	0.0129	0.0085	0.0043
171	0.0132	0.0088	0.0045
172	0.0134	0.0089	0.0045

173	0.0138	0.0091	0.0047
174	0.0140	0.0093	0.0047
175	0.0145	0.0096	0.0049
176	0.0147	0.0097	0.0050
177	0.0153	0.0101	0.0051
178	0.0155	0.0103	0.0052
179	0.0162	0.0107	0.0055
180	0.0166	0.0110	0.0056
181	0.0174	0.0115	0.0059
182	0.0178	0.0118	0.0060
183	0.0189	0.0125	0.0064
184	0.0195	0.0129	0.0066
185	0.0114	0.0075	0.0038
186	0.0121	0.0080	0.0041
187	0.0141	0.0093	0.0048
188	0.0154	0.0102	0.0052
189	0.0191	0.0127	0.0065
190	0.0220	0.0146	0.0074
191	0.0334	0.0221	0.0113
192	0.0485	0.0321	0.0164
193	0.2099	0.0374	0.1725
194	0.0263	0.0174	0.0089
195	0.0170	0.0113	0.0057
196	0.0130	0.0086	0.0044
197	0.0202	0.0134	0.0068
198	0.0183	0.0121	0.0062
199	0.0170	0.0112	0.0057
200	0.0159	0.0105	0.0054
201	0.0150	0.0099	0.0051
202	0.0142	0.0094	0.0048
203	0.0136	0.0090	0.0046
204	0.0130	0.0086	0.0044
205	0.0125	0.0083	0.0042
206	0.0121	0.0080	0.0041
207	0.0117	0.0078	0.0040
208	0.0114	0.0075	0.0038
209	0.0111	0.0073	0.0037
210	0.0108	0.0071	0.0036
211	0.0105	0.0070	0.0035
212	0.0103	0.0068	0.0035
213	0.0100	0.0066	0.0034
214	0.0098	0.0065	0.0033
215	0.0096	0.0064	0.0032
216	0.0094	0.0062	0.0032
217	0.0071	0.0047	0.0024
218	0.0070	0.0046	0.0024
219	0.0068	0.0045	0.0023
220	0.0067	0.0044	0.0023
221	0.0066	0.0043	0.0022
222	0.0064	0.0043	0.0022
223	0.0063	0.0042	0.0021
224	0.0062	0.0041	0.0021
225	0.0061	0.0040	0.0021
226	0.0060	0.0040	0.0020
227	0.0059	0.0039	0.0020
228	0.0058	0.0038	0.0019
229	0.0057	0.0038	0.0019
230	0.0056	0.0037	0.0019
231	0.0055	0.0037	0.0019
232	0.0054	0.0036	0.0018
233	0.0054	0.0035	0.0018
234	0.0053	0.0035	0.0018
235	0.0052	0.0034	0.0018
236	0.0051	0.0034	0.0017
237	0.0051	0.0034	0.0017
238	0.0050	0.0033	0.0017
239	0.0049	0.0033	0.0017
240	0.0049	0.0032	0.0016
241	0.0048	0.0032	0.0016
242	0.0048	0.0032	0.0016
243	0.0047	0.0031	0.0016
244	0.0047	0.0031	0.0016
245	0.0046	0.0031	0.0016
246	0.0046	0.0030	0.0015
247	0.0045	0.0030	0.0015
248	0.0045	0.0030	0.0015
249	0.0044	0.0029	0.0015
250	0.0044	0.0029	0.0015
251	0.0043	0.0029	0.0015
252	0.0043	0.0028	0.0014
253	0.0043	0.0028	0.0014
254	0.0042	0.0028	0.0014
255	0.0042	0.0028	0.0014
256	0.0041	0.0027	0.0014

257	0.0041	0.0027	0.0014
258	0.0041	0.0027	0.0014
259	0.0040	0.0027	0.0014
260	0.0040	0.0026	0.0013
261	0.0040	0.0026	0.0013
262	0.0039	0.0026	0.0013
263	0.0039	0.0026	0.0013
264	0.0039	0.0026	0.0013
265	0.0038	0.0025	0.0013
266	0.0038	0.0025	0.0013
267	0.0038	0.0025	0.0013
268	0.0037	0.0025	0.0013
269	0.0037	0.0025	0.0013
270	0.0037	0.0024	0.0012
271	0.0037	0.0024	0.0012
272	0.0036	0.0024	0.0012
273	0.0036	0.0024	0.0012
274	0.0036	0.0024	0.0012
275	0.0036	0.0024	0.0012
276	0.0035	0.0023	0.0012
277	0.0035	0.0023	0.0012
278	0.0035	0.0023	0.0012
279	0.0035	0.0023	0.0012
280	0.0034	0.0023	0.0012
281	0.0034	0.0023	0.0012
282	0.0034	0.0023	0.0011
283	0.0034	0.0022	0.0011
284	0.0034	0.0022	0.0011
285	0.0033	0.0022	0.0011
286	0.0033	0.0022	0.0011
287	0.0033	0.0022	0.0011
288	0.0033	0.0022	0.0011

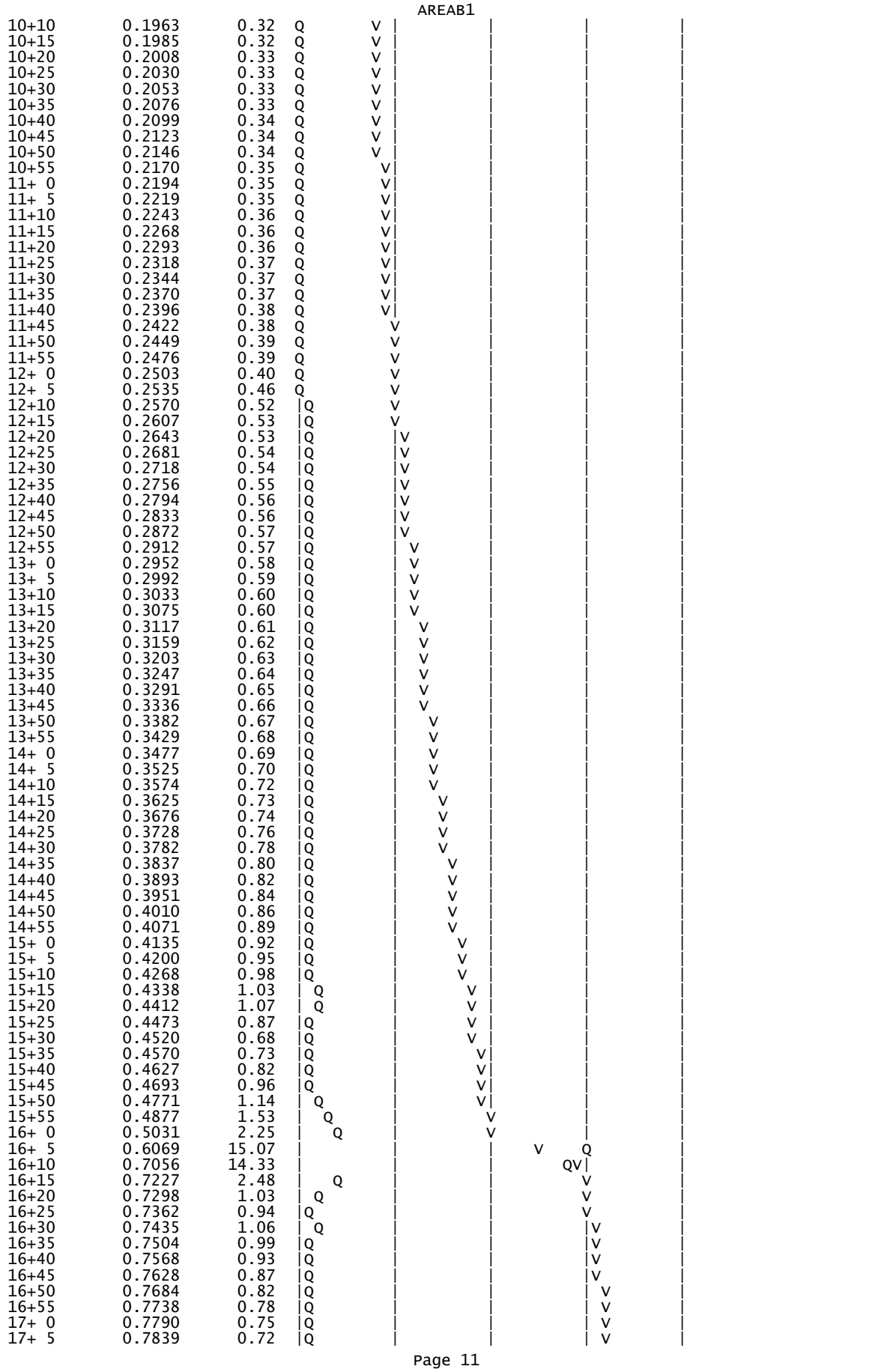
Total soil rain loss = 1.34(In)
Total effective rainfall = 0.84(In)
Peak flow rate in flood hydrograph = 15.07(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0006	0.09	Q				
0+10	0.0018	0.17	Q				
0+15	0.0031	0.18	Q				
0+20	0.0043	0.18	Q				
0+25	0.0056	0.18	Q				
0+30	0.0069	0.19	Q				
0+35	0.0082	0.19	Q				
0+40	0.0094	0.19	Q				
0+45	0.0107	0.19	Q				
0+50	0.0120	0.19	Q				
0+55	0.0133	0.19	Q				
1+ 0	0.0146	0.19	Q				
1+ 5	0.0159	0.19	Q				
1+10	0.0172	0.19	Q				
1+15	0.0185	0.19	Q				
1+20	0.0199	0.19	Q				
1+25	0.0212	0.19	Q				
1+30	0.0225	0.19	Q				
1+35	0.0238	0.19	Q				
1+40	0.0252	0.19	QV				
1+45	0.0265	0.19	QV				
1+50	0.0279	0.20	QV				
1+55	0.0292	0.20	QV				
2+ 0	0.0306	0.20	QV				
2+ 5	0.0319	0.20	QV				
2+10	0.0333	0.20	QV				
2+15	0.0346	0.20	QV				
2+20	0.0360	0.20	QV				
2+25	0.0374	0.20	QV				
2+30	0.0388	0.20	QV				
2+35	0.0402	0.20	QV				
2+40	0.0415	0.20	QV				
2+45	0.0429	0.20	QV				
2+50	0.0443	0.20	QV				
2+55	0.0457	0.20	QV				
3+ 0	0.0472	0.20	QV				
3+ 5	0.0486	0.21	Q V				

3+10	0.0500	0.21	Q V				
3+15	0.0514	0.21	Q V				
3+20	0.0529	0.21	Q V				
3+25	0.0543	0.21	Q V				
3+30	0.0557	0.21	Q V				
3+35	0.0572	0.21	Q V				
3+40	0.0586	0.21	Q V				
3+45	0.0601	0.21	Q V				
3+50	0.0616	0.21	Q V				
3+55	0.0630	0.21	Q V				
4+ 0	0.0645	0.21	Q V				
4+ 5	0.0660	0.22	Q V				
4+10	0.0675	0.22	Q V				
4+15	0.0690	0.22	Q V				
4+20	0.0705	0.22	Q V				
4+25	0.0720	0.22	Q V				
4+30	0.0735	0.22	Q V				
4+35	0.0750	0.22	Q V				
4+40	0.0765	0.22	Q V				
4+45	0.0780	0.22	Q V				
4+50	0.0796	0.22	Q V				
4+55	0.0811	0.22	Q V				
5+ 0	0.0827	0.22	Q V				
5+ 5	0.0842	0.23	Q V				
5+10	0.0858	0.23	Q V				
5+15	0.0874	0.23	Q V				
5+20	0.0889	0.23	Q V				
5+25	0.0905	0.23	Q V				
5+30	0.0921	0.23	Q V				
5+35	0.0937	0.23	Q V				
5+40	0.0953	0.23	Q V				
5+45	0.0969	0.23	Q V				
5+50	0.0985	0.24	Q V				
5+55	0.1002	0.24	Q V				
6+ 0	0.1018	0.24	Q V				
6+ 5	0.1035	0.24	Q V				
6+10	0.1051	0.24	Q V				
6+15	0.1068	0.24	Q V				
6+20	0.1084	0.24	Q V				
6+25	0.1101	0.24	Q V				
6+30	0.1118	0.24	Q V				
6+35	0.1135	0.25	Q V				
6+40	0.1152	0.25	Q V				
6+45	0.1169	0.25	Q V				
6+50	0.1186	0.25	Q V				
6+55	0.1203	0.25	Q V				
7+ 0	0.1221	0.25	Q V				
7+ 5	0.1238	0.25	Q V				
7+10	0.1256	0.25	Q V				
7+15	0.1273	0.26	Q V				
7+20	0.1291	0.26	Q V				
7+25	0.1309	0.26	Q V				
7+30	0.1327	0.26	Q V				
7+35	0.1345	0.26	Q V				
7+40	0.1363	0.26	Q V				
7+45	0.1381	0.26	Q V				
7+50	0.1399	0.27	Q V				
7+55	0.1418	0.27	Q V				
8+ 0	0.1436	0.27	Q V				
8+ 5	0.1455	0.27	Q V				
8+10	0.1474	0.27	Q V				
8+15	0.1493	0.27	Q V				
8+20	0.1512	0.28	Q V				
8+25	0.1531	0.28	Q V				
8+30	0.1550	0.28	Q V				
8+35	0.1569	0.28	Q V				
8+40	0.1589	0.28	Q V				
8+45	0.1608	0.28	Q V				
8+50	0.1628	0.29	Q V				
8+55	0.1648	0.29	Q V				
9+ 0	0.1668	0.29	Q V				
9+ 5	0.1688	0.29	Q V				
9+10	0.1708	0.29	Q V				
9+15	0.1728	0.30	Q V				
9+20	0.1749	0.30	Q V				
9+25	0.1770	0.30	Q V				
9+30	0.1790	0.30	Q V				
9+35	0.1811	0.30	Q V				
9+40	0.1833	0.31	Q V				
9+45	0.1854	0.31	Q V				
9+50	0.1875	0.31	Q V				
9+55	0.1897	0.31	Q V				
10+ 0	0.1919	0.32	Q V				
10+ 5	0.1941	0.32	Q V				



10+10	0.1963	0.32	Q V
10+15	0.1985	0.32	Q V
10+20	0.2008	0.33	Q V
10+25	0.2030	0.33	Q V
10+30	0.2053	0.33	Q V
10+35	0.2076	0.33	Q V
10+40	0.2099	0.34	Q V
10+45	0.2123	0.34	Q V
10+50	0.2146	0.34	Q V
10+55	0.2170	0.35	Q V
11+ 0	0.2194	0.35	Q V
11+ 5	0.2219	0.35	Q V
11+10	0.2243	0.36	Q V
11+15	0.2268	0.36	Q V
11+20	0.2293	0.36	Q V
11+25	0.2318	0.37	Q V
11+30	0.2344	0.37	Q V
11+35	0.2370	0.37	Q V
11+40	0.2396	0.38	Q V
11+45	0.2422	0.38	Q V
11+50	0.2449	0.39	Q V
11+55	0.2476	0.39	Q V
12+ 0	0.2503	0.40	Q V
12+ 5	0.2535	0.46	Q V
12+10	0.2570	0.52	Q V
12+15	0.2607	0.53	Q V
12+20	0.2643	0.53	Q V
12+25	0.2681	0.54	Q V
12+30	0.2718	0.54	Q V
12+35	0.2756	0.55	Q V
12+40	0.2794	0.56	Q V
12+45	0.2833	0.56	Q V
12+50	0.2872	0.57	Q V
12+55	0.2912	0.57	Q V
13+ 0	0.2952	0.58	Q V
13+ 5	0.2992	0.59	Q V
13+10	0.3033	0.60	Q V
13+15	0.3075	0.60	Q V
13+20	0.3117	0.61	Q V
13+25	0.3159	0.62	Q V
13+30	0.3203	0.63	Q V
13+35	0.3247	0.64	Q V
13+40	0.3291	0.65	Q V
13+45	0.3336	0.66	Q V
13+50	0.3382	0.67	Q V
13+55	0.3429	0.68	Q V
14+ 0	0.3477	0.69	Q V
14+ 5	0.3525	0.70	Q V
14+10	0.3574	0.72	Q V
14+15	0.3625	0.73	Q V
14+20	0.3676	0.74	Q V
14+25	0.3728	0.76	Q V
14+30	0.3782	0.78	Q V
14+35	0.3837	0.80	Q V
14+40	0.3893	0.82	Q V
14+45	0.3951	0.84	Q V
14+50	0.4010	0.86	Q V
14+55	0.4071	0.89	Q V
15+ 0	0.4135	0.92	Q V
15+ 5	0.4200	0.95	Q V
15+10	0.4268	0.98	Q V
15+15	0.4338	1.03	Q V
15+20	0.4412	1.07	Q V
15+25	0.4473	0.87	Q V
15+30	0.4520	0.68	Q V
15+35	0.4570	0.73	Q V
15+40	0.4627	0.82	Q V
15+45	0.4693	0.96	Q V
15+50	0.4771	1.14	Q V
15+55	0.4877	1.53	Q V
16+ 0	0.5031	2.25	Q V
16+ 5	0.6069	15.07	V Q
16+10	0.7056	14.33	QV
16+15	0.7227	2.48	Q V
16+20	0.7298	1.03	Q V
16+25	0.7362	0.94	Q V
16+30	0.7435	1.06	Q V
16+35	0.7504	0.99	Q V
16+40	0.7568	0.93	Q V
16+45	0.7628	0.87	Q V
16+50	0.7684	0.82	Q V
16+55	0.7738	0.78	Q V
17+ 0	0.7790	0.75	Q V
17+ 5	0.7839	0.72	Q V

17+10	0.7887	0.69	Q			V	
17+15	0.7933	0.67	Q			V	
17+20	0.7978	0.65	Q			V	
17+25	0.8021	0.63	Q			V	
17+30	0.8064	0.61	Q			V	
17+35	0.8105	0.60	Q			V	
17+40	0.8145	0.58	Q			V	
17+45	0.8184	0.57	Q			V	
17+50	0.8223	0.56	Q			V	
17+55	0.8260	0.55	Q			V	
18+ 0	0.8297	0.53	Q			V	
18+ 5	0.8329	0.47	Q			V	
18+10	0.8357	0.40	Q			V	
18+15	0.8384	0.39	Q			V	
18+20	0.8410	0.38	Q			V	
18+25	0.8436	0.37	Q			V	
18+30	0.8461	0.36	Q			V	
18+35	0.8485	0.36	Q			V	
18+40	0.8510	0.35	Q			V	
18+45	0.8533	0.34	Q			V	
18+50	0.8557	0.34	Q			V	
18+55	0.8579	0.33	Q			V	
19+ 0	0.8602	0.33	Q			V	
19+ 5	0.8624	0.32	Q			V	
19+10	0.8646	0.32	Q			V	
19+15	0.8667	0.31	Q			V	
19+20	0.8689	0.31	Q			V	
19+25	0.8709	0.30	Q			V	
19+30	0.8730	0.30	Q			V	
19+35	0.8750	0.29	Q			V	
19+40	0.8770	0.29	Q			V	
19+45	0.8790	0.29	Q			V	
19+50	0.8810	0.28	Q			V	
19+55	0.8829	0.28	Q			V	
20+ 0	0.8848	0.28	Q			V	
20+ 5	0.8867	0.27	Q			V	
20+10	0.8885	0.27	Q			V	
20+15	0.8904	0.27	Q			V	
20+20	0.8922	0.26	Q			V	
20+25	0.8940	0.26	Q			V	
20+30	0.8957	0.26	Q			V	
20+35	0.8975	0.25	Q			V	
20+40	0.8992	0.25	Q			V	
20+45	0.9009	0.25	Q			V	
20+50	0.9026	0.25	Q			V	
20+55	0.9043	0.24	Q			V	
21+ 0	0.9060	0.24	Q			V	
21+ 5	0.9077	0.24	Q			V	
21+10	0.9093	0.24	Q			V	
21+15	0.9109	0.24	Q			V	
21+20	0.9125	0.23	Q			V	
21+25	0.9141	0.23	Q			V	
21+30	0.9157	0.23	Q			V	
21+35	0.9173	0.23	Q			V	
21+40	0.9188	0.23	Q			V	
21+45	0.9203	0.22	Q			V	
21+50	0.9219	0.22	Q			V	
21+55	0.9234	0.22	Q			V	
22+ 0	0.9249	0.22	Q			V	
22+ 5	0.9264	0.22	Q			V	
22+10	0.9278	0.21	Q			V	
22+15	0.9293	0.21	Q			V	
22+20	0.9308	0.21	Q			V	
22+25	0.9322	0.21	Q			V	
22+30	0.9336	0.21	Q			V	
22+35	0.9351	0.21	Q			V	
22+40	0.9365	0.20	Q			V	
22+45	0.9379	0.20	Q			V	
22+50	0.9393	0.20	Q			V	
22+55	0.9406	0.20	Q			V	
23+ 0	0.9420	0.20	Q			V	
23+ 5	0.9434	0.20	Q			V	
23+10	0.9447	0.20	Q			V	
23+15	0.9461	0.20	Q			V	
23+20	0.9474	0.19	Q			V	
23+25	0.9487	0.19	Q			V	
23+30	0.9501	0.19	Q			V	
23+35	0.9514	0.19	Q			V	
23+40	0.9527	0.19	Q			V	
23+45	0.9540	0.19	Q			V	
23+50	0.9553	0.19	Q			V	
23+55	0.9565	0.19	Q			V	
24+ 0	0.9578	0.18	Q			V	

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

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Study date 06/19/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA B.2
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
12.45	1	0.78
Rainfall data for year 2		
12.45	6	1.20
Rainfall data for year 2		
12.45	24	2.18
Rainfall data for year 100		
12.45	1	1.27
Rainfall data for year 100		
12.45	6	2.86
Rainfall data for year 100		
12.45	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
71.6	52.9	12.45	1.000	0.774	0.600	0.464

Area-averaged adjusted loss rate Fm (In/Hr) = 0.464

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
7.47	0.600	71.6	52.9	8.90	0.008
4.98	0.400	98.0	98.0	0.20	0.896

Area-averaged catchment yield fraction, Y = 0.363
Area-averaged low loss fraction, Yb = 0.637

++
Watercourse length = 1380.00(Ft.)
Length from concentration point to centroid = 320.00(Ft.)
Elevation difference along watercourse = 108.60(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 12.45(Ac.)
Catchment Lag time = 0.024 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 351.6722
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.464(In/Hr)
Average low loss rate fraction (Yb) = 0.637 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 12.45(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.210(In)
30-minute factor = 0.999 Adjusted rainfall = 0.359(In)
1-hour factor = 0.999 Adjusted rainfall = 0.442(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 150.57 (CFS))	
1	63.181	95.131
2	100.000	55.437

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2099	0.2099
2	0.2584	0.0485
3	0.2918	0.0334
4	0.3181	0.0263
5	0.3402	0.0220
6	0.3593	0.0191
7	0.3763	0.0170
8	0.3917	0.0154
9	0.4058	0.0141
10	0.4188	0.0130
11	0.4309	0.0121
12	0.4423	0.0114
13	0.4625	0.0202
14	0.4820	0.0195
15	0.5009	0.0189
16	0.5192	0.0183
17	0.5371	0.0178
18	0.5545	0.0174
19	0.5714	0.0170
20	0.5880	0.0166
21	0.6042	0.0162
22	0.6200	0.0159
23	0.6356	0.0155
24	0.6508	0.0153
25	0.6658	0.0150
26	0.6805	0.0147
27	0.6950	0.0145
28	0.7092	0.0142
29	0.7232	0.0140
30	0.7370	0.0138
31	0.7506	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7902	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8283	0.0125
38	0.8407	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8770	0.0120
42	0.8889	0.0118
43	0.9006	0.0117
44	0.9122	0.0116
45	0.9237	0.0115
46	0.9351	0.0114
47	0.9463	0.0113

		AREAB2
48	0.9575	0.0112
49	0.9685	0.0111
50	0.9795	0.0110
51	0.9904	0.0109
52	1.0011	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0536	0.0103
58	1.0639	0.0103
59	1.0740	0.0102
60	1.0841	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1335	0.0097
66	1.1432	0.0097
67	1.1528	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1906	0.0094
72	1.2000	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2212	0.0070
76	1.2282	0.0070
77	1.2352	0.0069
78	1.2420	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2757	0.0066
84	1.2823	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3018	0.0065
88	1.3083	0.0064
89	1.3147	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3336	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3582	0.0061
97	1.3643	0.0061
98	1.3703	0.0060
99	1.3763	0.0060
100	1.3823	0.0060
101	1.3882	0.0059
102	1.3942	0.0059
103	1.4000	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4174	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4402	0.0057
111	1.4459	0.0056
112	1.4515	0.0056
113	1.4570	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4736	0.0055
117	1.4790	0.0055
118	1.4844	0.0054
119	1.4898	0.0054
120	1.4952	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5217	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5425	0.0052
130	1.5477	0.0051
131	1.5528	0.0051

		AREAB2
132	1.5579	0.0051
133	1.5629	0.0051
134	1.5680	0.0051
135	1.5730	0.0050
136	1.5780	0.0050
137	1.5830	0.0050
138	1.5880	0.0050
139	1.5929	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6076	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6460	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6601	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6924	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7060	0.0045
164	1.7105	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7239	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7503	0.0044
174	1.7547	0.0044
175	1.7590	0.0043
176	1.7634	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7762	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7932	0.0042
184	1.7974	0.0042
185	1.8016	0.0042
186	1.8058	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8224	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8429	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8591	0.0040
200	1.8632	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8751	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8870	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9182	0.0039
215	1.9221	0.0039

		AREAB2
216	1.9259	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9563	0.0038
225	1.9601	0.0038
226	1.9638	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9750	0.0037
230	1.9787	0.0037
231	1.9824	0.0037
232	1.9861	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9972	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0117	0.0036
240	2.0153	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0297	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0405	0.0036
248	2.0440	0.0036
249	2.0476	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0581	0.0035
253	2.0617	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0721	0.0035
257	2.0756	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0860	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1066	0.0034
267	2.1100	0.0034
268	2.1134	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1370	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1470	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1734	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0021	0.0012
2	0.0033	0.0021	0.0012
3	0.0033	0.0021	0.0012
4	0.0033	0.0021	0.0012
5	0.0033	0.0021	0.0012
6	0.0033	0.0021	0.0012

		AREAB2	
7	0.0033	0.0021	0.0012
8	0.0033	0.0021	0.0012
9	0.0033	0.0021	0.0012
10	0.0034	0.0021	0.0012
11	0.0034	0.0021	0.0012
12	0.0034	0.0021	0.0012
13	0.0034	0.0022	0.0012
14	0.0034	0.0022	0.0012
15	0.0034	0.0022	0.0012
16	0.0034	0.0022	0.0012
17	0.0034	0.0022	0.0012
18	0.0034	0.0022	0.0012
19	0.0035	0.0022	0.0013
20	0.0035	0.0022	0.0013
21	0.0035	0.0022	0.0013
22	0.0035	0.0022	0.0013
23	0.0035	0.0022	0.0013
24	0.0035	0.0022	0.0013
25	0.0035	0.0022	0.0013
26	0.0035	0.0022	0.0013
27	0.0035	0.0023	0.0013
28	0.0036	0.0023	0.0013
29	0.0036	0.0023	0.0013
30	0.0036	0.0023	0.0013
31	0.0036	0.0023	0.0013
32	0.0036	0.0023	0.0013
33	0.0036	0.0023	0.0013
34	0.0036	0.0023	0.0013
35	0.0036	0.0023	0.0013
36	0.0037	0.0023	0.0013
37	0.0037	0.0023	0.0013
38	0.0037	0.0023	0.0013
39	0.0037	0.0024	0.0013
40	0.0037	0.0024	0.0013
41	0.0037	0.0024	0.0014
42	0.0037	0.0024	0.0014
43	0.0038	0.0024	0.0014
44	0.0038	0.0024	0.0014
45	0.0038	0.0024	0.0014
46	0.0038	0.0024	0.0014
47	0.0038	0.0024	0.0014
48	0.0038	0.0024	0.0014
49	0.0038	0.0024	0.0014
50	0.0039	0.0025	0.0014
51	0.0039	0.0025	0.0014
52	0.0039	0.0025	0.0014
53	0.0039	0.0025	0.0014
54	0.0039	0.0025	0.0014
55	0.0039	0.0025	0.0014
56	0.0040	0.0025	0.0014
57	0.0040	0.0025	0.0014
58	0.0040	0.0025	0.0014
59	0.0040	0.0026	0.0015
60	0.0040	0.0026	0.0015
61	0.0040	0.0026	0.0015
62	0.0041	0.0026	0.0015
63	0.0041	0.0026	0.0015
64	0.0041	0.0026	0.0015
65	0.0041	0.0026	0.0015
66	0.0041	0.0026	0.0015
67	0.0041	0.0026	0.0015
68	0.0042	0.0027	0.0015
69	0.0042	0.0027	0.0015
70	0.0042	0.0027	0.0015
71	0.0042	0.0027	0.0015
72	0.0042	0.0027	0.0015
73	0.0043	0.0027	0.0015
74	0.0043	0.0027	0.0016
75	0.0043	0.0027	0.0016
76	0.0043	0.0028	0.0016
77	0.0044	0.0028	0.0016
78	0.0044	0.0028	0.0016
79	0.0044	0.0028	0.0016
80	0.0044	0.0028	0.0016
81	0.0044	0.0028	0.0016
82	0.0045	0.0028	0.0016
83	0.0045	0.0029	0.0016
84	0.0045	0.0029	0.0016
85	0.0045	0.0029	0.0016
86	0.0045	0.0029	0.0017
87	0.0046	0.0029	0.0017
88	0.0046	0.0029	0.0017
89	0.0046	0.0029	0.0017
90	0.0046	0.0030	0.0017

		AREAB2	
91	0.0047	0.0030	0.0017
92	0.0047	0.0030	0.0017
93	0.0047	0.0030	0.0017
94	0.0048	0.0030	0.0017
95	0.0048	0.0031	0.0017
96	0.0048	0.0031	0.0017
97	0.0048	0.0031	0.0018
98	0.0049	0.0031	0.0018
99	0.0049	0.0031	0.0018
100	0.0049	0.0031	0.0018
101	0.0050	0.0032	0.0018
102	0.0050	0.0032	0.0018
103	0.0050	0.0032	0.0018
104	0.0051	0.0032	0.0018
105	0.0051	0.0032	0.0018
106	0.0051	0.0033	0.0019
107	0.0052	0.0033	0.0019
108	0.0052	0.0033	0.0019
109	0.0052	0.0033	0.0019
110	0.0053	0.0033	0.0019
111	0.0053	0.0034	0.0019
112	0.0053	0.0034	0.0019
113	0.0054	0.0034	0.0020
114	0.0054	0.0034	0.0020
115	0.0055	0.0035	0.0020
116	0.0055	0.0035	0.0020
117	0.0055	0.0035	0.0020
118	0.0056	0.0035	0.0020
119	0.0056	0.0036	0.0020
120	0.0057	0.0036	0.0021
121	0.0057	0.0036	0.0021
122	0.0057	0.0037	0.0021
123	0.0058	0.0037	0.0021
124	0.0058	0.0037	0.0021
125	0.0059	0.0038	0.0021
126	0.0059	0.0038	0.0022
127	0.0060	0.0038	0.0022
128	0.0060	0.0038	0.0022
129	0.0061	0.0039	0.0022
130	0.0061	0.0039	0.0022
131	0.0062	0.0040	0.0023
132	0.0063	0.0040	0.0023
133	0.0063	0.0040	0.0023
134	0.0064	0.0041	0.0023
135	0.0065	0.0041	0.0023
136	0.0065	0.0041	0.0024
137	0.0066	0.0042	0.0024
138	0.0066	0.0042	0.0024
139	0.0067	0.0043	0.0024
140	0.0068	0.0043	0.0025
141	0.0069	0.0044	0.0025
142	0.0069	0.0044	0.0025
143	0.0070	0.0045	0.0026
144	0.0071	0.0045	0.0026
145	0.0093	0.0059	0.0034
146	0.0094	0.0060	0.0034
147	0.0095	0.0060	0.0034
148	0.0095	0.0061	0.0035
149	0.0097	0.0062	0.0035
150	0.0097	0.0062	0.0035
151	0.0099	0.0063	0.0036
152	0.0099	0.0063	0.0036
153	0.0101	0.0064	0.0037
154	0.0102	0.0065	0.0037
155	0.0103	0.0066	0.0038
156	0.0104	0.0066	0.0038
157	0.0106	0.0067	0.0038
158	0.0107	0.0068	0.0039
159	0.0109	0.0069	0.0039
160	0.0110	0.0070	0.0040
161	0.0112	0.0071	0.0041
162	0.0113	0.0072	0.0041
163	0.0115	0.0073	0.0042
164	0.0116	0.0074	0.0042
165	0.0118	0.0075	0.0043
166	0.0120	0.0076	0.0043
167	0.0122	0.0078	0.0044
168	0.0124	0.0079	0.0045
169	0.0127	0.0081	0.0046
170	0.0129	0.0082	0.0047
171	0.0132	0.0084	0.0048
172	0.0134	0.0085	0.0049
173	0.0138	0.0088	0.0050
174	0.0140	0.0089	0.0051

		AREAB2	
175	0.0145	0.0092	0.0053
176	0.0147	0.0094	0.0053
177	0.0153	0.0097	0.0055
178	0.0155	0.0099	0.0056
179	0.0162	0.0103	0.0059
180	0.0166	0.0106	0.0060
181	0.0174	0.0111	0.0063
182	0.0178	0.0114	0.0065
183	0.0189	0.0120	0.0069
184	0.0195	0.0124	0.0071
185	0.0114	0.0073	0.0041
186	0.0121	0.0077	0.0044
187	0.0141	0.0090	0.0051
188	0.0154	0.0098	0.0056
189	0.0191	0.0122	0.0069
190	0.0220	0.0140	0.0080
191	0.0334	0.0213	0.0121
192	0.0485	0.0309	0.0176
193	0.2099	0.0387	0.1712
194	0.0263	0.0168	0.0096
195	0.0170	0.0108	0.0062
196	0.0130	0.0083	0.0047
197	0.0202	0.0128	0.0073
198	0.0183	0.0117	0.0067
199	0.0170	0.0108	0.0062
200	0.0159	0.0101	0.0058
201	0.0150	0.0095	0.0054
202	0.0142	0.0091	0.0052
203	0.0136	0.0087	0.0049
204	0.0130	0.0083	0.0047
205	0.0125	0.0080	0.0046
206	0.0121	0.0077	0.0044
207	0.0117	0.0075	0.0043
208	0.0114	0.0072	0.0041
209	0.0111	0.0070	0.0040
210	0.0108	0.0069	0.0039
211	0.0105	0.0067	0.0038
212	0.0103	0.0065	0.0037
213	0.0100	0.0064	0.0036
214	0.0098	0.0062	0.0036
215	0.0096	0.0061	0.0035
216	0.0094	0.0060	0.0034
217	0.0071	0.0046	0.0026
218	0.0070	0.0044	0.0025
219	0.0068	0.0044	0.0025
220	0.0067	0.0043	0.0024
221	0.0066	0.0042	0.0024
222	0.0064	0.0041	0.0023
223	0.0063	0.0040	0.0023
224	0.0062	0.0039	0.0022
225	0.0061	0.0039	0.0022
226	0.0060	0.0038	0.0022
227	0.0059	0.0037	0.0021
228	0.0058	0.0037	0.0021
229	0.0057	0.0036	0.0021
230	0.0056	0.0036	0.0020
231	0.0055	0.0035	0.0020
232	0.0054	0.0035	0.0020
233	0.0054	0.0034	0.0019
234	0.0053	0.0034	0.0019
235	0.0052	0.0033	0.0019
236	0.0051	0.0033	0.0019
237	0.0051	0.0032	0.0018
238	0.0050	0.0032	0.0018
239	0.0049	0.0031	0.0018
240	0.0049	0.0031	0.0018
241	0.0048	0.0031	0.0018
242	0.0048	0.0030	0.0017
243	0.0047	0.0030	0.0017
244	0.0047	0.0030	0.0017
245	0.0046	0.0029	0.0017
246	0.0046	0.0029	0.0017
247	0.0045	0.0029	0.0016
248	0.0045	0.0028	0.0016
249	0.0044	0.0028	0.0016
250	0.0044	0.0028	0.0016
251	0.0043	0.0028	0.0016
252	0.0043	0.0027	0.0016
253	0.0043	0.0027	0.0015
254	0.0042	0.0027	0.0015
255	0.0042	0.0027	0.0015
256	0.0041	0.0026	0.0015
257	0.0041	0.0026	0.0015
258	0.0041	0.0026	0.0015

259	0.0040	0.0026	0.0015
260	0.0040	0.0025	0.0015
261	0.0040	0.0025	0.0014
262	0.0039	0.0025	0.0014
263	0.0039	0.0025	0.0014
264	0.0039	0.0025	0.0014
265	0.0038	0.0024	0.0014
266	0.0038	0.0024	0.0014
267	0.0038	0.0024	0.0014
268	0.0037	0.0024	0.0014
269	0.0037	0.0024	0.0014
270	0.0037	0.0024	0.0013
271	0.0037	0.0023	0.0013
272	0.0036	0.0023	0.0013
273	0.0036	0.0023	0.0013
274	0.0036	0.0023	0.0013
275	0.0036	0.0023	0.0013
276	0.0035	0.0023	0.0013
277	0.0035	0.0022	0.0013
278	0.0035	0.0022	0.0013
279	0.0035	0.0022	0.0013
280	0.0034	0.0022	0.0013
281	0.0034	0.0022	0.0012
282	0.0034	0.0022	0.0012
283	0.0034	0.0022	0.0012
284	0.0034	0.0021	0.0012
285	0.0033	0.0021	0.0012
286	0.0033	0.0021	0.0012
287	0.0033	0.0021	0.0012
288	0.0033	0.0021	0.0012

Total soil rain loss = 1.29(In)
Total effective rainfall = 0.89(In)
Peak flow rate in flood hydrograph = 17.26(CFS)

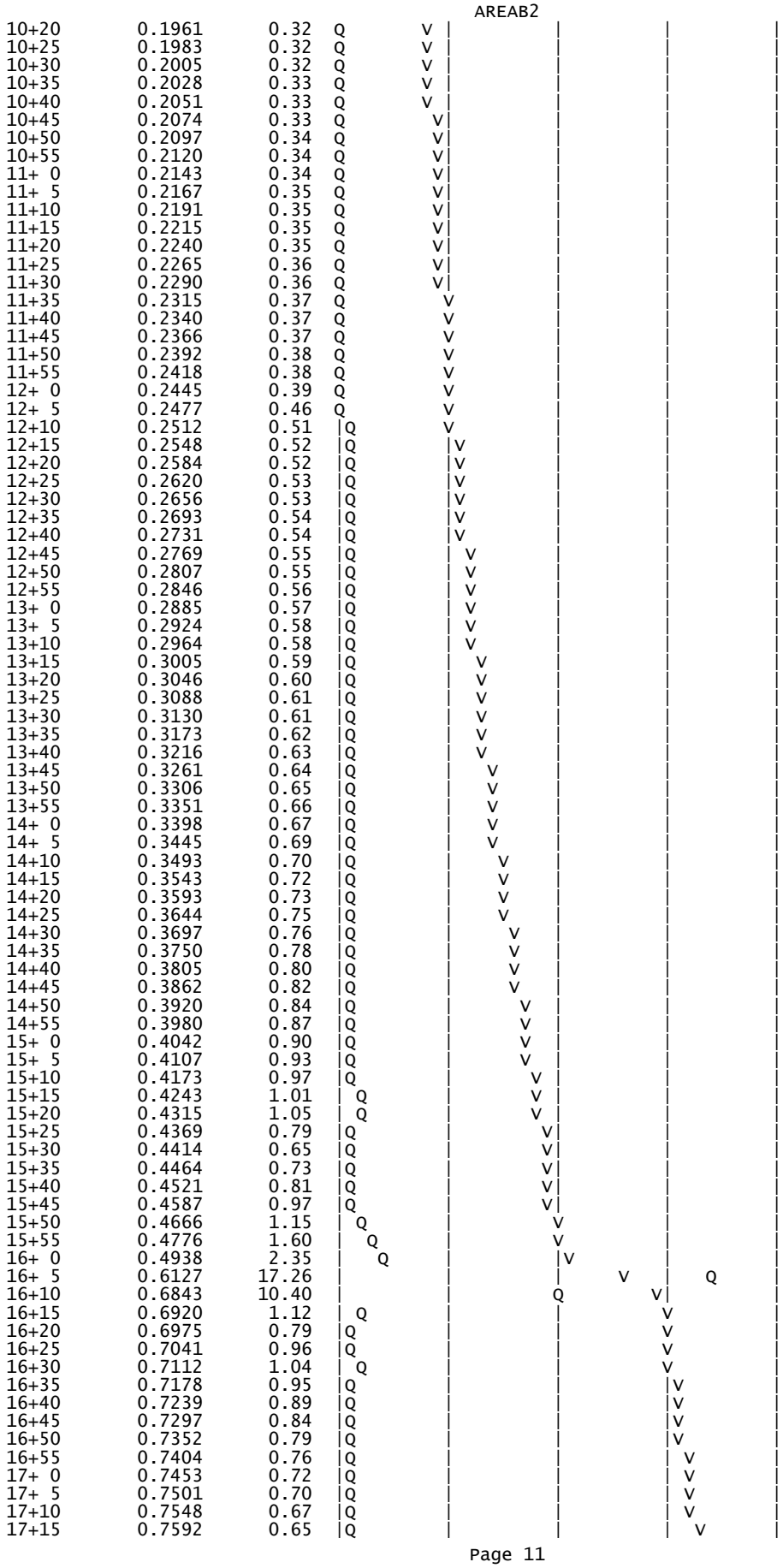
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0008	0.11	Q				
0+10	0.0020	0.18	Q				
0+15	0.0032	0.18	Q				
0+20	0.0045	0.18	Q				
0+25	0.0057	0.18	Q				
0+30	0.0070	0.18	Q				
0+35	0.0082	0.18	Q				
0+40	0.0095	0.18	Q				
0+45	0.0107	0.18	Q				
0+50	0.0120	0.18	Q				
0+55	0.0132	0.18	Q				
1+ 0	0.0145	0.18	Q				
1+ 5	0.0158	0.18	Q				
1+10	0.0171	0.19	Q				
1+15	0.0183	0.19	Q				
1+20	0.0196	0.19	Q				
1+25	0.0209	0.19	Q				
1+30	0.0222	0.19	Q				
1+35	0.0235	0.19	QV				
1+40	0.0248	0.19	QV				
1+45	0.0261	0.19	QV				
1+50	0.0274	0.19	QV				
1+55	0.0287	0.19	QV				
2+ 0	0.0301	0.19	QV				
2+ 5	0.0314	0.19	QV				
2+10	0.0327	0.19	QV				
2+15	0.0340	0.19	QV				
2+20	0.0354	0.19	QV				
2+25	0.0367	0.19	QV				
2+30	0.0381	0.20	QV				
2+35	0.0394	0.20	QV				
2+40	0.0408	0.20	QV				
2+45	0.0421	0.20	QV				
2+50	0.0435	0.20	QV				
2+55	0.0449	0.20	QV				
3+ 0	0.0462	0.20	Q V				
3+ 5	0.0476	0.20	Q V				
3+10	0.0490	0.20	Q V				
3+15	0.0504	0.20	Q V				

3+20	0.0518	0.20	Q	V			
3+25	0.0532	0.20	Q	V			
3+30	0.0546	0.20	Q	V			
3+35	0.0560	0.20	Q	V			
3+40	0.0574	0.21	Q	V			
3+45	0.0589	0.21	Q	V			
3+50	0.0603	0.21	Q	V			
3+55	0.0617	0.21	Q	V			
4+ 0	0.0632	0.21	Q	V			
4+ 5	0.0646	0.21	Q	V			
4+10	0.0661	0.21	Q	V			
4+15	0.0675	0.21	Q	V			
4+20	0.0690	0.21	Q	V			
4+25	0.0704	0.21	Q	V			
4+30	0.0719	0.21	Q	V			
4+35	0.0734	0.21	Q	V			
4+40	0.0749	0.22	Q	V			
4+45	0.0764	0.22	Q	V			
4+50	0.0779	0.22	Q	V			
4+55	0.0794	0.22	Q	V			
5+ 0	0.0809	0.22	Q	V			
5+ 5	0.0824	0.22	Q	V			
5+10	0.0839	0.22	Q	V			
5+15	0.0855	0.22	Q	V			
5+20	0.0870	0.22	Q	V			
5+25	0.0885	0.22	Q	V			
5+30	0.0901	0.23	Q	V			
5+35	0.0917	0.23	Q	V			
5+40	0.0932	0.23	Q	V			
5+45	0.0948	0.23	Q	V			
5+50	0.0964	0.23	Q	V			
5+55	0.0980	0.23	Q	V			
6+ 0	0.0996	0.23	Q	V			
6+ 5	0.1012	0.23	Q	V			
6+10	0.1028	0.23	Q	V			
6+15	0.1044	0.23	Q	V			
6+20	0.1060	0.24	Q	V			
6+25	0.1076	0.24	Q	V			
6+30	0.1093	0.24	Q	V			
6+35	0.1109	0.24	Q	V			
6+40	0.1126	0.24	Q	V			
6+45	0.1143	0.24	Q	V			
6+50	0.1159	0.24	Q	V			
6+55	0.1176	0.24	Q	V			
7+ 0	0.1193	0.25	Q	V			
7+ 5	0.1210	0.25	Q	V			
7+10	0.1227	0.25	Q	V			
7+15	0.1244	0.25	Q	V			
7+20	0.1262	0.25	Q	V			
7+25	0.1279	0.25	Q	V			
7+30	0.1297	0.25	Q	V			
7+35	0.1314	0.26	Q	V			
7+40	0.1332	0.26	Q	V			
7+45	0.1350	0.26	Q	V			
7+50	0.1367	0.26	Q	V			
7+55	0.1385	0.26	Q	V			
8+ 0	0.1403	0.26	Q	V			
8+ 5	0.1422	0.26	Q	V			
8+10	0.1440	0.27	Q	V			
8+15	0.1458	0.27	Q	V			
8+20	0.1477	0.27	Q	V			
8+25	0.1496	0.27	Q	V			
8+30	0.1514	0.27	Q	V			
8+35	0.1533	0.27	Q	V			
8+40	0.1552	0.28	Q	V			
8+45	0.1571	0.28	Q	V			
8+50	0.1591	0.28	Q	V			
8+55	0.1610	0.28	Q	V			
9+ 0	0.1629	0.28	Q	V			
9+ 5	0.1649	0.29	Q	V			
9+10	0.1669	0.29	Q	V			
9+15	0.1689	0.29	Q	V			
9+20	0.1709	0.29	Q	V			
9+25	0.1729	0.29	Q	V			
9+30	0.1749	0.29	Q	V			
9+35	0.1770	0.30	Q	V			
9+40	0.1790	0.30	Q	V			
9+45	0.1811	0.30	Q	V			
9+50	0.1832	0.30	Q	V			
9+55	0.1853	0.31	Q	V			
10+ 0	0.1874	0.31	Q	V			
10+ 5	0.1896	0.31	Q	V			
10+10	0.1917	0.31	Q	V			
10+15	0.1939	0.32	Q	V			



10+20	0.1961	0.32	Q V
10+25	0.1983	0.32	Q V
10+30	0.2005	0.32	Q V
10+35	0.2028	0.33	Q V
10+40	0.2051	0.33	Q V
10+45	0.2074	0.33	Q V
10+50	0.2097	0.34	Q V
10+55	0.2120	0.34	Q V
11+ 0	0.2143	0.34	Q V
11+ 5	0.2167	0.35	Q V
11+10	0.2191	0.35	Q V
11+15	0.2215	0.35	Q V
11+20	0.2240	0.35	Q V
11+25	0.2265	0.36	Q V
11+30	0.2290	0.36	Q V
11+35	0.2315	0.37	Q V
11+40	0.2340	0.37	Q V
11+45	0.2366	0.37	Q V
11+50	0.2392	0.38	Q V
11+55	0.2418	0.38	Q V
12+ 0	0.2445	0.39	Q V
12+ 5	0.2477	0.46	Q V
12+10	0.2512	0.51	Q V
12+15	0.2548	0.52	Q V
12+20	0.2584	0.52	Q V
12+25	0.2620	0.53	Q V
12+30	0.2656	0.53	Q V
12+35	0.2693	0.54	Q V
12+40	0.2731	0.54	Q V
12+45	0.2769	0.55	Q V
12+50	0.2807	0.55	Q V
12+55	0.2846	0.56	Q V
13+ 0	0.2885	0.57	Q V
13+ 5	0.2924	0.58	Q V
13+10	0.2964	0.58	Q V
13+15	0.3005	0.59	Q V
13+20	0.3046	0.60	Q V
13+25	0.3088	0.61	Q V
13+30	0.3130	0.61	Q V
13+35	0.3173	0.62	Q V
13+40	0.3216	0.63	Q V
13+45	0.3261	0.64	Q V
13+50	0.3306	0.65	Q V
13+55	0.3351	0.66	Q V
14+ 0	0.3398	0.67	Q V
14+ 5	0.3445	0.69	Q V
14+10	0.3493	0.70	Q V
14+15	0.3543	0.72	Q V
14+20	0.3593	0.73	Q V
14+25	0.3644	0.75	Q V
14+30	0.3697	0.76	Q V
14+35	0.3750	0.78	Q V
14+40	0.3805	0.80	Q V
14+45	0.3862	0.82	Q V
14+50	0.3920	0.84	Q V
14+55	0.3980	0.87	Q V
15+ 0	0.4042	0.90	Q V
15+ 5	0.4107	0.93	Q V
15+10	0.4173	0.97	Q V
15+15	0.4243	1.01	Q V
15+20	0.4315	1.05	Q V
15+25	0.4369	0.79	Q V
15+30	0.4414	0.65	Q V
15+35	0.4464	0.73	Q V
15+40	0.4521	0.81	Q V
15+45	0.4587	0.97	Q V
15+50	0.4666	1.15	Q V
15+55	0.4776	1.60	Q V
16+ 0	0.4938	2.35	Q V
16+ 5	0.6127	17.26	V Q
16+10	0.6843	10.40	Q V
16+15	0.6920	1.12	Q V
16+20	0.6975	0.79	Q V
16+25	0.7041	0.96	Q V
16+30	0.7112	1.04	Q V
16+35	0.7178	0.95	Q V
16+40	0.7239	0.89	Q V
16+45	0.7297	0.84	Q V
16+50	0.7352	0.79	Q V
16+55	0.7404	0.76	Q V
17+ 0	0.7453	0.72	Q V
17+ 5	0.7501	0.70	Q V
17+10	0.7548	0.67	Q V
17+15	0.7592	0.65	Q V

17+20	0.7636	0.63	Q			V
17+25	0.7678	0.61	Q			V
17+30	0.7719	0.59	Q			V
17+35	0.7758	0.58	Q			V
17+40	0.7797	0.57	Q			V
17+45	0.7835	0.55	Q			V
17+50	0.7873	0.54	Q			V
17+55	0.7909	0.53	Q			V
18+ 0	0.7945	0.52	Q			V
18+ 5	0.7975	0.44	Q			V
18+10	0.8001	0.39	Q			V
18+15	0.8027	0.38	Q			V
18+20	0.8053	0.37	Q			V
18+25	0.8078	0.36	Q			V
18+30	0.8102	0.35	Q			V
18+35	0.8126	0.35	Q			V
18+40	0.8149	0.34	Q			V
18+45	0.8172	0.33	Q			V
18+50	0.8195	0.33	Q			V
18+55	0.8217	0.32	Q			V
19+ 0	0.8239	0.32	Q			V
19+ 5	0.8261	0.31	Q			V
19+10	0.8282	0.31	Q			V
19+15	0.8303	0.30	Q			V
19+20	0.8323	0.30	Q			V
19+25	0.8343	0.29	Q			V
19+30	0.8363	0.29	Q			V
19+35	0.8383	0.29	Q			V
19+40	0.8403	0.28	Q			V
19+45	0.8422	0.28	Q			V
19+50	0.8441	0.28	Q			V
19+55	0.8459	0.27	Q			V
20+ 0	0.8478	0.27	Q			V
20+ 5	0.8496	0.27	Q			V
20+10	0.8514	0.26	Q			V
20+15	0.8532	0.26	Q			V
20+20	0.8550	0.26	Q			V
20+25	0.8567	0.25	Q			V
20+30	0.8584	0.25	Q			V
20+35	0.8601	0.25	Q			V
20+40	0.8618	0.25	Q			V
20+45	0.8635	0.24	Q			V
20+50	0.8652	0.24	Q			V
20+55	0.8668	0.24	Q			V
21+ 0	0.8684	0.24	Q			V
21+ 5	0.8700	0.23	Q			V
21+10	0.8716	0.23	Q			V
21+15	0.8732	0.23	Q			V
21+20	0.8748	0.23	Q			V
21+25	0.8763	0.22	Q			V
21+30	0.8778	0.22	Q			V
21+35	0.8794	0.22	Q			V
21+40	0.8809	0.22	Q			V
21+45	0.8824	0.22	Q			V
21+50	0.8839	0.22	Q			V
21+55	0.8853	0.21	Q			V
22+ 0	0.8868	0.21	Q			V
22+ 5	0.8882	0.21	Q			V
22+10	0.8897	0.21	Q			V
22+15	0.8911	0.21	Q			V
22+20	0.8925	0.21	Q			V
22+25	0.8939	0.20	Q			V
22+30	0.8953	0.20	Q			V
22+35	0.8967	0.20	Q			V
22+40	0.8981	0.20	Q			V
22+45	0.8994	0.20	Q			V
22+50	0.9008	0.20	Q			V
22+55	0.9021	0.20	Q			V
23+ 0	0.9035	0.19	Q			V
23+ 5	0.9048	0.19	Q			V
23+10	0.9061	0.19	Q			V
23+15	0.9074	0.19	Q			V
23+20	0.9087	0.19	Q			V
23+25	0.9100	0.19	Q			V
23+30	0.9113	0.19	Q			V
23+35	0.9126	0.19	Q			V
23+40	0.9138	0.18	Q			V
23+45	0.9151	0.18	Q			V
23+50	0.9163	0.18	Q			V
23+55	0.9176	0.18	Q			V
24+ 0	0.9188	0.18	Q			V

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA C
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
13.87	1	0.78
Rainfall data for year 2		
13.87	6	1.20
Rainfall data for year 2		
13.87	24	2.18
Rainfall data for year 100		
13.87	1	1.27
Rainfall data for year 100		
13.87	6	2.86
Rainfall data for year 100		
13.87	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
61.6	41.6	13.87	1.000	0.901	0.489	0.441

Area-averaged adjusted loss rate Fm (In/Hr) = 0.441

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
6.78	0.489	61.6	41.6	10.90	0.000
7.09	0.511	98.0	98.0	0.20	0.896

Area-averaged catchment yield fraction, Y = 0.458
Area-averaged low loss fraction, Yb = 0.542

++
Watercourse length = 1690.00(Ft.)
Length from concentration point to centroid = 755.00(Ft.)
Elevation difference along watercourse = 102.90(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 13.87(Ac.)
Catchment Lag time = 0.037 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 223.8011
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.441(In/Hr)
Average low loss rate fraction (Yb) = 0.542 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 13.87(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.210(In)
30-minute factor = 0.999 Adjusted rainfall = 0.359(In)
1-hour factor = 0.999 Adjusted rainfall = 0.442(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 167.74 (CFS))	
1	46.728	78.381
2	94.417	79.994
3	99.351	8.276
4	100.000	1.089

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2099	0.2099
2	0.2584	0.0485
3	0.2918	0.0334
4	0.3181	0.0263
5	0.3401	0.0220
6	0.3593	0.0191
7	0.3763	0.0170
8	0.3917	0.0154
9	0.4057	0.0141
10	0.4188	0.0130
11	0.4309	0.0121
12	0.4423	0.0114
13	0.4625	0.0202
14	0.4820	0.0195
15	0.5009	0.0189
16	0.5192	0.0183
17	0.5370	0.0178
18	0.5544	0.0174
19	0.5714	0.0170
20	0.5879	0.0166
21	0.6042	0.0162
22	0.6200	0.0159
23	0.6356	0.0155
24	0.6508	0.0153
25	0.6658	0.0150
26	0.6805	0.0147
27	0.6950	0.0145
28	0.7092	0.0142
29	0.7232	0.0140
30	0.7370	0.0138
31	0.7506	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7902	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8283	0.0125
38	0.8407	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8770	0.0120
42	0.8889	0.0118
43	0.9006	0.0117
44	0.9122	0.0116
45	0.9237	0.0115

		AREAC
46	0.9351	0.0114
47	0.9463	0.0113
48	0.9575	0.0112
49	0.9685	0.0111
50	0.9795	0.0110
51	0.9903	0.0109
52	1.0011	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0536	0.0103
58	1.0639	0.0103
59	1.0740	0.0102
60	1.0841	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1335	0.0097
66	1.1432	0.0097
67	1.1528	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1906	0.0094
72	1.1999	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2212	0.0070
76	1.2282	0.0070
77	1.2352	0.0069
78	1.2420	0.0069
79	1.2489	0.0068
80	1.2556	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2757	0.0066
84	1.2823	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3018	0.0065
88	1.3083	0.0064
89	1.3146	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3335	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3582	0.0061
97	1.3643	0.0061
98	1.3703	0.0060
99	1.3763	0.0060
100	1.3823	0.0060
101	1.3882	0.0059
102	1.3941	0.0059
103	1.4000	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4174	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4402	0.0057
111	1.4459	0.0056
112	1.4514	0.0056
113	1.4570	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4735	0.0055
117	1.4790	0.0055
118	1.4844	0.0054
119	1.4898	0.0054
120	1.4952	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5217	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5425	0.0052

		AREAC
130	1.5477	0.0051
131	1.5528	0.0051
132	1.5579	0.0051
133	1.5629	0.0051
134	1.5680	0.0051
135	1.5730	0.0050
136	1.5780	0.0050
137	1.5830	0.0050
138	1.5880	0.0050
139	1.5929	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6076	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6460	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6601	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6924	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7060	0.0045
164	1.7105	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7239	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7503	0.0044
174	1.7547	0.0044
175	1.7590	0.0043
176	1.7633	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7762	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7932	0.0042
184	1.7974	0.0042
185	1.8016	0.0042
186	1.8058	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8224	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8429	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8591	0.0040
200	1.8631	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8751	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8870	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039

		AREAC
214	1.9182	0.0039
215	1.9221	0.0039
216	1.9259	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9563	0.0038
225	1.9601	0.0038
226	1.9638	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9750	0.0037
230	1.9787	0.0037
231	1.9824	0.0037
232	1.9861	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9971	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0117	0.0036
240	2.0153	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0297	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0404	0.0036
248	2.0440	0.0036
249	2.0475	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0581	0.0035
253	2.0616	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0721	0.0035
257	2.0756	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0860	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1066	0.0034
267	2.1100	0.0034
268	2.1134	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1370	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1470	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1734	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0018	0.0015
2	0.0033	0.0018	0.0015
3	0.0033	0.0018	0.0015
4	0.0033	0.0018	0.0015

5	0.0033	0.0018	0.0015
6	0.0033	0.0018	0.0015
7	0.0033	0.0018	0.0015
8	0.0033	0.0018	0.0015
9	0.0033	0.0018	0.0015
10	0.0034	0.0018	0.0015
11	0.0034	0.0018	0.0015
12	0.0034	0.0018	0.0015
13	0.0034	0.0018	0.0015
14	0.0034	0.0018	0.0016
15	0.0034	0.0018	0.0016
16	0.0034	0.0019	0.0016
17	0.0034	0.0019	0.0016
18	0.0034	0.0019	0.0016
19	0.0035	0.0019	0.0016
20	0.0035	0.0019	0.0016
21	0.0035	0.0019	0.0016
22	0.0035	0.0019	0.0016
23	0.0035	0.0019	0.0016
24	0.0035	0.0019	0.0016
25	0.0035	0.0019	0.0016
26	0.0035	0.0019	0.0016
27	0.0035	0.0019	0.0016
28	0.0036	0.0019	0.0016
29	0.0036	0.0019	0.0016
30	0.0036	0.0019	0.0016
31	0.0036	0.0019	0.0016
32	0.0036	0.0020	0.0016
33	0.0036	0.0020	0.0017
34	0.0036	0.0020	0.0017
35	0.0036	0.0020	0.0017
36	0.0037	0.0020	0.0017
37	0.0037	0.0020	0.0017
38	0.0037	0.0020	0.0017
39	0.0037	0.0020	0.0017
40	0.0037	0.0020	0.0017
41	0.0037	0.0020	0.0017
42	0.0037	0.0020	0.0017
43	0.0038	0.0020	0.0017
44	0.0038	0.0020	0.0017
45	0.0038	0.0021	0.0017
46	0.0038	0.0021	0.0017
47	0.0038	0.0021	0.0017
48	0.0038	0.0021	0.0018
49	0.0038	0.0021	0.0018
50	0.0039	0.0021	0.0018
51	0.0039	0.0021	0.0018
52	0.0039	0.0021	0.0018
53	0.0039	0.0021	0.0018
54	0.0039	0.0021	0.0018
55	0.0039	0.0021	0.0018
56	0.0040	0.0021	0.0018
57	0.0040	0.0022	0.0018
58	0.0040	0.0022	0.0018
59	0.0040	0.0022	0.0018
60	0.0040	0.0022	0.0018
61	0.0040	0.0022	0.0018
62	0.0041	0.0022	0.0019
63	0.0041	0.0022	0.0019
64	0.0041	0.0022	0.0019
65	0.0041	0.0022	0.0019
66	0.0041	0.0022	0.0019
67	0.0041	0.0023	0.0019
68	0.0042	0.0023	0.0019
69	0.0042	0.0023	0.0019
70	0.0042	0.0023	0.0019
71	0.0042	0.0023	0.0019
72	0.0042	0.0023	0.0019
73	0.0043	0.0023	0.0020
74	0.0043	0.0023	0.0020
75	0.0043	0.0023	0.0020
76	0.0043	0.0023	0.0020
77	0.0044	0.0024	0.0020
78	0.0044	0.0024	0.0020
79	0.0044	0.0024	0.0020
80	0.0044	0.0024	0.0020
81	0.0044	0.0024	0.0020
82	0.0045	0.0024	0.0020
83	0.0045	0.0024	0.0021
84	0.0045	0.0024	0.0021
85	0.0045	0.0025	0.0021
86	0.0045	0.0025	0.0021
87	0.0046	0.0025	0.0021
88	0.0046	0.0025	0.0021

89	0.0046	0.0025	0.0021
90	0.0046	0.0025	0.0021
91	0.0047	0.0025	0.0021
92	0.0047	0.0025	0.0022
93	0.0047	0.0026	0.0022
94	0.0048	0.0026	0.0022
95	0.0048	0.0026	0.0022
96	0.0048	0.0026	0.0022
97	0.0048	0.0026	0.0022
98	0.0049	0.0026	0.0022
99	0.0049	0.0027	0.0022
100	0.0049	0.0027	0.0023
101	0.0050	0.0027	0.0023
102	0.0050	0.0027	0.0023
103	0.0050	0.0027	0.0023
104	0.0051	0.0027	0.0023
105	0.0051	0.0028	0.0023
106	0.0051	0.0028	0.0023
107	0.0052	0.0028	0.0024
108	0.0052	0.0028	0.0024
109	0.0052	0.0028	0.0024
110	0.0053	0.0028	0.0024
111	0.0053	0.0029	0.0024
112	0.0053	0.0029	0.0024
113	0.0054	0.0029	0.0025
114	0.0054	0.0029	0.0025
115	0.0055	0.0030	0.0025
116	0.0055	0.0030	0.0025
117	0.0055	0.0030	0.0025
118	0.0056	0.0030	0.0025
119	0.0056	0.0030	0.0026
120	0.0057	0.0031	0.0026
121	0.0057	0.0031	0.0026
122	0.0057	0.0031	0.0026
123	0.0058	0.0031	0.0027
124	0.0058	0.0032	0.0027
125	0.0059	0.0032	0.0027
126	0.0059	0.0032	0.0027
127	0.0060	0.0033	0.0027
128	0.0060	0.0033	0.0028
129	0.0061	0.0033	0.0028
130	0.0061	0.0033	0.0028
131	0.0062	0.0034	0.0028
132	0.0063	0.0034	0.0029
133	0.0063	0.0034	0.0029
134	0.0064	0.0035	0.0029
135	0.0065	0.0035	0.0030
136	0.0065	0.0035	0.0030
137	0.0066	0.0036	0.0030
138	0.0066	0.0036	0.0030
139	0.0067	0.0037	0.0031
140	0.0068	0.0037	0.0031
141	0.0069	0.0037	0.0032
142	0.0069	0.0038	0.0032
143	0.0070	0.0038	0.0032
144	0.0071	0.0038	0.0032
145	0.0093	0.0050	0.0043
146	0.0094	0.0051	0.0043
147	0.0095	0.0051	0.0043
148	0.0095	0.0052	0.0044
149	0.0097	0.0052	0.0044
150	0.0097	0.0053	0.0045
151	0.0099	0.0054	0.0045
152	0.0099	0.0054	0.0046
153	0.0101	0.0055	0.0046
154	0.0102	0.0055	0.0047
155	0.0103	0.0056	0.0047
156	0.0104	0.0056	0.0048
157	0.0106	0.0057	0.0048
158	0.0107	0.0058	0.0049
159	0.0109	0.0059	0.0050
160	0.0110	0.0059	0.0050
161	0.0112	0.0060	0.0051
162	0.0113	0.0061	0.0052
163	0.0115	0.0062	0.0053
164	0.0116	0.0063	0.0053
165	0.0118	0.0064	0.0054
166	0.0120	0.0065	0.0055
167	0.0122	0.0066	0.0056
168	0.0124	0.0067	0.0057
169	0.0127	0.0069	0.0058
170	0.0129	0.0070	0.0059
171	0.0132	0.0072	0.0060
172	0.0134	0.0073	0.0061

173	0.0138	0.0075	0.0063
174	0.0140	0.0076	0.0064
175	0.0145	0.0078	0.0066
176	0.0147	0.0080	0.0067
177	0.0153	0.0083	0.0070
178	0.0155	0.0084	0.0071
179	0.0162	0.0088	0.0074
180	0.0166	0.0090	0.0076
181	0.0174	0.0094	0.0080
182	0.0178	0.0097	0.0082
183	0.0189	0.0102	0.0086
184	0.0195	0.0106	0.0089
185	0.0114	0.0062	0.0052
186	0.0121	0.0066	0.0056
187	0.0141	0.0076	0.0064
188	0.0154	0.0083	0.0070
189	0.0191	0.0104	0.0088
190	0.0220	0.0119	0.0101
191	0.0334	0.0181	0.0153
192	0.0485	0.0263	0.0222
193	0.2099	0.0367	0.1731
194	0.0263	0.0143	0.0120
195	0.0170	0.0092	0.0078
196	0.0130	0.0071	0.0060
197	0.0202	0.0109	0.0092
198	0.0183	0.0099	0.0084
199	0.0170	0.0092	0.0078
200	0.0159	0.0086	0.0073
201	0.0150	0.0081	0.0069
202	0.0142	0.0077	0.0065
203	0.0136	0.0074	0.0062
204	0.0130	0.0071	0.0060
205	0.0125	0.0068	0.0057
206	0.0121	0.0066	0.0055
207	0.0117	0.0064	0.0054
208	0.0114	0.0062	0.0052
209	0.0111	0.0060	0.0051
210	0.0108	0.0058	0.0049
211	0.0105	0.0057	0.0048
212	0.0103	0.0056	0.0047
213	0.0100	0.0054	0.0046
214	0.0098	0.0053	0.0045
215	0.0096	0.0052	0.0044
216	0.0094	0.0051	0.0043
217	0.0071	0.0039	0.0033
218	0.0070	0.0038	0.0032
219	0.0068	0.0037	0.0031
220	0.0067	0.0036	0.0031
221	0.0066	0.0036	0.0030
222	0.0064	0.0035	0.0029
223	0.0063	0.0034	0.0029
224	0.0062	0.0034	0.0028
225	0.0061	0.0033	0.0028
226	0.0060	0.0032	0.0027
227	0.0059	0.0032	0.0027
228	0.0058	0.0031	0.0026
229	0.0057	0.0031	0.0026
230	0.0056	0.0030	0.0026
231	0.0055	0.0030	0.0025
232	0.0054	0.0029	0.0025
233	0.0054	0.0029	0.0025
234	0.0053	0.0029	0.0024
235	0.0052	0.0028	0.0024
236	0.0051	0.0028	0.0024
237	0.0051	0.0028	0.0023
238	0.0050	0.0027	0.0023
239	0.0049	0.0027	0.0023
240	0.0049	0.0026	0.0022
241	0.0048	0.0026	0.0022
242	0.0048	0.0026	0.0022
243	0.0047	0.0026	0.0022
244	0.0047	0.0025	0.0021
245	0.0046	0.0025	0.0021
246	0.0046	0.0025	0.0021
247	0.0045	0.0024	0.0021
248	0.0045	0.0024	0.0020
249	0.0044	0.0024	0.0020
250	0.0044	0.0024	0.0020
251	0.0043	0.0024	0.0020
252	0.0043	0.0023	0.0020
253	0.0043	0.0023	0.0019
254	0.0042	0.0023	0.0019
255	0.0042	0.0023	0.0019
256	0.0041	0.0022	0.0019

257	0.0041	0.0022	0.0019
258	0.0041	0.0022	0.0019
259	0.0040	0.0022	0.0018
260	0.0040	0.0022	0.0018
261	0.0040	0.0021	0.0018
262	0.0039	0.0021	0.0018
263	0.0039	0.0021	0.0018
264	0.0039	0.0021	0.0018
265	0.0038	0.0021	0.0018
266	0.0038	0.0021	0.0017
267	0.0038	0.0020	0.0017
268	0.0037	0.0020	0.0017
269	0.0037	0.0020	0.0017
270	0.0037	0.0020	0.0017
271	0.0037	0.0020	0.0017
272	0.0036	0.0020	0.0017
273	0.0036	0.0020	0.0017
274	0.0036	0.0019	0.0016
275	0.0036	0.0019	0.0016
276	0.0035	0.0019	0.0016
277	0.0035	0.0019	0.0016
278	0.0035	0.0019	0.0016
279	0.0035	0.0019	0.0016
280	0.0034	0.0019	0.0016
281	0.0034	0.0019	0.0016
282	0.0034	0.0018	0.0016
283	0.0034	0.0018	0.0015
284	0.0034	0.0018	0.0015
285	0.0033	0.0018	0.0015
286	0.0033	0.0018	0.0015
287	0.0033	0.0018	0.0015
288	0.0033	0.0018	0.0015

Total soil rain loss = 1.10(In)
Total effective rainfall = 1.07(In)
Peak flow rate in flood hydrograph = 15.49(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0008	0.12	Q				
0+10	0.0024	0.24	Q				
0+15	0.0042	0.25	Q				
0+20	0.0059	0.25	Q				
0+25	0.0076	0.25	Q				
0+30	0.0094	0.25	Q				
0+35	0.0111	0.25	Q				
0+40	0.0129	0.26	Q				
0+45	0.0147	0.26	Q				
0+50	0.0164	0.26	Q				
0+55	0.0182	0.26	Q				
1+ 0	0.0200	0.26	Q				
1+ 5	0.0218	0.26	Q				
1+10	0.0236	0.26	Q				
1+15	0.0254	0.26	Q				
1+20	0.0272	0.26	Q				
1+25	0.0290	0.26	Q				
1+30	0.0308	0.26	Q				
1+35	0.0326	0.26	QV				
1+40	0.0344	0.27	QV				
1+45	0.0363	0.27	QV				
1+50	0.0381	0.27	QV				
1+55	0.0400	0.27	QV				
2+ 0	0.0418	0.27	QV				
2+ 5	0.0437	0.27	QV				
2+10	0.0455	0.27	QV				
2+15	0.0474	0.27	QV				
2+20	0.0493	0.27	QV				
2+25	0.0512	0.27	QV				
2+30	0.0530	0.27	QV				
2+35	0.0549	0.28	QV				
2+40	0.0568	0.28	QV				
2+45	0.0588	0.28	QV				
2+50	0.0607	0.28	QV				
2+55	0.0626	0.28	Q V				
3+ 0	0.0645	0.28	Q V				
3+ 5	0.0665	0.28	Q V				

3+10	0.0684	0.28	Q V				
3+15	0.0704	0.28	Q V				
3+20	0.0723	0.28	Q V				
3+25	0.0743	0.29	Q V				
3+30	0.0763	0.29	Q V				
3+35	0.0782	0.29	Q V				
3+40	0.0802	0.29	Q V				
3+45	0.0822	0.29	Q V				
3+50	0.0842	0.29	Q V				
3+55	0.0862	0.29	Q V				
4+ 0	0.0883	0.29	Q V				
4+ 5	0.0903	0.29	Q V				
4+10	0.0923	0.30	Q V				
4+15	0.0944	0.30	Q V				
4+20	0.0964	0.30	Q V				
4+25	0.0985	0.30	Q V				
4+30	0.1005	0.30	Q V				
4+35	0.1026	0.30	Q V				
4+40	0.1047	0.30	Q V				
4+45	0.1068	0.30	Q V				
4+50	0.1089	0.31	Q V				
4+55	0.1110	0.31	Q V				
5+ 0	0.1131	0.31	Q V				
5+ 5	0.1153	0.31	Q V				
5+10	0.1174	0.31	Q V				
5+15	0.1195	0.31	Q V				
5+20	0.1217	0.31	Q V				
5+25	0.1239	0.31	Q V				
5+30	0.1260	0.32	Q V				
5+35	0.1282	0.32	Q V				
5+40	0.1304	0.32	Q V				
5+45	0.1326	0.32	Q V				
5+50	0.1349	0.32	Q V				
5+55	0.1371	0.32	Q V				
6+ 0	0.1393	0.32	Q V				
6+ 5	0.1416	0.33	Q V				
6+10	0.1438	0.33	Q V				
6+15	0.1461	0.33	Q V				
6+20	0.1484	0.33	Q V				
6+25	0.1507	0.33	Q V				
6+30	0.1530	0.33	Q V				
6+35	0.1553	0.34	Q V				
6+40	0.1576	0.34	Q V				
6+45	0.1600	0.34	Q V				
6+50	0.1623	0.34	Q V				
6+55	0.1647	0.34	Q V				
7+ 0	0.1670	0.34	Q V				
7+ 5	0.1694	0.35	Q V				
7+10	0.1718	0.35	Q V				
7+15	0.1742	0.35	Q V				
7+20	0.1767	0.35	Q V				
7+25	0.1791	0.35	Q V				
7+30	0.1816	0.36	Q V				
7+35	0.1840	0.36	Q V				
7+40	0.1865	0.36	Q V				
7+45	0.1890	0.36	Q V				
7+50	0.1915	0.36	Q V				
7+55	0.1940	0.37	Q V				
8+ 0	0.1966	0.37	Q V				
8+ 5	0.1991	0.37	Q V				
8+10	0.2017	0.37	Q V				
8+15	0.2043	0.37	Q V				
8+20	0.2069	0.38	Q V				
8+25	0.2095	0.38	Q V				
8+30	0.2121	0.38	Q V				
8+35	0.2147	0.38	Q V				
8+40	0.2174	0.39	Q V				
8+45	0.2201	0.39	Q V				
8+50	0.2228	0.39	Q V				
8+55	0.2255	0.39	Q V				
9+ 0	0.2282	0.40	Q V				
9+ 5	0.2310	0.40	Q V				
9+10	0.2338	0.40	Q V				
9+15	0.2365	0.41	Q V				
9+20	0.2394	0.41	Q V				
9+25	0.2422	0.41	Q V				
9+30	0.2450	0.41	Q V				
9+35	0.2479	0.42	Q V				
9+40	0.2508	0.42	Q V				
9+45	0.2537	0.42	Q V				
9+50	0.2566	0.43	Q V				
9+55	0.2596	0.43	Q V				
10+ 0	0.2626	0.43	Q V				
10+ 5	0.2656	0.44	Q V				

10+10	0.2686	0.44	Q V | | | |
10+15	0.2717	0.44	Q V | | | |
10+20	0.2747	0.45	Q V | | | |
10+25	0.2778	0.45	Q V | | | |
10+30	0.2810	0.45	Q V| | | |
10+35	0.2841	0.46	Q V| | | |
10+40	0.2873	0.46	Q V| | | |
10+45	0.2905	0.47	Q V| | | |
10+50	0.2938	0.47	Q V| | | |
10+55	0.2970	0.47	Q V| | | |
11+ 0	0.3003	0.48	Q V| | | |
11+ 5	0.3037	0.48	Q V| | | |
11+10	0.3070	0.49	Q V| | | |
11+15	0.3104	0.49	Q V| | | |
11+20	0.3138	0.50	Q V | | |
11+25	0.3173	0.50	|Q V | | |
11+30	0.3208	0.51	|Q V | | |
11+35	0.3243	0.51	|Q V | | |
11+40	0.3279	0.52	|Q V | | |
11+45	0.3315	0.52	|Q V | | |
11+50	0.3352	0.53	|Q V | | |
11+55	0.3388	0.54	|Q V | | |
12+ 0	0.3426	0.54	|Q |V | | |
12+ 5	0.3469	0.62	|Q |V | | |
12+10	0.3517	0.71	|Q |V | | |
12+15	0.3567	0.72	|Q |V | | |
12+20	0.3617	0.73	|Q |V | | |
12+25	0.3668	0.74	|Q |V | | |
12+30	0.3720	0.74	|Q |V | | |
12+35	0.3771	0.75	|Q | V | | |
12+40	0.3824	0.76	|Q | V | | |
12+45	0.3877	0.77	|Q | V | | |
12+50	0.3930	0.78	|Q | V | | |
12+55	0.3984	0.79	|Q | V | | |
13+ 0	0.4039	0.80	|Q | V | | |
13+ 5	0.4095	0.81	|Q | V | | |
13+10	0.4151	0.82	|Q | V | | |
13+15	0.4208	0.83	|Q | V | | |
13+20	0.4265	0.84	|Q | V | | |
13+25	0.4324	0.85	|Q | V | | |
13+30	0.4383	0.86	|Q | V | | |
13+35	0.4443	0.87	|Q | V | | |
13+40	0.4504	0.88	|Q | V | | |
13+45	0.4566	0.90	|Q | V | | |
13+50	0.4629	0.91	|Q | V | | |
13+55	0.4693	0.93	|Q | V | | |
14+ 0	0.4758	0.94	|Q | V | | |
14+ 5	0.4824	0.96	|Q | V | | |
14+10	0.4891	0.98	|Q | V | | |
14+15	0.4960	1.00	|Q | V | | |
14+20	0.5030	1.02	| Q | V | | |
14+25	0.5102	1.04	| Q | V | | |
14+30	0.5175	1.06	| Q | V | | |
14+35	0.5251	1.09	| Q | V | | |
14+40	0.5328	1.12	| Q | V | | |
14+45	0.5407	1.15	| Q | V | | |
14+50	0.5488	1.18	| Q | V | | |
14+55	0.5572	1.22	| Q | V | | |
15+ 0	0.5658	1.25	| Q | V | | |
15+ 5	0.5747	1.30	| Q | V | | |
15+10	0.5840	1.35	| Q | V | | |
15+15	0.5937	1.41	| Q | V| | |
15+20	0.6038	1.47	| Q | V| | |
15+25	0.6121	1.20	| Q | V| | |
15+30	0.6185	0.94	|Q | V| | |
15+35	0.6254	1.00	| Q | V | | |
15+40	0.6332	1.12	| Q | V | | |
15+45	0.6422	1.31	| Q | V | | |
15+50	0.6529	1.56	| Q | |V | |
15+55	0.6672	2.09	| Q | |V | |
16+ 0	0.6883	3.06	| Q | | V | |
16+ 5	0.7950	15.49	| | | V Q |
16+10	0.8982	15.00	| | | VQ| |
16+15	0.9191	3.03	| Q | | V| |
16+20	0.9286	1.38	| Q | | V| |
16+25	0.9374	1.28	| Q | | V |
16+30	0.9474	1.45	| Q | | V |
16+35	0.9568	1.36	| Q | | V |
16+40	0.9655	1.27	| Q | | |V |
16+45	0.9738	1.19	| Q | | |V |
16+50	0.9815	1.13	| Q | | |V |
16+55	0.9889	1.07	| Q | | |V |
17+ 0	0.9960	1.03	| Q | | | V |
17+ 5	1.0028	0.99	|Q | | | V |

17+10	1.0093	0.95	Q			V
17+15	1.0156	0.92	Q			V
17+20	1.0218	0.89	Q			V
17+25	1.0277	0.86	Q			V
17+30	1.0335	0.84	Q			V
17+35	1.0391	0.82	Q			V
17+40	1.0446	0.80	Q			V
17+45	1.0500	0.78	Q			V
17+50	1.0552	0.76	Q			V
17+55	1.0604	0.75	Q			V
18+ 0	1.0654	0.73	Q			V
18+ 5	1.0699	0.64	Q			V
18+10	1.0737	0.55	Q			V
18+15	1.0773	0.53	Q			V
18+20	1.0809	0.52	Q			V
18+25	1.0844	0.51	Q			V
18+30	1.0879	0.50	Q			V
18+35	1.0912	0.49	Q			V
18+40	1.0945	0.48	Q			V
18+45	1.0978	0.47	Q			V
18+50	1.1010	0.46	Q			V
18+55	1.1041	0.46	Q			V
19+ 0	1.1072	0.45	Q			V
19+ 5	1.1102	0.44	Q			V
19+10	1.1132	0.43	Q			V
19+15	1.1162	0.43	Q			V
19+20	1.1191	0.42	Q			V
19+25	1.1219	0.41	Q			V
19+30	1.1247	0.41	Q			V
19+35	1.1275	0.40	Q			V
19+40	1.1303	0.40	Q			V
19+45	1.1330	0.39	Q			V
19+50	1.1356	0.39	Q			V
19+55	1.1383	0.38	Q			V
20+ 0	1.1409	0.38	Q			V
20+ 5	1.1434	0.37	Q			V
20+10	1.1460	0.37	Q			V
20+15	1.1485	0.36	Q			V
20+20	1.1510	0.36	Q			V
20+25	1.1534	0.36	Q			V
20+30	1.1559	0.35	Q			V
20+35	1.1583	0.35	Q			V
20+40	1.1606	0.35	Q			V
20+45	1.1630	0.34	Q			V
20+50	1.1653	0.34	Q			V
20+55	1.1676	0.33	Q			V
21+ 0	1.1699	0.33	Q			V
21+ 5	1.1722	0.33	Q			V
21+10	1.1744	0.33	Q			V
21+15	1.1766	0.32	Q			V
21+20	1.1788	0.32	Q			V
21+25	1.1810	0.32	Q			V
21+30	1.1832	0.31	Q			V
21+35	1.1853	0.31	Q			V
21+40	1.1874	0.31	Q			V
21+45	1.1895	0.31	Q			V
21+50	1.1916	0.30	Q			V
21+55	1.1937	0.30	Q			V
22+ 0	1.1958	0.30	Q			V
22+ 5	1.1978	0.30	Q			V
22+10	1.1998	0.29	Q			V
22+15	1.2018	0.29	Q			V
22+20	1.2038	0.29	Q			V
22+25	1.2058	0.29	Q			V
22+30	1.2077	0.28	Q			V
22+35	1.2097	0.28	Q			V
22+40	1.2116	0.28	Q			V
22+45	1.2135	0.28	Q			V
22+50	1.2154	0.28	Q			V
22+55	1.2173	0.27	Q			V
23+ 0	1.2192	0.27	Q			V
23+ 5	1.2211	0.27	Q			V
23+10	1.2229	0.27	Q			V
23+15	1.2248	0.27	Q			V
23+20	1.2266	0.27	Q			V
23+25	1.2284	0.26	Q			V
23+30	1.2302	0.26	Q			V
23+35	1.2320	0.26	Q			V
23+40	1.2338	0.26	Q			V
23+45	1.2356	0.26	Q			V
23+50	1.2373	0.26	Q			V
23+55	1.2391	0.25	Q			V
24+ 0	1.2408	0.25	Q			V

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA D
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
4.42	1	0.78
Rainfall data for year 2		
4.42	6	1.20
Rainfall data for year 2		
4.42	24	2.18
Rainfall data for year 100		
4.42	1	1.27
Rainfall data for year 100		
4.42	6	2.86
Rainfall data for year 100		
4.42	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	49.8	4.42	1.000	0.812	0.036	0.029

Area-averaged adjusted loss rate Fm (In/Hr) = 0.029

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
0.16	0.036	69.0	49.8	10.08	0.001
4.26	0.964	98.0	98.0	0.20	0.896

Area-averaged catchment yield fraction, Y = 0.864
Area-averaged low loss fraction, Yb = 0.136

++
Watercourse length = 1155.00(Ft.)
Length from concentration point to centroid = 490.00(Ft.)
Elevation difference along watercourse = 108.50(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 4.42(Ac.)
Catchment Lag time = 0.025 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 330.9816
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.029(In/Hr)
Average low loss rate fraction (Yb) = 0.136 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 4.42(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.210(In)
30-minute factor = 1.000 Adjusted rainfall = 0.359(In)
1-hour factor = 1.000 Adjusted rainfall = 0.443(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 53.45 (CFS))	
1	61.143	32.684
2	98.623	20.034
3	100.000	0.736

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2100	0.2100
2	0.2585	0.0485
3	0.2919	0.0334
4	0.3183	0.0263
5	0.3403	0.0220
6	0.3594	0.0191
7	0.3764	0.0170
8	0.3918	0.0154
9	0.4059	0.0141
10	0.4190	0.0130
11	0.4311	0.0122
12	0.4425	0.0114
13	0.4627	0.0202
14	0.4822	0.0195
15	0.5011	0.0189
16	0.5194	0.0183
17	0.5372	0.0178
18	0.5546	0.0174
19	0.5715	0.0170
20	0.5881	0.0166
21	0.6043	0.0162
22	0.6202	0.0159
23	0.6357	0.0155
24	0.6509	0.0152
25	0.6659	0.0150
26	0.6806	0.0147
27	0.6951	0.0145
28	0.7093	0.0142
29	0.7233	0.0140
30	0.7371	0.0138
31	0.7506	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7903	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8284	0.0125
38	0.8408	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8771	0.0120
42	0.8889	0.0118
43	0.9006	0.0117
44	0.9122	0.0116
45	0.9237	0.0115
46	0.9351	0.0114

		AREAD
47	0.9464	0.0113
48	0.9575	0.0112
49	0.9686	0.0111
50	0.9795	0.0110
51	0.9904	0.0109
52	1.0012	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0536	0.0103
58	1.0639	0.0103
59	1.0741	0.0102
60	1.0842	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1336	0.0097
66	1.1432	0.0097
67	1.1529	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1907	0.0094
72	1.2000	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2213	0.0070
76	1.2283	0.0070
77	1.2352	0.0069
78	1.2421	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2758	0.0066
84	1.2823	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3019	0.0065
88	1.3083	0.0064
89	1.3147	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3336	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3583	0.0061
97	1.3643	0.0061
98	1.3704	0.0060
99	1.3764	0.0060
100	1.3823	0.0060
101	1.3883	0.0059
102	1.3942	0.0059
103	1.4001	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4175	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4403	0.0057
111	1.4459	0.0056
112	1.4515	0.0056
113	1.4570	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4736	0.0055
117	1.4790	0.0055
118	1.4845	0.0054
119	1.4899	0.0054
120	1.4953	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5218	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5426	0.0052
130	1.5477	0.0051

		AREAD
131	1.5528	0.0051
132	1.5579	0.0051
133	1.5630	0.0051
134	1.5680	0.0051
135	1.5731	0.0050
136	1.5781	0.0050
137	1.5830	0.0050
138	1.5880	0.0050
139	1.5930	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6077	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6461	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6602	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6925	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7061	0.0045
164	1.7106	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7240	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7504	0.0044
174	1.7547	0.0044
175	1.7591	0.0043
176	1.7634	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7763	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7932	0.0042
184	1.7975	0.0042
185	1.8017	0.0042
186	1.8059	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8225	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8430	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8592	0.0040
200	1.8632	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8752	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8870	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9183	0.0039

		AREAD
215	1.9221	0.0039
216	1.9260	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9564	0.0038
225	1.9601	0.0038
226	1.9639	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9751	0.0037
230	1.9788	0.0037
231	1.9825	0.0037
232	1.9862	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9972	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0117	0.0036
240	2.0154	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0298	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0405	0.0036
248	2.0440	0.0036
249	2.0476	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0582	0.0035
253	2.0617	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0722	0.0035
257	2.0757	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0861	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1066	0.0034
267	2.1101	0.0034
268	2.1135	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1371	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1471	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1735	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0004	0.0028
2	0.0033	0.0004	0.0028
3	0.0033	0.0004	0.0028
4	0.0033	0.0004	0.0028
5	0.0033	0.0005	0.0029

6	0.0033	0.0005	0.0029
7	0.0033	0.0005	0.0029
8	0.0033	0.0005	0.0029
9	0.0033	0.0005	0.0029
10	0.0034	0.0005	0.0029
11	0.0034	0.0005	0.0029
12	0.0034	0.0005	0.0029
13	0.0034	0.0005	0.0029
14	0.0034	0.0005	0.0029
15	0.0034	0.0005	0.0029
16	0.0034	0.0005	0.0029
17	0.0034	0.0005	0.0030
18	0.0034	0.0005	0.0030
19	0.0035	0.0005	0.0030
20	0.0035	0.0005	0.0030
21	0.0035	0.0005	0.0030
22	0.0035	0.0005	0.0030
23	0.0035	0.0005	0.0030
24	0.0035	0.0005	0.0030
25	0.0035	0.0005	0.0030
26	0.0035	0.0005	0.0030
27	0.0035	0.0005	0.0031
28	0.0036	0.0005	0.0031
29	0.0036	0.0005	0.0031
30	0.0036	0.0005	0.0031
31	0.0036	0.0005	0.0031
32	0.0036	0.0005	0.0031
33	0.0036	0.0005	0.0031
34	0.0036	0.0005	0.0031
35	0.0036	0.0005	0.0031
36	0.0037	0.0005	0.0032
37	0.0037	0.0005	0.0032
38	0.0037	0.0005	0.0032
39	0.0037	0.0005	0.0032
40	0.0037	0.0005	0.0032
41	0.0037	0.0005	0.0032
42	0.0037	0.0005	0.0032
43	0.0038	0.0005	0.0032
44	0.0038	0.0005	0.0033
45	0.0038	0.0005	0.0033
46	0.0038	0.0005	0.0033
47	0.0038	0.0005	0.0033
48	0.0038	0.0005	0.0033
49	0.0038	0.0005	0.0033
50	0.0039	0.0005	0.0033
51	0.0039	0.0005	0.0033
52	0.0039	0.0005	0.0034
53	0.0039	0.0005	0.0034
54	0.0039	0.0005	0.0034
55	0.0039	0.0005	0.0034
56	0.0040	0.0005	0.0034
57	0.0040	0.0005	0.0034
58	0.0040	0.0005	0.0034
59	0.0040	0.0005	0.0035
60	0.0040	0.0005	0.0035
61	0.0040	0.0006	0.0035
62	0.0041	0.0006	0.0035
63	0.0041	0.0006	0.0035
64	0.0041	0.0006	0.0035
65	0.0041	0.0006	0.0036
66	0.0041	0.0006	0.0036
67	0.0041	0.0006	0.0036
68	0.0042	0.0006	0.0036
69	0.0042	0.0006	0.0036
70	0.0042	0.0006	0.0036
71	0.0042	0.0006	0.0037
72	0.0042	0.0006	0.0037
73	0.0043	0.0006	0.0037
74	0.0043	0.0006	0.0037
75	0.0043	0.0006	0.0037
76	0.0043	0.0006	0.0037
77	0.0044	0.0006	0.0038
78	0.0044	0.0006	0.0038
79	0.0044	0.0006	0.0038
80	0.0044	0.0006	0.0038
81	0.0044	0.0006	0.0038
82	0.0045	0.0006	0.0038
83	0.0045	0.0006	0.0039
84	0.0045	0.0006	0.0039
85	0.0045	0.0006	0.0039
86	0.0045	0.0006	0.0039
87	0.0046	0.0006	0.0040
88	0.0046	0.0006	0.0040
89	0.0046	0.0006	0.0040

90	0.0046	0.0006	0.0040
91	0.0047	0.0006	0.0040
92	0.0047	0.0006	0.0041
93	0.0047	0.0006	0.0041
94	0.0048	0.0006	0.0041
95	0.0048	0.0007	0.0041
96	0.0048	0.0007	0.0042
97	0.0048	0.0007	0.0042
98	0.0049	0.0007	0.0042
99	0.0049	0.0007	0.0042
100	0.0049	0.0007	0.0043
101	0.0050	0.0007	0.0043
102	0.0050	0.0007	0.0043
103	0.0050	0.0007	0.0043
104	0.0051	0.0007	0.0044
105	0.0051	0.0007	0.0044
106	0.0051	0.0007	0.0044
107	0.0052	0.0007	0.0045
108	0.0052	0.0007	0.0045
109	0.0052	0.0007	0.0045
110	0.0053	0.0007	0.0045
111	0.0053	0.0007	0.0046
112	0.0053	0.0007	0.0046
113	0.0054	0.0007	0.0046
114	0.0054	0.0007	0.0047
115	0.0055	0.0007	0.0047
116	0.0055	0.0007	0.0047
117	0.0055	0.0008	0.0048
118	0.0056	0.0008	0.0048
119	0.0056	0.0008	0.0049
120	0.0057	0.0008	0.0049
121	0.0057	0.0008	0.0049
122	0.0057	0.0008	0.0050
123	0.0058	0.0008	0.0050
124	0.0058	0.0008	0.0050
125	0.0059	0.0008	0.0051
126	0.0059	0.0008	0.0051
127	0.0060	0.0008	0.0052
128	0.0060	0.0008	0.0052
129	0.0061	0.0008	0.0053
130	0.0061	0.0008	0.0053
131	0.0062	0.0008	0.0054
132	0.0063	0.0009	0.0054
133	0.0063	0.0009	0.0055
134	0.0064	0.0009	0.0055
135	0.0065	0.0009	0.0056
136	0.0065	0.0009	0.0056
137	0.0066	0.0009	0.0057
138	0.0066	0.0009	0.0057
139	0.0067	0.0009	0.0058
140	0.0068	0.0009	0.0059
141	0.0069	0.0009	0.0059
142	0.0069	0.0009	0.0060
143	0.0070	0.0010	0.0061
144	0.0071	0.0010	0.0061
145	0.0093	0.0013	0.0080
146	0.0094	0.0013	0.0081
147	0.0095	0.0013	0.0082
148	0.0095	0.0013	0.0082
149	0.0097	0.0013	0.0084
150	0.0097	0.0013	0.0084
151	0.0099	0.0013	0.0085
152	0.0099	0.0014	0.0086
153	0.0101	0.0014	0.0087
154	0.0102	0.0014	0.0088
155	0.0103	0.0014	0.0089
156	0.0104	0.0014	0.0090
157	0.0106	0.0014	0.0091
158	0.0107	0.0015	0.0092
159	0.0109	0.0015	0.0094
160	0.0110	0.0015	0.0095
161	0.0112	0.0015	0.0096
162	0.0113	0.0015	0.0097
163	0.0115	0.0016	0.0099
164	0.0116	0.0016	0.0100
165	0.0118	0.0016	0.0102
166	0.0120	0.0016	0.0103
167	0.0122	0.0017	0.0106
168	0.0124	0.0017	0.0107
169	0.0127	0.0017	0.0110
170	0.0129	0.0018	0.0111
171	0.0132	0.0018	0.0114
172	0.0134	0.0018	0.0116
173	0.0138	0.0019	0.0119

174	0.0140	0.0019	0.0121
175	0.0145	0.0020	0.0125
176	0.0147	0.0020	0.0127
177	0.0152	0.0021	0.0132
178	0.0155	0.0021	0.0134
179	0.0162	0.0022	0.0140
180	0.0166	0.0023	0.0143
181	0.0174	0.0024	0.0150
182	0.0178	0.0024	0.0154
183	0.0189	0.0024	0.0164
184	0.0195	0.0024	0.0171
185	0.0114	0.0016	0.0098
186	0.0122	0.0017	0.0105
187	0.0141	0.0019	0.0122
188	0.0154	0.0021	0.0133
189	0.0191	0.0024	0.0167
190	0.0220	0.0024	0.0196
191	0.0334	0.0024	0.0310
192	0.0485	0.0024	0.0461
193	0.2100	0.0024	0.2075
194	0.0263	0.0024	0.0239
195	0.0170	0.0023	0.0147
196	0.0130	0.0018	0.0113
197	0.0202	0.0024	0.0177
198	0.0183	0.0024	0.0159
199	0.0170	0.0023	0.0146
200	0.0159	0.0022	0.0137
201	0.0150	0.0020	0.0129
202	0.0142	0.0019	0.0123
203	0.0136	0.0019	0.0117
204	0.0130	0.0018	0.0113
205	0.0125	0.0017	0.0108
206	0.0121	0.0017	0.0105
207	0.0117	0.0016	0.0101
208	0.0114	0.0016	0.0098
209	0.0111	0.0015	0.0095
210	0.0108	0.0015	0.0093
211	0.0105	0.0014	0.0091
212	0.0103	0.0014	0.0089
213	0.0100	0.0014	0.0087
214	0.0098	0.0013	0.0085
215	0.0096	0.0013	0.0083
216	0.0094	0.0013	0.0081
217	0.0071	0.0010	0.0062
218	0.0070	0.0010	0.0060
219	0.0068	0.0009	0.0059
220	0.0067	0.0009	0.0058
221	0.0066	0.0009	0.0057
222	0.0064	0.0009	0.0055
223	0.0063	0.0009	0.0054
224	0.0062	0.0008	0.0053
225	0.0061	0.0008	0.0052
226	0.0060	0.0008	0.0052
227	0.0059	0.0008	0.0051
228	0.0058	0.0008	0.0050
229	0.0057	0.0008	0.0049
230	0.0056	0.0008	0.0048
231	0.0055	0.0008	0.0048
232	0.0054	0.0007	0.0047
233	0.0054	0.0007	0.0046
234	0.0053	0.0007	0.0046
235	0.0052	0.0007	0.0045
236	0.0051	0.0007	0.0044
237	0.0051	0.0007	0.0044
238	0.0050	0.0007	0.0043
239	0.0049	0.0007	0.0043
240	0.0049	0.0007	0.0042
241	0.0048	0.0007	0.0042
242	0.0048	0.0007	0.0041
243	0.0047	0.0006	0.0041
244	0.0047	0.0006	0.0040
245	0.0046	0.0006	0.0040
246	0.0046	0.0006	0.0039
247	0.0045	0.0006	0.0039
248	0.0045	0.0006	0.0039
249	0.0044	0.0006	0.0038
250	0.0044	0.0006	0.0038
251	0.0043	0.0006	0.0037
252	0.0043	0.0006	0.0037
253	0.0043	0.0006	0.0037
254	0.0042	0.0006	0.0036
255	0.0042	0.0006	0.0036
256	0.0041	0.0006	0.0036
257	0.0041	0.0006	0.0035

258	0.0041	0.0006	0.0035
259	0.0040	0.0005	0.0035
260	0.0040	0.0005	0.0035
261	0.0040	0.0005	0.0034
262	0.0039	0.0005	0.0034
263	0.0039	0.0005	0.0034
264	0.0039	0.0005	0.0033
265	0.0038	0.0005	0.0033
266	0.0038	0.0005	0.0033
267	0.0038	0.0005	0.0033
268	0.0037	0.0005	0.0032
269	0.0037	0.0005	0.0032
270	0.0037	0.0005	0.0032
271	0.0037	0.0005	0.0032
272	0.0036	0.0005	0.0031
273	0.0036	0.0005	0.0031
274	0.0036	0.0005	0.0031
275	0.0036	0.0005	0.0031
276	0.0035	0.0005	0.0031
277	0.0035	0.0005	0.0030
278	0.0035	0.0005	0.0030
279	0.0035	0.0005	0.0030
280	0.0034	0.0005	0.0030
281	0.0034	0.0005	0.0030
282	0.0034	0.0005	0.0029
283	0.0034	0.0005	0.0029
284	0.0034	0.0005	0.0029
285	0.0033	0.0005	0.0029
286	0.0033	0.0005	0.0029
287	0.0033	0.0004	0.0028
288	0.0033	0.0004	0.0028

Total soil rain loss = 0.26(In)
Total effective rainfall = 1.92(In)
Peak flow rate in flood hydrograph = 7.73(CFS)

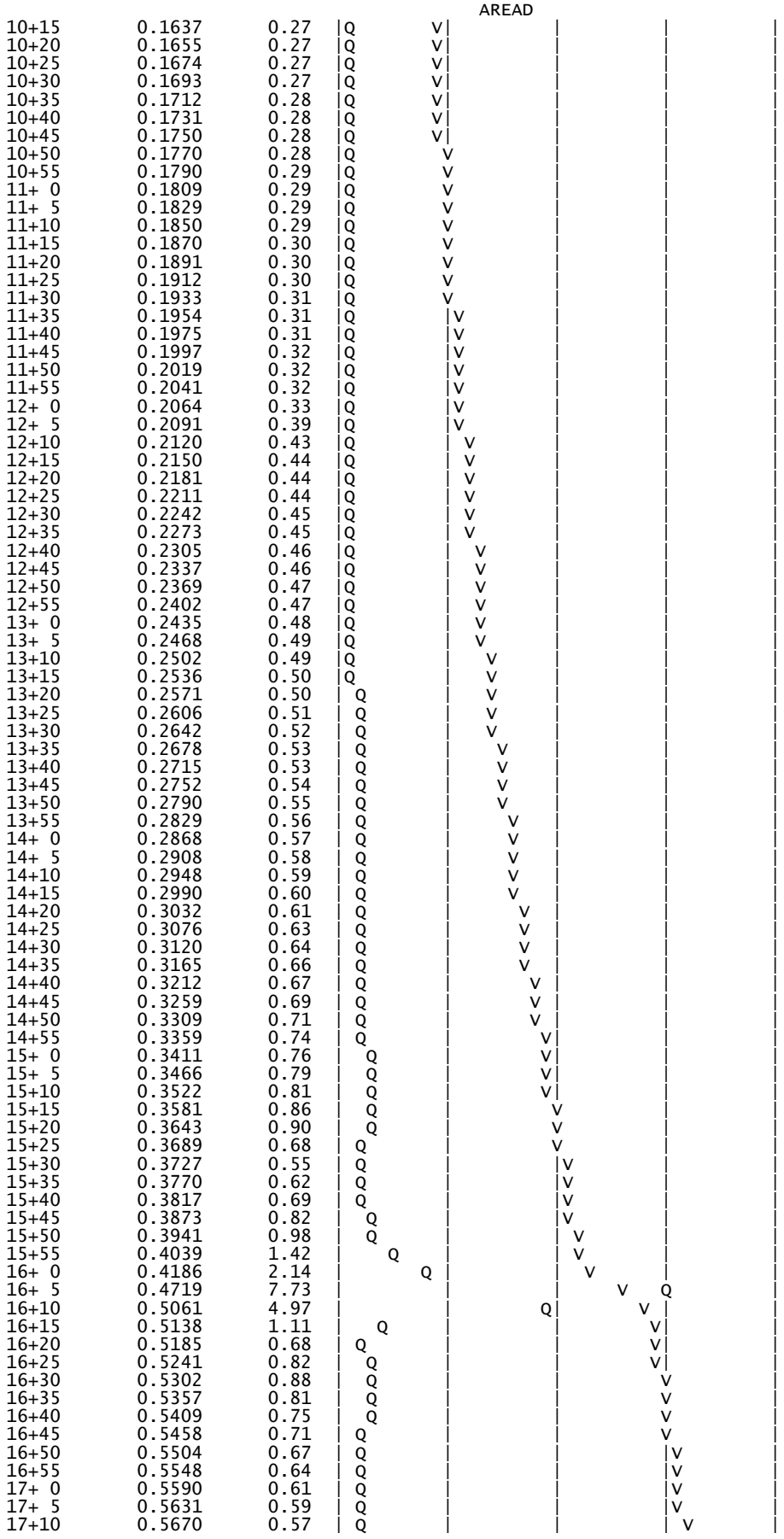
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0006	0.09	Q				
0+10	0.0017	0.15	Q				
0+15	0.0027	0.15	Q				
0+20	0.0037	0.15	Q				
0+25	0.0048	0.15	Q				
0+30	0.0058	0.15	Q				
0+35	0.0069	0.15	Q				
0+40	0.0080	0.15	Q				
0+45	0.0090	0.15	Q				
0+50	0.0101	0.15	Q				
0+55	0.0112	0.16	Q				
1+ 0	0.0122	0.16	Q				
1+ 5	0.0133	0.16	Q				
1+10	0.0144	0.16	Q				
1+15	0.0155	0.16	Q				
1+20	0.0165	0.16	Q				
1+25	0.0176	0.16	Q				
1+30	0.0187	0.16	QV				
1+35	0.0198	0.16	QV				
1+40	0.0209	0.16	QV				
1+45	0.0220	0.16	QV				
1+50	0.0231	0.16	QV				
1+55	0.0242	0.16	QV				
2+ 0	0.0253	0.16	QV				
2+ 5	0.0265	0.16	QV				
2+10	0.0276	0.16	QV				
2+15	0.0287	0.16	QV				
2+20	0.0298	0.16	QV				
2+25	0.0310	0.16	QV				
2+30	0.0321	0.17	QV				
2+35	0.0332	0.17	QV				
2+40	0.0344	0.17	QV				
2+45	0.0355	0.17	Q V				
2+50	0.0367	0.17	Q V				
2+55	0.0379	0.17	Q V				
3+ 0	0.0390	0.17	Q V				
3+ 5	0.0402	0.17	Q V				
3+10	0.0413	0.17	Q V				

3+15	0.0425	0.17	Q V	|	|	|	|
3+20	0.0437	0.17	Q V	|	|	|	|
3+25	0.0449	0.17	Q V	|	|	|	|
3+30	0.0461	0.17	Q V	|	|	|	|
3+35	0.0473	0.17	Q V	|	|	|	|
3+40	0.0485	0.17	Q V	|	|	|	|
3+45	0.0497	0.17	Q V	|	|	|	|
3+50	0.0509	0.18	Q V	|	|	|	|
3+55	0.0521	0.18	Q V	|	|	|	|
4+ 0	0.0533	0.18	Q V	|	|	|	|
4+ 5	0.0545	0.18	Q V	|	|	|	|
4+10	0.0557	0.18	Q V	|	|	|	|
4+15	0.0570	0.18	Q V	|	|	|	|
4+20	0.0582	0.18	Q V	|	|	|	|
4+25	0.0594	0.18	Q V	|	|	|	|
4+30	0.0607	0.18	Q V	|	|	|	|
4+35	0.0619	0.18	Q V	|	|	|	|
4+40	0.0632	0.18	Q V	|	|	|	|
4+45	0.0644	0.18	Q V	|	|	|	|
4+50	0.0657	0.18	Q V	|	|	|	|
4+55	0.0670	0.18	Q V	|	|	|	|
5+ 0	0.0683	0.19	Q V	|	|	|	|
5+ 5	0.0695	0.19	Q V	|	|	|	|
5+10	0.0708	0.19	Q V	|	|	|	|
5+15	0.0721	0.19	Q V	|	|	|	|
5+20	0.0734	0.19	Q V	|	|	|	|
5+25	0.0747	0.19	Q V	|	|	|	|
5+30	0.0760	0.19	Q V	|	|	|	|
5+35	0.0773	0.19	Q V	|	|	|	|
5+40	0.0787	0.19	Q V	|	|	|	|
5+45	0.0800	0.19	Q V	|	|	|	|
5+50	0.0813	0.19	Q V	|	|	|	|
5+55	0.0827	0.19	Q V	|	|	|	|
6+ 0	0.0840	0.20	Q V	|	|	|	|
6+ 5	0.0854	0.20	Q V	|	|	|	|
6+10	0.0867	0.20	Q V	|	|	|	|
6+15	0.0881	0.20	Q V	|	|	|	|
6+20	0.0895	0.20	Q V	|	|	|	|
6+25	0.0908	0.20	Q V	|	|	|	|
6+30	0.0922	0.20	Q V	|	|	|	|
6+35	0.0936	0.20	Q V	|	|	|	|
6+40	0.0950	0.20	Q V	|	|	|	|
6+45	0.0964	0.20	Q V	|	|	|	|
6+50	0.0978	0.21	Q V	|	|	|	|
6+55	0.0993	0.21	Q V	|	|	|	|
7+ 0	0.1007	0.21	Q V	|	|	|	|
7+ 5	0.1021	0.21	Q V	|	|	|	|
7+10	0.1036	0.21	Q V	|	|	|	|
7+15	0.1050	0.21	Q V	|	|	|	|
7+20	0.1065	0.21	Q V	|	|	|	|
7+25	0.1080	0.21	Q V	|	|	|	|
7+30	0.1094	0.21	Q V	|	|	|	|
7+35	0.1109	0.22	Q V	|	|	|	|
7+40	0.1124	0.22	Q V	|	|	|	|
7+45	0.1139	0.22	Q V	|	|	|	|
7+50	0.1154	0.22	Q V	|	|	|	|
7+55	0.1169	0.22	Q V	|	|	|	|
8+ 0	0.1185	0.22	Q V	|	|	|	|
8+ 5	0.1200	0.22	Q V	|	|	|	|
8+10	0.1215	0.22	Q V	|	|	|	|
8+15	0.1231	0.23	Q V	|	|	|	|
8+20	0.1247	0.23	Q V	|	|	|	|
8+25	0.1262	0.23	Q V	|	|	|	|
8+30	0.1278	0.23	Q V	|	|	|	|
8+35	0.1294	0.23	Q V	|	|	|	|
8+40	0.1310	0.23	Q V	|	|	|	|
8+45	0.1326	0.23	Q V	|	|	|	|
8+50	0.1343	0.24	Q V	|	|	|	|
8+55	0.1359	0.24	Q V	|	|	|	|
9+ 0	0.1375	0.24	Q V	|	|	|	|
9+ 5	0.1392	0.24	Q V	|	|	|	|
9+10	0.1409	0.24	Q V	|	|	|	|
9+15	0.1425	0.24	Q V	|	|	|	|
9+20	0.1442	0.25	Q V	|	|	|	|
9+25	0.1459	0.25	Q V	|	|	|	|
9+30	0.1476	0.25	Q V	|	|	|	|
9+35	0.1494	0.25	|Q V	|	|	|	|
9+40	0.1511	0.25	|Q V	|	|	|	|
9+45	0.1529	0.25	|Q V	|	|	|	|
9+50	0.1546	0.26	|Q V	|	|	|	|
9+55	0.1564	0.26	|Q V	|	|	|	|
10+ 0	0.1582	0.26	|Q V	|	|	|	|
10+ 5	0.1600	0.26	|Q V|	|	|	|	|
10+10	0.1618	0.26	|Q V|	|	|	|	|



10+15	0.1637	0.27	
10+20	0.1655	0.27	
10+25	0.1674	0.27	
10+30	0.1693	0.27	
10+35	0.1712	0.28	
10+40	0.1731	0.28	
10+45	0.1750	0.28	
10+50	0.1770	0.28	
10+55	0.1790	0.29	
11+ 0	0.1809	0.29	
11+ 5	0.1829	0.29	
11+10	0.1850	0.29	
11+15	0.1870	0.30	
11+20	0.1891	0.30	
11+25	0.1912	0.30	
11+30	0.1933	0.31	
11+35	0.1954	0.31	
11+40	0.1975	0.31	
11+45	0.1997	0.32	
11+50	0.2019	0.32	
11+55	0.2041	0.32	
12+ 0	0.2064	0.33	
12+ 5	0.2091	0.39	
12+10	0.2120	0.43	
12+15	0.2150	0.44	
12+20	0.2181	0.44	
12+25	0.2211	0.44	
12+30	0.2242	0.45	
12+35	0.2273	0.45	
12+40	0.2305	0.46	
12+45	0.2337	0.46	
12+50	0.2369	0.47	
12+55	0.2402	0.47	
13+ 0	0.2435	0.48	
13+ 5	0.2468	0.49	
13+10	0.2502	0.49	
13+15	0.2536	0.50	
13+20	0.2571	0.50	
13+25	0.2606	0.51	
13+30	0.2642	0.52	
13+35	0.2678	0.53	
13+40	0.2715	0.53	
13+45	0.2752	0.54	
13+50	0.2790	0.55	
13+55	0.2829	0.56	
14+ 0	0.2868	0.57	
14+ 5	0.2908	0.58	
14+10	0.2948	0.59	
14+15	0.2990	0.60	
14+20	0.3032	0.61	
14+25	0.3076	0.63	
14+30	0.3120	0.64	
14+35	0.3165	0.66	
14+40	0.3212	0.67	
14+45	0.3259	0.69	
14+50	0.3309	0.71	
14+55	0.3359	0.74	
15+ 0	0.3411	0.76	
15+ 5	0.3466	0.79	
15+10	0.3522	0.81	
15+15	0.3581	0.86	
15+20	0.3643	0.90	
15+25	0.3689	0.68	
15+30	0.3727	0.55	
15+35	0.3770	0.62	
15+40	0.3817	0.69	
15+45	0.3873	0.82	
15+50	0.3941	0.98	
15+55	0.4039	1.42	
16+ 0	0.4186	2.14	
16+ 5	0.4719	7.73	
16+10	0.5061	4.97	
16+15	0.5138	1.11	
16+20	0.5185	0.68	
16+25	0.5241	0.82	
16+30	0.5302	0.88	
16+35	0.5357	0.81	
16+40	0.5409	0.75	
16+45	0.5458	0.71	
16+50	0.5504	0.67	
16+55	0.5548	0.64	
17+ 0	0.5590	0.61	
17+ 5	0.5631	0.59	
17+10	0.5670	0.57	

17+15	0.5707	0.55	Q			V
17+20	0.5744	0.53	Q			V
17+25	0.5780	0.52	Q			V
17+30	0.5814	0.50	Q			V
17+35	0.5848	0.49	Q			V
17+40	0.5881	0.48	Q			V
17+45	0.5913	0.47	Q			V
17+50	0.5944	0.46	Q			V
17+55	0.5975	0.45	Q			V
18+ 0	0.6005	0.44	Q			V
18+ 5	0.6031	0.37	Q			V
18+10	0.6054	0.33	Q			V
18+15	0.6075	0.32	Q			V
18+20	0.6097	0.31	Q			V
18+25	0.6118	0.31	Q			V
18+30	0.6138	0.30	Q			V
18+35	0.6159	0.29	Q			V
18+40	0.6178	0.29	Q			V
18+45	0.6198	0.28	Q			V
18+50	0.6217	0.28	Q			V
18+55	0.6236	0.27	Q			V
19+ 0	0.6254	0.27	Q			V
19+ 5	0.6273	0.26	Q			V
19+10	0.6290	0.26	Q			V
19+15	0.6308	0.26	Q			V
19+20	0.6325	0.25	Q			V
19+25	0.6343	0.25	Q			V
19+30	0.6359	0.25	Q			V
19+35	0.6376	0.24	Q			V
19+40	0.6393	0.24	Q			V
19+45	0.6409	0.24	Q			V
19+50	0.6425	0.23	Q			V
19+55	0.6441	0.23	Q			V
20+ 0	0.6456	0.23	Q			V
20+ 5	0.6472	0.22	Q			V
20+10	0.6487	0.22	Q			V
20+15	0.6502	0.22	Q			V
20+20	0.6517	0.22	Q			V
20+25	0.6531	0.21	Q			V
20+30	0.6546	0.21	Q			V
20+35	0.6560	0.21	Q			V
20+40	0.6575	0.21	Q			V
20+45	0.6589	0.21	Q			V
20+50	0.6603	0.20	Q			V
20+55	0.6617	0.20	Q			V
21+ 0	0.6630	0.20	Q			V
21+ 5	0.6644	0.20	Q			V
21+10	0.6657	0.20	Q			V
21+15	0.6671	0.19	Q			V
21+20	0.6684	0.19	Q			V
21+25	0.6697	0.19	Q			V
21+30	0.6710	0.19	Q			V
21+35	0.6723	0.19	Q			V
21+40	0.6736	0.19	Q			V
21+45	0.6748	0.18	Q			V
21+50	0.6761	0.18	Q			V
21+55	0.6773	0.18	Q			V
22+ 0	0.6786	0.18	Q			V
22+ 5	0.6798	0.18	Q			V
22+10	0.6810	0.18	Q			V
22+15	0.6822	0.17	Q			V
22+20	0.6834	0.17	Q			V
22+25	0.6846	0.17	Q			V
22+30	0.6857	0.17	Q			V
22+35	0.6869	0.17	Q			V
22+40	0.6881	0.17	Q			V
22+45	0.6892	0.17	Q			V
22+50	0.6904	0.17	Q			V
22+55	0.6915	0.16	Q			V
23+ 0	0.6926	0.16	Q			V
23+ 5	0.6938	0.16	Q			V
23+10	0.6949	0.16	Q			V
23+15	0.6960	0.16	Q			V
23+20	0.6971	0.16	Q			V
23+25	0.6982	0.16	Q			V
23+30	0.6992	0.16	Q			V
23+35	0.7003	0.16	Q			V
23+40	0.7014	0.16	Q			V
23+45	0.7025	0.15	Q			V
23+50	0.7035	0.15	Q			V
23+55	0.7046	0.15	Q			V
24+ 0	0.7056	0.15	Q			V

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA E
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1.20	1	0.78
Rainfall data for year 2		
1.20	6	1.20
Rainfall data for year 2		
1.20	24	2.18
Rainfall data for year 100		
1.20	1	1.27
Rainfall data for year 100		
1.20	6	2.86
Rainfall data for year 100		
1.20	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
44.0	26.2	1.20	1.000	0.999	0.046	0.046

Area-averaged adjusted loss rate Fm (In/Hr) = 0.046

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
0.06	0.046	44.0	26.2	10.90	0.000
1.14	0.954	98.0	98.0	0.20	0.896

Area-averaged catchment yield fraction, Y = 0.855
Area-averaged low loss fraction, Yb = 0.145

++
Watercourse length = 650.00(Ft.)
Length from concentration point to centroid = 120.00(Ft.)
Elevation difference along watercourse = 57.30(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 1.20(Ac.)
Catchment Lag time = 0.012 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 694.4138
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.046(In/Hr)
Average low loss rate fraction (Yb) = 0.145 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 1.20(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.210(In)
30-minute factor = 1.000 Adjusted rainfall = 0.359(In)
1-hour factor = 1.000 Adjusted rainfall = 0.443(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 14.51 (CFS))	
1	80.821	11.729
2	100.000	2.783

Mday RAINFALL MASS RATIOS
Rainfall Duration Ratio To Peak 24 Hours
PEAK 24 HOURS 1
PEAK 48 TO 24 HOURS 0.360

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
STORM DAY 1	Ratio to Peak 24 Hours: 0.360	
STORM DAY 1	Total Rainfall = 0.7848 (In)	
1	0.0756	0.0756
2	0.0931	0.0175
3	0.1051	0.0120
4	0.1146	0.0095
5	0.1225	0.0079
6	0.1294	0.0069
7	0.1355	0.0061
8	0.1411	0.0055
9	0.1462	0.0051
10	0.1508	0.0047
11	0.1552	0.0044
12	0.1593	0.0041
13	0.1666	0.0073
14	0.1736	0.0070
15	0.1804	0.0068
16	0.1870	0.0066
17	0.1934	0.0064
18	0.1997	0.0063
19	0.2058	0.0061
20	0.2117	0.0060
21	0.2176	0.0058
22	0.2233	0.0057
23	0.2289	0.0056
24	0.2344	0.0055
25	0.2397	0.0054
26	0.2450	0.0053
27	0.2502	0.0052
28	0.2554	0.0051
29	0.2604	0.0050
30	0.2654	0.0050
31	0.2702	0.0049
32	0.2751	0.0048
33	0.2798	0.0048
34	0.2845	0.0047
35	0.2891	0.0046
36	0.2937	0.0046
37	0.2982	0.0045
38	0.3027	0.0045
39	0.3071	0.0044
40	0.3114	0.0044

		AREAE
41	0.3158	0.0043
42	0.3200	0.0043
43	0.3242	0.0042
44	0.3284	0.0042
45	0.3325	0.0041
46	0.3366	0.0041
47	0.3407	0.0041
48	0.3447	0.0040
49	0.3487	0.0040
50	0.3526	0.0039
51	0.3565	0.0039
52	0.3604	0.0039
53	0.3643	0.0038
54	0.3681	0.0038
55	0.3719	0.0038
56	0.3756	0.0037
57	0.3793	0.0037
58	0.3830	0.0037
59	0.3867	0.0037
60	0.3903	0.0036
61	0.3939	0.0036
62	0.3975	0.0036
63	0.4011	0.0036
64	0.4046	0.0035
65	0.4081	0.0035
66	0.4116	0.0035
67	0.4150	0.0035
68	0.4185	0.0034
69	0.4219	0.0034
70	0.4253	0.0034
71	0.4286	0.0034
72	0.4320	0.0034
73	0.4346	0.0026
74	0.4371	0.0026
75	0.4397	0.0025
76	0.4422	0.0025
77	0.4447	0.0025
78	0.4471	0.0025
79	0.4496	0.0025
80	0.4521	0.0024
81	0.4545	0.0024
82	0.4569	0.0024
83	0.4593	0.0024
84	0.4616	0.0024
85	0.4640	0.0024
86	0.4664	0.0023
87	0.4687	0.0023
88	0.4710	0.0023
89	0.4733	0.0023
90	0.4756	0.0023
91	0.4778	0.0023
92	0.4801	0.0023
93	0.4823	0.0022
94	0.4846	0.0022
95	0.4868	0.0022
96	0.4890	0.0022
97	0.4912	0.0022
98	0.4933	0.0022
99	0.4955	0.0022
100	0.4976	0.0021
101	0.4998	0.0021
102	0.5019	0.0021
103	0.5040	0.0021
104	0.5061	0.0021
105	0.5082	0.0021
106	0.5103	0.0021
107	0.5124	0.0021
108	0.5144	0.0021
109	0.5165	0.0020
110	0.5185	0.0020
111	0.5205	0.0020
112	0.5225	0.0020
113	0.5245	0.0020
114	0.5265	0.0020
115	0.5285	0.0020
116	0.5305	0.0020
117	0.5325	0.0020
118	0.5344	0.0020
119	0.5364	0.0019
120	0.5383	0.0019
121	0.5402	0.0019
122	0.5421	0.0019
123	0.5441	0.0019
124	0.5460	0.0019

		AREAE
125	0.5478	0.0019
126	0.5497	0.0019
127	0.5516	0.0019
128	0.5535	0.0019
129	0.5553	0.0019
130	0.5572	0.0018
131	0.5590	0.0018
132	0.5608	0.0018
133	0.5627	0.0018
134	0.5645	0.0018
135	0.5663	0.0018
136	0.5681	0.0018
137	0.5699	0.0018
138	0.5717	0.0018
139	0.5735	0.0018
140	0.5752	0.0018
141	0.5770	0.0018
142	0.5788	0.0018
143	0.5805	0.0018
144	0.5823	0.0017
145	0.5840	0.0017
146	0.5857	0.0017
147	0.5875	0.0017
148	0.5892	0.0017
149	0.5909	0.0017
150	0.5926	0.0017
151	0.5943	0.0017
152	0.5960	0.0017
153	0.5977	0.0017
154	0.5993	0.0017
155	0.6010	0.0017
156	0.6027	0.0017
157	0.6043	0.0017
158	0.6060	0.0017
159	0.6076	0.0016
160	0.6093	0.0016
161	0.6109	0.0016
162	0.6126	0.0016
163	0.6142	0.0016
164	0.6158	0.0016
165	0.6174	0.0016
166	0.6190	0.0016
167	0.6206	0.0016
168	0.6222	0.0016
169	0.6238	0.0016
170	0.6254	0.0016
171	0.6270	0.0016
172	0.6286	0.0016
173	0.6301	0.0016
174	0.6317	0.0016
175	0.6333	0.0016
176	0.6348	0.0016
177	0.6364	0.0016
178	0.6379	0.0015
179	0.6395	0.0015
180	0.6410	0.0015
181	0.6425	0.0015
182	0.6441	0.0015
183	0.6456	0.0015
184	0.6471	0.0015
185	0.6486	0.0015
186	0.6501	0.0015
187	0.6516	0.0015
188	0.6531	0.0015
189	0.6546	0.0015
190	0.6561	0.0015
191	0.6576	0.0015
192	0.6591	0.0015
193	0.6605	0.0015
194	0.6620	0.0015
195	0.6635	0.0015
196	0.6649	0.0015
197	0.6664	0.0015
198	0.6679	0.0015
199	0.6693	0.0015
200	0.6707	0.0014
201	0.6722	0.0014
202	0.6736	0.0014
203	0.6751	0.0014
204	0.6765	0.0014
205	0.6779	0.0014
206	0.6793	0.0014
207	0.6808	0.0014
208	0.6822	0.0014

		AREAE
209	0.6836	0.0014
210	0.6850	0.0014
211	0.6864	0.0014
212	0.6878	0.0014
213	0.6892	0.0014
214	0.6906	0.0014
215	0.6920	0.0014
216	0.6934	0.0014
217	0.6947	0.0014
218	0.6961	0.0014
219	0.6975	0.0014
220	0.6989	0.0014
221	0.7002	0.0014
222	0.7016	0.0014
223	0.7029	0.0014
224	0.7043	0.0014
225	0.7056	0.0014
226	0.7070	0.0013
227	0.7083	0.0013
228	0.7097	0.0013
229	0.7110	0.0013
230	0.7124	0.0013
231	0.7137	0.0013
232	0.7150	0.0013
233	0.7163	0.0013
234	0.7177	0.0013
235	0.7190	0.0013
236	0.7203	0.0013
237	0.7216	0.0013
238	0.7229	0.0013
239	0.7242	0.0013
240	0.7255	0.0013
241	0.7268	0.0013
242	0.7281	0.0013
243	0.7294	0.0013
244	0.7307	0.0013
245	0.7320	0.0013
246	0.7333	0.0013
247	0.7346	0.0013
248	0.7359	0.0013
249	0.7371	0.0013
250	0.7384	0.0013
251	0.7397	0.0013
252	0.7409	0.0013
253	0.7422	0.0013
254	0.7435	0.0013
255	0.7447	0.0013
256	0.7460	0.0013
257	0.7472	0.0013
258	0.7485	0.0013
259	0.7497	0.0012
260	0.7510	0.0012
261	0.7522	0.0012
262	0.7535	0.0012
263	0.7547	0.0012
264	0.7559	0.0012
265	0.7572	0.0012
266	0.7584	0.0012
267	0.7596	0.0012
268	0.7608	0.0012
269	0.7621	0.0012
270	0.7633	0.0012
271	0.7645	0.0012
272	0.7657	0.0012
273	0.7669	0.0012
274	0.7681	0.0012
275	0.7693	0.0012
276	0.7705	0.0012
277	0.7717	0.0012
278	0.7729	0.0012
279	0.7741	0.0012
280	0.7753	0.0012
281	0.7765	0.0012
282	0.7777	0.0012
283	0.7789	0.0012
284	0.7801	0.0012
285	0.7813	0.0012
286	0.7824	0.0012
287	0.7836	0.0012
288	0.7848	0.0012

STORM DAY 2 Ratio to Peak 24 Hours: 1.000

STORM DAY 2 Total Rainfall = 2.1800 (In)

1	0.2100	0.2100
2	0.2585	0.0485

		AREAE
3	0.2920	0.0334
4	0.3183	0.0263
5	0.3403	0.0220
6	0.3595	0.0191
7	0.3765	0.0170
8	0.3919	0.0154
9	0.4060	0.0141
10	0.4190	0.0130
11	0.4312	0.0122
12	0.4426	0.0114
13	0.4627	0.0202
14	0.4822	0.0195
15	0.5011	0.0189
16	0.5194	0.0183
17	0.5373	0.0178
18	0.5547	0.0174
19	0.5716	0.0169
20	0.5882	0.0166
21	0.6044	0.0162
22	0.6202	0.0159
23	0.6357	0.0155
24	0.6510	0.0152
25	0.6660	0.0150
26	0.6807	0.0147
27	0.6951	0.0145
28	0.7093	0.0142
29	0.7233	0.0140
30	0.7371	0.0138
31	0.7507	0.0136
32	0.7641	0.0134
33	0.7773	0.0132
34	0.7903	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8284	0.0125
38	0.8408	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8771	0.0120
42	0.8889	0.0118
43	0.9007	0.0117
44	0.9123	0.0116
45	0.9237	0.0115
46	0.9351	0.0114
47	0.9464	0.0113
48	0.9575	0.0112
49	0.9686	0.0111
50	0.9795	0.0110
51	0.9904	0.0109
52	1.0012	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0537	0.0103
58	1.0639	0.0103
59	1.0741	0.0102
60	1.0842	0.0101
61	1.0942	0.0100
62	1.1042	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1336	0.0097
66	1.1433	0.0097
67	1.1529	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1907	0.0094
72	1.2000	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2213	0.0070
76	1.2283	0.0070
77	1.2352	0.0069
78	1.2421	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2758	0.0066
84	1.2824	0.0066
85	1.2889	0.0066
86	1.2954	0.0065

		AREAE
87	1.3019	0.0065
88	1.3083	0.0064
89	1.3147	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3336	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3522	0.0061
96	1.3583	0.0061
97	1.3643	0.0061
98	1.3704	0.0060
99	1.3764	0.0060
100	1.3824	0.0060
101	1.3883	0.0059
102	1.3942	0.0059
103	1.4001	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4175	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4403	0.0057
111	1.4459	0.0056
112	1.4515	0.0056
113	1.4571	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4736	0.0055
117	1.4791	0.0055
118	1.4845	0.0054
119	1.4899	0.0054
120	1.4953	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5113	0.0053
124	1.5165	0.0053
125	1.5218	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5426	0.0052
130	1.5477	0.0051
131	1.5528	0.0051
132	1.5579	0.0051
133	1.5630	0.0051
134	1.5680	0.0051
135	1.5731	0.0050
136	1.5781	0.0050
137	1.5831	0.0050
138	1.5880	0.0050
139	1.5930	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6077	0.0049
143	1.6126	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6414	0.0048
150	1.6461	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6602	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6925	0.0046
161	1.6970	0.0045
162	1.7016	0.0045
163	1.7061	0.0045
164	1.7106	0.0045
165	1.7151	0.0045
166	1.7195	0.0045
167	1.7240	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044

		AREAE
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7504	0.0044
174	1.7547	0.0044
175	1.7591	0.0043
176	1.7634	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7763	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7933	0.0042
184	1.7975	0.0042
185	1.8017	0.0042
186	1.8059	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8225	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8430	0.0041
196	1.8471	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8592	0.0040
200	1.8632	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8752	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8871	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9028	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9183	0.0039
215	1.9221	0.0039
216	1.9260	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9375	0.0038
220	1.9413	0.0038
221	1.9451	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9564	0.0038
225	1.9601	0.0038
226	1.9639	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9751	0.0037
230	1.9788	0.0037
231	1.9825	0.0037
232	1.9862	0.0037
233	1.9899	0.0037
234	1.9935	0.0037
235	1.9972	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0118	0.0036
240	2.0154	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0298	0.0036
245	2.0334	0.0036
246	2.0369	0.0036
247	2.0405	0.0036
248	2.0440	0.0036
249	2.0476	0.0035
250	2.0511	0.0035
251	2.0547	0.0035
252	2.0582	0.0035
253	2.0617	0.0035
254	2.0652	0.0035

		AREAE
255	2.0687	0.0035
256	2.0722	0.0035
257	2.0757	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0861	0.0035
261	2.0895	0.0035
262	2.0930	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1067	0.0034
267	2.1101	0.0034
268	2.1135	0.0034
269	2.1169	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1304	0.0034
274	2.1337	0.0034
275	2.1371	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1471	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1735	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
STORM DAY 1			
1	0.0012	0.0002	0.0010
2	0.0012	0.0002	0.0010
3	0.0012	0.0002	0.0010
4	0.0012	0.0002	0.0010
5	0.0012	0.0002	0.0010
6	0.0012	0.0002	0.0010
7	0.0012	0.0002	0.0010
8	0.0012	0.0002	0.0010
9	0.0012	0.0002	0.0010
10	0.0012	0.0002	0.0010
11	0.0012	0.0002	0.0010
12	0.0012	0.0002	0.0010
13	0.0012	0.0002	0.0010
14	0.0012	0.0002	0.0010
15	0.0012	0.0002	0.0010
16	0.0012	0.0002	0.0011
17	0.0012	0.0002	0.0011
18	0.0012	0.0002	0.0011
19	0.0012	0.0002	0.0011
20	0.0012	0.0002	0.0011
21	0.0013	0.0002	0.0011
22	0.0013	0.0002	0.0011
23	0.0013	0.0002	0.0011
24	0.0013	0.0002	0.0011
25	0.0013	0.0002	0.0011
26	0.0013	0.0002	0.0011
27	0.0013	0.0002	0.0011
28	0.0013	0.0002	0.0011
29	0.0013	0.0002	0.0011
30	0.0013	0.0002	0.0011
31	0.0013	0.0002	0.0011
32	0.0013	0.0002	0.0011
33	0.0013	0.0002	0.0011
34	0.0013	0.0002	0.0011
35	0.0013	0.0002	0.0011
36	0.0013	0.0002	0.0011
37	0.0013	0.0002	0.0011
38	0.0013	0.0002	0.0011
39	0.0013	0.0002	0.0011
40	0.0013	0.0002	0.0011
41	0.0013	0.0002	0.0011
42	0.0013	0.0002	0.0011
43	0.0014	0.0002	0.0012
44	0.0014	0.0002	0.0012

45	0.0014	0.0002	0.0012
46	0.0014	0.0002	0.0012
47	0.0014	0.0002	0.0012
48	0.0014	0.0002	0.0012
49	0.0014	0.0002	0.0012
50	0.0014	0.0002	0.0012
51	0.0014	0.0002	0.0012
52	0.0014	0.0002	0.0012
53	0.0014	0.0002	0.0012
54	0.0014	0.0002	0.0012
55	0.0014	0.0002	0.0012
56	0.0014	0.0002	0.0012
57	0.0014	0.0002	0.0012
58	0.0014	0.0002	0.0012
59	0.0014	0.0002	0.0012
60	0.0014	0.0002	0.0012
61	0.0015	0.0002	0.0012
62	0.0015	0.0002	0.0012
63	0.0015	0.0002	0.0013
64	0.0015	0.0002	0.0013
65	0.0015	0.0002	0.0013
66	0.0015	0.0002	0.0013
67	0.0015	0.0002	0.0013
68	0.0015	0.0002	0.0013
69	0.0015	0.0002	0.0013
70	0.0015	0.0002	0.0013
71	0.0015	0.0002	0.0013
72	0.0015	0.0002	0.0013
73	0.0015	0.0002	0.0013
74	0.0015	0.0002	0.0013
75	0.0016	0.0002	0.0013
76	0.0016	0.0002	0.0013
77	0.0016	0.0002	0.0013
78	0.0016	0.0002	0.0013
79	0.0016	0.0002	0.0014
80	0.0016	0.0002	0.0014
81	0.0016	0.0002	0.0014
82	0.0016	0.0002	0.0014
83	0.0016	0.0002	0.0014
84	0.0016	0.0002	0.0014
85	0.0016	0.0002	0.0014
86	0.0016	0.0002	0.0014
87	0.0016	0.0002	0.0014
88	0.0017	0.0002	0.0014
89	0.0017	0.0002	0.0014
90	0.0017	0.0002	0.0014
91	0.0017	0.0002	0.0014
92	0.0017	0.0002	0.0014
93	0.0017	0.0002	0.0015
94	0.0017	0.0002	0.0015
95	0.0017	0.0003	0.0015
96	0.0017	0.0003	0.0015
97	0.0017	0.0003	0.0015
98	0.0018	0.0003	0.0015
99	0.0018	0.0003	0.0015
100	0.0018	0.0003	0.0015
101	0.0018	0.0003	0.0015
102	0.0018	0.0003	0.0015
103	0.0018	0.0003	0.0015
104	0.0018	0.0003	0.0016
105	0.0018	0.0003	0.0016
106	0.0018	0.0003	0.0016
107	0.0019	0.0003	0.0016
108	0.0019	0.0003	0.0016
109	0.0019	0.0003	0.0016
110	0.0019	0.0003	0.0016
111	0.0019	0.0003	0.0016
112	0.0019	0.0003	0.0016
113	0.0019	0.0003	0.0017
114	0.0019	0.0003	0.0017
115	0.0020	0.0003	0.0017
116	0.0020	0.0003	0.0017
117	0.0020	0.0003	0.0017
118	0.0020	0.0003	0.0017
119	0.0020	0.0003	0.0017
120	0.0020	0.0003	0.0017
121	0.0021	0.0003	0.0018
122	0.0021	0.0003	0.0018
123	0.0021	0.0003	0.0018
124	0.0021	0.0003	0.0018
125	0.0021	0.0003	0.0018
126	0.0021	0.0003	0.0018
127	0.0022	0.0003	0.0018
128	0.0022	0.0003	0.0019

129	0.0022	0.0003	0.0019
130	0.0022	0.0003	0.0019
131	0.0022	0.0003	0.0019
132	0.0023	0.0003	0.0019
133	0.0023	0.0003	0.0020
134	0.0023	0.0003	0.0020
135	0.0023	0.0003	0.0020
136	0.0023	0.0003	0.0020
137	0.0024	0.0003	0.0020
138	0.0024	0.0003	0.0020
139	0.0024	0.0004	0.0021
140	0.0024	0.0004	0.0021
141	0.0025	0.0004	0.0021
142	0.0025	0.0004	0.0021
143	0.0025	0.0004	0.0022
144	0.0026	0.0004	0.0022
145	0.0034	0.0005	0.0029
146	0.0034	0.0005	0.0029
147	0.0034	0.0005	0.0029
148	0.0034	0.0005	0.0029
149	0.0035	0.0005	0.0030
150	0.0035	0.0005	0.0030
151	0.0036	0.0005	0.0030
152	0.0036	0.0005	0.0031
153	0.0036	0.0005	0.0031
154	0.0037	0.0005	0.0031
155	0.0037	0.0005	0.0032
156	0.0037	0.0005	0.0032
157	0.0038	0.0006	0.0033
158	0.0038	0.0006	0.0033
159	0.0039	0.0006	0.0033
160	0.0039	0.0006	0.0034
161	0.0040	0.0006	0.0034
162	0.0041	0.0006	0.0035
163	0.0041	0.0006	0.0035
164	0.0042	0.0006	0.0036
165	0.0043	0.0006	0.0036
166	0.0043	0.0006	0.0037
167	0.0044	0.0006	0.0038
168	0.0045	0.0006	0.0038
169	0.0046	0.0007	0.0039
170	0.0046	0.0007	0.0040
171	0.0048	0.0007	0.0041
172	0.0048	0.0007	0.0041
173	0.0050	0.0007	0.0042
174	0.0050	0.0007	0.0043
175	0.0052	0.0008	0.0044
176	0.0053	0.0008	0.0045
177	0.0055	0.0008	0.0047
178	0.0056	0.0008	0.0048
179	0.0058	0.0008	0.0050
180	0.0060	0.0009	0.0051
181	0.0063	0.0009	0.0053
182	0.0064	0.0009	0.0055
183	0.0068	0.0010	0.0058
184	0.0070	0.0010	0.0060
185	0.0041	0.0006	0.0035
186	0.0044	0.0006	0.0037
187	0.0051	0.0007	0.0043
188	0.0055	0.0008	0.0047
189	0.0069	0.0010	0.0059
190	0.0079	0.0012	0.0068
191	0.0120	0.0018	0.0103
192	0.0175	0.0025	0.0149
193	0.0756	0.0038	0.0718
194	0.0095	0.0014	0.0081
195	0.0061	0.0009	0.0052
196	0.0047	0.0007	0.0040
197	0.0073	0.0011	0.0062
198	0.0066	0.0010	0.0056
199	0.0061	0.0009	0.0052
200	0.0057	0.0008	0.0049
201	0.0054	0.0008	0.0046
202	0.0051	0.0007	0.0044
203	0.0049	0.0007	0.0042
204	0.0047	0.0007	0.0040
205	0.0045	0.0007	0.0039
206	0.0044	0.0006	0.0037
207	0.0042	0.0006	0.0036
208	0.0041	0.0006	0.0035
209	0.0040	0.0006	0.0034
210	0.0039	0.0006	0.0033
211	0.0038	0.0005	0.0032
212	0.0037	0.0005	0.0032

213	0.0036	0.0005	0.0031
214	0.0035	0.0005	0.0030
215	0.0035	0.0005	0.0030
216	0.0034	0.0005	0.0029
217	0.0026	0.0004	0.0022
218	0.0025	0.0004	0.0021
219	0.0025	0.0004	0.0021
220	0.0024	0.0004	0.0021
221	0.0024	0.0003	0.0020
222	0.0023	0.0003	0.0020
223	0.0023	0.0003	0.0019
224	0.0022	0.0003	0.0019
225	0.0022	0.0003	0.0019
226	0.0021	0.0003	0.0018
227	0.0021	0.0003	0.0018
228	0.0021	0.0003	0.0018
229	0.0020	0.0003	0.0017
230	0.0020	0.0003	0.0017
231	0.0020	0.0003	0.0017
232	0.0020	0.0003	0.0017
233	0.0019	0.0003	0.0016
234	0.0019	0.0003	0.0016
235	0.0019	0.0003	0.0016
236	0.0018	0.0003	0.0016
237	0.0018	0.0003	0.0016
238	0.0018	0.0003	0.0015
239	0.0018	0.0003	0.0015
240	0.0018	0.0003	0.0015
241	0.0017	0.0003	0.0015
242	0.0017	0.0002	0.0015
243	0.0017	0.0002	0.0015
244	0.0017	0.0002	0.0014
245	0.0017	0.0002	0.0014
246	0.0016	0.0002	0.0014
247	0.0016	0.0002	0.0014
248	0.0016	0.0002	0.0014
249	0.0016	0.0002	0.0014
250	0.0016	0.0002	0.0013
251	0.0016	0.0002	0.0013
252	0.0015	0.0002	0.0013
253	0.0015	0.0002	0.0013
254	0.0015	0.0002	0.0013
255	0.0015	0.0002	0.0013
256	0.0015	0.0002	0.0013
257	0.0015	0.0002	0.0013
258	0.0015	0.0002	0.0013
259	0.0015	0.0002	0.0012
260	0.0014	0.0002	0.0012
261	0.0014	0.0002	0.0012
262	0.0014	0.0002	0.0012
263	0.0014	0.0002	0.0012
264	0.0014	0.0002	0.0012
265	0.0014	0.0002	0.0012
266	0.0014	0.0002	0.0012
267	0.0014	0.0002	0.0012
268	0.0013	0.0002	0.0012
269	0.0013	0.0002	0.0011
270	0.0013	0.0002	0.0011
271	0.0013	0.0002	0.0011
272	0.0013	0.0002	0.0011
273	0.0013	0.0002	0.0011
274	0.0013	0.0002	0.0011
275	0.0013	0.0002	0.0011
276	0.0013	0.0002	0.0011
277	0.0013	0.0002	0.0011
278	0.0013	0.0002	0.0011
279	0.0012	0.0002	0.0011
280	0.0012	0.0002	0.0011
281	0.0012	0.0002	0.0011
282	0.0012	0.0002	0.0010
283	0.0012	0.0002	0.0010
284	0.0012	0.0002	0.0010
285	0.0012	0.0002	0.0010
286	0.0012	0.0002	0.0010
287	0.0012	0.0002	0.0010
288	0.0012	0.0002	0.0010
STORM DAY 2			
289	0.0033	0.0005	0.0028
290	0.0033	0.0005	0.0028
291	0.0033	0.0005	0.0028
292	0.0033	0.0005	0.0028
293	0.0033	0.0005	0.0028
294	0.0033	0.0005	0.0028
295	0.0033	0.0005	0.0028

296	0.0033	0.0005	0.0028
297	0.0033	0.0005	0.0029
298	0.0034	0.0005	0.0029
299	0.0034	0.0005	0.0029
300	0.0034	0.0005	0.0029
301	0.0034	0.0005	0.0029
302	0.0034	0.0005	0.0029
303	0.0034	0.0005	0.0029
304	0.0034	0.0005	0.0029
305	0.0034	0.0005	0.0029
306	0.0034	0.0005	0.0029
307	0.0035	0.0005	0.0029
308	0.0035	0.0005	0.0030
309	0.0035	0.0005	0.0030
310	0.0035	0.0005	0.0030
311	0.0035	0.0005	0.0030
312	0.0035	0.0005	0.0030
313	0.0035	0.0005	0.0030
314	0.0035	0.0005	0.0030
315	0.0035	0.0005	0.0030
316	0.0036	0.0005	0.0030
317	0.0036	0.0005	0.0031
318	0.0036	0.0005	0.0031
319	0.0036	0.0005	0.0031
320	0.0036	0.0005	0.0031
321	0.0036	0.0005	0.0031
322	0.0036	0.0005	0.0031
323	0.0036	0.0005	0.0031
324	0.0037	0.0005	0.0031
325	0.0037	0.0005	0.0031
326	0.0037	0.0005	0.0031
327	0.0037	0.0005	0.0032
328	0.0037	0.0005	0.0032
329	0.0037	0.0005	0.0032
330	0.0037	0.0005	0.0032
331	0.0038	0.0005	0.0032
332	0.0038	0.0005	0.0032
333	0.0038	0.0006	0.0032
334	0.0038	0.0006	0.0032
335	0.0038	0.0006	0.0033
336	0.0038	0.0006	0.0033
337	0.0038	0.0006	0.0033
338	0.0039	0.0006	0.0033
339	0.0039	0.0006	0.0033
340	0.0039	0.0006	0.0033
341	0.0039	0.0006	0.0033
342	0.0039	0.0006	0.0033
343	0.0039	0.0006	0.0034
344	0.0040	0.0006	0.0034
345	0.0040	0.0006	0.0034
346	0.0040	0.0006	0.0034
347	0.0040	0.0006	0.0034
348	0.0040	0.0006	0.0034
349	0.0040	0.0006	0.0035
350	0.0041	0.0006	0.0035
351	0.0041	0.0006	0.0035
352	0.0041	0.0006	0.0035
353	0.0041	0.0006	0.0035
354	0.0041	0.0006	0.0035
355	0.0041	0.0006	0.0035
356	0.0042	0.0006	0.0036
357	0.0042	0.0006	0.0036
358	0.0042	0.0006	0.0036
359	0.0042	0.0006	0.0036
360	0.0042	0.0006	0.0036
361	0.0043	0.0006	0.0036
362	0.0043	0.0006	0.0037
363	0.0043	0.0006	0.0037
364	0.0043	0.0006	0.0037
365	0.0044	0.0006	0.0037
366	0.0044	0.0006	0.0037
367	0.0044	0.0006	0.0038
368	0.0044	0.0006	0.0038
369	0.0044	0.0006	0.0038
370	0.0045	0.0006	0.0038
371	0.0045	0.0007	0.0038
372	0.0045	0.0007	0.0038
373	0.0045	0.0007	0.0039
374	0.0045	0.0007	0.0039
375	0.0046	0.0007	0.0039
376	0.0046	0.0007	0.0039
377	0.0046	0.0007	0.0040
378	0.0046	0.0007	0.0040
379	0.0047	0.0007	0.0040

380	0.0047	0.0007	0.0040
381	0.0047	0.0007	0.0040
382	0.0048	0.0007	0.0041
383	0.0048	0.0007	0.0041
384	0.0048	0.0007	0.0041
385	0.0048	0.0007	0.0041
386	0.0049	0.0007	0.0042
387	0.0049	0.0007	0.0042
388	0.0049	0.0007	0.0042
389	0.0050	0.0007	0.0042
390	0.0050	0.0007	0.0043
391	0.0050	0.0007	0.0043
392	0.0051	0.0007	0.0043
393	0.0051	0.0007	0.0044
394	0.0051	0.0007	0.0044
395	0.0052	0.0008	0.0044
396	0.0052	0.0008	0.0044
397	0.0052	0.0008	0.0045
398	0.0053	0.0008	0.0045
399	0.0053	0.0008	0.0045
400	0.0053	0.0008	0.0046
401	0.0054	0.0008	0.0046
402	0.0054	0.0008	0.0046
403	0.0055	0.0008	0.0047
404	0.0055	0.0008	0.0047
405	0.0055	0.0008	0.0047
406	0.0056	0.0008	0.0048
407	0.0056	0.0008	0.0048
408	0.0057	0.0008	0.0048
409	0.0057	0.0008	0.0049
410	0.0057	0.0008	0.0049
411	0.0058	0.0008	0.0050
412	0.0058	0.0008	0.0050
413	0.0059	0.0009	0.0050
414	0.0059	0.0009	0.0051
415	0.0060	0.0009	0.0051
416	0.0060	0.0009	0.0052
417	0.0061	0.0009	0.0052
418	0.0061	0.0009	0.0053
419	0.0062	0.0009	0.0053
420	0.0063	0.0009	0.0054
421	0.0063	0.0009	0.0054
422	0.0064	0.0009	0.0055
423	0.0065	0.0009	0.0055
424	0.0065	0.0009	0.0056
425	0.0066	0.0010	0.0056
426	0.0066	0.0010	0.0057
427	0.0067	0.0010	0.0058
428	0.0068	0.0010	0.0058
429	0.0069	0.0010	0.0059
430	0.0069	0.0010	0.0059
431	0.0070	0.0010	0.0060
432	0.0071	0.0010	0.0061
433	0.0093	0.0014	0.0080
434	0.0094	0.0014	0.0080
435	0.0095	0.0014	0.0081
436	0.0095	0.0014	0.0082
437	0.0097	0.0014	0.0083
438	0.0097	0.0014	0.0083
439	0.0099	0.0014	0.0084
440	0.0099	0.0014	0.0085
441	0.0101	0.0015	0.0086
442	0.0102	0.0015	0.0087
443	0.0103	0.0015	0.0088
444	0.0104	0.0015	0.0089
445	0.0106	0.0015	0.0090
446	0.0107	0.0016	0.0091
447	0.0109	0.0016	0.0093
448	0.0110	0.0016	0.0094
449	0.0112	0.0016	0.0095
450	0.0113	0.0016	0.0096
451	0.0115	0.0017	0.0098
452	0.0116	0.0017	0.0099
453	0.0118	0.0017	0.0101
454	0.0120	0.0017	0.0102
455	0.0122	0.0018	0.0105
456	0.0124	0.0018	0.0106
457	0.0127	0.0018	0.0108
458	0.0129	0.0019	0.0110
459	0.0132	0.0019	0.0113
460	0.0134	0.0019	0.0114
461	0.0138	0.0020	0.0118
462	0.0140	0.0020	0.0120
463	0.0145	0.0021	0.0124

464	0.0147	0.0021	0.0126
465	0.0152	0.0022	0.0130
466	0.0155	0.0023	0.0133
467	0.0162	0.0024	0.0138
468	0.0166	0.0024	0.0142
469	0.0174	0.0025	0.0148
470	0.0178	0.0026	0.0152
471	0.0189	0.0027	0.0161
472	0.0195	0.0028	0.0167
473	0.0114	0.0017	0.0097
474	0.0122	0.0018	0.0104
475	0.0141	0.0020	0.0120
476	0.0154	0.0022	0.0132
477	0.0191	0.0028	0.0164
478	0.0220	0.0032	0.0188
479	0.0334	0.0038	0.0296
480	0.0485	0.0038	0.0447
481	0.2100	0.0038	0.2062
482	0.0263	0.0038	0.0225
483	0.0170	0.0025	0.0145
484	0.0130	0.0019	0.0111
485	0.0202	0.0029	0.0172
486	0.0183	0.0027	0.0157
487	0.0169	0.0025	0.0145
488	0.0159	0.0023	0.0136
489	0.0150	0.0022	0.0128
490	0.0142	0.0021	0.0121
491	0.0136	0.0020	0.0116
492	0.0130	0.0019	0.0111
493	0.0125	0.0018	0.0107
494	0.0121	0.0018	0.0103
495	0.0117	0.0017	0.0100
496	0.0114	0.0017	0.0097
497	0.0111	0.0016	0.0094
498	0.0108	0.0016	0.0092
499	0.0105	0.0015	0.0090
500	0.0103	0.0015	0.0088
501	0.0100	0.0015	0.0086
502	0.0098	0.0014	0.0084
503	0.0096	0.0014	0.0082
504	0.0094	0.0014	0.0081
505	0.0071	0.0010	0.0061
506	0.0070	0.0010	0.0060
507	0.0068	0.0010	0.0058
508	0.0067	0.0010	0.0057
509	0.0066	0.0010	0.0056
510	0.0064	0.0009	0.0055
511	0.0063	0.0009	0.0054
512	0.0062	0.0009	0.0053
513	0.0061	0.0009	0.0052
514	0.0060	0.0009	0.0051
515	0.0059	0.0009	0.0050
516	0.0058	0.0008	0.0049
517	0.0057	0.0008	0.0049
518	0.0056	0.0008	0.0048
519	0.0055	0.0008	0.0047
520	0.0054	0.0008	0.0046
521	0.0054	0.0008	0.0046
522	0.0053	0.0008	0.0045
523	0.0052	0.0008	0.0045
524	0.0051	0.0007	0.0044
525	0.0051	0.0007	0.0043
526	0.0050	0.0007	0.0043
527	0.0049	0.0007	0.0042
528	0.0049	0.0007	0.0042
529	0.0048	0.0007	0.0041
530	0.0048	0.0007	0.0041
531	0.0047	0.0007	0.0040
532	0.0047	0.0007	0.0040
533	0.0046	0.0007	0.0039
534	0.0046	0.0007	0.0039
535	0.0045	0.0007	0.0039
536	0.0045	0.0006	0.0038
537	0.0044	0.0006	0.0038
538	0.0044	0.0006	0.0037
539	0.0043	0.0006	0.0037
540	0.0043	0.0006	0.0037
541	0.0043	0.0006	0.0036
542	0.0042	0.0006	0.0036
543	0.0042	0.0006	0.0036
544	0.0041	0.0006	0.0035
545	0.0041	0.0006	0.0035
546	0.0041	0.0006	0.0035
547	0.0040	0.0006	0.0034

548	0.0040	0.0006	0.0034
549	0.0040	0.0006	0.0034
550	0.0039	0.0006	0.0034
551	0.0039	0.0006	0.0033
552	0.0039	0.0006	0.0033
553	0.0038	0.0006	0.0033
554	0.0038	0.0006	0.0033
555	0.0038	0.0005	0.0032
556	0.0037	0.0005	0.0032
557	0.0037	0.0005	0.0032
558	0.0037	0.0005	0.0032
559	0.0037	0.0005	0.0031
560	0.0036	0.0005	0.0031
561	0.0036	0.0005	0.0031
562	0.0036	0.0005	0.0031
563	0.0036	0.0005	0.0030
564	0.0035	0.0005	0.0030
565	0.0035	0.0005	0.0030
566	0.0035	0.0005	0.0030
567	0.0035	0.0005	0.0030
568	0.0034	0.0005	0.0029
569	0.0034	0.0005	0.0029
570	0.0034	0.0005	0.0029
571	0.0034	0.0005	0.0029
572	0.0034	0.0005	0.0029
573	0.0033	0.0005	0.0029
574	0.0033	0.0005	0.0028
575	0.0033	0.0005	0.0028
576	0.0033	0.0005	0.0028

Total soil rain loss = 0.39(In)
Total effective rainfall = 2.57(In)
Peak flow rate in flood hydrograph = 2.54(CFS)

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48 - 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	0.0002	0.01	Q	|	|	|	|
0+15	0.0003	0.01	Q	|	|	|	|
0+20	0.0004	0.01	Q	|	|	|	|
0+25	0.0005	0.01	Q	|	|	|	|
0+30	0.0006	0.01	Q	|	|	|	|
0+35	0.0007	0.01	Q	|	|	|	|
0+40	0.0008	0.01	Q	|	|	|	|
0+45	0.0009	0.01	Q	|	|	|	|
0+50	0.0010	0.01	Q	|	|	|	|
0+55	0.0011	0.02	Q	|	|	|	|
1+ 0	0.0012	0.02	Q	|	|	|	|
1+ 5	0.0013	0.02	Q	|	|	|	|
1+10	0.0014	0.02	Q	|	|	|	|
1+15	0.0015	0.02	Q	|	|	|	|
1+20	0.0016	0.02	Q	|	|	|	|
1+25	0.0017	0.02	Q	|	|	|	|
1+30	0.0018	0.02	Q	|	|	|	|
1+35	0.0019	0.02	Q	|	|	|	|
1+40	0.0020	0.02	Q	|	|	|	|
1+45	0.0022	0.02	Q	|	|	|	|
1+50	0.0023	0.02	Q	|	|	|	|
1+55	0.0024	0.02	Q	|	|	|	|
2+ 0	0.0025	0.02	Q	|	|	|	|
2+ 5	0.0026	0.02	Q	|	|	|	|
2+10	0.0027	0.02	Q	|	|	|	|
2+15	0.0028	0.02	Q	|	|	|	|
2+20	0.0029	0.02	Q	|	|	|	|
2+25	0.0030	0.02	Q	|	|	|	|
2+30	0.0031	0.02	Q	|	|	|	|
2+35	0.0032	0.02	Q	|	|	|	|
2+40	0.0033	0.02	Q	|	|	|	|
2+45	0.0035	0.02	Q	|	|	|	|
2+50	0.0036	0.02	Q	|	|	|	|
2+55	0.0037	0.02	Q	|	|	|	|
3+ 0	0.0038	0.02	Q	|	|	|	|
3+ 5	0.0039	0.02	Q	|	|	|	|
3+10	0.0040	0.02	Q	|	|	|	|
3+15	0.0041	0.02	Q	|	|	|	|
3+20	0.0043	0.02	Q	|	|	|	|

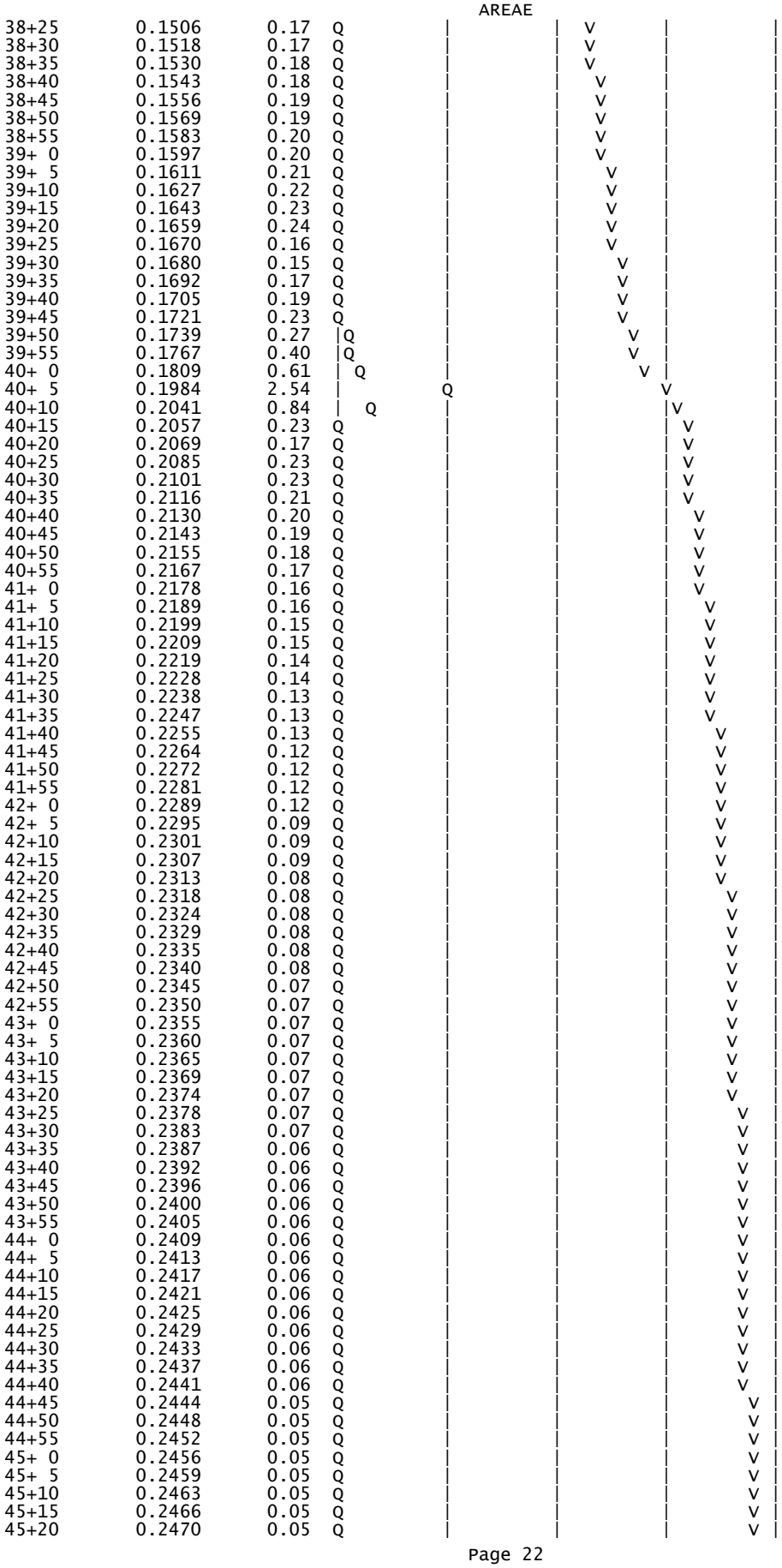
3+25	0.0044	0.02	Q				
3+30	0.0045	0.02	Q				
3+35	0.0046	0.02	Q				
3+40	0.0047	0.02	Q				
3+45	0.0048	0.02	Q				
3+50	0.0049	0.02	Q				
3+55	0.0051	0.02	Q				
4+ 0	0.0052	0.02	Q				
4+ 5	0.0053	0.02	Q				
4+10	0.0054	0.02	Q				
4+15	0.0055	0.02	Q				
4+20	0.0057	0.02	Q				
4+25	0.0058	0.02	Q				
4+30	0.0059	0.02	Q				
4+35	0.0060	0.02	Q				
4+40	0.0061	0.02	Q				
4+45	0.0063	0.02	Q				
4+50	0.0064	0.02	Q				
4+55	0.0065	0.02	QV				
5+ 0	0.0066	0.02	QV				
5+ 5	0.0068	0.02	QV				
5+10	0.0069	0.02	QV				
5+15	0.0070	0.02	QV				
5+20	0.0071	0.02	QV				
5+25	0.0073	0.02	QV				
5+30	0.0074	0.02	QV				
5+35	0.0075	0.02	QV				
5+40	0.0076	0.02	QV				
5+45	0.0078	0.02	QV				
5+50	0.0079	0.02	QV				
5+55	0.0080	0.02	QV				
6+ 0	0.0082	0.02	QV				
6+ 5	0.0083	0.02	QV				
6+10	0.0084	0.02	QV				
6+15	0.0085	0.02	QV				
6+20	0.0087	0.02	QV				
6+25	0.0088	0.02	QV				
6+30	0.0089	0.02	QV				
6+35	0.0091	0.02	QV				
6+40	0.0092	0.02	QV				
6+45	0.0094	0.02	QV				
6+50	0.0095	0.02	QV				
6+55	0.0096	0.02	QV				
7+ 0	0.0098	0.02	QV				
7+ 5	0.0099	0.02	QV				
7+10	0.0100	0.02	QV				
7+15	0.0102	0.02	QV				
7+20	0.0103	0.02	QV				
7+25	0.0105	0.02	QV				
7+30	0.0106	0.02	QV				
7+35	0.0108	0.02	QV				
7+40	0.0109	0.02	QV				
7+45	0.0110	0.02	QV				
7+50	0.0112	0.02	QV				
7+55	0.0113	0.02	QV				
8+ 0	0.0115	0.02	QV				
8+ 5	0.0116	0.02	QV				
8+10	0.0118	0.02	QV				
8+15	0.0119	0.02	QV				
8+20	0.0121	0.02	QV				
8+25	0.0122	0.02	QV				
8+30	0.0124	0.02	QV				
8+35	0.0125	0.02	QV				
8+40	0.0127	0.02	QV				
8+45	0.0129	0.02	Q V				
8+50	0.0130	0.02	Q V				
8+55	0.0132	0.02	Q V				
9+ 0	0.0133	0.02	Q V				
9+ 5	0.0135	0.02	Q V				
9+10	0.0137	0.02	Q V				
9+15	0.0138	0.02	Q V				
9+20	0.0140	0.02	Q V				
9+25	0.0141	0.02	Q V				
9+30	0.0143	0.02	Q V				
9+35	0.0145	0.02	Q V				
9+40	0.0147	0.02	Q V				
9+45	0.0148	0.02	Q V				
9+50	0.0150	0.02	Q V				
9+55	0.0152	0.03	Q V				
10+ 0	0.0153	0.03	Q V				
10+ 5	0.0155	0.03	Q V				
10+10	0.0157	0.03	Q V				
10+15	0.0159	0.03	Q V				
10+20	0.0160	0.03	Q V				

10+25	0.0162	0.03	Q V	|	|	|	|
10+30	0.0164	0.03	Q V	|	|	|	|
10+35	0.0166	0.03	Q V	|	|	|	|
10+40	0.0168	0.03	Q V	|	|	|	|
10+45	0.0170	0.03	Q V	|	|	|	|
10+50	0.0172	0.03	Q V	|	|	|	|
10+55	0.0173	0.03	Q V	|	|	|	|
11+ 0	0.0175	0.03	Q V	|	|	|	|
11+ 5	0.0177	0.03	Q V	|	|	|	|
11+10	0.0179	0.03	Q V	|	|	|	|
11+15	0.0181	0.03	Q V	|	|	|	|
11+20	0.0183	0.03	Q V	|	|	|	|
11+25	0.0185	0.03	Q V	|	|	|	|
11+30	0.0187	0.03	Q V	|	|	|	|
11+35	0.0189	0.03	Q V	|	|	|	|
11+40	0.0192	0.03	Q V	|	|	|	|
11+45	0.0194	0.03	Q V	|	|	|	|
11+50	0.0196	0.03	Q V	|	|	|	|
11+55	0.0198	0.03	Q V	|	|	|	|
12+ 0	0.0200	0.03	Q V	|	|	|	|
12+ 5	0.0203	0.04	Q V	|	|	|	|
12+10	0.0206	0.04	Q V	|	|	|	|
12+15	0.0209	0.04	Q V	|	|	|	|
12+20	0.0212	0.04	Q V	|	|	|	|
12+25	0.0214	0.04	Q V	|	|	|	|
12+30	0.0217	0.04	Q V	|	|	|	|
12+35	0.0221	0.04	Q V	|	|	|	|
12+40	0.0224	0.04	Q V	|	|	|	|
12+45	0.0227	0.04	Q V	|	|	|	|
12+50	0.0230	0.05	Q V	|	|	|	|
12+55	0.0233	0.05	Q V	|	|	|	|
13+ 0	0.0236	0.05	Q V	|	|	|	|
13+ 5	0.0239	0.05	Q V	|	|	|	|
13+10	0.0243	0.05	Q V	|	|	|	|
13+15	0.0246	0.05	Q V	|	|	|	|
13+20	0.0249	0.05	Q V	|	|	|	|
13+25	0.0253	0.05	Q V	|	|	|	|
13+30	0.0256	0.05	Q V	|	|	|	|
13+35	0.0260	0.05	Q V	|	|	|	|
13+40	0.0263	0.05	Q V	|	|	|	|
13+45	0.0267	0.05	Q V	|	|	|	|
13+50	0.0271	0.05	Q V	|	|	|	|
13+55	0.0274	0.05	Q V	|	|	|	|
14+ 0	0.0278	0.06	Q V	|	|	|	|
14+ 5	0.0282	0.06	Q V	|	|	|	|
14+10	0.0286	0.06	Q V	|	|	|	|
14+15	0.0290	0.06	Q V	|	|	|	|
14+20	0.0294	0.06	Q V	|	|	|	|
14+25	0.0298	0.06	Q V	|	|	|	|
14+30	0.0303	0.06	Q V	|	|	|	|
14+35	0.0307	0.06	Q V	|	|	|	|
14+40	0.0312	0.07	Q V	|	|	|	|
14+45	0.0316	0.07	Q V	|	|	|	|
14+50	0.0321	0.07	Q V	|	|	|	|
14+55	0.0326	0.07	Q V	|	|	|	|
15+ 0	0.0331	0.07	Q V	|	|	|	|
15+ 5	0.0336	0.08	Q V	|	|	|	|
15+10	0.0342	0.08	Q V	|	|	|	|
15+15	0.0347	0.08	Q V	|	|	|	|
15+20	0.0353	0.09	Q V	|	|	|	|
15+25	0.0357	0.06	Q V	|	|	|	|
15+30	0.0361	0.05	Q V	|	|	|	|
15+35	0.0365	0.06	Q V	|	|	|	|
15+40	0.0370	0.07	Q V	|	|	|	|
15+45	0.0376	0.08	Q V	|	|	|	|
15+50	0.0382	0.10	Q V	|	|	|	|
15+55	0.0392	0.14	Q V	|	|	|	|
16+ 0	0.0406	0.20	Q V	|	|	|	|
16+ 5	0.0467	0.88	| Q V	|	|	|	|
16+10	0.0487	0.29	|Q V	|	|	|	|
16+15	0.0493	0.08	Q V	|	|	|	|
16+20	0.0497	0.06	Q V	|	|	|	|
16+25	0.0503	0.08	Q V	|	|	|	|
16+30	0.0509	0.08	Q V	|	|	|	|
16+35	0.0514	0.08	Q V	|	|	|	|
16+40	0.0519	0.07	Q V	|	|	|	|
16+45	0.0523	0.07	Q V	|	|	|	|
16+50	0.0528	0.06	Q V	|	|	|	|
16+55	0.0532	0.06	Q V	|	|	|	|
17+ 0	0.0536	0.06	Q V	|	|	|	|
17+ 5	0.0540	0.06	Q V	|	|	|	|
17+10	0.0544	0.05	Q V	|	|	|	|
17+15	0.0547	0.05	Q V	|	|	|	|
17+20	0.0551	0.05	Q V	|	|	|	|

17+25	0.0554	0.05	Q	V				
17+30	0.0558	0.05	Q	V				
17+35	0.0561	0.05	Q	V				
17+40	0.0564	0.05	Q	V				
17+45	0.0567	0.04	Q	V				
17+50	0.0570	0.04	Q	V				
17+55	0.0573	0.04	Q	V				
18+ 0	0.0576	0.04	Q	V				
18+ 5	0.0578	0.03	Q	V				
18+10	0.0581	0.03	Q	V				
18+15	0.0583	0.03	Q	V				
18+20	0.0585	0.03	Q	V				
18+25	0.0587	0.03	Q	V				
18+30	0.0589	0.03	Q	V				
18+35	0.0591	0.03	Q	V				
18+40	0.0593	0.03	Q	V				
18+45	0.0594	0.03	Q	V				
18+50	0.0596	0.03	Q	V				
18+55	0.0598	0.03	Q	V				
19+ 0	0.0600	0.03	Q	V				
19+ 5	0.0602	0.03	Q	V				
19+10	0.0603	0.03	Q	V				
19+15	0.0605	0.02	Q	V				
19+20	0.0607	0.02	Q	V				
19+25	0.0608	0.02	Q	V				
19+30	0.0610	0.02	Q	V				
19+35	0.0612	0.02	Q	V				
19+40	0.0613	0.02	Q	V				
19+45	0.0615	0.02	Q	V				
19+50	0.0616	0.02	Q	V				
19+55	0.0618	0.02	Q	V				
20+ 0	0.0619	0.02	Q	V				
20+ 5	0.0621	0.02	Q	V				
20+10	0.0622	0.02	Q	V				
20+15	0.0624	0.02	Q	V				
20+20	0.0625	0.02	Q	V				
20+25	0.0627	0.02	Q	V				
20+30	0.0628	0.02	Q	V				
20+35	0.0629	0.02	Q	V				
20+40	0.0631	0.02	Q	V				
20+45	0.0632	0.02	Q	V				
20+50	0.0634	0.02	Q	V				
20+55	0.0635	0.02	Q	V				
21+ 0	0.0636	0.02	Q	V				
21+ 5	0.0638	0.02	Q	V				
21+10	0.0639	0.02	Q	V				
21+15	0.0640	0.02	Q	V				
21+20	0.0641	0.02	Q	V				
21+25	0.0643	0.02	Q	V				
21+30	0.0644	0.02	Q	V				
21+35	0.0645	0.02	Q	V				
21+40	0.0646	0.02	Q	V				
21+45	0.0648	0.02	Q	V				
21+50	0.0649	0.02	Q	V				
21+55	0.0650	0.02	Q	V				
22+ 0	0.0651	0.02	Q	V				
22+ 5	0.0652	0.02	Q	V				
22+10	0.0654	0.02	Q	V				
22+15	0.0655	0.02	Q	V				
22+20	0.0656	0.02	Q	V				
22+25	0.0657	0.02	Q	V				
22+30	0.0658	0.02	Q	V				
22+35	0.0659	0.02	Q	V				
22+40	0.0660	0.02	Q	V				
22+45	0.0661	0.02	Q	V				
22+50	0.0663	0.02	Q	V				
22+55	0.0664	0.02	Q	V				
23+ 0	0.0665	0.02	Q	V				
23+ 5	0.0666	0.02	Q	V				
23+10	0.0667	0.02	Q	V				
23+15	0.0668	0.02	Q	V				
23+20	0.0669	0.02	Q	V				
23+25	0.0670	0.02	Q	V				
23+30	0.0671	0.02	Q	V				
23+35	0.0672	0.02	Q	V				
23+40	0.0673	0.02	Q	V				
23+45	0.0674	0.01	Q	V				
23+50	0.0675	0.01	Q	V				
23+55	0.0676	0.01	Q	V				
24+ 0	0.0677	0.01	Q	V				
24+ 5	0.0680	0.03	Q	V				
24+10	0.0682	0.04	Q	V				
24+15	0.0685	0.04	Q	V				
24+20	0.0688	0.04	Q	V				

24+25	0.0691	0.04	Q	V	|	|	|
24+30	0.0694	0.04	Q	V	|	|	|
24+35	0.0696	0.04	Q	V	|	|	|
24+40	0.0699	0.04	Q	V	|	|	|
24+45	0.0702	0.04	Q	V	|	|	|
24+50	0.0705	0.04	Q	V	|	|	|
24+55	0.0708	0.04	Q	|V	|	|	|
25+ 0	0.0711	0.04	Q	|V	|	|	|
25+ 5	0.0714	0.04	Q	|V	|	|	|
25+10	0.0717	0.04	Q	|V	|	|	|
25+15	0.0719	0.04	Q	|V	|	|	|
25+20	0.0722	0.04	Q	|V	|	|	|
25+25	0.0725	0.04	Q	|V	|	|	|
25+30	0.0728	0.04	Q	|V	|	|	|
25+35	0.0731	0.04	Q	|V	|	|	|
25+40	0.0734	0.04	Q	|V	|	|	|
25+45	0.0737	0.04	Q	|V	|	|	|
25+50	0.0740	0.04	Q	|V	|	|	|
25+55	0.0743	0.04	Q	|V	|	|	|
26+ 0	0.0746	0.04	Q	|V	|	|	|
26+ 5	0.0749	0.04	Q	|V	|	|	|
26+10	0.0752	0.04	Q	|V	|	|	|
26+15	0.0755	0.04	Q	|V	|	|	|
26+20	0.0758	0.04	Q	|V	|	|	|
26+25	0.0761	0.04	Q	|V	|	|	|
26+30	0.0764	0.04	Q	|V	|	|	|
26+35	0.0767	0.04	Q	|V	|	|	|
26+40	0.0770	0.04	Q	|V	|	|	|
26+45	0.0773	0.04	Q	| V	|	|	|
26+50	0.0777	0.04	Q	| V	|	|	|
26+55	0.0780	0.05	Q	| V	|	|	|
27+ 0	0.0783	0.05	Q	| V	|	|	|
27+ 5	0.0786	0.05	Q	| V	|	|	|
27+10	0.0789	0.05	Q	| V	|	|	|
27+15	0.0792	0.05	Q	| V	|	|	|
27+20	0.0795	0.05	Q	| V	|	|	|
27+25	0.0799	0.05	Q	| V	|	|	|
27+30	0.0802	0.05	Q	| V	|	|	|
27+35	0.0805	0.05	Q	| V	|	|	|
27+40	0.0808	0.05	Q	| V	|	|	|
27+45	0.0811	0.05	Q	| V	|	|	|
27+50	0.0815	0.05	Q	| V	|	|	|
27+55	0.0818	0.05	Q	| V	|	|	|
28+ 0	0.0821	0.05	Q	| V	|	|	|
28+ 5	0.0824	0.05	Q	| V	|	|	|
28+10	0.0828	0.05	Q	| V	|	|	|
28+15	0.0831	0.05	Q	| V	|	|	|
28+20	0.0834	0.05	Q	| V	|	|	|
28+25	0.0838	0.05	Q	| V	|	|	|
28+30	0.0841	0.05	Q	| V	|	|	|
28+35	0.0844	0.05	Q	| V	|	|	|
28+40	0.0848	0.05	Q	| V	|	|	|
28+45	0.0851	0.05	Q	| V	|	|	|
28+50	0.0855	0.05	Q	| V	|	|	|
28+55	0.0858	0.05	Q	| V	|	|	|
29+ 0	0.0861	0.05	Q	| V	|	|	|
29+ 5	0.0865	0.05	Q	| V	|	|	|
29+10	0.0868	0.05	Q	| V	|	|	|
29+15	0.0872	0.05	Q	| V	|	|	|
29+20	0.0875	0.05	Q	| V	|	|	|
29+25	0.0879	0.05	Q	| V	|	|	|
29+30	0.0882	0.05	Q	| V	|	|	|
29+35	0.0886	0.05	Q	| V	|	|	|
29+40	0.0889	0.05	Q	| V	|	|	|
29+45	0.0893	0.05	Q	| V	|	|	|
29+50	0.0897	0.05	Q	| V	|	|	|
29+55	0.0900	0.05	Q	| V	|	|	|
30+ 0	0.0904	0.05	Q	| V	|	|	|
30+ 5	0.0907	0.05	Q	| V	|	|	|
30+10	0.0911	0.05	Q	| V	|	|	|
30+15	0.0915	0.05	Q	| V	|	|	|
30+20	0.0918	0.05	Q	| V	|	|	|
30+25	0.0922	0.05	Q	| V	|	|	|
30+30	0.0926	0.05	Q	| V	|	|	|
30+35	0.0930	0.05	Q	| V	|	|	|
30+40	0.0933	0.05	Q	| V	|	|	|
30+45	0.0937	0.05	Q	| V	|	|	|
30+50	0.0941	0.06	Q	| V	|	|	|
30+55	0.0945	0.06	Q	| V	|	|	|
31+ 0	0.0949	0.06	Q	| V	|	|	|
31+ 5	0.0953	0.06	Q	| V	|	|	|
31+10	0.0956	0.06	Q	| V	|	|	|
31+15	0.0960	0.06	Q	| V	|	|	|
31+20	0.0964	0.06	Q	| V	|	|	|

31+25	0.0968	0.06	Q	V			
31+30	0.0972	0.06	Q	V			
31+35	0.0976	0.06	Q	V			
31+40	0.0980	0.06	Q	V			
31+45	0.0984	0.06	Q	V			
31+50	0.0988	0.06	Q	V			
31+55	0.0992	0.06	Q	V			
32+ 0	0.0996	0.06	Q	V			
32+ 5	0.1001	0.06	Q	V			
32+10	0.1005	0.06	Q	V			
32+15	0.1009	0.06	Q	V			
32+20	0.1013	0.06	Q	V			
32+25	0.1017	0.06	Q	V			
32+30	0.1022	0.06	Q	V			
32+35	0.1026	0.06	Q	V			
32+40	0.1030	0.06	Q	V			
32+45	0.1035	0.06	Q	V			
32+50	0.1039	0.06	Q	V			
32+55	0.1043	0.06	Q	V			
33+ 0	0.1048	0.06	Q	V			
33+ 5	0.1052	0.06	Q	V			
33+10	0.1057	0.07	Q	V			
33+15	0.1061	0.07	Q	V			
33+20	0.1066	0.07	Q	V			
33+25	0.1070	0.07	Q	V			
33+30	0.1075	0.07	Q	V			
33+35	0.1080	0.07	Q	V			
33+40	0.1084	0.07	Q	V			
33+45	0.1089	0.07	Q	V			
33+50	0.1094	0.07	Q	V			
33+55	0.1099	0.07	Q	V			
34+ 0	0.1103	0.07	Q	V			
34+ 5	0.1108	0.07	Q	V			
34+10	0.1113	0.07	Q	V			
34+15	0.1118	0.07	Q	V			
34+20	0.1123	0.07	Q	V			
34+25	0.1128	0.07	Q	V			
34+30	0.1133	0.07	Q	V			
34+35	0.1138	0.07	Q	V			
34+40	0.1143	0.07	Q	V			
34+45	0.1149	0.08	Q	V			
34+50	0.1154	0.08	Q	V			
34+55	0.1159	0.08	Q	V			
35+ 0	0.1165	0.08	Q	V			
35+ 5	0.1170	0.08	Q	V			
35+10	0.1175	0.08	Q	V			
35+15	0.1181	0.08	Q	V			
35+20	0.1186	0.08	Q	V			
35+25	0.1192	0.08	Q	V			
35+30	0.1198	0.08	Q	V			
35+35	0.1203	0.08	Q	V			
35+40	0.1209	0.08	Q	V			
35+45	0.1215	0.09	Q	V			
35+50	0.1221	0.09	Q	V			
35+55	0.1227	0.09	Q	V			
36+ 0	0.1233	0.09	Q	V			
36+ 5	0.1241	0.11	Q	V			
36+10	0.1249	0.12	Q	V			
36+15	0.1257	0.12	Q	V			
36+20	0.1265	0.12	Q	V			
36+25	0.1273	0.12	Q	V			
36+30	0.1281	0.12	Q	V			
36+35	0.1290	0.12	Q	V			
36+40	0.1298	0.12	Q	V			
36+45	0.1307	0.12	Q	V			
36+50	0.1316	0.13	Q	V			
36+55	0.1324	0.13	Q	V			
37+ 0	0.1333	0.13	Q	V			
37+ 5	0.1342	0.13	Q	V			
37+10	0.1351	0.13	Q	V			
37+15	0.1361	0.13	Q	V			
37+20	0.1370	0.14	Q	V			
37+25	0.1379	0.14	Q	V			
37+30	0.1389	0.14	Q	V			
37+35	0.1399	0.14	Q	V			
37+40	0.1409	0.14	Q	V			
37+45	0.1419	0.15	Q	V			
37+50	0.1429	0.15	Q	V			
37+55	0.1439	0.15	Q	V			
38+ 0	0.1450	0.15	Q	V			
38+ 5	0.1461	0.16	Q	V			
38+10	0.1472	0.16	Q	V			
38+15	0.1483	0.16	Q	V			
38+20	0.1494	0.17	Q	V			



38+25	0.1506	0.17	Q	
38+30	0.1518	0.17	Q	
38+35	0.1530	0.18	Q	
38+40	0.1543	0.18	Q	
38+45	0.1556	0.19	Q	
38+50	0.1569	0.19	Q	
38+55	0.1583	0.20	Q	
39+ 0	0.1597	0.20	Q	
39+ 5	0.1611	0.21	Q	
39+10	0.1627	0.22	Q	
39+15	0.1643	0.23	Q	
39+20	0.1659	0.24	Q	
39+25	0.1670	0.16	Q	
39+30	0.1680	0.15	Q	
39+35	0.1692	0.17	Q	
39+40	0.1705	0.19	Q	
39+45	0.1721	0.23	Q	
39+50	0.1739	0.27	Q	
39+55	0.1767	0.40	Q	
40+ 0	0.1809	0.61	Q	
40+ 5	0.1984	2.54	Q	
40+10	0.2041	0.84	Q	
40+15	0.2057	0.23	Q	
40+20	0.2069	0.17	Q	
40+25	0.2085	0.23	Q	
40+30	0.2101	0.23	Q	
40+35	0.2116	0.21	Q	
40+40	0.2130	0.20	Q	
40+45	0.2143	0.19	Q	
40+50	0.2155	0.18	Q	
40+55	0.2167	0.17	Q	
41+ 0	0.2178	0.16	Q	
41+ 5	0.2189	0.16	Q	
41+10	0.2199	0.15	Q	
41+15	0.2209	0.15	Q	
41+20	0.2219	0.14	Q	
41+25	0.2228	0.14	Q	
41+30	0.2238	0.13	Q	
41+35	0.2247	0.13	Q	
41+40	0.2255	0.13	Q	
41+45	0.2264	0.12	Q	
41+50	0.2272	0.12	Q	
41+55	0.2281	0.12	Q	
42+ 0	0.2289	0.12	Q	
42+ 5	0.2295	0.09	Q	
42+10	0.2301	0.09	Q	
42+15	0.2307	0.09	Q	
42+20	0.2313	0.08	Q	
42+25	0.2318	0.08	Q	
42+30	0.2324	0.08	Q	
42+35	0.2329	0.08	Q	
42+40	0.2335	0.08	Q	
42+45	0.2340	0.08	Q	
42+50	0.2345	0.07	Q	
42+55	0.2350	0.07	Q	
43+ 0	0.2355	0.07	Q	
43+ 5	0.2360	0.07	Q	
43+10	0.2365	0.07	Q	
43+15	0.2369	0.07	Q	
43+20	0.2374	0.07	Q	
43+25	0.2378	0.07	Q	
43+30	0.2383	0.07	Q	
43+35	0.2387	0.06	Q	
43+40	0.2392	0.06	Q	
43+45	0.2396	0.06	Q	
43+50	0.2400	0.06	Q	
43+55	0.2405	0.06	Q	
44+ 0	0.2409	0.06	Q	
44+ 5	0.2413	0.06	Q	
44+10	0.2417	0.06	Q	
44+15	0.2421	0.06	Q	
44+20	0.2425	0.06	Q	
44+25	0.2429	0.06	Q	
44+30	0.2433	0.06	Q	
44+35	0.2437	0.06	Q	
44+40	0.2441	0.06	Q	
44+45	0.2444	0.05	Q	
44+50	0.2448	0.05	Q	
44+55	0.2452	0.05	Q	
45+ 0	0.2456	0.05	Q	
45+ 5	0.2459	0.05	Q	
45+10	0.2463	0.05	Q	
45+15	0.2466	0.05	Q	
45+20	0.2470	0.05	Q	

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45+25	0.2473	0.05	Q				V
45+30	0.2477	0.05	Q				V
45+35	0.2480	0.05	Q				V
45+40	0.2484	0.05	Q				V
45+45	0.2487	0.05	Q				V
45+50	0.2491	0.05	Q				V
45+55	0.2494	0.05	Q				V
46+ 0	0.2497	0.05	Q				V
46+ 5	0.2500	0.05	Q				V
46+10	0.2504	0.05	Q				V
46+15	0.2507	0.05	Q				V
46+20	0.2510	0.05	Q				V
46+25	0.2513	0.05	Q				V
46+30	0.2517	0.05	Q				V
46+35	0.2520	0.05	Q				V
46+40	0.2523	0.05	Q				V
46+45	0.2526	0.04	Q				V
46+50	0.2529	0.04	Q				V
46+55	0.2532	0.04	Q				V
47+ 0	0.2535	0.04	Q				V
47+ 5	0.2538	0.04	Q				V
47+10	0.2541	0.04	Q				V
47+15	0.2544	0.04	Q				V
47+20	0.2547	0.04	Q				V
47+25	0.2550	0.04	Q				V
47+30	0.2553	0.04	Q				V
47+35	0.2556	0.04	Q				V
47+40	0.2558	0.04	Q				V
47+45	0.2561	0.04	Q				V
47+50	0.2564	0.04	Q				V
47+55	0.2567	0.04	Q				V
48+ 0	0.2570	0.04	Q				V
48+ 5	0.2570	0.01	Q				V

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA F
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
3.38	1	0.78
Rainfall data for year 2		
3.38	6	1.20
Rainfall data for year 2		
3.38	24	2.18
Rainfall data for year 100		
3.38	1	1.27
Rainfall data for year 100		
3.38	6	2.86
Rainfall data for year 100		
3.38	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
44.0	26.2	3.38	1.000	0.999	0.019	0.019

Area-averaged adjusted loss rate Fm (In/Hr) = 0.019

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
0.06	0.019	44.0	26.2	10.90	0.000
3.32	0.981	98.0	98.0	0.20	0.896

Area-averaged catchment yield fraction, Y = 0.879
Area-averaged low loss fraction, Yb = 0.121

++
Watercourse length = 940.00(Ft.)
Length from concentration point to centroid = 210.00(Ft.)
Elevation difference along watercourse = 102.80(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 3.38(Ac.)
Catchment Lag time = 0.016 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 508.3595
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.019(In/Hr)
Average low loss rate fraction (Yb) = 0.121 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.210(In)
Computed peak 30-minute rainfall = 0.360(In)
Specified peak 1-hour rainfall = 0.443(In)
Computed peak 3-hour rainfall = 0.816(In)
Specified peak 6-hour rainfall = 1.200(In)
Specified peak 24-hour rainfall = 2.180(In)

Rainfall depth area reduction factors:
Using a total area of 3.38(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.210(In)
30-minute factor = 1.000 Adjusted rainfall = 0.359(In)
1-hour factor = 1.000 Adjusted rainfall = 0.443(In)
3-hour factor = 1.000 Adjusted rainfall = 0.816(In)
6-hour factor = 1.000 Adjusted rainfall = 1.200(In)
24-hour factor = 1.000 Adjusted rainfall = 2.180(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 40.88 (CFS))		
1	73.943	30.226
2	100.000	10.651

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2100	0.2100
2	0.2585	0.0485
3	0.2920	0.0334
4	0.3183	0.0263
5	0.3403	0.0220
6	0.3594	0.0191
7	0.3765	0.0170
8	0.3918	0.0154
9	0.4059	0.0141
10	0.4190	0.0130
11	0.4311	0.0122
12	0.4425	0.0114
13	0.4627	0.0202
14	0.4822	0.0195
15	0.5011	0.0189
16	0.5194	0.0183
17	0.5372	0.0178
18	0.5546	0.0174
19	0.5716	0.0169
20	0.5881	0.0166
21	0.6043	0.0162
22	0.6202	0.0159
23	0.6357	0.0155
24	0.6510	0.0152
25	0.6659	0.0150
26	0.6806	0.0147
27	0.6951	0.0145
28	0.7093	0.0142
29	0.7233	0.0140
30	0.7371	0.0138
31	0.7507	0.0136
32	0.7640	0.0134
33	0.7772	0.0132
34	0.7903	0.0130
35	0.8031	0.0129
36	0.8158	0.0127
37	0.8284	0.0125
38	0.8408	0.0124
39	0.8530	0.0122
40	0.8651	0.0121
41	0.8771	0.0120
42	0.8889	0.0118
43	0.9007	0.0117
44	0.9123	0.0116
45	0.9237	0.0115
46	0.9351	0.0114
47	0.9464	0.0113

		AREAF
48	0.9575	0.0112
49	0.9686	0.0111
50	0.9795	0.0110
51	0.9904	0.0109
52	1.0012	0.0108
53	1.0118	0.0107
54	1.0224	0.0106
55	1.0329	0.0105
56	1.0433	0.0104
57	1.0537	0.0103
58	1.0639	0.0103
59	1.0741	0.0102
60	1.0842	0.0101
61	1.0942	0.0100
62	1.1041	0.0099
63	1.1140	0.0099
64	1.1238	0.0098
65	1.1336	0.0097
66	1.1432	0.0097
67	1.1529	0.0096
68	1.1624	0.0095
69	1.1719	0.0095
70	1.1813	0.0094
71	1.1907	0.0094
72	1.2000	0.0093
73	1.2071	0.0071
74	1.2142	0.0071
75	1.2213	0.0070
76	1.2283	0.0070
77	1.2352	0.0069
78	1.2421	0.0069
79	1.2489	0.0068
80	1.2557	0.0068
81	1.2624	0.0067
82	1.2691	0.0067
83	1.2758	0.0066
84	1.2824	0.0066
85	1.2889	0.0066
86	1.2954	0.0065
87	1.3019	0.0065
88	1.3083	0.0064
89	1.3147	0.0064
90	1.3210	0.0063
91	1.3273	0.0063
92	1.3336	0.0063
93	1.3398	0.0062
94	1.3460	0.0062
95	1.3521	0.0061
96	1.3583	0.0061
97	1.3643	0.0061
98	1.3704	0.0060
99	1.3764	0.0060
100	1.3823	0.0060
101	1.3883	0.0059
102	1.3942	0.0059
103	1.4001	0.0059
104	1.4059	0.0058
105	1.4117	0.0058
106	1.4175	0.0058
107	1.4232	0.0057
108	1.4289	0.0057
109	1.4346	0.0057
110	1.4403	0.0057
111	1.4459	0.0056
112	1.4515	0.0056
113	1.4571	0.0056
114	1.4626	0.0055
115	1.4681	0.0055
116	1.4736	0.0055
117	1.4790	0.0055
118	1.4845	0.0054
119	1.4899	0.0054
120	1.4953	0.0054
121	1.5006	0.0054
122	1.5059	0.0053
123	1.5112	0.0053
124	1.5165	0.0053
125	1.5218	0.0053
126	1.5270	0.0052
127	1.5322	0.0052
128	1.5374	0.0052
129	1.5426	0.0052
130	1.5477	0.0051
131	1.5528	0.0051

		AREAF
132	1.5579	0.0051
133	1.5630	0.0051
134	1.5680	0.0051
135	1.5731	0.0050
136	1.5781	0.0050
137	1.5831	0.0050
138	1.5880	0.0050
139	1.5930	0.0049
140	1.5979	0.0049
141	1.6028	0.0049
142	1.6077	0.0049
143	1.6125	0.0049
144	1.6174	0.0048
145	1.6222	0.0048
146	1.6270	0.0048
147	1.6318	0.0048
148	1.6366	0.0048
149	1.6413	0.0048
150	1.6461	0.0047
151	1.6508	0.0047
152	1.6555	0.0047
153	1.6602	0.0047
154	1.6648	0.0047
155	1.6695	0.0046
156	1.6741	0.0046
157	1.6787	0.0046
158	1.6833	0.0046
159	1.6879	0.0046
160	1.6925	0.0046
161	1.6970	0.0045
162	1.7015	0.0045
163	1.7061	0.0045
164	1.7106	0.0045
165	1.7150	0.0045
166	1.7195	0.0045
167	1.7240	0.0045
168	1.7284	0.0044
169	1.7328	0.0044
170	1.7372	0.0044
171	1.7416	0.0044
172	1.7460	0.0044
173	1.7504	0.0044
174	1.7547	0.0044
175	1.7591	0.0043
176	1.7634	0.0043
177	1.7677	0.0043
178	1.7720	0.0043
179	1.7763	0.0043
180	1.7805	0.0043
181	1.7848	0.0043
182	1.7890	0.0042
183	1.7933	0.0042
184	1.7975	0.0042
185	1.8017	0.0042
186	1.8059	0.0042
187	1.8100	0.0042
188	1.8142	0.0042
189	1.8183	0.0041
190	1.8225	0.0041
191	1.8266	0.0041
192	1.8307	0.0041
193	1.8348	0.0041
194	1.8389	0.0041
195	1.8430	0.0041
196	1.8470	0.0041
197	1.8511	0.0041
198	1.8551	0.0040
199	1.8592	0.0040
200	1.8632	0.0040
201	1.8672	0.0040
202	1.8712	0.0040
203	1.8752	0.0040
204	1.8791	0.0040
205	1.8831	0.0040
206	1.8871	0.0040
207	1.8910	0.0039
208	1.8949	0.0039
209	1.8988	0.0039
210	1.9027	0.0039
211	1.9066	0.0039
212	1.9105	0.0039
213	1.9144	0.0039
214	1.9183	0.0039
215	1.9221	0.0039

		AREAF
216	1.9260	0.0038
217	1.9298	0.0038
218	1.9336	0.0038
219	1.9374	0.0038
220	1.9412	0.0038
221	1.9450	0.0038
222	1.9488	0.0038
223	1.9526	0.0038
224	1.9564	0.0038
225	1.9601	0.0038
226	1.9639	0.0037
227	1.9676	0.0037
228	1.9713	0.0037
229	1.9751	0.0037
230	1.9788	0.0037
231	1.9825	0.0037
232	1.9862	0.0037
233	1.9898	0.0037
234	1.9935	0.0037
235	1.9972	0.0037
236	2.0008	0.0037
237	2.0045	0.0036
238	2.0081	0.0036
239	2.0118	0.0036
240	2.0154	0.0036
241	2.0190	0.0036
242	2.0226	0.0036
243	2.0262	0.0036
244	2.0298	0.0036
245	2.0333	0.0036
246	2.0369	0.0036
247	2.0405	0.0036
248	2.0440	0.0036
249	2.0476	0.0035
250	2.0511	0.0035
251	2.0546	0.0035
252	2.0582	0.0035
253	2.0617	0.0035
254	2.0652	0.0035
255	2.0687	0.0035
256	2.0722	0.0035
257	2.0757	0.0035
258	2.0791	0.0035
259	2.0826	0.0035
260	2.0861	0.0035
261	2.0895	0.0035
262	2.0929	0.0034
263	2.0964	0.0034
264	2.0998	0.0034
265	2.1032	0.0034
266	2.1067	0.0034
267	2.1101	0.0034
268	2.1135	0.0034
269	2.1168	0.0034
270	2.1202	0.0034
271	2.1236	0.0034
272	2.1270	0.0034
273	2.1303	0.0034
274	2.1337	0.0034
275	2.1371	0.0034
276	2.1404	0.0033
277	2.1437	0.0033
278	2.1471	0.0033
279	2.1504	0.0033
280	2.1537	0.0033
281	2.1570	0.0033
282	2.1603	0.0033
283	2.1636	0.0033
284	2.1669	0.0033
285	2.1702	0.0033
286	2.1735	0.0033
287	2.1767	0.0033
288	2.1800	0.0033

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0033	0.0004	0.0029
2	0.0033	0.0004	0.0029
3	0.0033	0.0004	0.0029
4	0.0033	0.0004	0.0029
5	0.0033	0.0004	0.0029
6	0.0033	0.0004	0.0029

	AREAF		
7	0.0033	0.0004	0.0029
8	0.0033	0.0004	0.0029
9	0.0033	0.0004	0.0029
10	0.0034	0.0004	0.0029
11	0.0034	0.0004	0.0030
12	0.0034	0.0004	0.0030
13	0.0034	0.0004	0.0030
14	0.0034	0.0004	0.0030
15	0.0034	0.0004	0.0030
16	0.0034	0.0004	0.0030
17	0.0034	0.0004	0.0030
18	0.0034	0.0004	0.0030
19	0.0035	0.0004	0.0030
20	0.0035	0.0004	0.0030
21	0.0035	0.0004	0.0031
22	0.0035	0.0004	0.0031
23	0.0035	0.0004	0.0031
24	0.0035	0.0004	0.0031
25	0.0035	0.0004	0.0031
26	0.0035	0.0004	0.0031
27	0.0035	0.0004	0.0031
28	0.0036	0.0004	0.0031
29	0.0036	0.0004	0.0031
30	0.0036	0.0004	0.0031
31	0.0036	0.0004	0.0032
32	0.0036	0.0004	0.0032
33	0.0036	0.0004	0.0032
34	0.0036	0.0004	0.0032
35	0.0036	0.0004	0.0032
36	0.0037	0.0004	0.0032
37	0.0037	0.0004	0.0032
38	0.0037	0.0004	0.0032
39	0.0037	0.0004	0.0033
40	0.0037	0.0004	0.0033
41	0.0037	0.0005	0.0033
42	0.0037	0.0005	0.0033
43	0.0038	0.0005	0.0033
44	0.0038	0.0005	0.0033
45	0.0038	0.0005	0.0033
46	0.0038	0.0005	0.0033
47	0.0038	0.0005	0.0034
48	0.0038	0.0005	0.0034
49	0.0038	0.0005	0.0034
50	0.0039	0.0005	0.0034
51	0.0039	0.0005	0.0034
52	0.0039	0.0005	0.0034
53	0.0039	0.0005	0.0034
54	0.0039	0.0005	0.0034
55	0.0039	0.0005	0.0035
56	0.0040	0.0005	0.0035
57	0.0040	0.0005	0.0035
58	0.0040	0.0005	0.0035
59	0.0040	0.0005	0.0035
60	0.0040	0.0005	0.0035
61	0.0040	0.0005	0.0036
62	0.0041	0.0005	0.0036
63	0.0041	0.0005	0.0036
64	0.0041	0.0005	0.0036
65	0.0041	0.0005	0.0036
66	0.0041	0.0005	0.0036
67	0.0041	0.0005	0.0036
68	0.0042	0.0005	0.0037
69	0.0042	0.0005	0.0037
70	0.0042	0.0005	0.0037
71	0.0042	0.0005	0.0037
72	0.0042	0.0005	0.0037
73	0.0043	0.0005	0.0037
74	0.0043	0.0005	0.0038
75	0.0043	0.0005	0.0038
76	0.0043	0.0005	0.0038
77	0.0044	0.0005	0.0038
78	0.0044	0.0005	0.0038
79	0.0044	0.0005	0.0039
80	0.0044	0.0005	0.0039
81	0.0044	0.0005	0.0039
82	0.0045	0.0005	0.0039
83	0.0045	0.0005	0.0039
84	0.0045	0.0005	0.0040
85	0.0045	0.0005	0.0040
86	0.0045	0.0006	0.0040
87	0.0046	0.0006	0.0040
88	0.0046	0.0006	0.0040
89	0.0046	0.0006	0.0041
90	0.0046	0.0006	0.0041

	AREAF		
91	0.0047	0.0006	0.0041
92	0.0047	0.0006	0.0041
93	0.0047	0.0006	0.0042
94	0.0048	0.0006	0.0042
95	0.0048	0.0006	0.0042
96	0.0048	0.0006	0.0042
97	0.0048	0.0006	0.0043
98	0.0049	0.0006	0.0043
99	0.0049	0.0006	0.0043
100	0.0049	0.0006	0.0043
101	0.0050	0.0006	0.0044
102	0.0050	0.0006	0.0044
103	0.0050	0.0006	0.0044
104	0.0051	0.0006	0.0044
105	0.0051	0.0006	0.0045
106	0.0051	0.0006	0.0045
107	0.0052	0.0006	0.0045
108	0.0052	0.0006	0.0046
109	0.0052	0.0006	0.0046
110	0.0053	0.0006	0.0046
111	0.0053	0.0006	0.0047
112	0.0053	0.0006	0.0047
113	0.0054	0.0007	0.0047
114	0.0054	0.0007	0.0047
115	0.0055	0.0007	0.0048
116	0.0055	0.0007	0.0048
117	0.0055	0.0007	0.0049
118	0.0056	0.0007	0.0049
119	0.0056	0.0007	0.0049
120	0.0057	0.0007	0.0050
121	0.0057	0.0007	0.0050
122	0.0057	0.0007	0.0050
123	0.0058	0.0007	0.0051
124	0.0058	0.0007	0.0051
125	0.0059	0.0007	0.0052
126	0.0059	0.0007	0.0052
127	0.0060	0.0007	0.0053
128	0.0060	0.0007	0.0053
129	0.0061	0.0007	0.0054
130	0.0061	0.0007	0.0054
131	0.0062	0.0008	0.0055
132	0.0063	0.0008	0.0055
133	0.0063	0.0008	0.0056
134	0.0064	0.0008	0.0056
135	0.0065	0.0008	0.0057
136	0.0065	0.0008	0.0057
137	0.0066	0.0008	0.0058
138	0.0066	0.0008	0.0058
139	0.0067	0.0008	0.0059
140	0.0068	0.0008	0.0060
141	0.0069	0.0008	0.0060
142	0.0069	0.0008	0.0061
143	0.0070	0.0009	0.0062
144	0.0071	0.0009	0.0062
145	0.0093	0.0011	0.0082
146	0.0094	0.0011	0.0082
147	0.0095	0.0011	0.0083
148	0.0095	0.0012	0.0084
149	0.0097	0.0012	0.0085
150	0.0097	0.0012	0.0086
151	0.0099	0.0012	0.0087
152	0.0099	0.0012	0.0087
153	0.0101	0.0012	0.0089
154	0.0102	0.0012	0.0089
155	0.0103	0.0013	0.0091
156	0.0104	0.0013	0.0092
157	0.0106	0.0013	0.0093
158	0.0107	0.0013	0.0094
159	0.0109	0.0013	0.0095
160	0.0110	0.0013	0.0096
161	0.0112	0.0014	0.0098
162	0.0113	0.0014	0.0099
163	0.0115	0.0014	0.0101
164	0.0116	0.0014	0.0102
165	0.0118	0.0014	0.0104
166	0.0120	0.0015	0.0105
167	0.0122	0.0015	0.0108
168	0.0124	0.0015	0.0109
169	0.0127	0.0015	0.0112
170	0.0129	0.0016	0.0113
171	0.0132	0.0016	0.0116
172	0.0134	0.0016	0.0118
173	0.0138	0.0016	0.0122
174	0.0140	0.0016	0.0124

175	0.0145	0.0016	0.0129
176	0.0147	0.0016	0.0131
177	0.0152	0.0016	0.0137
178	0.0155	0.0016	0.0140
179	0.0162	0.0016	0.0146
180	0.0166	0.0016	0.0150
181	0.0174	0.0016	0.0158
182	0.0178	0.0016	0.0162
183	0.0189	0.0016	0.0173
184	0.0195	0.0016	0.0179
185	0.0114	0.0014	0.0100
186	0.0122	0.0015	0.0107
187	0.0141	0.0016	0.0125
188	0.0154	0.0016	0.0138
189	0.0191	0.0016	0.0176
190	0.0220	0.0016	0.0205
191	0.0334	0.0016	0.0319
192	0.0485	0.0016	0.0470
193	0.2100	0.0016	0.2084
194	0.0263	0.0016	0.0247
195	0.0170	0.0016	0.0154
196	0.0130	0.0016	0.0115
197	0.0202	0.0016	0.0186
198	0.0183	0.0016	0.0168
199	0.0169	0.0016	0.0154
200	0.0159	0.0016	0.0143
201	0.0150	0.0016	0.0134
202	0.0142	0.0016	0.0126
203	0.0136	0.0016	0.0120
204	0.0130	0.0016	0.0114
205	0.0125	0.0015	0.0110
206	0.0121	0.0015	0.0106
207	0.0117	0.0014	0.0103
208	0.0114	0.0014	0.0100
209	0.0111	0.0013	0.0097
210	0.0108	0.0013	0.0095
211	0.0105	0.0013	0.0092
212	0.0103	0.0012	0.0090
213	0.0100	0.0012	0.0088
214	0.0098	0.0012	0.0086
215	0.0096	0.0012	0.0084
216	0.0094	0.0011	0.0083
217	0.0071	0.0009	0.0063
218	0.0070	0.0008	0.0061
219	0.0068	0.0008	0.0060
220	0.0067	0.0008	0.0059
221	0.0066	0.0008	0.0058
222	0.0064	0.0008	0.0056
223	0.0063	0.0008	0.0055
224	0.0062	0.0007	0.0054
225	0.0061	0.0007	0.0053
226	0.0060	0.0007	0.0052
227	0.0059	0.0007	0.0052
228	0.0058	0.0007	0.0051
229	0.0057	0.0007	0.0050
230	0.0056	0.0007	0.0049
231	0.0055	0.0007	0.0048
232	0.0054	0.0007	0.0048
233	0.0054	0.0006	0.0047
234	0.0053	0.0006	0.0046
235	0.0052	0.0006	0.0046
236	0.0051	0.0006	0.0045
237	0.0051	0.0006	0.0045
238	0.0050	0.0006	0.0044
239	0.0049	0.0006	0.0043
240	0.0049	0.0006	0.0043
241	0.0048	0.0006	0.0042
242	0.0048	0.0006	0.0042
243	0.0047	0.0006	0.0041
244	0.0047	0.0006	0.0041
245	0.0046	0.0006	0.0041
246	0.0046	0.0006	0.0040
247	0.0045	0.0005	0.0040
248	0.0045	0.0005	0.0039
249	0.0044	0.0005	0.0039
250	0.0044	0.0005	0.0038
251	0.0043	0.0005	0.0038
252	0.0043	0.0005	0.0038
253	0.0043	0.0005	0.0037
254	0.0042	0.0005	0.0037
255	0.0042	0.0005	0.0037
256	0.0041	0.0005	0.0036
257	0.0041	0.0005	0.0036
258	0.0041	0.0005	0.0036

		AREAF	
259	0.0040	0.0005	0.0035
260	0.0040	0.0005	0.0035
261	0.0040	0.0005	0.0035
262	0.0039	0.0005	0.0035
263	0.0039	0.0005	0.0034
264	0.0039	0.0005	0.0034
265	0.0038	0.0005	0.0034
266	0.0038	0.0005	0.0033
267	0.0038	0.0005	0.0033
268	0.0037	0.0005	0.0033
269	0.0037	0.0005	0.0033
270	0.0037	0.0004	0.0032
271	0.0037	0.0004	0.0032
272	0.0036	0.0004	0.0032
273	0.0036	0.0004	0.0032
274	0.0036	0.0004	0.0032
275	0.0036	0.0004	0.0031
276	0.0035	0.0004	0.0031
277	0.0035	0.0004	0.0031
278	0.0035	0.0004	0.0031
279	0.0035	0.0004	0.0030
280	0.0034	0.0004	0.0030
281	0.0034	0.0004	0.0030
282	0.0034	0.0004	0.0030
283	0.0034	0.0004	0.0030
284	0.0034	0.0004	0.0030
285	0.0033	0.0004	0.0029
286	0.0033	0.0004	0.0029
287	0.0033	0.0004	0.0029
288	0.0033	0.0004	0.0029

Total soil rain loss = 0.22(In)
Total effective rainfall = 1.96(In)
Peak flow rate in flood hydrograph = 6.80(CFS)

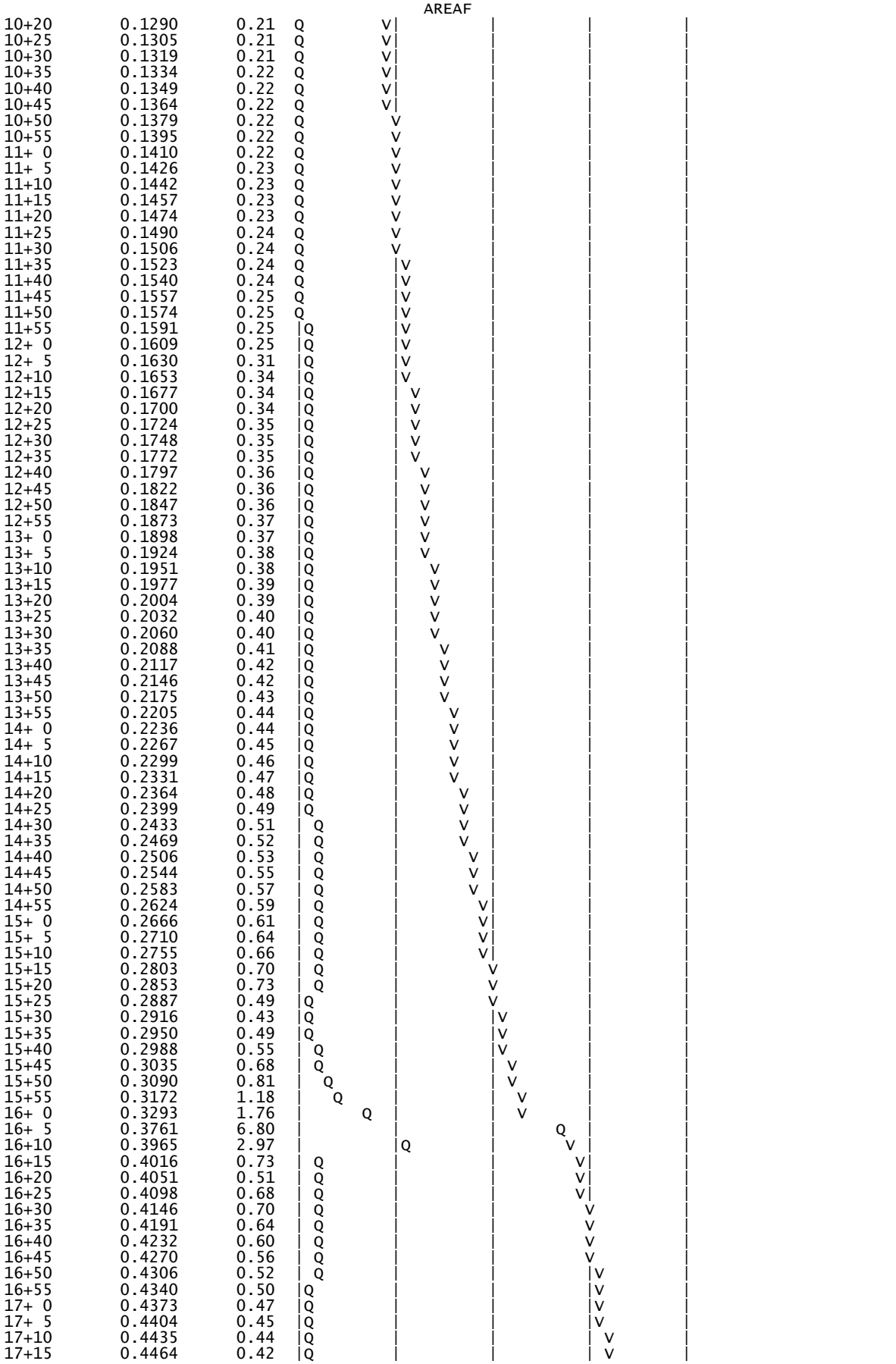
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0006	0.09	Q				
0+10	0.0014	0.12	Q				
0+15	0.0022	0.12	Q				
0+20	0.0030	0.12	Q				
0+25	0.0038	0.12	Q				
0+30	0.0047	0.12	Q				
0+35	0.0055	0.12	Q				
0+40	0.0063	0.12	Q				
0+45	0.0071	0.12	Q				
0+50	0.0080	0.12	Q				
0+55	0.0088	0.12	Q				
1+ 0	0.0096	0.12	Q				
1+ 5	0.0105	0.12	Q				
1+10	0.0113	0.12	Q				
1+15	0.0121	0.12	Q				
1+20	0.0130	0.12	Q				
1+25	0.0138	0.12	QV				
1+30	0.0147	0.12	QV				
1+35	0.0155	0.12	QV				
1+40	0.0164	0.12	QV				
1+45	0.0173	0.12	QV				
1+50	0.0181	0.13	QV				
1+55	0.0190	0.13	QV				
2+ 0	0.0198	0.13	QV				
2+ 5	0.0207	0.13	QV				
2+10	0.0216	0.13	QV				
2+15	0.0225	0.13	QV				
2+20	0.0233	0.13	QV				
2+25	0.0242	0.13	QV				
2+30	0.0251	0.13	QV				
2+35	0.0260	0.13	QV				
2+40	0.0269	0.13	QV				
2+45	0.0278	0.13	Q V				
2+50	0.0287	0.13	Q V				
2+55	0.0296	0.13	Q V				
3+ 0	0.0305	0.13	Q V				
3+ 5	0.0314	0.13	Q V				
3+10	0.0323	0.13	Q V				
3+15	0.0332	0.13	Q V				

3+20	0.0341	0.13	Q V				
3+25	0.0351	0.13	Q V				
3+30	0.0360	0.13	Q V				
3+35	0.0369	0.13	Q V				
3+40	0.0378	0.14	Q V				
3+45	0.0388	0.14	Q V				
3+50	0.0397	0.14	Q V				
3+55	0.0407	0.14	Q V				
4+ 0	0.0416	0.14	Q V				
4+ 5	0.0426	0.14	Q V				
4+10	0.0435	0.14	Q V				
4+15	0.0445	0.14	Q V				
4+20	0.0454	0.14	Q V				
4+25	0.0464	0.14	Q V				
4+30	0.0474	0.14	Q V				
4+35	0.0483	0.14	Q V				
4+40	0.0493	0.14	Q V				
4+45	0.0503	0.14	Q V				
4+50	0.0513	0.14	Q V				
4+55	0.0523	0.14	Q V				
5+ 0	0.0533	0.14	Q V				
5+ 5	0.0543	0.14	Q V				
5+10	0.0553	0.15	Q V				
5+15	0.0563	0.15	Q V				
5+20	0.0573	0.15	Q V				
5+25	0.0583	0.15	Q V				
5+30	0.0593	0.15	Q V				
5+35	0.0603	0.15	Q V				
5+40	0.0614	0.15	Q V				
5+45	0.0624	0.15	Q V				
5+50	0.0634	0.15	Q V				
5+55	0.0645	0.15	Q V				
6+ 0	0.0655	0.15	Q V				
6+ 5	0.0666	0.15	Q V				
6+10	0.0676	0.15	Q V				
6+15	0.0687	0.15	Q V				
6+20	0.0698	0.16	Q V				
6+25	0.0708	0.16	Q V				
6+30	0.0719	0.16	Q V				
6+35	0.0730	0.16	Q V				
6+40	0.0741	0.16	Q V				
6+45	0.0752	0.16	Q V				
6+50	0.0763	0.16	Q V				
6+55	0.0774	0.16	Q V				
7+ 0	0.0785	0.16	Q V				
7+ 5	0.0796	0.16	Q V				
7+10	0.0808	0.16	Q V				
7+15	0.0819	0.16	Q V				
7+20	0.0830	0.16	Q V				
7+25	0.0842	0.17	Q V				
7+30	0.0853	0.17	Q V				
7+35	0.0865	0.17	Q V				
7+40	0.0876	0.17	Q V				
7+45	0.0888	0.17	Q V				
7+50	0.0900	0.17	Q V				
7+55	0.0912	0.17	Q V				
8+ 0	0.0924	0.17	Q V				
8+ 5	0.0935	0.17	Q V				
8+10	0.0947	0.17	Q V				
8+15	0.0960	0.18	Q V				
8+20	0.0972	0.18	Q V				
8+25	0.0984	0.18	Q V				
8+30	0.0996	0.18	Q V				
8+35	0.1009	0.18	Q V				
8+40	0.1021	0.18	Q V				
8+45	0.1034	0.18	Q V				
8+50	0.1046	0.18	Q V				
8+55	0.1059	0.18	Q V				
9+ 0	0.1072	0.19	Q V				
9+ 5	0.1085	0.19	Q V				
9+10	0.1098	0.19	Q V				
9+15	0.1111	0.19	Q V				
9+20	0.1124	0.19	Q V				
9+25	0.1137	0.19	Q V				
9+30	0.1151	0.19	Q V				
9+35	0.1164	0.20	Q V				
9+40	0.1178	0.20	Q V				
9+45	0.1191	0.20	Q V				
9+50	0.1205	0.20	Q V				
9+55	0.1219	0.20	Q V				
10+ 0	0.1233	0.20	Q V				
10+ 5	0.1247	0.20	Q V				
10+10	0.1261	0.21	Q V				
10+15	0.1276	0.21	Q V				



10+20	0.1290	0.21	
10+25	0.1305	0.21	
10+30	0.1319	0.21	
10+35	0.1334	0.22	
10+40	0.1349	0.22	
10+45	0.1364	0.22	
10+50	0.1379	0.22	
10+55	0.1395	0.22	
11+ 0	0.1410	0.22	
11+ 5	0.1426	0.23	
11+10	0.1442	0.23	
11+15	0.1457	0.23	
11+20	0.1474	0.23	
11+25	0.1490	0.24	
11+30	0.1506	0.24	
11+35	0.1523	0.24	
11+40	0.1540	0.24	
11+45	0.1557	0.25	
11+50	0.1574	0.25	
11+55	0.1591	0.25	
12+ 0	0.1609	0.25	
12+ 5	0.1630	0.31	
12+10	0.1653	0.34	
12+15	0.1677	0.34	
12+20	0.1700	0.34	
12+25	0.1724	0.35	
12+30	0.1748	0.35	
12+35	0.1772	0.35	
12+40	0.1797	0.36	
12+45	0.1822	0.36	
12+50	0.1847	0.36	
12+55	0.1873	0.37	
13+ 0	0.1898	0.37	
13+ 5	0.1924	0.38	
13+10	0.1951	0.38	
13+15	0.1977	0.39	
13+20	0.2004	0.39	
13+25	0.2032	0.40	
13+30	0.2060	0.40	
13+35	0.2088	0.41	
13+40	0.2117	0.42	
13+45	0.2146	0.42	
13+50	0.2175	0.43	
13+55	0.2205	0.44	
14+ 0	0.2236	0.44	
14+ 5	0.2267	0.45	
14+10	0.2299	0.46	
14+15	0.2331	0.47	
14+20	0.2364	0.48	
14+25	0.2399	0.49	
14+30	0.2433	0.51	
14+35	0.2469	0.52	
14+40	0.2506	0.53	
14+45	0.2544	0.55	
14+50	0.2583	0.57	
14+55	0.2624	0.59	
15+ 0	0.2666	0.61	
15+ 5	0.2710	0.64	
15+10	0.2755	0.66	
15+15	0.2803	0.70	
15+20	0.2853	0.73	
15+25	0.2887	0.49	
15+30	0.2916	0.43	
15+35	0.2950	0.49	
15+40	0.2988	0.55	
15+45	0.3035	0.68	
15+50	0.3090	0.81	
15+55	0.3172	1.18	
16+ 0	0.3293	1.76	
16+ 5	0.3761	6.80	
16+10	0.3965	2.97	
16+15	0.4016	0.73	
16+20	0.4051	0.51	
16+25	0.4098	0.68	
16+30	0.4146	0.70	
16+35	0.4191	0.64	
16+40	0.4232	0.60	
16+45	0.4270	0.56	
16+50	0.4306	0.52	
16+55	0.4340	0.50	
17+ 0	0.4373	0.47	
17+ 5	0.4404	0.45	
17+10	0.4435	0.44	
17+15	0.4464	0.42	

17+20	0.4492	0.41	|Q	|	|	| V |
17+25	0.4520	0.40	|Q	|	|	| V |
17+30	0.4547	0.39	|Q	|	|	| V |
17+35	0.4573	0.38	|Q	|	|	| V |
17+40	0.4598	0.37	|Q	|	|	| V |
17+45	0.4623	0.36	|Q	|	|	| V |
17+50	0.4648	0.35	|Q	|	|	| V |
17+55	0.4671	0.35	|Q	|	|	| V |
18+ 0	0.4695	0.34	|Q	|	|	| V |
18+ 5	0.4714	0.28	|Q	|	|	| V |
18+10	0.4731	0.25	|Q	|	|	| V |
18+15	0.4748	0.25	Q	|	|	| V |
18+20	0.4765	0.24	Q	|	|	| V |
18+25	0.4781	0.24	Q	|	|	| V |
18+30	0.4797	0.23	Q	|	|	| V |
18+35	0.4813	0.23	Q	|	|	| V |
18+40	0.4828	0.22	Q	|	|	| V |
18+45	0.4844	0.22	Q	|	|	| V |
18+50	0.4858	0.22	Q	|	|	| V |
18+55	0.4873	0.21	Q	|	|	| V |
19+ 0	0.4887	0.21	Q	|	|	| V |
19+ 5	0.4901	0.21	Q	|	|	| V |
19+10	0.4915	0.20	Q	|	|	| V |
19+15	0.4929	0.20	Q	|	|	| V |
19+20	0.4942	0.20	Q	|	|	| V |
19+25	0.4956	0.19	Q	|	|	| V |
19+30	0.4969	0.19	Q	|	|	| V |
19+35	0.4982	0.19	Q	|	|	| V |
19+40	0.4995	0.19	Q	|	|	| V |
19+45	0.5007	0.18	Q	|	|	| V |
19+50	0.5020	0.18	Q	|	|	| V |
19+55	0.5032	0.18	Q	|	|	| V |
20+ 0	0.5044	0.18	Q	|	|	| V |
20+ 5	0.5056	0.17	Q	|	|	| V |
20+10	0.5068	0.17	Q	|	|	| V |
20+15	0.5080	0.17	Q	|	|	| V |
20+20	0.5091	0.17	Q	|	|	| V |
20+25	0.5103	0.17	Q	|	|	| V |
20+30	0.5114	0.16	Q	|	|	| V |
20+35	0.5125	0.16	Q	|	|	| V |
20+40	0.5136	0.16	Q	|	|	| V |
20+45	0.5147	0.16	Q	|	|	| V |
20+50	0.5158	0.16	Q	|	|	| V |
20+55	0.5169	0.16	Q	|	|	| V |
21+ 0	0.5179	0.15	Q	|	|	| V |
21+ 5	0.5190	0.15	Q	|	|	| V |
21+10	0.5200	0.15	Q	|	|	| V |
21+15	0.5211	0.15	Q	|	|	| V |
21+20	0.5221	0.15	Q	|	|	| V |
21+25	0.5231	0.15	Q	|	|	| V |
21+30	0.5241	0.15	Q	|	|	| V |
21+35	0.5251	0.15	Q	|	|	| V |
21+40	0.5261	0.14	Q	|	|	| V |
21+45	0.5271	0.14	Q	|	|	| V |
21+50	0.5281	0.14	Q	|	|	| V |
21+55	0.5290	0.14	Q	|	|	| V |
22+ 0	0.5300	0.14	Q	|	|	| V |
22+ 5	0.5309	0.14	Q	|	|	| V |
22+10	0.5319	0.14	Q	|	|	| V |
22+15	0.5328	0.14	Q	|	|	| V |
22+20	0.5338	0.13	Q	|	|	| V |
22+25	0.5347	0.13	Q	|	|	| V |
22+30	0.5356	0.13	Q	|	|	| V |
22+35	0.5365	0.13	Q	|	|	| V |
22+40	0.5374	0.13	Q	|	|	| V |
22+45	0.5383	0.13	Q	|	|	| V |
22+50	0.5392	0.13	Q	|	|	| V |
22+55	0.5401	0.13	Q	|	|	| V |
23+ 0	0.5409	0.13	Q	|	|	| V |
23+ 5	0.5418	0.13	Q	|	|	| V |
23+10	0.5427	0.13	Q	|	|	| V |
23+15	0.5435	0.12	Q	|	|	| V |
23+20	0.5444	0.12	Q	|	|	| V |
23+25	0.5452	0.12	Q	|	|	| V |
23+30	0.5461	0.12	Q	|	|	| V |
23+35	0.5469	0.12	Q	|	|	| V |
23+40	0.5478	0.12	Q	|	|	| V |
23+45	0.5486	0.12	Q	|	|	| V |
23+50	0.5494	0.12	Q	|	|	| V |
23+55	0.5502	0.12	Q	|	|	| V |
24+ 0	0.5510	0.12	Q	|	|	| V |

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA G
2YR-24HR

Storm Event Year = 2

Antecedent Moisture Condition = 1

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1.36	1	0.78
Rainfall data for year 2		
1.36	6	2.18
Rainfall data for year 2		
1.36	24	2.86
Rainfall data for year 100		
1.36	1	1.20
Rainfall data for year 100		
1.36	6	1.27
Rainfall data for year 100		
1.36	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 1)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
44.0	26.2	1.36	1.000	0.999	0.036	0.036

Area-averaged adjusted loss rate Fm (In/Hr) = 0.036

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC1)	S	Pervious Yield Fr
0.05	0.036	44.0	26.2	14.30	0.000
1.31	0.964	98.0	98.0	0.20	0.919

Area-averaged catchment yield fraction, Y = 0.886
Area-averaged low loss fraction, Yb = 0.114

++
Watercourse length = 650.00(Ft.)
Length from concentration point to centroid = 200.00(Ft.)
Elevation difference along watercourse = 87.70(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 1.36(Ac.)
Catchment Lag time = 0.013 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 620.0638
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.036(In/Hr)
Average low loss rate fraction (Yb) = 0.114 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.233(In)
Computed peak 30-minute rainfall = 0.399(In)
Specified peak 1-hour rainfall = 0.492(In)
Computed peak 3-hour rainfall = 1.225(In)
Specified peak 6-hour rainfall = 2.180(In)
Specified peak 24-hour rainfall = 2.860(In)

Rainfall depth area reduction factors:
Using a total area of 1.36(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.233(In)
30-minute factor = 1.000 Adjusted rainfall = 0.399(In)
1-hour factor = 1.000 Adjusted rainfall = 0.491(In)
3-hour factor = 1.000 Adjusted rainfall = 1.225(In)
6-hour factor = 1.000 Adjusted rainfall = 2.180(In)
24-hour factor = 1.000 Adjusted rainfall = 2.860(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 16.45 (CFS))	
1	78.533	12.917
2	100.000	3.531

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.2332	0.2332
2	0.2871	0.0539
3	0.3243	0.0371
4	0.3535	0.0292
5	0.3780	0.0245
6	0.3992	0.0212
7	0.4181	0.0189
8	0.4352	0.0171
9	0.4509	0.0157
10	0.4653	0.0145
11	0.4788	0.0135
12	0.4915	0.0127
13	0.5253	0.0338
14	0.5587	0.0334
15	0.5917	0.0330
16	0.6243	0.0326
17	0.6566	0.0323
18	0.6885	0.0320
19	0.7202	0.0317
20	0.7516	0.0314
21	0.7827	0.0311
22	0.8135	0.0309
23	0.8442	0.0306
24	0.8746	0.0304
25	0.9048	0.0302
26	0.9348	0.0300
27	0.9645	0.0298
28	0.9942	0.0296
29	1.0236	0.0294
30	1.0528	0.0293
31	1.0819	0.0291
32	1.1109	0.0289
33	1.1397	0.0288
34	1.1683	0.0286
35	1.1968	0.0285
36	1.2252	0.0284
37	1.2534	0.0282
38	1.2815	0.0281
39	1.3095	0.0280
40	1.3373	0.0279
41	1.3651	0.0277
42	1.3927	0.0276
43	1.4202	0.0275
44	1.4476	0.0274
45	1.4749	0.0273
46	1.5021	0.0272
47	1.5292	0.0271

		AREAG
48	1.5562	0.0270
49	1.5831	0.0269
50	1.6099	0.0268
51	1.6366	0.0267
52	1.6633	0.0266
53	1.6898	0.0265
54	1.7163	0.0265
55	1.7427	0.0264
56	1.7690	0.0263
57	1.7952	0.0262
58	1.8213	0.0261
59	1.8474	0.0261
60	1.8734	0.0260
61	1.8993	0.0259
62	1.9252	0.0258
63	1.9509	0.0258
64	1.9766	0.0257
65	2.0023	0.0256
66	2.0279	0.0256
67	2.0534	0.0255
68	2.0788	0.0254
69	2.1042	0.0254
70	2.1295	0.0253
71	2.1548	0.0253
72	2.1800	0.0252
73	2.1859	0.0059
74	2.1917	0.0058
75	2.1975	0.0058
76	2.2032	0.0057
77	2.2088	0.0056
78	2.2144	0.0056
79	2.2200	0.0055
80	2.2254	0.0055
81	2.2309	0.0054
82	2.2362	0.0054
83	2.2415	0.0053
84	2.2468	0.0053
85	2.2520	0.0052
86	2.2572	0.0052
87	2.2623	0.0051
88	2.2674	0.0051
89	2.2724	0.0050
90	2.2774	0.0050
91	2.2823	0.0049
92	2.2872	0.0049
93	2.2920	0.0048
94	2.2968	0.0048
95	2.3016	0.0048
96	2.3063	0.0047
97	2.3110	0.0047
98	2.3157	0.0046
99	2.3203	0.0046
100	2.3249	0.0046
101	2.3294	0.0045
102	2.3339	0.0045
103	2.3384	0.0045
104	2.3428	0.0044
105	2.3472	0.0044
106	2.3515	0.0044
107	2.3559	0.0043
108	2.3602	0.0043
109	2.3644	0.0043
110	2.3687	0.0042
111	2.3729	0.0042
112	2.3770	0.0042
113	2.3812	0.0041
114	2.3853	0.0041
115	2.3894	0.0041
116	2.3934	0.0041
117	2.3974	0.0040
118	2.4014	0.0040
119	2.4054	0.0040
120	2.4094	0.0039
121	2.4133	0.0039
122	2.4172	0.0039
123	2.4210	0.0039
124	2.4249	0.0038
125	2.4287	0.0038
126	2.4325	0.0038
127	2.4363	0.0038
128	2.4400	0.0037
129	2.4437	0.0037
130	2.4474	0.0037
131	2.4511	0.0037

		AREAG
132	2.4548	0.0037
133	2.4584	0.0036
134	2.4620	0.0036
135	2.4656	0.0036
136	2.4692	0.0036
137	2.4727	0.0035
138	2.4762	0.0035
139	2.4797	0.0035
140	2.4832	0.0035
141	2.4867	0.0035
142	2.4901	0.0034
143	2.4935	0.0034
144	2.4970	0.0034
145	2.5003	0.0034
146	2.5037	0.0034
147	2.5071	0.0033
148	2.5104	0.0033
149	2.5137	0.0033
150	2.5170	0.0033
151	2.5203	0.0033
152	2.5235	0.0033
153	2.5268	0.0032
154	2.5300	0.0032
155	2.5332	0.0032
156	2.5364	0.0032
157	2.5396	0.0032
158	2.5427	0.0032
159	2.5459	0.0031
160	2.5490	0.0031
161	2.5521	0.0031
162	2.5552	0.0031
163	2.5583	0.0031
164	2.5614	0.0031
165	2.5644	0.0031
166	2.5675	0.0030
167	2.5705	0.0030
168	2.5735	0.0030
169	2.5765	0.0030
170	2.5795	0.0030
171	2.5824	0.0030
172	2.5854	0.0030
173	2.5883	0.0029
174	2.5912	0.0029
175	2.5941	0.0029
176	2.5970	0.0029
177	2.5999	0.0029
178	2.6028	0.0029
179	2.6056	0.0029
180	2.6085	0.0028
181	2.6113	0.0028
182	2.6141	0.0028
183	2.6169	0.0028
184	2.6197	0.0028
185	2.6225	0.0028
186	2.6253	0.0028
187	2.6281	0.0028
188	2.6308	0.0027
189	2.6335	0.0027
190	2.6363	0.0027
191	2.6390	0.0027
192	2.6417	0.0027
193	2.6444	0.0027
194	2.6470	0.0027
195	2.6497	0.0027
196	2.6524	0.0027
197	2.6550	0.0026
198	2.6576	0.0026
199	2.6603	0.0026
200	2.6629	0.0026
201	2.6655	0.0026
202	2.6681	0.0026
203	2.6707	0.0026
204	2.6732	0.0026
205	2.6758	0.0026
206	2.6783	0.0026
207	2.6809	0.0025
208	2.6834	0.0025
209	2.6859	0.0025
210	2.6884	0.0025
211	2.6909	0.0025
212	2.6934	0.0025
213	2.6959	0.0025
214	2.6984	0.0025
215	2.7009	0.0025

		AREAG
216	2.7033	0.0025
217	2.7058	0.0024
218	2.7082	0.0024
219	2.7106	0.0024
220	2.7130	0.0024
221	2.7155	0.0024
222	2.7179	0.0024
223	2.7203	0.0024
224	2.7226	0.0024
225	2.7250	0.0024
226	2.7274	0.0024
227	2.7297	0.0024
228	2.7321	0.0024
229	2.7344	0.0023
230	2.7368	0.0023
231	2.7391	0.0023
232	2.7414	0.0023
233	2.7437	0.0023
234	2.7460	0.0023
235	2.7483	0.0023
236	2.7506	0.0023
237	2.7529	0.0023
238	2.7552	0.0023
239	2.7574	0.0023
240	2.7597	0.0023
241	2.7619	0.0022
242	2.7642	0.0022
243	2.7664	0.0022
244	2.7686	0.0022
245	2.7708	0.0022
246	2.7731	0.0022
247	2.7753	0.0022
248	2.7775	0.0022
249	2.7796	0.0022
250	2.7818	0.0022
251	2.7840	0.0022
252	2.7862	0.0022
253	2.7883	0.0022
254	2.7905	0.0022
255	2.7926	0.0021
256	2.7948	0.0021
257	2.7969	0.0021
258	2.7990	0.0021
259	2.8012	0.0021
260	2.8033	0.0021
261	2.8054	0.0021
262	2.8075	0.0021
263	2.8096	0.0021
264	2.8117	0.0021
265	2.8138	0.0021
266	2.8158	0.0021
267	2.8179	0.0021
268	2.8200	0.0021
269	2.8220	0.0021
270	2.8241	0.0021
271	2.8261	0.0020
272	2.8282	0.0020
273	2.8302	0.0020
274	2.8322	0.0020
275	2.8342	0.0020
276	2.8363	0.0020
277	2.8383	0.0020
278	2.8403	0.0020
279	2.8423	0.0020
280	2.8443	0.0020
281	2.8462	0.0020
282	2.8482	0.0020
283	2.8502	0.0020
284	2.8522	0.0020
285	2.8541	0.0020
286	2.8561	0.0020
287	2.8580	0.0020
288	2.8600	0.0019

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0019	0.0002	0.0017
2	0.0020	0.0002	0.0017
3	0.0020	0.0002	0.0017
4	0.0020	0.0002	0.0017
5	0.0020	0.0002	0.0018
6	0.0020	0.0002	0.0018

7	0.0020	0.0002	0.0018
8	0.0020	0.0002	0.0018
9	0.0020	0.0002	0.0018
10	0.0020	0.0002	0.0018
11	0.0020	0.0002	0.0018
12	0.0020	0.0002	0.0018
13	0.0021	0.0002	0.0018
14	0.0021	0.0002	0.0018
15	0.0021	0.0002	0.0018
16	0.0021	0.0002	0.0018
17	0.0021	0.0002	0.0019
18	0.0021	0.0002	0.0019
19	0.0021	0.0002	0.0019
20	0.0021	0.0002	0.0019
21	0.0021	0.0002	0.0019
22	0.0021	0.0002	0.0019
23	0.0021	0.0002	0.0019
24	0.0022	0.0002	0.0019
25	0.0022	0.0002	0.0019
26	0.0022	0.0002	0.0019
27	0.0022	0.0002	0.0019
28	0.0022	0.0003	0.0019
29	0.0022	0.0003	0.0020
30	0.0022	0.0003	0.0020
31	0.0022	0.0003	0.0020
32	0.0022	0.0003	0.0020
33	0.0023	0.0003	0.0020
34	0.0023	0.0003	0.0020
35	0.0023	0.0003	0.0020
36	0.0023	0.0003	0.0020
37	0.0023	0.0003	0.0020
38	0.0023	0.0003	0.0020
39	0.0023	0.0003	0.0021
40	0.0023	0.0003	0.0021
41	0.0024	0.0003	0.0021
42	0.0024	0.0003	0.0021
43	0.0024	0.0003	0.0021
44	0.0024	0.0003	0.0021
45	0.0024	0.0003	0.0021
46	0.0024	0.0003	0.0021
47	0.0024	0.0003	0.0022
48	0.0024	0.0003	0.0022
49	0.0025	0.0003	0.0022
50	0.0025	0.0003	0.0022
51	0.0025	0.0003	0.0022
52	0.0025	0.0003	0.0022
53	0.0025	0.0003	0.0022
54	0.0025	0.0003	0.0022
55	0.0025	0.0003	0.0023
56	0.0026	0.0003	0.0023
57	0.0026	0.0003	0.0023
58	0.0026	0.0003	0.0023
59	0.0026	0.0003	0.0023
60	0.0026	0.0003	0.0023
61	0.0026	0.0003	0.0023
62	0.0026	0.0003	0.0023
63	0.0027	0.0003	0.0024
64	0.0027	0.0003	0.0024
65	0.0027	0.0003	0.0024
66	0.0027	0.0003	0.0024
67	0.0027	0.0003	0.0024
68	0.0027	0.0003	0.0024
69	0.0028	0.0003	0.0025
70	0.0028	0.0003	0.0025
71	0.0028	0.0003	0.0025
72	0.0028	0.0003	0.0025
73	0.0028	0.0003	0.0025
74	0.0029	0.0003	0.0025
75	0.0029	0.0003	0.0026
76	0.0029	0.0003	0.0026
77	0.0029	0.0003	0.0026
78	0.0029	0.0003	0.0026
79	0.0030	0.0003	0.0026
80	0.0030	0.0003	0.0026
81	0.0030	0.0003	0.0027
82	0.0030	0.0003	0.0027
83	0.0031	0.0003	0.0027
84	0.0031	0.0003	0.0027
85	0.0031	0.0004	0.0027
86	0.0031	0.0004	0.0028
87	0.0031	0.0004	0.0028
88	0.0032	0.0004	0.0028
89	0.0032	0.0004	0.0028
90	0.0032	0.0004	0.0028

91	0.0032	0.0004	0.0029
92	0.0033	0.0004	0.0029
93	0.0033	0.0004	0.0029
94	0.0033	0.0004	0.0029
95	0.0033	0.0004	0.0030
96	0.0034	0.0004	0.0030
97	0.0034	0.0004	0.0030
98	0.0034	0.0004	0.0030
99	0.0035	0.0004	0.0031
100	0.0035	0.0004	0.0031
101	0.0035	0.0004	0.0031
102	0.0035	0.0004	0.0031
103	0.0036	0.0004	0.0032
104	0.0036	0.0004	0.0032
105	0.0037	0.0004	0.0032
106	0.0037	0.0004	0.0033
107	0.0037	0.0004	0.0033
108	0.0037	0.0004	0.0033
109	0.0038	0.0004	0.0034
110	0.0038	0.0004	0.0034
111	0.0039	0.0004	0.0034
112	0.0039	0.0004	0.0034
113	0.0039	0.0004	0.0035
114	0.0040	0.0005	0.0035
115	0.0040	0.0005	0.0036
116	0.0041	0.0005	0.0036
117	0.0041	0.0005	0.0036
118	0.0041	0.0005	0.0037
119	0.0042	0.0005	0.0037
120	0.0042	0.0005	0.0038
121	0.0043	0.0005	0.0038
122	0.0043	0.0005	0.0038
123	0.0044	0.0005	0.0039
124	0.0044	0.0005	0.0039
125	0.0045	0.0005	0.0040
126	0.0045	0.0005	0.0040
127	0.0046	0.0005	0.0041
128	0.0046	0.0005	0.0041
129	0.0047	0.0005	0.0042
130	0.0048	0.0005	0.0042
131	0.0048	0.0006	0.0043
132	0.0049	0.0006	0.0043
133	0.0050	0.0006	0.0044
134	0.0050	0.0006	0.0045
135	0.0051	0.0006	0.0045
136	0.0052	0.0006	0.0046
137	0.0053	0.0006	0.0047
138	0.0053	0.0006	0.0047
139	0.0054	0.0006	0.0048
140	0.0055	0.0006	0.0049
141	0.0056	0.0006	0.0050
142	0.0056	0.0006	0.0050
143	0.0058	0.0007	0.0051
144	0.0058	0.0007	0.0052
145	0.0252	0.0029	0.0223
146	0.0253	0.0029	0.0224
147	0.0254	0.0029	0.0225
148	0.0254	0.0029	0.0225
149	0.0256	0.0029	0.0227
150	0.0256	0.0029	0.0227
151	0.0258	0.0029	0.0228
152	0.0258	0.0029	0.0229
153	0.0260	0.0030	0.0230
154	0.0261	0.0030	0.0231
155	0.0262	0.0030	0.0232
156	0.0263	0.0030	0.0233
157	0.0265	0.0030	0.0235
158	0.0265	0.0030	0.0236
159	0.0267	0.0030	0.0237
160	0.0268	0.0030	0.0238
161	0.0270	0.0030	0.0240
162	0.0271	0.0030	0.0241
163	0.0273	0.0030	0.0243
164	0.0274	0.0030	0.0244
165	0.0276	0.0030	0.0246
166	0.0277	0.0030	0.0247
167	0.0280	0.0030	0.0250
168	0.0281	0.0030	0.0251
169	0.0284	0.0030	0.0254
170	0.0285	0.0030	0.0255
171	0.0288	0.0030	0.0258
172	0.0289	0.0030	0.0259
173	0.0293	0.0030	0.0263
174	0.0294	0.0030	0.0264

175	0.0298	0.0030	0.0268
176	0.0300	0.0030	0.0270
177	0.0304	0.0030	0.0274
178	0.0306	0.0030	0.0276
179	0.0311	0.0030	0.0281
180	0.0314	0.0030	0.0284
181	0.0320	0.0030	0.0290
182	0.0323	0.0030	0.0293
183	0.0330	0.0030	0.0300
184	0.0334	0.0030	0.0304
185	0.0127	0.0014	0.0112
186	0.0135	0.0015	0.0120
187	0.0157	0.0018	0.0139
188	0.0171	0.0019	0.0151
189	0.0212	0.0024	0.0188
190	0.0245	0.0028	0.0217
191	0.0371	0.0030	0.0341
192	0.0539	0.0030	0.0509
193	0.2332	0.0030	0.2302
194	0.0292	0.0030	0.0262
195	0.0189	0.0022	0.0167
196	0.0145	0.0016	0.0128
197	0.0338	0.0030	0.0308
198	0.0326	0.0030	0.0296
199	0.0317	0.0030	0.0287
200	0.0309	0.0030	0.0279
201	0.0302	0.0030	0.0272
202	0.0296	0.0030	0.0266
203	0.0291	0.0030	0.0261
204	0.0286	0.0030	0.0256
205	0.0282	0.0030	0.0252
206	0.0279	0.0030	0.0249
207	0.0275	0.0030	0.0245
208	0.0272	0.0030	0.0242
209	0.0269	0.0030	0.0239
210	0.0266	0.0030	0.0236
211	0.0264	0.0030	0.0234
212	0.0261	0.0030	0.0232
213	0.0259	0.0030	0.0230
214	0.0257	0.0029	0.0228
215	0.0255	0.0029	0.0226
216	0.0253	0.0029	0.0224
217	0.0059	0.0007	0.0052
218	0.0057	0.0007	0.0051
219	0.0055	0.0006	0.0049
220	0.0054	0.0006	0.0048
221	0.0052	0.0006	0.0046
222	0.0051	0.0006	0.0045
223	0.0049	0.0006	0.0044
224	0.0048	0.0005	0.0043
225	0.0047	0.0005	0.0042
226	0.0046	0.0005	0.0041
227	0.0045	0.0005	0.0040
228	0.0044	0.0005	0.0039
229	0.0043	0.0005	0.0038
230	0.0042	0.0005	0.0037
231	0.0041	0.0005	0.0036
232	0.0040	0.0005	0.0035
233	0.0039	0.0004	0.0035
234	0.0038	0.0004	0.0034
235	0.0038	0.0004	0.0033
236	0.0037	0.0004	0.0033
237	0.0036	0.0004	0.0032
238	0.0036	0.0004	0.0032
239	0.0035	0.0004	0.0031
240	0.0034	0.0004	0.0031
241	0.0034	0.0004	0.0030
242	0.0033	0.0004	0.0030
243	0.0033	0.0004	0.0029
244	0.0032	0.0004	0.0029
245	0.0032	0.0004	0.0028
246	0.0031	0.0004	0.0028
247	0.0031	0.0004	0.0027
248	0.0030	0.0003	0.0027
249	0.0030	0.0003	0.0027
250	0.0030	0.0003	0.0026
251	0.0029	0.0003	0.0026
252	0.0029	0.0003	0.0025
253	0.0028	0.0003	0.0025
254	0.0028	0.0003	0.0025
255	0.0028	0.0003	0.0024
256	0.0027	0.0003	0.0024
257	0.0027	0.0003	0.0024
258	0.0027	0.0003	0.0024

259	0.0026	0.0003	0.0023
260	0.0026	0.0003	0.0023
261	0.0026	0.0003	0.0023
262	0.0025	0.0003	0.0022
263	0.0025	0.0003	0.0022
264	0.0025	0.0003	0.0022
265	0.0024	0.0003	0.0022
266	0.0024	0.0003	0.0021
267	0.0024	0.0003	0.0021
268	0.0024	0.0003	0.0021
269	0.0023	0.0003	0.0021
270	0.0023	0.0003	0.0021
271	0.0023	0.0003	0.0020
272	0.0023	0.0003	0.0020
273	0.0022	0.0003	0.0020
274	0.0022	0.0003	0.0020
275	0.0022	0.0003	0.0020
276	0.0022	0.0002	0.0019
277	0.0022	0.0002	0.0019
278	0.0021	0.0002	0.0019
279	0.0021	0.0002	0.0019
280	0.0021	0.0002	0.0019
281	0.0021	0.0002	0.0018
282	0.0021	0.0002	0.0018
283	0.0020	0.0002	0.0018
284	0.0020	0.0002	0.0018
285	0.0020	0.0002	0.0018
286	0.0020	0.0002	0.0018
287	0.0020	0.0002	0.0018
288	0.0020	0.0002	0.0017

Total soil rain loss = 0.28(In)
Total effective rainfall = 2.58(In)
Peak flow rate in flood hydrograph = 3.15(CFS)

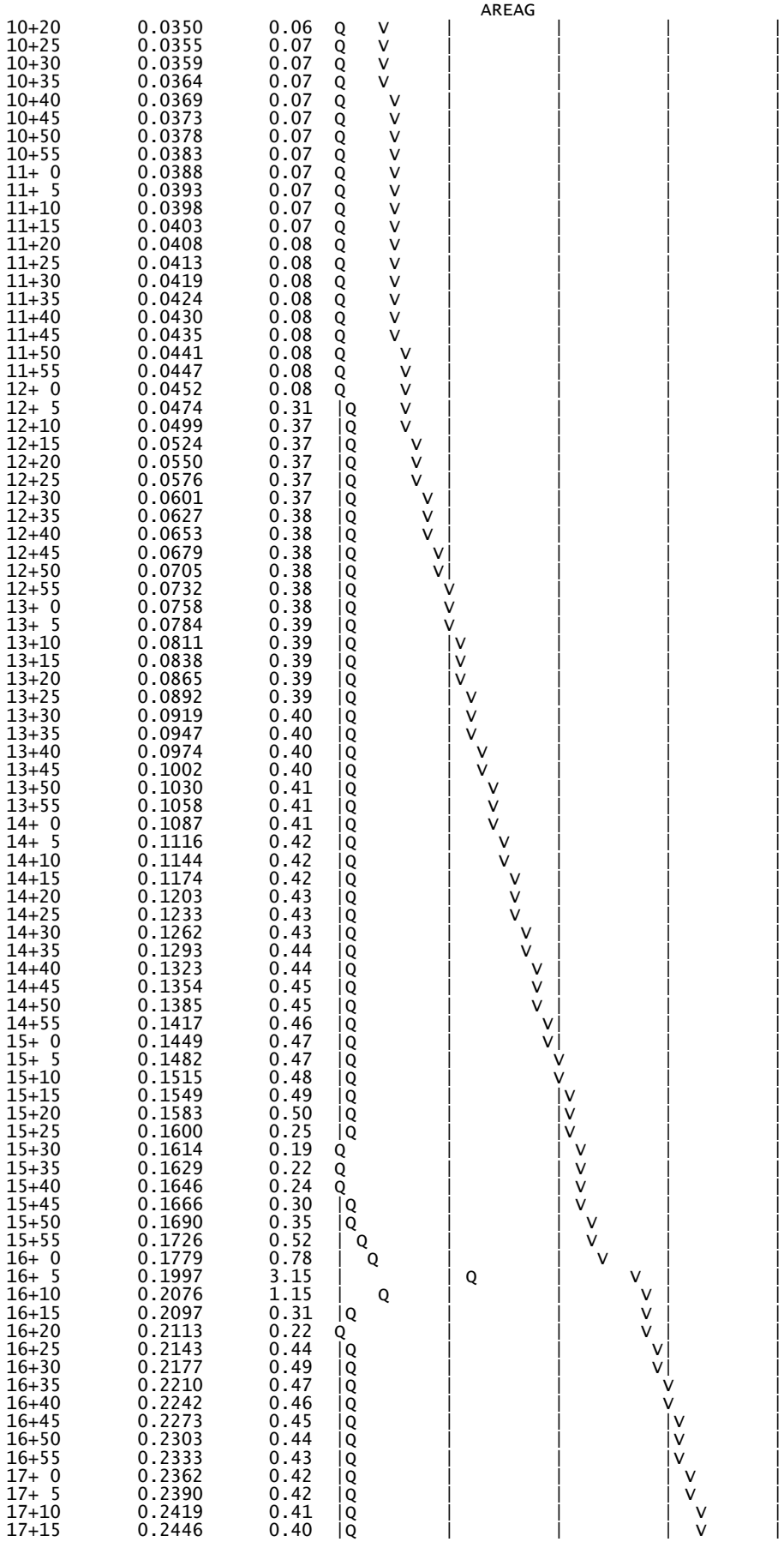
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

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	0.0002	0.02	Q				
0+10	0.0003	0.03	Q				
0+15	0.0005	0.03	Q				
0+20	0.0007	0.03	Q				
0+25	0.0009	0.03	Q				
0+30	0.0011	0.03	Q				
0+35	0.0013	0.03	Q				
0+40	0.0015	0.03	Q				
0+45	0.0017	0.03	Q				
0+50	0.0019	0.03	Q				
0+55	0.0022	0.03	Q				
1+ 0	0.0024	0.03	Q				
1+ 5	0.0026	0.03	Q				
1+10	0.0028	0.03	Q				
1+15	0.0030	0.03	Q				
1+20	0.0032	0.03	Q				
1+25	0.0034	0.03	Q				
1+30	0.0036	0.03	Q				
1+35	0.0038	0.03	Q				
1+40	0.0040	0.03	Q				
1+45	0.0042	0.03	Q				
1+50	0.0045	0.03	Q				
1+55	0.0047	0.03	Q				
2+ 0	0.0049	0.03	Q				
2+ 5	0.0051	0.03	Q				
2+10	0.0053	0.03	Q				
2+15	0.0055	0.03	Q				
2+20	0.0058	0.03	Q				
2+25	0.0060	0.03	Q				
2+30	0.0062	0.03	Q				
2+35	0.0064	0.03	Q				
2+40	0.0067	0.03	Q				
2+45	0.0069	0.03	Q				
2+50	0.0071	0.03	Q				
2+55	0.0073	0.03	QV				
3+ 0	0.0076	0.03	QV				
3+ 5	0.0078	0.03	QV				
3+10	0.0080	0.03	QV				
3+15	0.0083	0.03	QV				

3+20	0.0085	0.03	QV				
3+25	0.0087	0.03	QV				
3+30	0.0090	0.03	QV				
3+35	0.0092	0.03	QV				
3+40	0.0094	0.03	QV				
3+45	0.0097	0.03	QV				
3+50	0.0099	0.04	QV				
3+55	0.0102	0.04	QV				
4+ 0	0.0104	0.04	QV				
4+ 5	0.0107	0.04	QV				
4+10	0.0109	0.04	QV				
4+15	0.0112	0.04	QV				
4+20	0.0114	0.04	QV				
4+25	0.0117	0.04	QV				
4+30	0.0119	0.04	QV				
4+35	0.0122	0.04	QV				
4+40	0.0124	0.04	QV				
4+45	0.0127	0.04	QV				
4+50	0.0129	0.04	QV				
4+55	0.0132	0.04	QV				
5+ 0	0.0135	0.04	QV				
5+ 5	0.0137	0.04	QV				
5+10	0.0140	0.04	QV				
5+15	0.0143	0.04	QV				
5+20	0.0145	0.04	QV				
5+25	0.0148	0.04	Q V				
5+30	0.0151	0.04	Q V				
5+35	0.0153	0.04	Q V				
5+40	0.0156	0.04	Q V				
5+45	0.0159	0.04	Q V				
5+50	0.0162	0.04	Q V				
5+55	0.0165	0.04	Q V				
6+ 0	0.0167	0.04	Q V				
6+ 5	0.0170	0.04	Q V				
6+10	0.0173	0.04	Q V				
6+15	0.0176	0.04	Q V				
6+20	0.0179	0.04	Q V				
6+25	0.0182	0.04	Q V				
6+30	0.0185	0.04	Q V				
6+35	0.0188	0.04	Q V				
6+40	0.0191	0.04	Q V				
6+45	0.0194	0.04	Q V				
6+50	0.0197	0.04	Q V				
6+55	0.0200	0.04	Q V				
7+ 0	0.0203	0.04	Q V				
7+ 5	0.0206	0.05	Q V				
7+10	0.0209	0.05	Q V				
7+15	0.0212	0.05	Q V				
7+20	0.0215	0.05	Q V				
7+25	0.0219	0.05	Q V				
7+30	0.0222	0.05	Q V				
7+35	0.0225	0.05	Q V				
7+40	0.0228	0.05	Q V				
7+45	0.0232	0.05	Q V				
7+50	0.0235	0.05	Q V				
7+55	0.0238	0.05	Q V				
8+ 0	0.0242	0.05	Q V				
8+ 5	0.0245	0.05	Q V				
8+10	0.0249	0.05	Q V				
8+15	0.0252	0.05	Q V				
8+20	0.0256	0.05	Q V				
8+25	0.0259	0.05	Q V				
8+30	0.0263	0.05	Q V				
8+35	0.0266	0.05	Q V				
8+40	0.0270	0.05	Q V				
8+45	0.0273	0.05	Q V				
8+50	0.0277	0.05	Q V				
8+55	0.0281	0.05	Q V				
9+ 0	0.0285	0.05	Q V				
9+ 5	0.0288	0.06	Q V				
9+10	0.0292	0.06	Q V				
9+15	0.0296	0.06	Q V				
9+20	0.0300	0.06	Q V				
9+25	0.0304	0.06	Q V				
9+30	0.0308	0.06	Q V				
9+35	0.0312	0.06	Q V				
9+40	0.0316	0.06	Q V				
9+45	0.0320	0.06	Q V				
9+50	0.0324	0.06	Q V				
9+55	0.0329	0.06	Q V				
10+ 0	0.0333	0.06	Q V				
10+ 5	0.0337	0.06	Q V				
10+10	0.0341	0.06	Q V				
10+15	0.0346	0.06	Q V				



10+20	0.0350	0.06	
10+25	0.0355	0.07	
10+30	0.0359	0.07	
10+35	0.0364	0.07	
10+40	0.0369	0.07	
10+45	0.0373	0.07	
10+50	0.0378	0.07	
10+55	0.0383	0.07	
11+ 0	0.0388	0.07	
11+ 5	0.0393	0.07	
11+10	0.0398	0.07	
11+15	0.0403	0.07	
11+20	0.0408	0.08	
11+25	0.0413	0.08	
11+30	0.0419	0.08	
11+35	0.0424	0.08	
11+40	0.0430	0.08	
11+45	0.0435	0.08	
11+50	0.0441	0.08	
11+55	0.0447	0.08	
12+ 0	0.0452	0.08	
12+ 5	0.0474	0.31	
12+10	0.0499	0.37	
12+15	0.0524	0.37	
12+20	0.0550	0.37	
12+25	0.0576	0.37	
12+30	0.0601	0.37	
12+35	0.0627	0.38	
12+40	0.0653	0.38	
12+45	0.0679	0.38	
12+50	0.0705	0.38	
12+55	0.0732	0.38	
13+ 0	0.0758	0.38	
13+ 5	0.0784	0.39	
13+10	0.0811	0.39	
13+15	0.0838	0.39	
13+20	0.0865	0.39	
13+25	0.0892	0.39	
13+30	0.0919	0.40	
13+35	0.0947	0.40	
13+40	0.0974	0.40	
13+45	0.1002	0.40	
13+50	0.1030	0.41	
13+55	0.1058	0.41	
14+ 0	0.1087	0.41	
14+ 5	0.1116	0.42	
14+10	0.1144	0.42	
14+15	0.1174	0.42	
14+20	0.1203	0.43	
14+25	0.1233	0.43	
14+30	0.1262	0.43	
14+35	0.1293	0.44	
14+40	0.1323	0.44	
14+45	0.1354	0.45	
14+50	0.1385	0.45	
14+55	0.1417	0.46	
15+ 0	0.1449	0.47	
15+ 5	0.1482	0.47	
15+10	0.1515	0.48	
15+15	0.1549	0.49	
15+20	0.1583	0.50	
15+25	0.1600	0.25	
15+30	0.1614	0.19	
15+35	0.1629	0.22	
15+40	0.1646	0.24	
15+45	0.1666	0.30	
15+50	0.1690	0.35	
15+55	0.1726	0.52	
16+ 0	0.1779	0.78	
16+ 5	0.1997	3.15	
16+10	0.2076	1.15	
16+15	0.2097	0.31	
16+20	0.2113	0.22	
16+25	0.2143	0.44	
16+30	0.2177	0.49	
16+35	0.2210	0.47	
16+40	0.2242	0.46	
16+45	0.2273	0.45	
16+50	0.2303	0.44	
16+55	0.2333	0.43	
17+ 0	0.2362	0.42	
17+ 5	0.2390	0.42	
17+10	0.2419	0.41	
17+15	0.2446	0.40	

17+20	0.2474	0.40	|Q	|	|	V |
17+25	0.2501	0.39	|Q	|	|	V |
17+30	0.2528	0.39	|Q	|	|	V |
17+35	0.2554	0.39	|Q	|	|	V |
17+40	0.2581	0.38	|Q	|	|	V |
17+45	0.2607	0.38	|Q	|	|	V |
17+50	0.2633	0.38	|Q	|	|	V |
17+55	0.2658	0.37	|Q	|	|	V |
18+ 0	0.2684	0.37	|Q	|	|	V |
18+ 5	0.2694	0.15	Q	|	|	V |
18+10	0.2700	0.08	Q	|	|	V |
18+15	0.2705	0.08	Q	|	|	V |
18+20	0.2711	0.08	Q	|	|	V |
18+25	0.2716	0.08	Q	|	|	V |
18+30	0.2721	0.07	Q	|	|	V |
18+35	0.2726	0.07	Q	|	|	V |
18+40	0.2731	0.07	Q	|	|	V |
18+45	0.2736	0.07	Q	|	|	V |
18+50	0.2740	0.07	Q	|	|	V |
18+55	0.2745	0.07	Q	|	|	V |
19+ 0	0.2749	0.06	Q	|	|	V |
19+ 5	0.2753	0.06	Q	|	|	V |
19+10	0.2758	0.06	Q	|	|	V |
19+15	0.2762	0.06	Q	|	|	V |
19+20	0.2766	0.06	Q	|	|	V |
19+25	0.2770	0.06	Q	|	|	V |
19+30	0.2774	0.06	Q	|	|	V |
19+35	0.2777	0.06	Q	|	|	V |
19+40	0.2781	0.05	Q	|	|	V |
19+45	0.2785	0.05	Q	|	|	V |
19+50	0.2788	0.05	Q	|	|	V |
19+55	0.2792	0.05	Q	|	|	V |
20+ 0	0.2795	0.05	Q	|	|	V |
20+ 5	0.2799	0.05	Q	|	|	V |
20+10	0.2802	0.05	Q	|	|	V |
20+15	0.2805	0.05	Q	|	|	V |
20+20	0.2809	0.05	Q	|	|	V |
20+25	0.2812	0.05	Q	|	|	V |
20+30	0.2815	0.05	Q	|	|	V |
20+35	0.2818	0.05	Q	|	|	V |
20+40	0.2821	0.04	Q	|	|	V |
20+45	0.2824	0.04	Q	|	|	V |
20+50	0.2827	0.04	Q	|	|	V |
20+55	0.2830	0.04	Q	|	|	V |
21+ 0	0.2833	0.04	Q	|	|	V |
21+ 5	0.2836	0.04	Q	|	|	V |
21+10	0.2839	0.04	Q	|	|	V |
21+15	0.2841	0.04	Q	|	|	V |
21+20	0.2844	0.04	Q	|	|	V |
21+25	0.2847	0.04	Q	|	|	V|
21+30	0.2850	0.04	Q	|	|	V|
21+35	0.2852	0.04	Q	|	|	V|
21+40	0.2855	0.04	Q	|	|	V|
21+45	0.2857	0.04	Q	|	|	V|
21+50	0.2860	0.04	Q	|	|	V|
21+55	0.2862	0.04	Q	|	|	V|
22+ 0	0.2865	0.04	Q	|	|	V|
22+ 5	0.2867	0.04	Q	|	|	V|
22+10	0.2870	0.04	Q	|	|	V|
22+15	0.2872	0.03	Q	|	|	V|
22+20	0.2875	0.03	Q	|	|	V|
22+25	0.2877	0.03	Q	|	|	V|
22+30	0.2879	0.03	Q	|	|	V|
22+35	0.2882	0.03	Q	|	|	V|
22+40	0.2884	0.03	Q	|	|	V|
22+45	0.2886	0.03	Q	|	|	V|
22+50	0.2888	0.03	Q	|	|	V|
22+55	0.2891	0.03	Q	|	|	V|
23+ 0	0.2893	0.03	Q	|	|	V|
23+ 5	0.2895	0.03	Q	|	|	V|
23+10	0.2897	0.03	Q	|	|	V|
23+15	0.2899	0.03	Q	|	|	V|
23+20	0.2901	0.03	Q	|	|	V|
23+25	0.2904	0.03	Q	|	|	V|
23+30	0.2906	0.03	Q	|	|	V|
23+35	0.2908	0.03	Q	|	|	V|
23+40	0.2910	0.03	Q	|	|	V|
23+45	0.2912	0.03	Q	|	|	V|
23+50	0.2914	0.03	Q	|	|	V|
23+55	0.2916	0.03	Q	|	|	V|
24+ 0	0.2918	0.03	Q	|	|	V|

APPENDIX D.2: 100-YEAR

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA A
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
7.47	1	0.78
Rainfall data for year 2		
7.47	6	1.20
Rainfall data for year 2		
7.47	24	2.18
Rainfall data for year 100		
7.47	1	1.27
Rainfall data for year 100		
7.47	6	2.86
Rainfall data for year 100		
7.47	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
58.9	78.1	7.47	1.000	0.402	0.486	0.195

Area-averaged adjusted loss rate Fm (In/Hr) = 0.195

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
3.63	0.486	58.9	78.1	2.80	0.553
3.84	0.514	98.0	98.0	0.20	0.954

Area-averaged catchment yield fraction, Y = 0.759
Area-averaged low loss fraction, Yb = 0.241

++
Watercourse length = 730.00(Ft.)
Length from concentration point to centroid = 280.00(Ft.)
Elevation difference along watercourse = 69.50(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 7.47(Ac.)
Catchment Lag time = 0.017 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 488.6316
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.195(In/Hr)
Average low loss rate fraction (Yb) = 0.241 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 7.47(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.602(In)
30-minute factor = 1.000 Adjusted rainfall = 1.031(In)
1-hour factor = 1.000 Adjusted rainfall = 1.270(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 90.34 (CFS))	
1	72.933	65.888
2	100.000	24.453

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6024	0.6024
2	0.7417	0.1392
3	0.8376	0.0959
4	0.9131	0.0755
5	0.9763	0.0632
6	1.0312	0.0549
7	1.0800	0.0488
8	1.1241	0.0441
9	1.1646	0.0404
10	1.2020	0.0374
11	1.2368	0.0349
12	1.2696	0.0327
13	1.3165	0.0469
14	1.3615	0.0450
15	1.4047	0.0433
16	1.4464	0.0417
17	1.4867	0.0403
18	1.5258	0.0390
19	1.5636	0.0379
20	1.6004	0.0368
21	1.6362	0.0358
22	1.6711	0.0349
23	1.7051	0.0340
24	1.7383	0.0332
25	1.7708	0.0325
26	1.8025	0.0318
27	1.8336	0.0311
28	1.8641	0.0305
29	1.8940	0.0299
30	1.9234	0.0293
31	1.9522	0.0288
32	1.9805	0.0283
33	2.0083	0.0278
34	2.0357	0.0274
35	2.0626	0.0269
36	2.0891	0.0265
37	2.1152	0.0261
38	2.1409	0.0257
39	2.1662	0.0253
40	2.1912	0.0250
41	2.2159	0.0247
42	2.2402	0.0243
43	2.2642	0.0240
44	2.2879	0.0237
45	2.3114	0.0234
46	2.3345	0.0231
47	2.3574	0.0229

		AREAA
48	2.3799	0.0226
49	2.4023	0.0223
50	2.4244	0.0221
51	2.4462	0.0219
52	2.4678	0.0216
53	2.4892	0.0214
54	2.5104	0.0212
55	2.5314	0.0210
56	2.5521	0.0208
57	2.5727	0.0205
58	2.5930	0.0204
59	2.6132	0.0202
60	2.6332	0.0200
61	2.6530	0.0198
62	2.6726	0.0196
63	2.6920	0.0194
64	2.7113	0.0193
65	2.7304	0.0191
66	2.7494	0.0190
67	2.7682	0.0188
68	2.7868	0.0186
69	2.8053	0.0185
70	2.8237	0.0183
71	2.8419	0.0182
72	2.8599	0.0181
73	2.8767	0.0168
74	2.8934	0.0167
75	2.9099	0.0165
76	2.9263	0.0164
77	2.9426	0.0163
78	2.9587	0.0162
79	2.9748	0.0160
80	2.9907	0.0159
81	3.0065	0.0158
82	3.0222	0.0157
83	3.0378	0.0156
84	3.0532	0.0155
85	3.0686	0.0154
86	3.0839	0.0153
87	3.0990	0.0152
88	3.1141	0.0151
89	3.1291	0.0150
90	3.1439	0.0149
91	3.1587	0.0148
92	3.1734	0.0147
93	3.1880	0.0146
94	3.2025	0.0145
95	3.2169	0.0144
96	3.2312	0.0143
97	3.2455	0.0142
98	3.2596	0.0142
99	3.2737	0.0141
100	3.2877	0.0140
101	3.3016	0.0139
102	3.3154	0.0138
103	3.3292	0.0138
104	3.3428	0.0137
105	3.3564	0.0136
106	3.3700	0.0135
107	3.3834	0.0135
108	3.3968	0.0134
109	3.4101	0.0133
110	3.4233	0.0132
111	3.4365	0.0132
112	3.4496	0.0131
113	3.4627	0.0130
114	3.4756	0.0130
115	3.4885	0.0129
116	3.5014	0.0128
117	3.5141	0.0128
118	3.5268	0.0127
119	3.5395	0.0127
120	3.5521	0.0126
121	3.5646	0.0125
122	3.5771	0.0125
123	3.5895	0.0124
124	3.6019	0.0124
125	3.6141	0.0123
126	3.6264	0.0122
127	3.6386	0.0122
128	3.6507	0.0121
129	3.6628	0.0121
130	3.6748	0.0120
131	3.6868	0.0120

		AREAA
132	3.6987	0.0119
133	3.7105	0.0119
134	3.7224	0.0118
135	3.7341	0.0118
136	3.7458	0.0117
137	3.7575	0.0117
138	3.7691	0.0116
139	3.7807	0.0116
140	3.7922	0.0115
141	3.8036	0.0115
142	3.8151	0.0114
143	3.8264	0.0114
144	3.8378	0.0113
145	3.8491	0.0113
146	3.8603	0.0112
147	3.8715	0.0112
148	3.8826	0.0112
149	3.8938	0.0111
150	3.9048	0.0111
151	3.9158	0.0110
152	3.9268	0.0110
153	3.9378	0.0109
154	3.9487	0.0109
155	3.9595	0.0109
156	3.9703	0.0108
157	3.9811	0.0108
158	3.9919	0.0107
159	4.0026	0.0107
160	4.0132	0.0107
161	4.0239	0.0106
162	4.0344	0.0106
163	4.0450	0.0105
164	4.0555	0.0105
165	4.0660	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0972	0.0104
169	4.1075	0.0103
170	4.1178	0.0103
171	4.1281	0.0103
172	4.1383	0.0102
173	4.1485	0.0102
174	4.1586	0.0102
175	4.1688	0.0101
176	4.1788	0.0101
177	4.1889	0.0101
178	4.1989	0.0100
179	4.2089	0.0100
180	4.2189	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2486	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2780	0.0098
187	4.2877	0.0097
188	4.2974	0.0097
189	4.3071	0.0097
190	4.3168	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3456	0.0096
194	4.3551	0.0095
195	4.3646	0.0095
196	4.3741	0.0095
197	4.3836	0.0095
198	4.3930	0.0094
199	4.4024	0.0094
200	4.4118	0.0094
201	4.4211	0.0093
202	4.4304	0.0093
203	4.4397	0.0093
204	4.4490	0.0093
205	4.4582	0.0092
206	4.4674	0.0092
207	4.4766	0.0092
208	4.4858	0.0092
209	4.4949	0.0091
210	4.5040	0.0091
211	4.5131	0.0091
212	4.5222	0.0091
213	4.5312	0.0090
214	4.5402	0.0090
215	4.5492	0.0090

		AREAA
216	4.5582	0.0090
217	4.5671	0.0089
218	4.5761	0.0089
219	4.5850	0.0089
220	4.5938	0.0089
221	4.6027	0.0088
222	4.6115	0.0088
223	4.6203	0.0088
224	4.6291	0.0088
225	4.6378	0.0088
226	4.6466	0.0087
227	4.6553	0.0087
228	4.6640	0.0087
229	4.6726	0.0087
230	4.6813	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7157	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7497	0.0085
239	4.7581	0.0085
240	4.7666	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7918	0.0084
244	4.8001	0.0084
245	4.8085	0.0083
246	4.8168	0.0083
247	4.8251	0.0083
248	4.8334	0.0083
249	4.8416	0.0083
250	4.8499	0.0082
251	4.8581	0.0082
252	4.8663	0.0082
253	4.8745	0.0082
254	4.8826	0.0082
255	4.8908	0.0081
256	4.8989	0.0081
257	4.9070	0.0081
258	4.9151	0.0081
259	4.9232	0.0081
260	4.9312	0.0081
261	4.9393	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9633	0.0080
265	4.9713	0.0080
266	4.9792	0.0080
267	4.9871	0.0079
268	4.9951	0.0079
269	5.0030	0.0079
270	5.0108	0.0079
271	5.0187	0.0079
272	5.0266	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0578	0.0078
277	5.0656	0.0078
278	5.0733	0.0078
279	5.0810	0.0077
280	5.0888	0.0077
281	5.0965	0.0077
282	5.1042	0.0077
283	5.1118	0.0077
284	5.1195	0.0077
285	5.1271	0.0076
286	5.1347	0.0076
287	5.1424	0.0076
288	5.1500	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0018	0.0058
2	0.0076	0.0018	0.0058
3	0.0076	0.0018	0.0058
4	0.0077	0.0018	0.0058
5	0.0077	0.0019	0.0058
6	0.0077	0.0019	0.0058

	AREAA		
7	0.0077	0.0019	0.0059
8	0.0078	0.0019	0.0059
9	0.0078	0.0019	0.0059
10	0.0078	0.0019	0.0059
11	0.0078	0.0019	0.0059
12	0.0078	0.0019	0.0060
13	0.0079	0.0019	0.0060
14	0.0079	0.0019	0.0060
15	0.0079	0.0019	0.0060
16	0.0080	0.0019	0.0060
17	0.0080	0.0019	0.0061
18	0.0080	0.0019	0.0061
19	0.0080	0.0019	0.0061
20	0.0081	0.0019	0.0061
21	0.0081	0.0019	0.0061
22	0.0081	0.0020	0.0062
23	0.0081	0.0020	0.0062
24	0.0082	0.0020	0.0062
25	0.0082	0.0020	0.0062
26	0.0082	0.0020	0.0062
27	0.0083	0.0020	0.0063
28	0.0083	0.0020	0.0063
29	0.0083	0.0020	0.0063
30	0.0083	0.0020	0.0063
31	0.0084	0.0020	0.0064
32	0.0084	0.0020	0.0064
33	0.0084	0.0020	0.0064
34	0.0085	0.0020	0.0064
35	0.0085	0.0020	0.0065
36	0.0085	0.0021	0.0065
37	0.0086	0.0021	0.0065
38	0.0086	0.0021	0.0065
39	0.0086	0.0021	0.0065
40	0.0086	0.0021	0.0066
41	0.0087	0.0021	0.0066
42	0.0087	0.0021	0.0066
43	0.0088	0.0021	0.0066
44	0.0088	0.0021	0.0067
45	0.0088	0.0021	0.0067
46	0.0088	0.0021	0.0067
47	0.0089	0.0021	0.0068
48	0.0089	0.0021	0.0068
49	0.0090	0.0022	0.0068
50	0.0090	0.0022	0.0068
51	0.0090	0.0022	0.0069
52	0.0091	0.0022	0.0069
53	0.0091	0.0022	0.0069
54	0.0091	0.0022	0.0069
55	0.0092	0.0022	0.0070
56	0.0092	0.0022	0.0070
57	0.0093	0.0022	0.0070
58	0.0093	0.0022	0.0071
59	0.0093	0.0022	0.0071
60	0.0094	0.0023	0.0071
61	0.0094	0.0023	0.0072
62	0.0095	0.0023	0.0072
63	0.0095	0.0023	0.0072
64	0.0095	0.0023	0.0072
65	0.0096	0.0023	0.0073
66	0.0096	0.0023	0.0073
67	0.0097	0.0023	0.0074
68	0.0097	0.0023	0.0074
69	0.0098	0.0024	0.0074
70	0.0098	0.0024	0.0074
71	0.0099	0.0024	0.0075
72	0.0099	0.0024	0.0075
73	0.0100	0.0024	0.0076
74	0.0100	0.0024	0.0076
75	0.0101	0.0024	0.0076
76	0.0101	0.0024	0.0077
77	0.0102	0.0024	0.0077
78	0.0102	0.0025	0.0077
79	0.0103	0.0025	0.0078
80	0.0103	0.0025	0.0078
81	0.0104	0.0025	0.0079
82	0.0104	0.0025	0.0079
83	0.0105	0.0025	0.0080
84	0.0105	0.0025	0.0080
85	0.0106	0.0025	0.0080
86	0.0106	0.0026	0.0081
87	0.0107	0.0026	0.0081
88	0.0107	0.0026	0.0082
89	0.0108	0.0026	0.0082
90	0.0109	0.0026	0.0082

91	0.0109	0.0026	0.0083
92	0.0110	0.0026	0.0083
93	0.0111	0.0027	0.0084
94	0.0111	0.0027	0.0084
95	0.0112	0.0027	0.0085
96	0.0112	0.0027	0.0085
97	0.0113	0.0027	0.0086
98	0.0114	0.0027	0.0086
99	0.0115	0.0028	0.0087
100	0.0115	0.0028	0.0087
101	0.0116	0.0028	0.0088
102	0.0117	0.0028	0.0089
103	0.0118	0.0028	0.0089
104	0.0118	0.0028	0.0090
105	0.0119	0.0029	0.0090
106	0.0120	0.0029	0.0091
107	0.0121	0.0029	0.0092
108	0.0121	0.0029	0.0092
109	0.0122	0.0029	0.0093
110	0.0123	0.0030	0.0093
111	0.0124	0.0030	0.0094
112	0.0125	0.0030	0.0095
113	0.0126	0.0030	0.0096
114	0.0127	0.0030	0.0096
115	0.0128	0.0031	0.0097
116	0.0128	0.0031	0.0097
117	0.0130	0.0031	0.0098
118	0.0130	0.0031	0.0099
119	0.0132	0.0032	0.0100
120	0.0132	0.0032	0.0101
121	0.0134	0.0032	0.0102
122	0.0135	0.0032	0.0102
123	0.0136	0.0033	0.0103
124	0.0137	0.0033	0.0104
125	0.0138	0.0033	0.0105
126	0.0139	0.0033	0.0106
127	0.0141	0.0034	0.0107
128	0.0142	0.0034	0.0107
129	0.0143	0.0034	0.0109
130	0.0144	0.0035	0.0109
131	0.0146	0.0035	0.0111
132	0.0147	0.0035	0.0111
133	0.0149	0.0036	0.0113
134	0.0150	0.0036	0.0114
135	0.0152	0.0036	0.0115
136	0.0153	0.0037	0.0116
137	0.0155	0.0037	0.0118
138	0.0156	0.0038	0.0118
139	0.0158	0.0038	0.0120
140	0.0159	0.0038	0.0121
141	0.0162	0.0039	0.0123
142	0.0163	0.0039	0.0124
143	0.0165	0.0040	0.0125
144	0.0167	0.0040	0.0126
145	0.0181	0.0043	0.0137
146	0.0182	0.0044	0.0138
147	0.0185	0.0045	0.0140
148	0.0186	0.0045	0.0142
149	0.0190	0.0046	0.0144
150	0.0191	0.0046	0.0145
151	0.0194	0.0047	0.0148
152	0.0196	0.0047	0.0149
153	0.0200	0.0048	0.0152
154	0.0202	0.0049	0.0153
155	0.0205	0.0049	0.0156
156	0.0208	0.0050	0.0158
157	0.0212	0.0051	0.0161
158	0.0214	0.0051	0.0162
159	0.0219	0.0053	0.0166
160	0.0221	0.0053	0.0168
161	0.0226	0.0054	0.0172
162	0.0229	0.0055	0.0174
163	0.0234	0.0056	0.0178
164	0.0237	0.0057	0.0180
165	0.0243	0.0059	0.0185
166	0.0247	0.0059	0.0187
167	0.0253	0.0061	0.0192
168	0.0257	0.0062	0.0195
169	0.0265	0.0064	0.0201
170	0.0269	0.0065	0.0204
171	0.0278	0.0067	0.0211
172	0.0283	0.0068	0.0215
173	0.0293	0.0071	0.0223
174	0.0299	0.0072	0.0227

175	0.0311	0.0075	0.0236
176	0.0318	0.0076	0.0241
177	0.0332	0.0080	0.0252
178	0.0340	0.0082	0.0258
179	0.0358	0.0086	0.0272
180	0.0368	0.0089	0.0279
181	0.0390	0.0094	0.0296
182	0.0403	0.0097	0.0306
183	0.0433	0.0104	0.0328
184	0.0450	0.0108	0.0342
185	0.0327	0.0079	0.0248
186	0.0349	0.0084	0.0265
187	0.0404	0.0097	0.0307
188	0.0441	0.0106	0.0335
189	0.0549	0.0132	0.0417
190	0.0632	0.0152	0.0480
191	0.0959	0.0163	0.0797
192	0.1392	0.0163	0.1230
193	0.6024	0.0163	0.5862
194	0.0755	0.0163	0.0592
195	0.0488	0.0117	0.0371
196	0.0374	0.0090	0.0284
197	0.0469	0.0113	0.0356
198	0.0417	0.0100	0.0317
199	0.0379	0.0091	0.0287
200	0.0349	0.0084	0.0265
201	0.0325	0.0078	0.0247
202	0.0305	0.0073	0.0231
203	0.0288	0.0069	0.0219
204	0.0274	0.0066	0.0208
205	0.0261	0.0063	0.0198
206	0.0250	0.0060	0.0190
207	0.0240	0.0058	0.0182
208	0.0231	0.0056	0.0176
209	0.0223	0.0054	0.0170
210	0.0216	0.0052	0.0164
211	0.0210	0.0050	0.0159
212	0.0204	0.0049	0.0155
213	0.0198	0.0048	0.0150
214	0.0193	0.0046	0.0146
215	0.0188	0.0045	0.0143
216	0.0183	0.0044	0.0139
217	0.0168	0.0040	0.0127
218	0.0164	0.0039	0.0125
219	0.0160	0.0039	0.0122
220	0.0157	0.0038	0.0119
221	0.0154	0.0037	0.0117
222	0.0151	0.0036	0.0114
223	0.0148	0.0036	0.0112
224	0.0145	0.0035	0.0110
225	0.0142	0.0034	0.0108
226	0.0140	0.0034	0.0106
227	0.0138	0.0033	0.0104
228	0.0135	0.0033	0.0103
229	0.0133	0.0032	0.0101
230	0.0131	0.0032	0.0099
231	0.0129	0.0031	0.0098
232	0.0127	0.0031	0.0097
233	0.0125	0.0030	0.0095
234	0.0124	0.0030	0.0094
235	0.0122	0.0029	0.0093
236	0.0120	0.0029	0.0091
237	0.0119	0.0029	0.0090
238	0.0117	0.0028	0.0089
239	0.0116	0.0028	0.0088
240	0.0114	0.0027	0.0087
241	0.0113	0.0027	0.0086
242	0.0112	0.0027	0.0085
243	0.0110	0.0027	0.0084
244	0.0109	0.0026	0.0083
245	0.0108	0.0026	0.0082
246	0.0107	0.0026	0.0081
247	0.0105	0.0025	0.0080
248	0.0104	0.0025	0.0079
249	0.0103	0.0025	0.0078
250	0.0102	0.0025	0.0078
251	0.0101	0.0024	0.0077
252	0.0100	0.0024	0.0076
253	0.0099	0.0024	0.0075
254	0.0098	0.0024	0.0075
255	0.0097	0.0023	0.0074
256	0.0097	0.0023	0.0073
257	0.0096	0.0023	0.0073
258	0.0095	0.0023	0.0072

259	0.0094	0.0023	0.0071
260	0.0093	0.0022	0.0071
261	0.0092	0.0022	0.0070
262	0.0092	0.0022	0.0070
263	0.0091	0.0022	0.0069
264	0.0090	0.0022	0.0068
265	0.0089	0.0022	0.0068
266	0.0089	0.0021	0.0067
267	0.0088	0.0021	0.0067
268	0.0087	0.0021	0.0066
269	0.0087	0.0021	0.0066
270	0.0086	0.0021	0.0065
271	0.0085	0.0021	0.0065
272	0.0085	0.0020	0.0064
273	0.0084	0.0020	0.0064
274	0.0084	0.0020	0.0063
275	0.0083	0.0020	0.0063
276	0.0082	0.0020	0.0063
277	0.0082	0.0020	0.0062
278	0.0081	0.0020	0.0062
279	0.0081	0.0019	0.0061
280	0.0080	0.0019	0.0061
281	0.0080	0.0019	0.0061
282	0.0079	0.0019	0.0060
283	0.0079	0.0019	0.0060
284	0.0078	0.0019	0.0059
285	0.0078	0.0019	0.0059
286	0.0077	0.0019	0.0059
287	0.0077	0.0018	0.0058
288	0.0076	0.0018	0.0058

Total soil rain loss = 1.08(In)
Total effective rainfall = 4.07(In)
Peak flow rate in flood hydrograph = 41.63(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	12.5	25.0	37.5	50.0
0+ 5	0.0026	0.38	Q				
0+10	0.0062	0.52	Q				
0+15	0.0098	0.52	Q				
0+20	0.0134	0.52	Q				
0+25	0.0171	0.53	Q				
0+30	0.0207	0.53	Q				
0+35	0.0243	0.53	Q				
0+40	0.0280	0.53	Q				
0+45	0.0317	0.53	Q				
0+50	0.0354	0.53	Q				
0+55	0.0391	0.54	Q				
1+ 0	0.0428	0.54	Q				
1+ 5	0.0465	0.54	Q				
1+10	0.0502	0.54	Q				
1+15	0.0540	0.54	Q				
1+20	0.0577	0.55	Q				
1+25	0.0615	0.55	Q				
1+30	0.0653	0.55	QV				
1+35	0.0691	0.55	QV				
1+40	0.0729	0.55	QV				
1+45	0.0767	0.55	QV				
1+50	0.0805	0.56	QV				
1+55	0.0843	0.56	QV				
2+ 0	0.0882	0.56	QV				
2+ 5	0.0921	0.56	QV				
2+10	0.0960	0.56	QV				
2+15	0.0999	0.57	QV				
2+20	0.1038	0.57	QV				
2+25	0.1077	0.57	QV				
2+30	0.1116	0.57	QV				
2+35	0.1156	0.57	QV				
2+40	0.1195	0.58	QV				
2+45	0.1235	0.58	QV				
2+50	0.1275	0.58	Q V				
2+55	0.1315	0.58	Q V				
3+ 0	0.1355	0.58	Q V				
3+ 5	0.1396	0.59	Q V				
3+10	0.1436	0.59	Q V				
3+15	0.1477	0.59	Q V				

3+20	0.1518	0.59	Q V				
3+25	0.1559	0.60	Q V				
3+30	0.1600	0.60	Q V				
3+35	0.1641	0.60	Q V				
3+40	0.1683	0.60	Q V				
3+45	0.1724	0.60	Q V				
3+50	0.1766	0.61	Q V				
3+55	0.1808	0.61	Q V				
4+ 0	0.1850	0.61	Q V				
4+ 5	0.1893	0.61	Q V				
4+10	0.1935	0.62	Q V				
4+15	0.1978	0.62	Q V				
4+20	0.2020	0.62	Q V				
4+25	0.2063	0.62	Q V				
4+30	0.2107	0.63	Q V				
4+35	0.2150	0.63	Q V				
4+40	0.2193	0.63	Q V				
4+45	0.2237	0.63	Q V				
4+50	0.2281	0.64	Q V				
4+55	0.2325	0.64	Q V				
5+ 0	0.2369	0.64	Q V				
5+ 5	0.2414	0.65	Q V				
5+10	0.2458	0.65	Q V				
5+15	0.2503	0.65	Q V				
5+20	0.2548	0.65	Q V				
5+25	0.2594	0.66	Q V				
5+30	0.2639	0.66	Q V				
5+35	0.2685	0.66	Q V				
5+40	0.2730	0.67	Q V				
5+45	0.2777	0.67	Q V				
5+50	0.2823	0.67	Q V				
5+55	0.2869	0.68	Q V				
6+ 0	0.2916	0.68	Q V				
6+ 5	0.2963	0.68	Q V				
6+10	0.3010	0.68	Q V				
6+15	0.3058	0.69	Q V				
6+20	0.3105	0.69	Q V				
6+25	0.3153	0.70	Q V				
6+30	0.3201	0.70	Q V				
6+35	0.3250	0.70	Q V				
6+40	0.3298	0.71	Q V				
6+45	0.3347	0.71	Q V				
6+50	0.3396	0.71	Q V				
6+55	0.3446	0.72	Q V				
7+ 0	0.3495	0.72	Q V				
7+ 5	0.3545	0.72	Q V				
7+10	0.3595	0.73	Q V				
7+15	0.3646	0.73	Q V				
7+20	0.3696	0.74	Q V				
7+25	0.3747	0.74	Q V				
7+30	0.3799	0.74	Q V				
7+35	0.3850	0.75	Q V				
7+40	0.3902	0.75	Q V				
7+45	0.3954	0.76	Q V				
7+50	0.4007	0.76	Q V				
7+55	0.4060	0.77	Q V				
8+ 0	0.4113	0.77	Q V				
8+ 5	0.4166	0.78	Q V				
8+10	0.4220	0.78	Q V				
8+15	0.4274	0.79	Q V				
8+20	0.4328	0.79	Q V				
8+25	0.4383	0.79	Q V				
8+30	0.4438	0.80	Q V				
8+35	0.4493	0.80	Q V				
8+40	0.4549	0.81	Q V				
8+45	0.4605	0.82	Q V				
8+50	0.4662	0.82	Q V				
8+55	0.4719	0.83	Q V				
9+ 0	0.4776	0.83	Q V				
9+ 5	0.4834	0.84	Q V				
9+10	0.4892	0.84	Q V				
9+15	0.4950	0.85	Q V				
9+20	0.5009	0.85	Q V				
9+25	0.5068	0.86	Q V				
9+30	0.5128	0.87	Q V				
9+35	0.5188	0.87	Q V				
9+40	0.5249	0.88	Q V				
9+45	0.5310	0.89	Q V				
9+50	0.5371	0.89	Q V				
9+55	0.5433	0.90	Q V				
10+ 0	0.5496	0.91	Q V				
10+ 5	0.5559	0.92	Q V				
10+10	0.5622	0.92	Q V				
10+15	0.5686	0.93	Q V				

10+20	0.5751	0.94	Q V| | | |
10+25	0.5816	0.95	Q V| | | |
10+30	0.5882	0.95	Q V| | | |
10+35	0.5948	0.96	Q V| | | |
10+40	0.6015	0.97	Q V| | | |
10+45	0.6082	0.98	Q V| | | |
10+50	0.6150	0.99	Q V| | | |
10+55	0.6219	1.00	Q V| | | |
11+ 0	0.6288	1.01	Q V| | | |
11+ 5	0.6358	1.02	Q V | | |
11+10	0.6429	1.02	Q V | | |
11+15	0.6500	1.04	Q V | | |
11+20	0.6572	1.05	Q V | | |
11+25	0.6645	1.06	Q V | | |
11+30	0.6718	1.07	Q V | | |
11+35	0.6793	1.08	Q V | | |
11+40	0.6868	1.09	Q V | | |
11+45	0.6944	1.10	Q V | | |
11+50	0.7020	1.11	Q |V | |
11+55	0.7098	1.13	Q |V | |
12+ 0	0.7177	1.14	Q |V | |
12+ 5	0.7260	1.21	Q |V | |
12+10	0.7346	1.25	Q |V | |
12+15	0.7433	1.26	|Q |V | |
12+20	0.7521	1.28	|Q |V | |
12+25	0.7610	1.29	|Q | V | |
12+30	0.7700	1.31	|Q | V | |
12+35	0.7792	1.33	|Q | V | |
12+40	0.7884	1.34	|Q | V | |
12+45	0.7978	1.36	|Q | V | |
12+50	0.8073	1.38	|Q | V | |
12+55	0.8170	1.40	|Q | V | |
13+ 0	0.8267	1.42	|Q | V | |
13+ 5	0.8367	1.44	|Q | V | |
13+10	0.8468	1.46	|Q | V | |
13+15	0.8570	1.49	|Q | V | |
13+20	0.8674	1.51	|Q | V | |
13+25	0.8781	1.54	|Q | V | |
13+30	0.8888	1.56	|Q | V | |
13+35	0.8998	1.60	|Q | V | |
13+40	0.9110	1.62	|Q | V | |
13+45	0.9224	1.66	|Q | V | |
13+50	0.9340	1.69	|Q | V | |
13+55	0.9459	1.73	|Q | V | |
14+ 0	0.9580	1.76	|Q | V | |
14+ 5	0.9704	1.80	|Q | V | |
14+10	0.9831	1.84	|Q | V | |
14+15	0.9961	1.89	|Q | V | |
14+20	1.0094	1.93	|Q | V | |
14+25	1.0231	1.99	|Q | V | |
14+30	1.0372	2.04	|Q | V | |
14+35	1.0517	2.11	|Q | V | |
14+40	1.0667	2.17	|Q | V | |
14+45	1.0822	2.25	|Q | V | |
14+50	1.0981	2.32	|Q | V | |
14+55	1.1148	2.42	|Q | V | |
15+ 0	1.1321	2.51	| Q | V | |
15+ 5	1.1502	2.64	| Q | V | |
15+10	1.1691	2.74	| Q | V | |
15+15	1.1892	2.91	| Q | V | |
15+20	1.2102	3.05	| Q | V| |
15+25	1.2272	2.47	|Q | V| |
15+30	1.2434	2.35	|Q | V| |
15+35	1.2618	2.67	| Q | V| |
15+40	1.2822	2.96	| Q | V | |
15+45	1.3067	3.57	| Q | V | |
15+50	1.3355	4.18	| Q | |V | |
15+55	1.3798	6.42	| Q | |V | |
16+ 0	1.4490	10.05	| Q | | V | |
16+ 5	1.7357	41.63	| | | V | Q |
16+10	1.8613	18.24	| | Q | | V| |
16+15	1.8881	3.89	| Q | | | V| |
16+20	1.9072	2.78	| Q | | | V |
16+25	1.9282	3.04	| Q | | | V |
16+30	1.9485	2.96	| Q | | | V |
16+35	1.9669	2.67	| Q | | | |V |
16+40	1.9838	2.45	|Q | | | |V |
16+45	1.9994	2.27	|Q | | | |V |
16+50	2.0141	2.13	|Q | | | |V |
16+55	2.0279	2.01	|Q | | | | V |
17+ 0	2.0410	1.90	|Q | | | | V |
17+ 5	2.0535	1.81	|Q | | | | V |
17+10	2.0654	1.74	|Q | | | | V |
17+15	2.0769	1.67	|Q | | | | V |

17+20	2.0880	1.60	Q			V	
17+25	2.0986	1.55	Q			V	
17+30	2.1089	1.50	Q			V	
17+35	2.1189	1.45	Q			V	
17+40	2.1286	1.41	Q			V	
17+45	2.1380	1.37	Q			V	
17+50	2.1472	1.33	Q			V	
17+55	2.1561	1.30	Q			V	
18+ 0	2.1649	1.27	Q			V	
18+ 5	2.1730	1.18	Q			V	
18+10	2.1808	1.13	Q			V	
18+15	2.1884	1.11	Q			V	
18+20	2.1959	1.08	Q			V	
18+25	2.2032	1.06	Q			V	
18+30	2.2103	1.04	Q			V	
18+35	2.2173	1.02	Q			V	
18+40	2.2242	1.00	Q			V	
18+45	2.2310	0.98	Q			V	
18+50	2.2376	0.96	Q			V	
18+55	2.2442	0.95	Q			V	
19+ 0	2.2506	0.93	Q			V	
19+ 5	2.2569	0.92	Q			V	
19+10	2.2631	0.90	Q			V	
19+15	2.2692	0.89	Q			V	
19+20	2.2753	0.88	Q			V	
19+25	2.2812	0.86	Q			V	
19+30	2.2871	0.85	Q			V	
19+35	2.2928	0.84	Q			V	
19+40	2.2985	0.83	Q			V	
19+45	2.3042	0.82	Q			V	
19+50	2.3097	0.81	Q			V	
19+55	2.3152	0.80	Q			V	
20+ 0	2.3206	0.79	Q			V	
20+ 5	2.3260	0.78	Q			V	
20+10	2.3312	0.77	Q			V	
20+15	2.3365	0.76	Q			V	
20+20	2.3416	0.75	Q			V	
20+25	2.3467	0.74	Q			V	
20+30	2.3518	0.73	Q			V	
20+35	2.3568	0.73	Q			V	
20+40	2.3617	0.72	Q			V	
20+45	2.3666	0.71	Q			V	
20+50	2.3715	0.70	Q			V	
20+55	2.3763	0.70	Q			V	
21+ 0	2.3810	0.69	Q			V	
21+ 5	2.3857	0.68	Q			V	
21+10	2.3904	0.68	Q			V	
21+15	2.3950	0.67	Q			V	
21+20	2.3996	0.66	Q			V	
21+25	2.4041	0.66	Q			V	
21+30	2.4086	0.65	Q			V	
21+35	2.4130	0.65	Q			V	
21+40	2.4175	0.64	Q			V	
21+45	2.4218	0.64	Q			V	
21+50	2.4262	0.63	Q			V	
21+55	2.4305	0.62	Q			V	
22+ 0	2.4347	0.62	Q			V	
22+ 5	2.4390	0.61	Q			V	
22+10	2.4432	0.61	Q			V	
22+15	2.4473	0.61	Q			V	
22+20	2.4515	0.60	Q			V	
22+25	2.4556	0.60	Q			V	
22+30	2.4597	0.59	Q			V	
22+35	2.4637	0.59	Q			V	
22+40	2.4677	0.58	Q			V	
22+45	2.4717	0.58	Q			V	
22+50	2.4757	0.57	Q			V	
22+55	2.4796	0.57	Q			V	
23+ 0	2.4835	0.57	Q			V	
23+ 5	2.4874	0.56	Q			V	
23+10	2.4912	0.56	Q			V	
23+15	2.4950	0.55	Q			V	
23+20	2.4988	0.55	Q			V	
23+25	2.5026	0.55	Q			V	
23+30	2.5063	0.54	Q			V	
23+35	2.5101	0.54	Q			V	
23+40	2.5138	0.54	Q			V	
23+45	2.5174	0.53	Q			V	
23+50	2.5211	0.53	Q			V	
23+55	2.5247	0.53	Q			V	
24+ 0	2.5283	0.52	Q			V	

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

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Study date 06/19/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA B.1
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	13.74	1	0.78
Rainfall data for year 2	13.74	6	1.20
Rainfall data for year 2	13.74	24	2.18
Rainfall data for year 100	13.74	1	1.27
Rainfall data for year 100	13.74	6	2.86
Rainfall data for year 100	13.74	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
77.0	92.2	13.74	1.000	0.151	0.652	0.099

Area-averaged adjusted loss rate Fm (In/Hr) = 0.099

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
8.96	0.652	77.0	92.2	0.85	0.827
4.78	0.348	98.0	98.0	0.20	0.954

Area-averaged catchment yield fraction, Y = 0.871
Area-averaged low loss fraction, Yb = 0.129

++
Watercourse length = 1775.00(Ft.)
Length from concentration point to centroid = 520.00(Ft.)
Elevation difference along watercourse = 65.20(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 13.74(Ac.)
Catchment Lag time = 0.036 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 229.9329
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.099(In/Hr)
Average low loss rate fraction (Yb) = 0.129 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 13.74(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.602(In)
30-minute factor = 0.999 Adjusted rainfall = 1.031(In)
1-hour factor = 0.999 Adjusted rainfall = 1.269(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 166.17 (CFS))	
1	47.781	79.397
2	94.855	78.222
3	99.443	7.623
4	100.000	0.926

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6022	0.6022
2	0.7414	0.1392
3	0.8373	0.0959
4	0.9128	0.0755
5	0.9760	0.0632
6	1.0309	0.0549
7	1.0797	0.0488
8	1.1238	0.0441
9	1.1642	0.0404
10	1.2016	0.0374
11	1.2365	0.0349
12	1.2692	0.0327
13	1.3161	0.0469
14	1.3611	0.0450
15	1.4044	0.0433
16	1.4461	0.0417
17	1.4864	0.0403
18	1.5254	0.0390
19	1.5633	0.0379
20	1.6001	0.0368
21	1.6359	0.0358
22	1.6708	0.0349
23	1.7048	0.0340
24	1.7381	0.0332
25	1.7706	0.0325
26	1.8023	0.0318
27	1.8335	0.0311
28	1.8639	0.0305
29	1.8939	0.0299
30	1.9232	0.0293
31	1.9520	0.0288
32	1.9803	0.0283
33	2.0082	0.0278
34	2.0355	0.0274
35	2.0625	0.0269
36	2.0890	0.0265
37	2.1151	0.0261
38	2.1408	0.0257
39	2.1662	0.0253
40	2.1912	0.0250
41	2.2158	0.0247
42	2.2401	0.0243
43	2.2642	0.0240
44	2.2879	0.0237
45	2.3113	0.0234

		AREAB1
46	2.3344	0.0231
47	2.3573	0.0229
48	2.3799	0.0226
49	2.4022	0.0223
50	2.4243	0.0221
51	2.4462	0.0219
52	2.4678	0.0216
53	2.4892	0.0214
54	2.5103	0.0212
55	2.5313	0.0210
56	2.5521	0.0208
57	2.5726	0.0206
58	2.5930	0.0204
59	2.6131	0.0202
60	2.6331	0.0200
61	2.6529	0.0198
62	2.6725	0.0196
63	2.6920	0.0194
64	2.7112	0.0193
65	2.7304	0.0191
66	2.7493	0.0190
67	2.7681	0.0188
68	2.7868	0.0186
69	2.8053	0.0185
70	2.8236	0.0184
71	2.8418	0.0182
72	2.8599	0.0181
73	2.8767	0.0168
74	2.8933	0.0167
75	2.9098	0.0165
76	2.9262	0.0164
77	2.9425	0.0163
78	2.9587	0.0162
79	2.9747	0.0160
80	2.9906	0.0159
81	3.0064	0.0158
82	3.0221	0.0157
83	3.0377	0.0156
84	3.0532	0.0155
85	3.0686	0.0154
86	3.0838	0.0153
87	3.0990	0.0152
88	3.1140	0.0151
89	3.1290	0.0150
90	3.1439	0.0149
91	3.1587	0.0148
92	3.1733	0.0147
93	3.1879	0.0146
94	3.2024	0.0145
95	3.2168	0.0144
96	3.2312	0.0143
97	3.2454	0.0142
98	3.2596	0.0142
99	3.2736	0.0141
100	3.2876	0.0140
101	3.3015	0.0139
102	3.3154	0.0138
103	3.3291	0.0138
104	3.3428	0.0137
105	3.3564	0.0136
106	3.3699	0.0135
107	3.3834	0.0135
108	3.3967	0.0134
109	3.4101	0.0133
110	3.4233	0.0132
111	3.4365	0.0132
112	3.4496	0.0131
113	3.4626	0.0130
114	3.4756	0.0130
115	3.4885	0.0129
116	3.5013	0.0128
117	3.5141	0.0128
118	3.5268	0.0127
119	3.5394	0.0127
120	3.5520	0.0126
121	3.5646	0.0125
122	3.5770	0.0125
123	3.5894	0.0124
124	3.6018	0.0124
125	3.6141	0.0123
126	3.6263	0.0122
127	3.6385	0.0122
128	3.6506	0.0121
129	3.6627	0.0121

		AREAB1
130	3.6747	0.0120
131	3.6867	0.0120
132	3.6986	0.0119
133	3.7105	0.0119
134	3.7223	0.0118
135	3.7341	0.0118
136	3.7458	0.0117
137	3.7574	0.0117
138	3.7690	0.0116
139	3.7806	0.0116
140	3.7921	0.0115
141	3.8036	0.0115
142	3.8150	0.0114
143	3.8264	0.0114
144	3.8377	0.0113
145	3.8490	0.0113
146	3.8602	0.0112
147	3.8714	0.0112
148	3.8826	0.0112
149	3.8937	0.0111
150	3.9048	0.0111
151	3.9158	0.0110
152	3.9268	0.0110
153	3.9377	0.0109
154	3.9486	0.0109
155	3.9595	0.0109
156	3.9703	0.0108
157	3.9811	0.0108
158	3.9918	0.0107
159	4.0025	0.0107
160	4.0132	0.0107
161	4.0238	0.0106
162	4.0344	0.0106
163	4.0449	0.0105
164	4.0554	0.0105
165	4.0659	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0971	0.0104
169	4.1075	0.0103
170	4.1177	0.0103
171	4.1280	0.0103
172	4.1382	0.0102
173	4.1484	0.0102
174	4.1586	0.0102
175	4.1687	0.0101
176	4.1788	0.0101
177	4.1889	0.0101
178	4.1989	0.0100
179	4.2089	0.0100
180	4.2188	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2485	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2779	0.0098
187	4.2877	0.0097
188	4.2974	0.0097
189	4.3071	0.0097
190	4.3167	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3455	0.0096
194	4.3551	0.0095
195	4.3646	0.0095
196	4.3741	0.0095
197	4.3835	0.0095
198	4.3929	0.0094
199	4.4023	0.0094
200	4.4117	0.0094
201	4.4211	0.0093
202	4.4304	0.0093
203	4.4397	0.0093
204	4.4489	0.0093
205	4.4582	0.0092
206	4.4674	0.0092
207	4.4766	0.0092
208	4.4857	0.0092
209	4.4949	0.0091
210	4.5040	0.0091
211	4.5131	0.0091
212	4.5221	0.0091
213	4.5312	0.0090

		AREAB1
214	4.5402	0.0090
215	4.5492	0.0090
216	4.5581	0.0090
217	4.5671	0.0089
218	4.5760	0.0089
219	4.5849	0.0089
220	4.5938	0.0089
221	4.6026	0.0088
222	4.6114	0.0088
223	4.6203	0.0088
224	4.6290	0.0088
225	4.6378	0.0088
226	4.6465	0.0087
227	4.6552	0.0087
228	4.6639	0.0087
229	4.6726	0.0087
230	4.6812	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7156	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7496	0.0085
239	4.7581	0.0085
240	4.7665	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7917	0.0084
244	4.8001	0.0084
245	4.8084	0.0083
246	4.8167	0.0083
247	4.8250	0.0083
248	4.8333	0.0083
249	4.8416	0.0083
250	4.8498	0.0082
251	4.8580	0.0082
252	4.8662	0.0082
253	4.8744	0.0082
254	4.8826	0.0082
255	4.8907	0.0081
256	4.8989	0.0081
257	4.9070	0.0081
258	4.9151	0.0081
259	4.9231	0.0081
260	4.9312	0.0081
261	4.9392	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9633	0.0080
265	4.9712	0.0080
266	4.9792	0.0080
267	4.9871	0.0079
268	4.9950	0.0079
269	5.0029	0.0079
270	5.0108	0.0079
271	5.0187	0.0079
272	5.0265	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0577	0.0078
277	5.0655	0.0078
278	5.0733	0.0078
279	5.0810	0.0077
280	5.0887	0.0077
281	5.0964	0.0077
282	5.1041	0.0077
283	5.1118	0.0077
284	5.1194	0.0077
285	5.1271	0.0076
286	5.1347	0.0076
287	5.1423	0.0076
288	5.1499	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0010	0.0066
2	0.0076	0.0010	0.0066
3	0.0076	0.0010	0.0067
4	0.0077	0.0010	0.0067

	AREAB1		
5	0.0077	0.0010	0.0067
6	0.0077	0.0010	0.0067
7	0.0077	0.0010	0.0067
8	0.0078	0.0010	0.0068
9	0.0078	0.0010	0.0068
10	0.0078	0.0010	0.0068
11	0.0078	0.0010	0.0068
12	0.0078	0.0010	0.0068
13	0.0079	0.0010	0.0069
14	0.0079	0.0010	0.0069
15	0.0079	0.0010	0.0069
16	0.0080	0.0010	0.0069
17	0.0080	0.0010	0.0070
18	0.0080	0.0010	0.0070
19	0.0080	0.0010	0.0070
20	0.0081	0.0010	0.0070
21	0.0081	0.0010	0.0070
22	0.0081	0.0010	0.0071
23	0.0081	0.0011	0.0071
24	0.0082	0.0011	0.0071
25	0.0082	0.0011	0.0071
26	0.0082	0.0011	0.0072
27	0.0083	0.0011	0.0072
28	0.0083	0.0011	0.0072
29	0.0083	0.0011	0.0072
30	0.0083	0.0011	0.0073
31	0.0084	0.0011	0.0073
32	0.0084	0.0011	0.0073
33	0.0084	0.0011	0.0073
34	0.0085	0.0011	0.0074
35	0.0085	0.0011	0.0074
36	0.0085	0.0011	0.0074
37	0.0086	0.0011	0.0075
38	0.0086	0.0011	0.0075
39	0.0086	0.0011	0.0075
40	0.0086	0.0011	0.0075
41	0.0087	0.0011	0.0076
42	0.0087	0.0011	0.0076
43	0.0088	0.0011	0.0076
44	0.0088	0.0011	0.0076
45	0.0088	0.0011	0.0077
46	0.0088	0.0011	0.0077
47	0.0089	0.0011	0.0077
48	0.0089	0.0012	0.0078
49	0.0090	0.0012	0.0078
50	0.0090	0.0012	0.0078
51	0.0090	0.0012	0.0079
52	0.0091	0.0012	0.0079
53	0.0091	0.0012	0.0079
54	0.0091	0.0012	0.0080
55	0.0092	0.0012	0.0080
56	0.0092	0.0012	0.0080
57	0.0093	0.0012	0.0081
58	0.0093	0.0012	0.0081
59	0.0093	0.0012	0.0081
60	0.0094	0.0012	0.0082
61	0.0094	0.0012	0.0082
62	0.0095	0.0012	0.0082
63	0.0095	0.0012	0.0083
64	0.0095	0.0012	0.0083
65	0.0096	0.0012	0.0084
66	0.0096	0.0012	0.0084
67	0.0097	0.0012	0.0084
68	0.0097	0.0013	0.0085
69	0.0098	0.0013	0.0085
70	0.0098	0.0013	0.0085
71	0.0099	0.0013	0.0086
72	0.0099	0.0013	0.0086
73	0.0100	0.0013	0.0087
74	0.0100	0.0013	0.0087
75	0.0101	0.0013	0.0088
76	0.0101	0.0013	0.0088
77	0.0102	0.0013	0.0088
78	0.0102	0.0013	0.0089
79	0.0103	0.0013	0.0089
80	0.0103	0.0013	0.0090
81	0.0104	0.0013	0.0090
82	0.0104	0.0013	0.0091
83	0.0105	0.0014	0.0091
84	0.0105	0.0014	0.0092
85	0.0106	0.0014	0.0092
86	0.0106	0.0014	0.0093
87	0.0107	0.0014	0.0093
88	0.0107	0.0014	0.0094

89	0.0108	0.0014	0.0094
90	0.0109	0.0014	0.0095
91	0.0109	0.0014	0.0095
92	0.0110	0.0014	0.0096
93	0.0111	0.0014	0.0096
94	0.0111	0.0014	0.0097
95	0.0112	0.0014	0.0098
96	0.0112	0.0014	0.0098
97	0.0113	0.0015	0.0099
98	0.0114	0.0015	0.0099
99	0.0115	0.0015	0.0100
100	0.0115	0.0015	0.0100
101	0.0116	0.0015	0.0101
102	0.0117	0.0015	0.0102
103	0.0118	0.0015	0.0102
104	0.0118	0.0015	0.0103
105	0.0119	0.0015	0.0104
106	0.0120	0.0015	0.0104
107	0.0121	0.0016	0.0105
108	0.0121	0.0016	0.0106
109	0.0122	0.0016	0.0107
110	0.0123	0.0016	0.0107
111	0.0124	0.0016	0.0108
112	0.0125	0.0016	0.0109
113	0.0126	0.0016	0.0110
114	0.0127	0.0016	0.0110
115	0.0128	0.0016	0.0111
116	0.0128	0.0017	0.0112
117	0.0130	0.0017	0.0113
118	0.0130	0.0017	0.0114
119	0.0132	0.0017	0.0115
120	0.0132	0.0017	0.0115
121	0.0134	0.0017	0.0117
122	0.0135	0.0017	0.0117
123	0.0136	0.0018	0.0118
124	0.0137	0.0018	0.0119
125	0.0138	0.0018	0.0120
126	0.0139	0.0018	0.0121
127	0.0141	0.0018	0.0123
128	0.0142	0.0018	0.0123
129	0.0143	0.0018	0.0125
130	0.0144	0.0019	0.0126
131	0.0146	0.0019	0.0127
132	0.0147	0.0019	0.0128
133	0.0149	0.0019	0.0130
134	0.0150	0.0019	0.0130
135	0.0152	0.0020	0.0132
136	0.0153	0.0020	0.0133
137	0.0155	0.0020	0.0135
138	0.0156	0.0020	0.0136
139	0.0158	0.0020	0.0138
140	0.0159	0.0021	0.0139
141	0.0162	0.0021	0.0141
142	0.0163	0.0021	0.0142
143	0.0165	0.0021	0.0144
144	0.0167	0.0021	0.0145
145	0.0181	0.0023	0.0157
146	0.0182	0.0023	0.0159
147	0.0185	0.0024	0.0161
148	0.0186	0.0024	0.0162
149	0.0190	0.0024	0.0165
150	0.0191	0.0025	0.0166
151	0.0194	0.0025	0.0169
152	0.0196	0.0025	0.0171
153	0.0200	0.0026	0.0174
154	0.0202	0.0026	0.0176
155	0.0206	0.0027	0.0179
156	0.0208	0.0027	0.0181
157	0.0212	0.0027	0.0184
158	0.0214	0.0028	0.0186
159	0.0219	0.0028	0.0190
160	0.0221	0.0028	0.0192
161	0.0226	0.0029	0.0197
162	0.0229	0.0029	0.0199
163	0.0234	0.0030	0.0204
164	0.0237	0.0031	0.0207
165	0.0243	0.0031	0.0212
166	0.0247	0.0032	0.0215
167	0.0253	0.0033	0.0221
168	0.0257	0.0033	0.0224
169	0.0265	0.0034	0.0231
170	0.0269	0.0035	0.0235
171	0.0278	0.0036	0.0242
172	0.0283	0.0037	0.0247

173	0.0293	0.0038	0.0256
174	0.0299	0.0039	0.0260
175	0.0311	0.0040	0.0271
176	0.0318	0.0041	0.0277
177	0.0332	0.0043	0.0289
178	0.0340	0.0044	0.0296
179	0.0358	0.0046	0.0312
180	0.0368	0.0047	0.0321
181	0.0390	0.0050	0.0340
182	0.0403	0.0052	0.0351
183	0.0433	0.0056	0.0377
184	0.0450	0.0058	0.0392
185	0.0327	0.0042	0.0285
186	0.0349	0.0045	0.0304
187	0.0404	0.0052	0.0352
188	0.0441	0.0057	0.0384
189	0.0549	0.0071	0.0478
190	0.0632	0.0082	0.0550
191	0.0959	0.0082	0.0877
192	0.1392	0.0082	0.1310
193	0.6022	0.0082	0.5940
194	0.0755	0.0082	0.0673
195	0.0488	0.0063	0.0425
196	0.0374	0.0048	0.0326
197	0.0469	0.0061	0.0409
198	0.0417	0.0054	0.0363
199	0.0379	0.0049	0.0330
200	0.0349	0.0045	0.0304
201	0.0325	0.0042	0.0283
202	0.0305	0.0039	0.0266
203	0.0288	0.0037	0.0251
204	0.0274	0.0035	0.0238
205	0.0261	0.0034	0.0227
206	0.0250	0.0032	0.0218
207	0.0240	0.0031	0.0209
208	0.0231	0.0030	0.0201
209	0.0223	0.0029	0.0195
210	0.0216	0.0028	0.0188
211	0.0210	0.0027	0.0183
212	0.0204	0.0026	0.0177
213	0.0198	0.0026	0.0172
214	0.0193	0.0025	0.0168
215	0.0188	0.0024	0.0164
216	0.0184	0.0024	0.0160
217	0.0168	0.0022	0.0146
218	0.0164	0.0021	0.0143
219	0.0160	0.0021	0.0140
220	0.0157	0.0020	0.0137
221	0.0154	0.0020	0.0134
222	0.0151	0.0019	0.0131
223	0.0148	0.0019	0.0129
224	0.0145	0.0019	0.0126
225	0.0142	0.0018	0.0124
226	0.0140	0.0018	0.0122
227	0.0138	0.0018	0.0120
228	0.0135	0.0017	0.0118
229	0.0133	0.0017	0.0116
230	0.0131	0.0017	0.0114
231	0.0129	0.0017	0.0112
232	0.0127	0.0016	0.0111
233	0.0125	0.0016	0.0109
234	0.0124	0.0016	0.0108
235	0.0122	0.0016	0.0106
236	0.0120	0.0016	0.0105
237	0.0119	0.0015	0.0103
238	0.0117	0.0015	0.0102
239	0.0116	0.0015	0.0101
240	0.0114	0.0015	0.0099
241	0.0113	0.0015	0.0098
242	0.0112	0.0014	0.0097
243	0.0110	0.0014	0.0096
244	0.0109	0.0014	0.0095
245	0.0108	0.0014	0.0094
246	0.0107	0.0014	0.0093
247	0.0105	0.0014	0.0092
248	0.0104	0.0013	0.0091
249	0.0103	0.0013	0.0090
250	0.0102	0.0013	0.0089
251	0.0101	0.0013	0.0088
252	0.0100	0.0013	0.0087
253	0.0099	0.0013	0.0086
254	0.0098	0.0013	0.0086
255	0.0097	0.0013	0.0085
256	0.0097	0.0012	0.0084

257	0.0096	0.0012	0.0083
258	0.0095	0.0012	0.0083
259	0.0094	0.0012	0.0082
260	0.0093	0.0012	0.0081
261	0.0092	0.0012	0.0080
262	0.0092	0.0012	0.0080
263	0.0091	0.0012	0.0079
264	0.0090	0.0012	0.0079
265	0.0089	0.0012	0.0078
266	0.0089	0.0011	0.0077
267	0.0088	0.0011	0.0077
268	0.0087	0.0011	0.0076
269	0.0087	0.0011	0.0076
270	0.0086	0.0011	0.0075
271	0.0085	0.0011	0.0074
272	0.0085	0.0011	0.0074
273	0.0084	0.0011	0.0073
274	0.0084	0.0011	0.0073
275	0.0083	0.0011	0.0072
276	0.0082	0.0011	0.0072
277	0.0082	0.0011	0.0071
278	0.0081	0.0010	0.0071
279	0.0081	0.0010	0.0070
280	0.0080	0.0010	0.0070
281	0.0080	0.0010	0.0069
282	0.0079	0.0010	0.0069
283	0.0079	0.0010	0.0069
284	0.0078	0.0010	0.0068
285	0.0078	0.0010	0.0068
286	0.0077	0.0010	0.0067
287	0.0077	0.0010	0.0067
288	0.0076	0.0010	0.0066

Total soil rain loss = 0.58(In)
Total effective rainfall = 4.57(In)
Peak flow rate in flood hydrograph = 58.13(CFS)

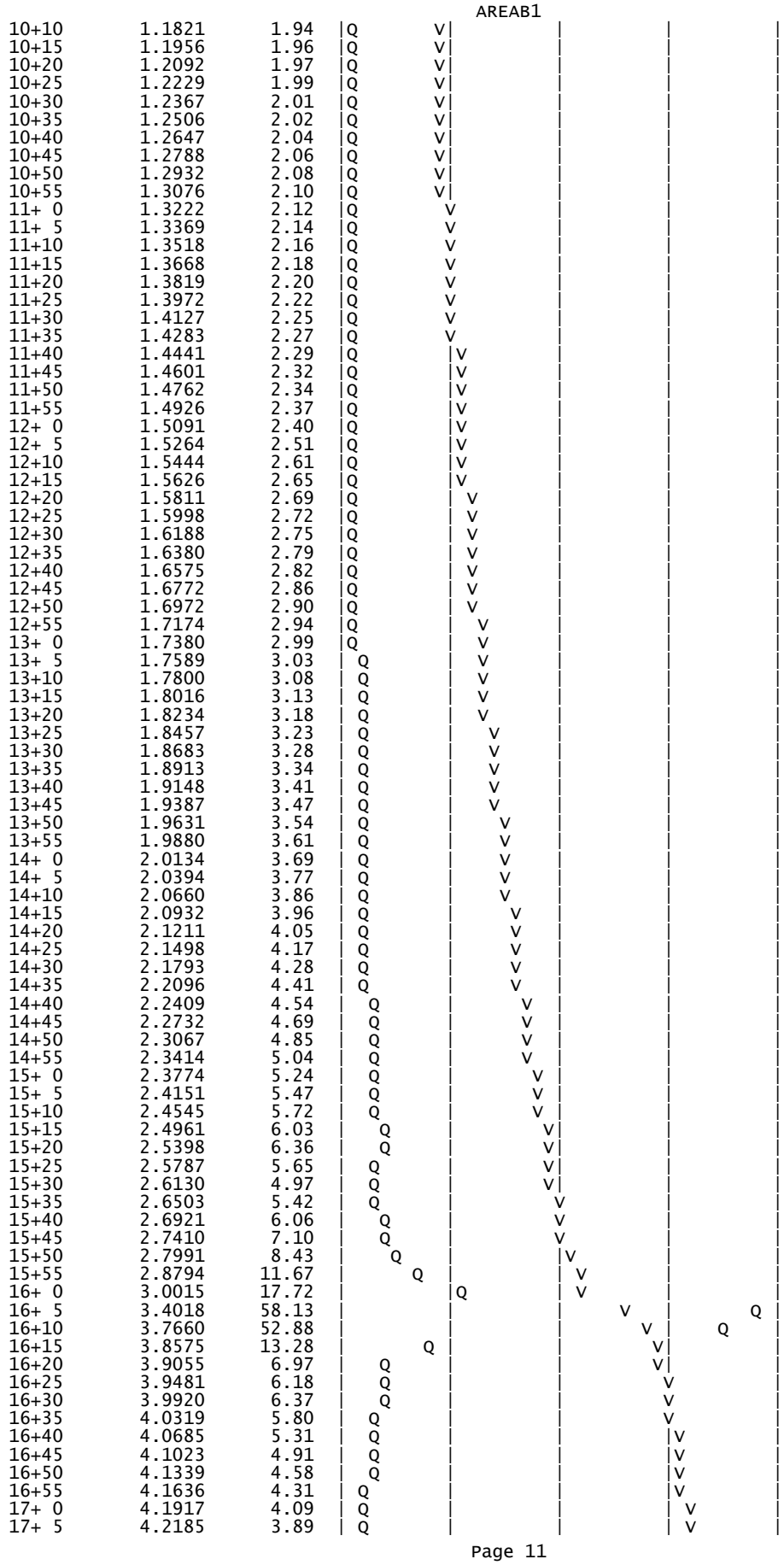
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0036	0.53	Q				
0+10	0.0108	1.04	Q				
0+15	0.0184	1.10	Q				
0+20	0.0260	1.11	Q				
0+25	0.0336	1.11	Q				
0+30	0.0413	1.11	Q				
0+35	0.0490	1.12	Q				
0+40	0.0567	1.12	Q				
0+45	0.0644	1.12	Q				
0+50	0.0722	1.13	Q				
0+55	0.0800	1.13	Q				
1+ 0	0.0878	1.13	Q				
1+ 5	0.0957	1.14	Q				
1+10	0.1035	1.14	Q				
1+15	0.1114	1.15	Q				
1+20	0.1193	1.15	Q				
1+25	0.1273	1.15	Q				
1+30	0.1352	1.16	QV				
1+35	0.1432	1.16	QV				
1+40	0.1512	1.16	QV				
1+45	0.1593	1.17	QV				
1+50	0.1674	1.17	QV				
1+55	0.1755	1.18	QV				
2+ 0	0.1836	1.18	QV				
2+ 5	0.1917	1.18	QV				
2+10	0.1999	1.19	QV				
2+15	0.2081	1.19	QV				
2+20	0.2164	1.20	QV				
2+25	0.2247	1.20	QV				
2+30	0.2329	1.20	QV				
2+35	0.2413	1.21	QV				
2+40	0.2496	1.21	QV				
2+45	0.2580	1.22	QV				
2+50	0.2664	1.22	Q V				
2+55	0.2749	1.23	Q V				
3+ 0	0.2834	1.23	Q V				
3+ 5	0.2919	1.24	Q V				

3+10	0.3004	1.24	Q V	|	|	|	|
3+15	0.3090	1.24	Q V	|	|	|	|
3+20	0.3176	1.25	Q V	|	|	|	|
3+25	0.3262	1.25	Q V	|	|	|	|
3+30	0.3349	1.26	Q V	|	|	|	|
3+35	0.3436	1.26	Q V	|	|	|	|
3+40	0.3523	1.27	Q V	|	|	|	|
3+45	0.3611	1.27	Q V	|	|	|	|
3+50	0.3699	1.28	Q V	|	|	|	|
3+55	0.3788	1.28	Q V	|	|	|	|
4+ 0	0.3876	1.29	Q V	|	|	|	|
4+ 5	0.3965	1.29	Q V	|	|	|	|
4+10	0.4055	1.30	Q V	|	|	|	|
4+15	0.4145	1.30	Q V	|	|	|	|
4+20	0.4235	1.31	Q V	|	|	|	|
4+25	0.4326	1.31	Q V	|	|	|	|
4+30	0.4416	1.32	Q V	|	|	|	|
4+35	0.4508	1.33	Q V	|	|	|	|
4+40	0.4599	1.33	Q V	|	|	|	|
4+45	0.4692	1.34	Q V	|	|	|	|
4+50	0.4784	1.34	Q V	|	|	|	|
4+55	0.4877	1.35	Q V	|	|	|	|
5+ 0	0.4970	1.35	Q V	|	|	|	|
5+ 5	0.5064	1.36	Q V	|	|	|	|
5+10	0.5158	1.37	Q V	|	|	|	|
5+15	0.5252	1.37	Q V	|	|	|	|
5+20	0.5347	1.38	Q V	|	|	|	|
5+25	0.5443	1.38	Q V	|	|	|	|
5+30	0.5538	1.39	Q V	|	|	|	|
5+35	0.5635	1.40	Q V	|	|	|	|
5+40	0.5731	1.40	Q V	|	|	|	|
5+45	0.5828	1.41	Q V	|	|	|	|
5+50	0.5926	1.42	Q V	|	|	|	|
5+55	0.6024	1.42	Q V	|	|	|	|
6+ 0	0.6122	1.43	Q V	|	|	|	|
6+ 5	0.6221	1.44	Q V	|	|	|	|
6+10	0.6321	1.44	Q V	|	|	|	|
6+15	0.6421	1.45	Q V	|	|	|	|
6+20	0.6521	1.46	Q V	|	|	|	|
6+25	0.6622	1.46	Q V	|	|	|	|
6+30	0.6723	1.47	Q V	|	|	|	|
6+35	0.6825	1.48	Q V	|	|	|	|
6+40	0.6927	1.49	Q V	|	|	|	|
6+45	0.7030	1.49	Q V	|	|	|	|
6+50	0.7134	1.50	|Q V	|	|	|	|
6+55	0.7238	1.51	|Q V	|	|	|	|
7+ 0	0.7342	1.52	|Q V	|	|	|	|
7+ 5	0.7447	1.53	|Q V	|	|	|	|
7+10	0.7553	1.53	|Q V	|	|	|	|
7+15	0.7659	1.54	|Q V	|	|	|	|
7+20	0.7766	1.55	|Q V	|	|	|	|
7+25	0.7874	1.56	|Q V	|	|	|	|
7+30	0.7982	1.57	|Q V	|	|	|	|
7+35	0.8090	1.58	|Q V	|	|	|	|
7+40	0.8199	1.59	|Q V	|	|	|	|
7+45	0.8309	1.59	|Q V	|	|	|	|
7+50	0.8420	1.60	|Q V	|	|	|	|
7+55	0.8531	1.61	|Q V	|	|	|	|
8+ 0	0.8643	1.62	|Q V	|	|	|	|
8+ 5	0.8755	1.63	|Q V	|	|	|	|
8+10	0.8868	1.64	|Q V	|	|	|	|
8+15	0.8982	1.65	|Q V	|	|	|	|
8+20	0.9096	1.66	|Q V	|	|	|	|
8+25	0.9212	1.67	|Q V	|	|	|	|
8+30	0.9328	1.68	|Q V	|	|	|	|
8+35	0.9444	1.69	|Q V	|	|	|	|
8+40	0.9562	1.70	|Q V	|	|	|	|
8+45	0.9680	1.72	|Q V	|	|	|	|
8+50	0.9799	1.73	|Q V	|	|	|	|
8+55	0.9919	1.74	|Q V	|	|	|	|
9+ 0	1.0039	1.75	|Q V	|	|	|	|
9+ 5	1.0161	1.76	|Q V	|	|	|	|
9+10	1.0283	1.77	|Q V	|	|	|	|
9+15	1.0406	1.79	|Q V	|	|	|	|
9+20	1.0530	1.80	|Q V	|	|	|	|
9+25	1.0655	1.81	|Q V	|	|	|	|
9+30	1.0780	1.83	|Q V	|	|	|	|
9+35	1.0907	1.84	|Q V	|	|	|	|
9+40	1.1035	1.85	|Q V	|	|	|	|
9+45	1.1163	1.87	|Q V	|	|	|	|
9+50	1.1293	1.88	|Q V	|	|	|	|
9+55	1.1423	1.90	|Q V	|	|	|	|
10+ 0	1.1555	1.91	|Q V	|	|	|	|
10+ 5	1.1687	1.93	|Q V	|	|	|	|



10+10	1.1821	1.94	
10+15	1.1956	1.96	
10+20	1.2092	1.97	
10+25	1.2229	1.99	
10+30	1.2367	2.01	
10+35	1.2506	2.02	
10+40	1.2647	2.04	
10+45	1.2788	2.06	
10+50	1.2932	2.08	
10+55	1.3076	2.10	
11+ 0	1.3222	2.12	
11+ 5	1.3369	2.14	
11+10	1.3518	2.16	
11+15	1.3668	2.18	
11+20	1.3819	2.20	
11+25	1.3972	2.22	
11+30	1.4127	2.25	
11+35	1.4283	2.27	
11+40	1.4441	2.29	
11+45	1.4601	2.32	
11+50	1.4762	2.34	
11+55	1.4926	2.37	
12+ 0	1.5091	2.40	
12+ 5	1.5264	2.51	
12+10	1.5444	2.61	
12+15	1.5626	2.65	
12+20	1.5811	2.69	
12+25	1.5998	2.72	
12+30	1.6188	2.75	
12+35	1.6380	2.79	
12+40	1.6575	2.82	
12+45	1.6772	2.86	
12+50	1.6972	2.90	
12+55	1.7174	2.94	
13+ 0	1.7380	2.99	
13+ 5	1.7589	3.03	
13+10	1.7800	3.08	
13+15	1.8016	3.13	
13+20	1.8234	3.18	
13+25	1.8457	3.23	
13+30	1.8683	3.28	
13+35	1.8913	3.34	
13+40	1.9148	3.41	
13+45	1.9387	3.47	
13+50	1.9631	3.54	
13+55	1.9880	3.61	
14+ 0	2.0134	3.69	
14+ 5	2.0394	3.77	
14+10	2.0660	3.86	
14+15	2.0932	3.96	
14+20	2.1211	4.05	
14+25	2.1498	4.17	
14+30	2.1793	4.28	
14+35	2.2096	4.41	
14+40	2.2409	4.54	
14+45	2.2732	4.69	
14+50	2.3067	4.85	
14+55	2.3414	5.04	
15+ 0	2.3774	5.24	
15+ 5	2.4151	5.47	
15+10	2.4545	5.72	
15+15	2.4961	6.03	
15+20	2.5398	6.36	
15+25	2.5787	5.65	
15+30	2.6130	4.97	
15+35	2.6503	5.42	
15+40	2.6921	6.06	
15+45	2.7410	7.10	
15+50	2.7991	8.43	
15+55	2.8794	11.67	
16+ 0	3.0015	17.72	
16+ 5	3.4018	58.13	
16+10	3.7660	52.88	
16+15	3.8575	13.28	
16+20	3.9055	6.97	
16+25	3.9481	6.18	
16+30	3.9920	6.37	
16+35	4.0319	5.80	
16+40	4.0685	5.31	
16+45	4.1023	4.91	
16+50	4.1339	4.58	
16+55	4.1636	4.31	
17+ 0	4.1917	4.09	
17+ 5	4.2185	3.89	

17+10	4.2440	3.71	Q			V
17+15	4.2685	3.56	Q			V
17+20	4.2921	3.42	Q			V
17+25	4.3148	3.30	Q			V
17+30	4.3368	3.19	Q			V
17+35	4.3581	3.09	Q			V
17+40	4.3787	3.00	Q			V
17+45	4.3988	2.91	Q			V
17+50	4.4183	2.83	Q			V
17+55	4.4373	2.76	Q			V
18+ 0	4.4559	2.69	Q			V
18+ 5	4.4735	2.55	Q			V
18+10	4.4901	2.41	Q			V
18+15	4.5063	2.35	Q			V
18+20	4.5221	2.30	Q			V
18+25	4.5376	2.25	Q			V
18+30	4.5528	2.21	Q			V
18+35	4.5677	2.16	Q			V
18+40	4.5823	2.12	Q			V
18+45	4.5967	2.08	Q			V
18+50	4.6108	2.05	Q			V
18+55	4.6246	2.01	Q			V
19+ 0	4.6382	1.98	Q			V
19+ 5	4.6516	1.94	Q			V
19+10	4.6648	1.91	Q			V
19+15	4.6778	1.88	Q			V
19+20	4.6906	1.86	Q			V
19+25	4.7032	1.83	Q			V
19+30	4.7156	1.80	Q			V
19+35	4.7278	1.78	Q			V
19+40	4.7399	1.75	Q			V
19+45	4.7518	1.73	Q			V
19+50	4.7636	1.71	Q			V
19+55	4.7752	1.69	Q			V
20+ 0	4.7867	1.67	Q			V
20+ 5	4.7980	1.64	Q			V
20+10	4.8092	1.63	Q			V
20+15	4.8202	1.61	Q			V
20+20	4.8312	1.59	Q			V
20+25	4.8420	1.57	Q			V
20+30	4.8527	1.55	Q			V
20+35	4.8633	1.54	Q			V
20+40	4.8737	1.52	Q			V
20+45	4.8841	1.50	Q			V
20+50	4.8943	1.49	Q			V
20+55	4.9045	1.47	Q			V
21+ 0	4.9145	1.46	Q			V
21+ 5	4.9245	1.45	Q			V
21+10	4.9344	1.43	Q			V
21+15	4.9441	1.42	Q			V
21+20	4.9538	1.40	Q			V
21+25	4.9634	1.39	Q			V
21+30	4.9729	1.38	Q			V
21+35	4.9823	1.37	Q			V
21+40	4.9916	1.36	Q			V
21+45	5.0009	1.34	Q			V
21+50	5.0101	1.33	Q			V
21+55	5.0192	1.32	Q			V
22+ 0	5.0282	1.31	Q			V
22+ 5	5.0372	1.30	Q			V
22+10	5.0460	1.29	Q			V
22+15	5.0549	1.28	Q			V
22+20	5.0636	1.27	Q			V
22+25	5.0723	1.26	Q			V
22+30	5.0809	1.25	Q			V
22+35	5.0894	1.24	Q			V
22+40	5.0979	1.23	Q			V
22+45	5.1064	1.22	Q			V
22+50	5.1147	1.21	Q			V
22+55	5.1230	1.21	Q			V
23+ 0	5.1313	1.20	Q			V
23+ 5	5.1395	1.19	Q			V
23+10	5.1476	1.18	Q			V
23+15	5.1557	1.17	Q			V
23+20	5.1637	1.17	Q			V
23+25	5.1717	1.16	Q			V
23+30	5.1796	1.15	Q			V
23+35	5.1875	1.14	Q			V
23+40	5.1953	1.14	Q			V
23+45	5.2031	1.13	Q			V
23+50	5.2108	1.12	Q			V
23+55	5.2185	1.11	Q			V
24+ 0	5.2261	1.11	Q			V

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

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Study date 06/19/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA B.2
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

	Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10	12.45	1	0.78
Rainfall data for year 2	12.45	6	1.20
Rainfall data for year 2	12.45	24	2.18
Rainfall data for year 100	12.45	1	1.27
Rainfall data for year 100	12.45	6	2.86
Rainfall data for year 100	12.45	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
71.6	88.3	12.45	1.000	0.224	0.600	0.134

Area-averaged adjusted loss rate Fm (In/Hr) = 0.134

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
7.47	0.600	71.6	88.3	1.33	0.746
4.98	0.400	98.0	98.0	0.20	0.954

Area-averaged catchment yield fraction, Y = 0.829
Area-averaged low loss fraction, Yb = 0.171

++
Watercourse length = 1380.00(Ft.)
Length from concentration point to centroid = 320.00(Ft.)
Elevation difference along watercourse = 108.60(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 12.45(Ac.)
Catchment Lag time = 0.024 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 351.6722
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.134(In/Hr)
Average low loss rate fraction (Yb) = 0.171 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 12.45(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.602(In)
30-minute factor = 0.999 Adjusted rainfall = 1.031(In)
1-hour factor = 0.999 Adjusted rainfall = 1.269(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 150.57 (CFS))	
1	63.181	95.131
2	100.000	55.437

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6023	0.6023
2	0.7415	0.1392
3	0.8374	0.0959
4	0.9129	0.0755
5	0.9761	0.0632
6	1.0310	0.0549
7	1.0798	0.0488
8	1.1239	0.0441
9	1.1643	0.0404
10	1.2017	0.0374
11	1.2366	0.0349
12	1.2693	0.0327
13	1.3162	0.0469
14	1.3612	0.0450
15	1.4044	0.0433
16	1.4462	0.0417
17	1.4865	0.0403
18	1.5255	0.0390
19	1.5634	0.0379
20	1.6002	0.0368
21	1.6360	0.0358
22	1.6709	0.0349
23	1.7049	0.0340
24	1.7381	0.0332
25	1.7706	0.0325
26	1.8024	0.0318
27	1.8335	0.0311
28	1.8640	0.0305
29	1.8939	0.0299
30	1.9232	0.0293
31	1.9520	0.0288
32	1.9804	0.0283
33	2.0082	0.0278
34	2.0356	0.0274
35	2.0625	0.0269
36	2.0890	0.0265
37	2.1151	0.0261
38	2.1408	0.0257
39	2.1662	0.0253
40	2.1912	0.0250
41	2.2158	0.0247
42	2.2402	0.0243
43	2.2642	0.0240
44	2.2879	0.0237
45	2.3113	0.0234
46	2.3344	0.0231
47	2.3573	0.0229

		AREAB2
48	2.3799	0.0226
49	2.4022	0.0223
50	2.4243	0.0221
51	2.4462	0.0219
52	2.4678	0.0216
53	2.4892	0.0214
54	2.5104	0.0212
55	2.5313	0.0210
56	2.5521	0.0208
57	2.5726	0.0206
58	2.5930	0.0204
59	2.6131	0.0202
60	2.6331	0.0200
61	2.6529	0.0198
62	2.6725	0.0196
63	2.6920	0.0194
64	2.7113	0.0193
65	2.7304	0.0191
66	2.7493	0.0190
67	2.7681	0.0188
68	2.7868	0.0186
69	2.8053	0.0185
70	2.8236	0.0183
71	2.8418	0.0182
72	2.8599	0.0181
73	2.8767	0.0168
74	2.8933	0.0167
75	2.9099	0.0165
76	2.9263	0.0164
77	2.9425	0.0163
78	2.9587	0.0162
79	2.9747	0.0160
80	2.9906	0.0159
81	3.0064	0.0158
82	3.0221	0.0157
83	3.0377	0.0156
84	3.0532	0.0155
85	3.0686	0.0154
86	3.0838	0.0153
87	3.0990	0.0152
88	3.1141	0.0151
89	3.1290	0.0150
90	3.1439	0.0149
91	3.1587	0.0148
92	3.1733	0.0147
93	3.1879	0.0146
94	3.2024	0.0145
95	3.2168	0.0144
96	3.2312	0.0143
97	3.2454	0.0142
98	3.2596	0.0142
99	3.2736	0.0141
100	3.2876	0.0140
101	3.3015	0.0139
102	3.3154	0.0138
103	3.3291	0.0138
104	3.3428	0.0137
105	3.3564	0.0136
106	3.3699	0.0135
107	3.3834	0.0135
108	3.3968	0.0134
109	3.4101	0.0133
110	3.4233	0.0132
111	3.4365	0.0132
112	3.4496	0.0131
113	3.4626	0.0130
114	3.4756	0.0130
115	3.4885	0.0129
116	3.5013	0.0128
117	3.5141	0.0128
118	3.5268	0.0127
119	3.5395	0.0127
120	3.5520	0.0126
121	3.5646	0.0125
122	3.5770	0.0125
123	3.5895	0.0124
124	3.6018	0.0124
125	3.6141	0.0123
126	3.6263	0.0122
127	3.6385	0.0122
128	3.6507	0.0121
129	3.6627	0.0121
130	3.6748	0.0120
131	3.6867	0.0120

		AREAB2
132	3.6986	0.0119
133	3.7105	0.0119
134	3.7223	0.0118
135	3.7341	0.0118
136	3.7458	0.0117
137	3.7574	0.0117
138	3.7691	0.0116
139	3.7806	0.0116
140	3.7921	0.0115
141	3.8036	0.0115
142	3.8150	0.0114
143	3.8264	0.0114
144	3.8377	0.0113
145	3.8490	0.0113
146	3.8603	0.0112
147	3.8715	0.0112
148	3.8826	0.0112
149	3.8937	0.0111
150	3.9048	0.0111
151	3.9158	0.0110
152	3.9268	0.0110
153	3.9377	0.0109
154	3.9486	0.0109
155	3.9595	0.0109
156	3.9703	0.0108
157	3.9811	0.0108
158	3.9918	0.0107
159	4.0025	0.0107
160	4.0132	0.0107
161	4.0238	0.0106
162	4.0344	0.0106
163	4.0449	0.0105
164	4.0555	0.0105
165	4.0659	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0971	0.0104
169	4.1075	0.0103
170	4.1178	0.0103
171	4.1280	0.0103
172	4.1382	0.0102
173	4.1484	0.0102
174	4.1586	0.0102
175	4.1687	0.0101
176	4.1788	0.0101
177	4.1889	0.0101
178	4.1989	0.0100
179	4.2089	0.0100
180	4.2188	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2485	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2779	0.0098
187	4.2877	0.0097
188	4.2974	0.0097
189	4.3071	0.0097
190	4.3167	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3455	0.0096
194	4.3551	0.0095
195	4.3646	0.0095
196	4.3741	0.0095
197	4.3835	0.0095
198	4.3929	0.0094
199	4.4023	0.0094
200	4.4117	0.0094
201	4.4211	0.0093
202	4.4304	0.0093
203	4.4397	0.0093
204	4.4489	0.0093
205	4.4582	0.0092
206	4.4674	0.0092
207	4.4766	0.0092
208	4.4858	0.0092
209	4.4949	0.0091
210	4.5040	0.0091
211	4.5131	0.0091
212	4.5222	0.0091
213	4.5312	0.0090
214	4.5402	0.0090
215	4.5492	0.0090

		AREAB2
216	4.5582	0.0090
217	4.5671	0.0089
218	4.5760	0.0089
219	4.5849	0.0089
220	4.5938	0.0089
221	4.6026	0.0088
222	4.6115	0.0088
223	4.6203	0.0088
224	4.6290	0.0088
225	4.6378	0.0088
226	4.6465	0.0087
227	4.6552	0.0087
228	4.6639	0.0087
229	4.6726	0.0087
230	4.6812	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7156	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7497	0.0085
239	4.7581	0.0085
240	4.7666	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7917	0.0084
244	4.8001	0.0084
245	4.8084	0.0083
246	4.8168	0.0083
247	4.8251	0.0083
248	4.8333	0.0083
249	4.8416	0.0083
250	4.8498	0.0082
251	4.8581	0.0082
252	4.8663	0.0082
253	4.8744	0.0082
254	4.8826	0.0082
255	4.8908	0.0081
256	4.8989	0.0081
257	4.9070	0.0081
258	4.9151	0.0081
259	4.9232	0.0081
260	4.9312	0.0081
261	4.9392	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9633	0.0080
265	4.9712	0.0080
266	4.9792	0.0080
267	4.9871	0.0079
268	4.9950	0.0079
269	5.0029	0.0079
270	5.0108	0.0079
271	5.0187	0.0079
272	5.0265	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0578	0.0078
277	5.0655	0.0078
278	5.0733	0.0078
279	5.0810	0.0077
280	5.0887	0.0077
281	5.0964	0.0077
282	5.1041	0.0077
283	5.1118	0.0077
284	5.1194	0.0077
285	5.1271	0.0076
286	5.1347	0.0076
287	5.1423	0.0076
288	5.1499	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0013	0.0063
2	0.0076	0.0013	0.0063
3	0.0076	0.0013	0.0063
4	0.0077	0.0013	0.0063
5	0.0077	0.0013	0.0064
6	0.0077	0.0013	0.0064

		AREAB2	
7	0.0077	0.0013	0.0064
8	0.0078	0.0013	0.0064
9	0.0078	0.0013	0.0065
10	0.0078	0.0013	0.0065
11	0.0078	0.0013	0.0065
12	0.0078	0.0013	0.0065
13	0.0079	0.0013	0.0065
14	0.0079	0.0014	0.0065
15	0.0079	0.0014	0.0066
16	0.0080	0.0014	0.0066
17	0.0080	0.0014	0.0066
18	0.0080	0.0014	0.0066
19	0.0080	0.0014	0.0067
20	0.0081	0.0014	0.0067
21	0.0081	0.0014	0.0067
22	0.0081	0.0014	0.0067
23	0.0081	0.0014	0.0068
24	0.0082	0.0014	0.0068
25	0.0082	0.0014	0.0068
26	0.0082	0.0014	0.0068
27	0.0083	0.0014	0.0068
28	0.0083	0.0014	0.0069
29	0.0083	0.0014	0.0069
30	0.0083	0.0014	0.0069
31	0.0084	0.0014	0.0069
32	0.0084	0.0014	0.0070
33	0.0084	0.0014	0.0070
34	0.0085	0.0014	0.0070
35	0.0085	0.0015	0.0070
36	0.0085	0.0015	0.0071
37	0.0086	0.0015	0.0071
38	0.0086	0.0015	0.0071
39	0.0086	0.0015	0.0072
40	0.0086	0.0015	0.0072
41	0.0087	0.0015	0.0072
42	0.0087	0.0015	0.0072
43	0.0088	0.0015	0.0073
44	0.0088	0.0015	0.0073
45	0.0088	0.0015	0.0073
46	0.0088	0.0015	0.0073
47	0.0089	0.0015	0.0074
48	0.0089	0.0015	0.0074
49	0.0090	0.0015	0.0074
50	0.0090	0.0015	0.0075
51	0.0090	0.0015	0.0075
52	0.0091	0.0015	0.0075
53	0.0091	0.0016	0.0076
54	0.0091	0.0016	0.0076
55	0.0092	0.0016	0.0076
56	0.0092	0.0016	0.0076
57	0.0093	0.0016	0.0077
58	0.0093	0.0016	0.0077
59	0.0093	0.0016	0.0077
60	0.0094	0.0016	0.0078
61	0.0094	0.0016	0.0078
62	0.0095	0.0016	0.0078
63	0.0095	0.0016	0.0079
64	0.0095	0.0016	0.0079
65	0.0096	0.0016	0.0080
66	0.0096	0.0016	0.0080
67	0.0097	0.0017	0.0080
68	0.0097	0.0017	0.0081
69	0.0098	0.0017	0.0081
70	0.0098	0.0017	0.0081
71	0.0099	0.0017	0.0082
72	0.0099	0.0017	0.0082
73	0.0100	0.0017	0.0083
74	0.0100	0.0017	0.0083
75	0.0101	0.0017	0.0083
76	0.0101	0.0017	0.0084
77	0.0102	0.0017	0.0084
78	0.0102	0.0017	0.0084
79	0.0103	0.0018	0.0085
80	0.0103	0.0018	0.0085
81	0.0104	0.0018	0.0086
82	0.0104	0.0018	0.0086
83	0.0105	0.0018	0.0087
84	0.0105	0.0018	0.0087
85	0.0106	0.0018	0.0088
86	0.0106	0.0018	0.0088
87	0.0107	0.0018	0.0089
88	0.0107	0.0018	0.0089
89	0.0108	0.0018	0.0090
90	0.0109	0.0019	0.0090

		AREAB2	
91	0.0109	0.0019	0.0091
92	0.0110	0.0019	0.0091
93	0.0111	0.0019	0.0092
94	0.0111	0.0019	0.0092
95	0.0112	0.0019	0.0093
96	0.0112	0.0019	0.0093
97	0.0113	0.0019	0.0094
98	0.0114	0.0019	0.0094
99	0.0115	0.0020	0.0095
100	0.0115	0.0020	0.0095
101	0.0116	0.0020	0.0096
102	0.0117	0.0020	0.0097
103	0.0118	0.0020	0.0098
104	0.0118	0.0020	0.0098
105	0.0119	0.0020	0.0099
106	0.0120	0.0020	0.0099
107	0.0121	0.0021	0.0100
108	0.0121	0.0021	0.0101
109	0.0122	0.0021	0.0101
110	0.0123	0.0021	0.0102
111	0.0124	0.0021	0.0103
112	0.0125	0.0021	0.0103
113	0.0126	0.0022	0.0104
114	0.0127	0.0022	0.0105
115	0.0128	0.0022	0.0106
116	0.0128	0.0022	0.0106
117	0.0130	0.0022	0.0108
118	0.0130	0.0022	0.0108
119	0.0132	0.0023	0.0109
120	0.0132	0.0023	0.0110
121	0.0134	0.0023	0.0111
122	0.0135	0.0023	0.0112
123	0.0136	0.0023	0.0113
124	0.0137	0.0023	0.0113
125	0.0138	0.0024	0.0115
126	0.0139	0.0024	0.0115
127	0.0141	0.0024	0.0117
128	0.0142	0.0024	0.0117
129	0.0143	0.0024	0.0119
130	0.0144	0.0025	0.0119
131	0.0146	0.0025	0.0121
132	0.0147	0.0025	0.0122
133	0.0149	0.0025	0.0123
134	0.0150	0.0026	0.0124
135	0.0152	0.0026	0.0126
136	0.0153	0.0026	0.0127
137	0.0155	0.0026	0.0128
138	0.0156	0.0027	0.0129
139	0.0158	0.0027	0.0131
140	0.0159	0.0027	0.0132
141	0.0162	0.0028	0.0134
142	0.0163	0.0028	0.0135
143	0.0165	0.0028	0.0137
144	0.0167	0.0028	0.0138
145	0.0181	0.0031	0.0150
146	0.0182	0.0031	0.0151
147	0.0185	0.0032	0.0153
148	0.0186	0.0032	0.0155
149	0.0190	0.0032	0.0157
150	0.0191	0.0033	0.0158
151	0.0194	0.0033	0.0161
152	0.0196	0.0034	0.0163
153	0.0200	0.0034	0.0166
154	0.0202	0.0034	0.0167
155	0.0206	0.0035	0.0170
156	0.0208	0.0035	0.0172
157	0.0212	0.0036	0.0176
158	0.0214	0.0037	0.0177
159	0.0219	0.0037	0.0181
160	0.0221	0.0038	0.0183
161	0.0226	0.0039	0.0187
162	0.0229	0.0039	0.0190
163	0.0234	0.0040	0.0194
164	0.0237	0.0041	0.0197
165	0.0243	0.0042	0.0202
166	0.0247	0.0042	0.0204
167	0.0253	0.0043	0.0210
168	0.0257	0.0044	0.0213
169	0.0265	0.0045	0.0220
170	0.0269	0.0046	0.0223
171	0.0278	0.0048	0.0231
172	0.0283	0.0048	0.0235
173	0.0293	0.0050	0.0243
174	0.0299	0.0051	0.0248

		AREAB2	
175	0.0311	0.0053	0.0258
176	0.0318	0.0054	0.0263
177	0.0332	0.0057	0.0275
178	0.0340	0.0058	0.0282
179	0.0358	0.0061	0.0297
180	0.0368	0.0063	0.0305
181	0.0390	0.0067	0.0324
182	0.0403	0.0069	0.0334
183	0.0433	0.0074	0.0359
184	0.0450	0.0077	0.0373
185	0.0327	0.0056	0.0271
186	0.0349	0.0060	0.0289
187	0.0404	0.0069	0.0335
188	0.0441	0.0075	0.0366
189	0.0549	0.0094	0.0455
190	0.0632	0.0108	0.0524
191	0.0959	0.0112	0.0847
192	0.1392	0.0112	0.1280
193	0.6023	0.0112	0.5911
194	0.0755	0.0112	0.0643
195	0.0488	0.0083	0.0405
196	0.0374	0.0064	0.0310
197	0.0469	0.0080	0.0389
198	0.0417	0.0071	0.0346
199	0.0379	0.0065	0.0314
200	0.0349	0.0060	0.0289
201	0.0325	0.0056	0.0269
202	0.0305	0.0052	0.0253
203	0.0288	0.0049	0.0239
204	0.0274	0.0047	0.0227
205	0.0261	0.0045	0.0216
206	0.0250	0.0043	0.0207
207	0.0240	0.0041	0.0199
208	0.0231	0.0040	0.0192
209	0.0223	0.0038	0.0185
210	0.0216	0.0037	0.0179
211	0.0210	0.0036	0.0174
212	0.0204	0.0035	0.0169
213	0.0198	0.0034	0.0164
214	0.0193	0.0033	0.0160
215	0.0188	0.0032	0.0156
216	0.0183	0.0031	0.0152
217	0.0168	0.0029	0.0139
218	0.0164	0.0028	0.0136
219	0.0160	0.0027	0.0133
220	0.0157	0.0027	0.0130
221	0.0154	0.0026	0.0127
222	0.0151	0.0026	0.0125
223	0.0148	0.0025	0.0122
224	0.0145	0.0025	0.0120
225	0.0142	0.0024	0.0118
226	0.0140	0.0024	0.0116
227	0.0138	0.0024	0.0114
228	0.0135	0.0023	0.0112
229	0.0133	0.0023	0.0110
230	0.0131	0.0022	0.0109
231	0.0129	0.0022	0.0107
232	0.0127	0.0022	0.0105
233	0.0125	0.0021	0.0104
234	0.0124	0.0021	0.0102
235	0.0122	0.0021	0.0101
236	0.0120	0.0021	0.0100
237	0.0119	0.0020	0.0098
238	0.0117	0.0020	0.0097
239	0.0116	0.0020	0.0096
240	0.0114	0.0020	0.0095
241	0.0113	0.0019	0.0094
242	0.0112	0.0019	0.0092
243	0.0110	0.0019	0.0091
244	0.0109	0.0019	0.0090
245	0.0108	0.0018	0.0089
246	0.0107	0.0018	0.0088
247	0.0105	0.0018	0.0087
248	0.0104	0.0018	0.0087
249	0.0103	0.0018	0.0086
250	0.0102	0.0017	0.0085
251	0.0101	0.0017	0.0084
252	0.0100	0.0017	0.0083
253	0.0099	0.0017	0.0082
254	0.0098	0.0017	0.0082
255	0.0097	0.0017	0.0081
256	0.0097	0.0017	0.0080
257	0.0096	0.0016	0.0079
258	0.0095	0.0016	0.0079

259	0.0094	0.0016	0.0078
260	0.0093	0.0016	0.0077
261	0.0092	0.0016	0.0077
262	0.0092	0.0016	0.0076
263	0.0091	0.0016	0.0075
264	0.0090	0.0015	0.0075
265	0.0089	0.0015	0.0074
266	0.0089	0.0015	0.0074
267	0.0088	0.0015	0.0073
268	0.0087	0.0015	0.0072
269	0.0087	0.0015	0.0072
270	0.0086	0.0015	0.0071
271	0.0085	0.0015	0.0071
272	0.0085	0.0014	0.0070
273	0.0084	0.0014	0.0070
274	0.0084	0.0014	0.0069
275	0.0083	0.0014	0.0069
276	0.0082	0.0014	0.0068
277	0.0082	0.0014	0.0068
278	0.0081	0.0014	0.0067
279	0.0081	0.0014	0.0067
280	0.0080	0.0014	0.0066
281	0.0080	0.0014	0.0066
282	0.0079	0.0014	0.0066
283	0.0079	0.0013	0.0065
284	0.0078	0.0013	0.0065
285	0.0078	0.0013	0.0064
286	0.0077	0.0013	0.0064
287	0.0077	0.0013	0.0064
288	0.0076	0.0013	0.0063

Total soil rain loss = 0.77(In)
Total effective rainfall = 4.38(In)
Peak flow rate in flood hydrograph = 63.33(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	17.5	35.0	52.5	70.0
0+ 5	0.0041	0.60	Q				
0+10	0.0107	0.95	Q				
0+15	0.0172	0.95	Q				
0+20	0.0238	0.95	Q				
0+25	0.0304	0.96	Q				
0+30	0.0370	0.96	Q				
0+35	0.0437	0.96	Q				
0+40	0.0503	0.97	Q				
0+45	0.0570	0.97	Q				
0+50	0.0637	0.97	Q				
0+55	0.0704	0.98	Q				
1+ 0	0.0772	0.98	Q				
1+ 5	0.0839	0.98	Q				
1+10	0.0907	0.99	Q				
1+15	0.0975	0.99	Q				
1+20	0.1044	0.99	Q				
1+25	0.1112	1.00	Q				
1+30	0.1181	1.00	QV				
1+35	0.1250	1.00	QV				
1+40	0.1319	1.00	QV				
1+45	0.1388	1.01	QV				
1+50	0.1458	1.01	QV				
1+55	0.1528	1.02	QV				
2+ 0	0.1598	1.02	QV				
2+ 5	0.1669	1.02	QV				
2+10	0.1739	1.03	QV				
2+15	0.1810	1.03	QV				
2+20	0.1881	1.03	QV				
2+25	0.1953	1.04	QV				
2+30	0.2024	1.04	QV				
2+35	0.2096	1.04	QV				
2+40	0.2168	1.05	QV				
2+45	0.2241	1.05	QV				
2+50	0.2313	1.05	Q V				
2+55	0.2386	1.06	Q V				
3+ 0	0.2459	1.06	Q V				
3+ 5	0.2533	1.07	Q V				
3+10	0.2607	1.07	Q V				
3+15	0.2681	1.07	Q V				

3+20	0.2755	1.08	Q V	|	|	|	|
3+25	0.2829	1.08	Q V	|	|	|	|
3+30	0.2904	1.09	Q V	|	|	|	|
3+35	0.2979	1.09	Q V	|	|	|	|
3+40	0.3055	1.09	Q V	|	|	|	|
3+45	0.3130	1.10	Q V	|	|	|	|
3+50	0.3206	1.10	Q V	|	|	|	|
3+55	0.3283	1.11	Q V	|	|	|	|
4+ 0	0.3359	1.11	Q V	|	|	|	|
4+ 5	0.3436	1.12	Q V	|	|	|	|
4+10	0.3513	1.12	Q V	|	|	|	|
4+15	0.3591	1.13	Q V	|	|	|	|
4+20	0.3669	1.13	Q V	|	|	|	|
4+25	0.3747	1.14	Q V	|	|	|	|
4+30	0.3826	1.14	Q V	|	|	|	|
4+35	0.3904	1.14	Q V	|	|	|	|
4+40	0.3983	1.15	Q V	|	|	|	|
4+45	0.4063	1.15	Q V	|	|	|	|
4+50	0.4143	1.16	Q V	|	|	|	|
4+55	0.4223	1.16	Q V	|	|	|	|
5+ 0	0.4303	1.17	Q V	|	|	|	|
5+ 5	0.4384	1.17	Q V	|	|	|	|
5+10	0.4466	1.18	Q V	|	|	|	|
5+15	0.4547	1.18	Q V	|	|	|	|
5+20	0.4629	1.19	Q V	|	|	|	|
5+25	0.4711	1.20	Q V	|	|	|	|
5+30	0.4794	1.20	Q V	|	|	|	|
5+35	0.4877	1.21	Q V	|	|	|	|
5+40	0.4960	1.21	Q V	|	|	|	|
5+45	0.5044	1.22	Q V	|	|	|	|
5+50	0.5129	1.22	Q V	|	|	|	|
5+55	0.5213	1.23	Q V	|	|	|	|
6+ 0	0.5298	1.23	Q V	|	|	|	|
6+ 5	0.5384	1.24	Q V	|	|	|	|
6+10	0.5469	1.25	Q V	|	|	|	|
6+15	0.5556	1.25	Q V	|	|	|	|
6+20	0.5642	1.26	Q V	|	|	|	|
6+25	0.5729	1.26	Q V	|	|	|	|
6+30	0.5817	1.27	Q V	|	|	|	|
6+35	0.5905	1.28	Q V	|	|	|	|
6+40	0.5993	1.28	Q V	|	|	|	|
6+45	0.6082	1.29	Q V	|	|	|	|
6+50	0.6171	1.30	Q V	|	|	|	|
6+55	0.6261	1.30	Q V	|	|	|	|
7+ 0	0.6351	1.31	Q V	|	|	|	|
7+ 5	0.6442	1.32	Q V	|	|	|	|
7+10	0.6533	1.32	Q V	|	|	|	|
7+15	0.6625	1.33	Q V	|	|	|	|
7+20	0.6717	1.34	Q V	|	|	|	|
7+25	0.6810	1.35	Q V	|	|	|	|
7+30	0.6903	1.35	Q V	|	|	|	|
7+35	0.6997	1.36	Q V	|	|	|	|
7+40	0.7091	1.37	Q V	|	|	|	|
7+45	0.7186	1.38	Q V	|	|	|	|
7+50	0.7282	1.38	Q V	|	|	|	|
7+55	0.7378	1.39	Q V	|	|	|	|
8+ 0	0.7474	1.40	Q V	|	|	|	|
8+ 5	0.7571	1.41	Q V	|	|	|	|
8+10	0.7669	1.42	Q V	|	|	|	|
8+15	0.7767	1.43	Q V	|	|	|	|
8+20	0.7866	1.44	Q V	|	|	|	|
8+25	0.7966	1.45	Q V	|	|	|	|
8+30	0.8066	1.45	Q V	|	|	|	|
8+35	0.8167	1.46	Q V	|	|	|	|
8+40	0.8268	1.47	Q V	|	|	|	|
8+45	0.8370	1.48	Q V	|	|	|	|
8+50	0.8473	1.49	Q V	|	|	|	|
8+55	0.8576	1.50	Q V	|	|	|	|
9+ 0	0.8680	1.51	Q V	|	|	|	|
9+ 5	0.8785	1.52	Q V	|	|	|	|
9+10	0.8891	1.53	Q V	|	|	|	|
9+15	0.8997	1.54	Q V	|	|	|	|
9+20	0.9104	1.55	Q V	|	|	|	|
9+25	0.9212	1.57	Q V	|	|	|	|
9+30	0.9320	1.58	Q V	|	|	|	|
9+35	0.9430	1.59	Q V	|	|	|	|
9+40	0.9540	1.60	Q V	|	|	|	|
9+45	0.9651	1.61	Q V	|	|	|	|
9+50	0.9763	1.62	Q V	|	|	|	|
9+55	0.9876	1.64	Q V	|	|	|	|
10+ 0	0.9989	1.65	Q V	|	|	|	|
10+ 5	1.0104	1.66	Q V	|	|	|	|
10+10	1.0219	1.68	Q V	|	|	|	|
10+15	1.0336	1.69	Q V	|	|	|	|

10+20	1.0453	1.70	Q V | | |
10+25	1.0572	1.72	Q V | | |
10+30	1.0691	1.73	Q V | | |
10+35	1.0811	1.75	Q V | | |
10+40	1.0933	1.76	|Q V | | |
10+45	1.1055	1.78	|Q V | | |
10+50	1.1179	1.79	|Q V | | |
10+55	1.1304	1.81	|Q V | | |
11+ 0	1.1430	1.83	|Q V | | |
11+ 5	1.1557	1.85	|Q V | | |
11+10	1.1685	1.86	|Q V | | |
11+15	1.1815	1.88	|Q V | | |
11+20	1.1946	1.90	|Q V | | |
11+25	1.2078	1.92	|Q V | | |
11+30	1.2212	1.94	|Q V | | |
11+35	1.2347	1.96	|Q V | | |
11+40	1.2484	1.98	|Q V | | |
11+45	1.2622	2.01	|Q |V | | |
11+50	1.2761	2.03	|Q |V | | |
11+55	1.2903	2.05	|Q |V | | |
12+ 0	1.3045	2.07	|Q |V | | |
12+ 5	1.3196	2.19	|Q |V | | |
12+10	1.3352	2.27	|Q |V | | |
12+15	1.3510	2.30	|Q |V | | |
12+20	1.3670	2.32	|Q | V | | |
12+25	1.3832	2.35	|Q | V | | |
12+30	1.3996	2.38	|Q | V | | |
12+35	1.4162	2.41	|Q | V | | |
12+40	1.4330	2.44	|Q | V | | |
12+45	1.4501	2.48	|Q | V | | |
12+50	1.4674	2.51	|Q | V | | |
12+55	1.4849	2.55	|Q | V | | |
13+ 0	1.5027	2.58	|Q | V | | |
13+ 5	1.5207	2.62	|Q | V | | |
13+10	1.5391	2.66	|Q | V | | |
13+15	1.5577	2.71	|Q | V | | |
13+20	1.5766	2.75	|Q | V | | |
13+25	1.5959	2.80	|Q | V | | |
13+30	1.6155	2.84	|Q | V | | |
13+35	1.6354	2.90	|Q | V | | |
13+40	1.6557	2.95	|Q | V | | |
13+45	1.6764	3.01	|Q | V | | |
13+50	1.6975	3.06	|Q | V | | |
13+55	1.7191	3.13	|Q | V | | |
14+ 0	1.7411	3.19	|Q | V | | |
14+ 5	1.7636	3.27	|Q | V | | |
14+10	1.7866	3.34	|Q | V | | |
14+15	1.8103	3.43	|Q | V | | |
14+20	1.8345	3.51	| Q | V | | |
14+25	1.8594	3.62	| Q | V | | |
14+30	1.8849	3.71	| Q | V | | |
14+35	1.9113	3.83	| Q | V | | |
14+40	1.9384	3.94	| Q | V | | |
14+45	1.9665	4.08	| Q | V | | |
14+50	1.9955	4.21	| Q | V | | |
14+55	2.0257	4.39	| Q | V | | |
15+ 0	2.0570	4.55	| Q | V | | |
15+ 5	2.0899	4.77	| Q | V | | |
15+10	2.1241	4.97	| Q | V | | |
15+15	2.1604	5.27	| Q | V | | |
15+20	2.1985	5.54	| Q | V | | |
15+25	2.2305	4.65	| Q | V | | |
15+30	2.2598	4.25	| Q | V | | |
15+35	2.2928	4.79	| Q | V | | |
15+40	2.3296	5.34	| Q | V | | |
15+45	2.3733	6.36	| Q | V | | |
15+50	2.4250	7.51	| Q | V | | |
15+55	2.5005	10.96	| Q | V | | |
16+ 0	2.6168	16.87	| Q | V | | |
16+ 5	3.0529	63.33	| | V | Q |
16+10	3.3207	38.88	| | Q V | |
16+15	3.3717	7.41	| Q | V | |
16+20	3.4075	5.19	| Q | V | |
16+25	3.4448	5.42	| Q | V | |
16+30	3.4823	5.45	| Q | V | |
16+35	3.5161	4.90	| Q | V | |
16+40	3.5470	4.49	| Q | |V | |
16+45	3.5757	4.16	| Q | |V | |
16+50	3.6026	3.90	| Q | |V | |
16+55	3.6279	3.67	| Q | |V | |
17+ 0	3.6518	3.48	|Q | | | V | |
17+ 5	3.6747	3.32	|Q | | | V | |
17+10	3.6965	3.17	|Q | | | V | |
17+15	3.7175	3.04	|Q | | | V | |

17+20	3.7376	2.93	Q			V
17+25	3.7571	2.83	Q			V
17+30	3.7759	2.73	Q			V
17+35	3.7941	2.65	Q			V
17+40	3.8118	2.57	Q			V
17+45	3.8290	2.50	Q			V
17+50	3.8458	2.43	Q			V
17+55	3.8621	2.37	Q			V
18+ 0	3.8780	2.31	Q			V
18+ 5	3.8929	2.17	Q			V
18+10	3.9071	2.06	Q			V
18+15	3.9210	2.02	Q			V
18+20	3.9346	1.97	Q			V
18+25	3.9479	1.93	Q			V
18+30	3.9610	1.89	Q			V
18+35	3.9738	1.86	Q			V
18+40	3.9863	1.82	Q			V
18+45	3.9987	1.79	Q			V
18+50	4.0108	1.76	Q			V
18+55	4.0227	1.73	Q			V
19+ 0	4.0344	1.70	Q			V
19+ 5	4.0459	1.67	Q			V
19+10	4.0572	1.64	Q			V
19+15	4.0684	1.62	Q			V
19+20	4.0794	1.60	Q			V
19+25	4.0902	1.57	Q			V
19+30	4.1009	1.55	Q			V
19+35	4.1114	1.53	Q			V
19+40	4.1218	1.51	Q			V
19+45	4.1320	1.49	Q			V
19+50	4.1421	1.47	Q			V
19+55	4.1521	1.45	Q			V
20+ 0	4.1620	1.43	Q			V
20+ 5	4.1717	1.42	Q			V
20+10	4.1814	1.40	Q			V
20+15	4.1909	1.38	Q			V
20+20	4.2003	1.37	Q			V
20+25	4.2096	1.35	Q			V
20+30	4.2188	1.34	Q			V
20+35	4.2279	1.32	Q			V
20+40	4.2369	1.31	Q			V
20+45	4.2458	1.29	Q			V
20+50	4.2546	1.28	Q			V
20+55	4.2634	1.27	Q			V
21+ 0	4.2720	1.26	Q			V
21+ 5	4.2806	1.24	Q			V
21+10	4.2891	1.23	Q			V
21+15	4.2975	1.22	Q			V
21+20	4.3058	1.21	Q			V
21+25	4.3141	1.20	Q			V
21+30	4.3222	1.19	Q			V
21+35	4.3304	1.18	Q			V
21+40	4.3384	1.17	Q			V
21+45	4.3464	1.16	Q			V
21+50	4.3543	1.15	Q			V
21+55	4.3621	1.14	Q			V
22+ 0	4.3699	1.13	Q			V
22+ 5	4.3776	1.12	Q			V
22+10	4.3852	1.11	Q			V
22+15	4.3928	1.10	Q			V
22+20	4.4003	1.09	Q			V
22+25	4.4078	1.09	Q			V
22+30	4.4152	1.08	Q			V
22+35	4.4226	1.07	Q			V
22+40	4.4299	1.06	Q			V
22+45	4.4372	1.05	Q			V
22+50	4.4444	1.05	Q			V
22+55	4.4515	1.04	Q			V
23+ 0	4.4586	1.03	Q			V
23+ 5	4.4657	1.02	Q			V
23+10	4.4727	1.02	Q			V
23+15	4.4796	1.01	Q			V
23+20	4.4866	1.00	Q			V
23+25	4.4934	1.00	Q			V
23+30	4.5002	0.99	Q			V
23+35	4.5070	0.98	Q			V
23+40	4.5138	0.98	Q			V
23+45	4.5204	0.97	Q			V
23+50	4.5271	0.97	Q			V
23+55	4.5337	0.96	Q			V
24+ 0	4.5403	0.95	Q			V

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA C
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
13.87	1	0.78
Rainfall data for year 2		
13.87	6	1.20
Rainfall data for year 2		
13.87	24	2.18
Rainfall data for year 100		
13.87	1	1.27
Rainfall data for year 100		
13.87	6	2.86
Rainfall data for year 100		
13.87	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
61.6	80.3	13.87	1.000	0.365	0.489	0.178

Area-averaged adjusted loss rate Fm (In/Hr) = 0.178

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
6.78	0.489	61.6	80.3	2.46	0.592
7.09	0.511	98.0	98.0	0.20	0.954

Area-averaged catchment yield fraction, Y = 0.777
Area-averaged low loss fraction, Yb = 0.223

++
Watercourse length = 1690.00(Ft.)
Length from concentration point to centroid = 755.00(Ft.)
Elevation difference along watercourse = 102.90(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 13.87(Ac.)
Catchment Lag time = 0.037 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 223.8011
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.178(In/Hr)
Average low loss rate fraction (Yb) = 0.223 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 13.87(Ac.) (Ref: fig. E-4)

5-minute factor = 0.999 Adjusted rainfall = 0.602(In)
30-minute factor = 0.999 Adjusted rainfall = 1.031(In)
1-hour factor = 0.999 Adjusted rainfall = 1.269(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 167.74 (CFS))		
1	46.728	78.381
2	94.417	79.994
3	99.351	8.276
4	100.000	1.089

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6022	0.6022
2	0.7414	0.1392
3	0.8373	0.0959
4	0.9128	0.0755
5	0.9760	0.0632
6	1.0309	0.0549
7	1.0797	0.0488
8	1.1238	0.0441
9	1.1642	0.0404
10	1.2016	0.0374
11	1.2365	0.0349
12	1.2692	0.0327
13	1.3161	0.0469
14	1.3611	0.0450
15	1.4044	0.0433
16	1.4461	0.0417
17	1.4864	0.0403
18	1.5254	0.0390
19	1.5633	0.0379
20	1.6001	0.0368
21	1.6359	0.0358
22	1.6708	0.0349
23	1.7048	0.0340
24	1.7381	0.0332
25	1.7706	0.0325
26	1.8023	0.0318
27	1.8335	0.0311
28	1.8639	0.0305
29	1.8939	0.0299
30	1.9232	0.0293
31	1.9520	0.0288
32	1.9803	0.0283
33	2.0082	0.0278
34	2.0355	0.0274
35	2.0625	0.0269
36	2.0890	0.0265
37	2.1151	0.0261
38	2.1408	0.0257
39	2.1662	0.0253
40	2.1912	0.0250
41	2.2158	0.0247
42	2.2401	0.0243
43	2.2642	0.0240
44	2.2879	0.0237
45	2.3113	0.0234

		AREAC
46	2.3344	0.0231
47	2.3573	0.0229
48	2.3799	0.0226
49	2.4022	0.0223
50	2.4243	0.0221
51	2.4462	0.0219
52	2.4678	0.0216
53	2.4892	0.0214
54	2.5103	0.0212
55	2.5313	0.0210
56	2.5521	0.0208
57	2.5726	0.0206
58	2.5930	0.0204
59	2.6131	0.0202
60	2.6331	0.0200
61	2.6529	0.0198
62	2.6725	0.0196
63	2.6920	0.0194
64	2.7112	0.0193
65	2.7304	0.0191
66	2.7493	0.0190
67	2.7681	0.0188
68	2.7868	0.0186
69	2.8053	0.0185
70	2.8236	0.0184
71	2.8418	0.0182
72	2.8599	0.0181
73	2.8767	0.0168
74	2.8933	0.0167
75	2.9098	0.0165
76	2.9262	0.0164
77	2.9425	0.0163
78	2.9587	0.0162
79	2.9747	0.0160
80	2.9906	0.0159
81	3.0064	0.0158
82	3.0221	0.0157
83	3.0377	0.0156
84	3.0532	0.0155
85	3.0686	0.0154
86	3.0838	0.0153
87	3.0990	0.0152
88	3.1140	0.0151
89	3.1290	0.0150
90	3.1439	0.0149
91	3.1587	0.0148
92	3.1733	0.0147
93	3.1879	0.0146
94	3.2024	0.0145
95	3.2168	0.0144
96	3.2312	0.0143
97	3.2454	0.0142
98	3.2596	0.0142
99	3.2736	0.0141
100	3.2876	0.0140
101	3.3015	0.0139
102	3.3154	0.0138
103	3.3291	0.0138
104	3.3428	0.0137
105	3.3564	0.0136
106	3.3699	0.0135
107	3.3834	0.0135
108	3.3967	0.0134
109	3.4100	0.0133
110	3.4233	0.0132
111	3.4365	0.0132
112	3.4496	0.0131
113	3.4626	0.0130
114	3.4756	0.0130
115	3.4885	0.0129
116	3.5013	0.0128
117	3.5141	0.0128
118	3.5268	0.0127
119	3.5394	0.0127
120	3.5520	0.0126
121	3.5646	0.0125
122	3.5770	0.0125
123	3.5894	0.0124
124	3.6018	0.0124
125	3.6141	0.0123
126	3.6263	0.0122
127	3.6385	0.0122
128	3.6506	0.0121
129	3.6627	0.0121

		AREAC
130	3.6747	0.0120
131	3.6867	0.0120
132	3.6986	0.0119
133	3.7105	0.0119
134	3.7223	0.0118
135	3.7341	0.0118
136	3.7458	0.0117
137	3.7574	0.0117
138	3.7690	0.0116
139	3.7806	0.0116
140	3.7921	0.0115
141	3.8036	0.0115
142	3.8150	0.0114
143	3.8264	0.0114
144	3.8377	0.0113
145	3.8490	0.0113
146	3.8602	0.0112
147	3.8714	0.0112
148	3.8826	0.0112
149	3.8937	0.0111
150	3.9048	0.0111
151	3.9158	0.0110
152	3.9268	0.0110
153	3.9377	0.0109
154	3.9486	0.0109
155	3.9595	0.0109
156	3.9703	0.0108
157	3.9811	0.0108
158	3.9918	0.0107
159	4.0025	0.0107
160	4.0132	0.0107
161	4.0238	0.0106
162	4.0344	0.0106
163	4.0449	0.0105
164	4.0554	0.0105
165	4.0659	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0971	0.0104
169	4.1075	0.0103
170	4.1177	0.0103
171	4.1280	0.0103
172	4.1382	0.0102
173	4.1484	0.0102
174	4.1586	0.0102
175	4.1687	0.0101
176	4.1788	0.0101
177	4.1889	0.0101
178	4.1989	0.0100
179	4.2089	0.0100
180	4.2188	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2485	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2779	0.0098
187	4.2877	0.0097
188	4.2974	0.0097
189	4.3071	0.0097
190	4.3167	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3455	0.0096
194	4.3551	0.0095
195	4.3646	0.0095
196	4.3741	0.0095
197	4.3835	0.0095
198	4.3929	0.0094
199	4.4023	0.0094
200	4.4117	0.0094
201	4.4211	0.0093
202	4.4304	0.0093
203	4.4397	0.0093
204	4.4489	0.0093
205	4.4582	0.0092
206	4.4674	0.0092
207	4.4766	0.0092
208	4.4857	0.0092
209	4.4949	0.0091
210	4.5040	0.0091
211	4.5131	0.0091
212	4.5221	0.0091
213	4.5312	0.0090

		AREAC
214	4.5402	0.0090
215	4.5492	0.0090
216	4.5581	0.0090
217	4.5671	0.0089
218	4.5760	0.0089
219	4.5849	0.0089
220	4.5938	0.0089
221	4.6026	0.0088
222	4.6114	0.0088
223	4.6203	0.0088
224	4.6290	0.0088
225	4.6378	0.0088
226	4.6465	0.0087
227	4.6552	0.0087
228	4.6639	0.0087
229	4.6726	0.0087
230	4.6812	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7156	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7496	0.0085
239	4.7581	0.0085
240	4.7665	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7917	0.0084
244	4.8001	0.0084
245	4.8084	0.0083
246	4.8167	0.0083
247	4.8250	0.0083
248	4.8333	0.0083
249	4.8416	0.0083
250	4.8498	0.0082
251	4.8580	0.0082
252	4.8662	0.0082
253	4.8744	0.0082
254	4.8826	0.0082
255	4.8907	0.0081
256	4.8989	0.0081
257	4.9070	0.0081
258	4.9151	0.0081
259	4.9231	0.0081
260	4.9312	0.0081
261	4.9392	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9632	0.0080
265	4.9712	0.0080
266	4.9792	0.0080
267	4.9871	0.0079
268	4.9950	0.0079
269	5.0029	0.0079
270	5.0108	0.0079
271	5.0187	0.0079
272	5.0265	0.0078
273	5.0343	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0577	0.0078
277	5.0655	0.0078
278	5.0733	0.0078
279	5.0810	0.0077
280	5.0887	0.0077
281	5.0964	0.0077
282	5.1041	0.0077
283	5.1118	0.0077
284	5.1194	0.0077
285	5.1271	0.0076
286	5.1347	0.0076
287	5.1423	0.0076
288	5.1499	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0017	0.0059
2	0.0076	0.0017	0.0059
3	0.0076	0.0017	0.0059
4	0.0077	0.0017	0.0059

		AREAC	
5	0.0077	0.0017	0.0060
6	0.0077	0.0017	0.0060
7	0.0077	0.0017	0.0060
8	0.0078	0.0017	0.0060
9	0.0078	0.0017	0.0060
10	0.0078	0.0017	0.0061
11	0.0078	0.0017	0.0061
12	0.0078	0.0017	0.0061
13	0.0079	0.0018	0.0061
14	0.0079	0.0018	0.0061
15	0.0079	0.0018	0.0062
16	0.0080	0.0018	0.0062
17	0.0080	0.0018	0.0062
18	0.0080	0.0018	0.0062
19	0.0080	0.0018	0.0062
20	0.0081	0.0018	0.0063
21	0.0081	0.0018	0.0063
22	0.0081	0.0018	0.0063
23	0.0081	0.0018	0.0063
24	0.0082	0.0018	0.0063
25	0.0082	0.0018	0.0064
26	0.0082	0.0018	0.0064
27	0.0083	0.0018	0.0064
28	0.0083	0.0018	0.0064
29	0.0083	0.0019	0.0065
30	0.0083	0.0019	0.0065
31	0.0084	0.0019	0.0065
32	0.0084	0.0019	0.0065
33	0.0084	0.0019	0.0066
34	0.0085	0.0019	0.0066
35	0.0085	0.0019	0.0066
36	0.0085	0.0019	0.0066
37	0.0086	0.0019	0.0067
38	0.0086	0.0019	0.0067
39	0.0086	0.0019	0.0067
40	0.0086	0.0019	0.0067
41	0.0087	0.0019	0.0068
42	0.0087	0.0019	0.0068
43	0.0088	0.0020	0.0068
44	0.0088	0.0020	0.0068
45	0.0088	0.0020	0.0069
46	0.0088	0.0020	0.0069
47	0.0089	0.0020	0.0069
48	0.0089	0.0020	0.0069
49	0.0090	0.0020	0.0070
50	0.0090	0.0020	0.0070
51	0.0090	0.0020	0.0070
52	0.0091	0.0020	0.0070
53	0.0091	0.0020	0.0071
54	0.0091	0.0020	0.0071
55	0.0092	0.0020	0.0071
56	0.0092	0.0021	0.0072
57	0.0093	0.0021	0.0072
58	0.0093	0.0021	0.0072
59	0.0093	0.0021	0.0073
60	0.0094	0.0021	0.0073
61	0.0094	0.0021	0.0073
62	0.0095	0.0021	0.0073
63	0.0095	0.0021	0.0074
64	0.0095	0.0021	0.0074
65	0.0096	0.0021	0.0075
66	0.0096	0.0021	0.0075
67	0.0097	0.0022	0.0075
68	0.0097	0.0022	0.0075
69	0.0098	0.0022	0.0076
70	0.0098	0.0022	0.0076
71	0.0099	0.0022	0.0077
72	0.0099	0.0022	0.0077
73	0.0100	0.0022	0.0077
74	0.0100	0.0022	0.0078
75	0.0101	0.0022	0.0078
76	0.0101	0.0022	0.0078
77	0.0102	0.0023	0.0079
78	0.0102	0.0023	0.0079
79	0.0103	0.0023	0.0080
80	0.0103	0.0023	0.0080
81	0.0104	0.0023	0.0081
82	0.0104	0.0023	0.0081
83	0.0105	0.0023	0.0081
84	0.0105	0.0023	0.0082
85	0.0106	0.0024	0.0082
86	0.0106	0.0024	0.0083
87	0.0107	0.0024	0.0083
88	0.0107	0.0024	0.0083

89	0.0108	0.0024	0.0084
90	0.0109	0.0024	0.0084
91	0.0109	0.0024	0.0085
92	0.0110	0.0024	0.0085
93	0.0111	0.0025	0.0086
94	0.0111	0.0025	0.0086
95	0.0112	0.0025	0.0087
96	0.0112	0.0025	0.0087
97	0.0113	0.0025	0.0088
98	0.0114	0.0025	0.0088
99	0.0115	0.0026	0.0089
100	0.0115	0.0026	0.0089
101	0.0116	0.0026	0.0090
102	0.0117	0.0026	0.0091
103	0.0118	0.0026	0.0091
104	0.0118	0.0026	0.0092
105	0.0119	0.0027	0.0093
106	0.0120	0.0027	0.0093
107	0.0121	0.0027	0.0094
108	0.0121	0.0027	0.0094
109	0.0122	0.0027	0.0095
110	0.0123	0.0027	0.0096
111	0.0124	0.0028	0.0096
112	0.0125	0.0028	0.0097
113	0.0126	0.0028	0.0098
114	0.0127	0.0028	0.0098
115	0.0128	0.0028	0.0099
116	0.0128	0.0029	0.0100
117	0.0130	0.0029	0.0101
118	0.0130	0.0029	0.0101
119	0.0132	0.0029	0.0102
120	0.0132	0.0030	0.0103
121	0.0134	0.0030	0.0104
122	0.0135	0.0030	0.0105
123	0.0136	0.0030	0.0106
124	0.0137	0.0030	0.0106
125	0.0138	0.0031	0.0107
126	0.0139	0.0031	0.0108
127	0.0141	0.0031	0.0109
128	0.0142	0.0032	0.0110
129	0.0143	0.0032	0.0111
130	0.0144	0.0032	0.0112
131	0.0146	0.0033	0.0113
132	0.0147	0.0033	0.0114
133	0.0149	0.0033	0.0116
134	0.0150	0.0033	0.0116
135	0.0152	0.0034	0.0118
136	0.0153	0.0034	0.0119
137	0.0155	0.0034	0.0120
138	0.0156	0.0035	0.0121
139	0.0158	0.0035	0.0123
140	0.0159	0.0035	0.0124
141	0.0162	0.0036	0.0126
142	0.0163	0.0036	0.0126
143	0.0165	0.0037	0.0128
144	0.0167	0.0037	0.0129
145	0.0181	0.0040	0.0140
146	0.0182	0.0041	0.0141
147	0.0185	0.0041	0.0144
148	0.0186	0.0042	0.0145
149	0.0190	0.0042	0.0147
150	0.0191	0.0043	0.0149
151	0.0194	0.0043	0.0151
152	0.0196	0.0044	0.0152
153	0.0200	0.0045	0.0155
154	0.0202	0.0045	0.0157
155	0.0206	0.0046	0.0160
156	0.0208	0.0046	0.0161
157	0.0212	0.0047	0.0165
158	0.0214	0.0048	0.0166
159	0.0219	0.0049	0.0170
160	0.0221	0.0049	0.0172
161	0.0226	0.0050	0.0176
162	0.0229	0.0051	0.0178
163	0.0234	0.0052	0.0182
164	0.0237	0.0053	0.0184
165	0.0243	0.0054	0.0189
166	0.0247	0.0055	0.0192
167	0.0253	0.0056	0.0197
168	0.0257	0.0057	0.0200
169	0.0265	0.0059	0.0206
170	0.0269	0.0060	0.0209
171	0.0278	0.0062	0.0216
172	0.0283	0.0063	0.0220

173	0.0293	0.0065	0.0228
174	0.0299	0.0067	0.0232
175	0.0311	0.0069	0.0242
176	0.0318	0.0071	0.0247
177	0.0332	0.0074	0.0258
178	0.0340	0.0076	0.0264
179	0.0358	0.0080	0.0278
180	0.0368	0.0082	0.0286
181	0.0390	0.0087	0.0303
182	0.0403	0.0090	0.0313
183	0.0433	0.0096	0.0336
184	0.0450	0.0100	0.0350
185	0.0327	0.0073	0.0254
186	0.0349	0.0078	0.0271
187	0.0404	0.0090	0.0314
188	0.0441	0.0098	0.0343
189	0.0549	0.0122	0.0426
190	0.0632	0.0141	0.0491
191	0.0959	0.0149	0.0810
192	0.1392	0.0149	0.1243
193	0.6022	0.0149	0.5874
194	0.0755	0.0149	0.0606
195	0.0488	0.0109	0.0379
196	0.0374	0.0083	0.0291
197	0.0469	0.0105	0.0365
198	0.0417	0.0093	0.0324
199	0.0379	0.0084	0.0294
200	0.0349	0.0078	0.0271
201	0.0325	0.0072	0.0252
202	0.0305	0.0068	0.0237
203	0.0288	0.0064	0.0224
204	0.0274	0.0061	0.0213
205	0.0261	0.0058	0.0203
206	0.0250	0.0056	0.0194
207	0.0240	0.0054	0.0187
208	0.0231	0.0052	0.0180
209	0.0223	0.0050	0.0174
210	0.0216	0.0048	0.0168
211	0.0210	0.0047	0.0163
212	0.0204	0.0045	0.0158
213	0.0198	0.0044	0.0154
214	0.0193	0.0043	0.0150
215	0.0188	0.0042	0.0146
216	0.0184	0.0041	0.0143
217	0.0168	0.0037	0.0130
218	0.0164	0.0037	0.0127
219	0.0160	0.0036	0.0125
220	0.0157	0.0035	0.0122
221	0.0154	0.0034	0.0119
222	0.0151	0.0034	0.0117
223	0.0148	0.0033	0.0115
224	0.0145	0.0032	0.0113
225	0.0142	0.0032	0.0111
226	0.0140	0.0031	0.0109
227	0.0138	0.0031	0.0107
228	0.0135	0.0030	0.0105
229	0.0133	0.0030	0.0103
230	0.0131	0.0029	0.0102
231	0.0129	0.0029	0.0100
232	0.0127	0.0028	0.0099
233	0.0125	0.0028	0.0097
234	0.0124	0.0028	0.0096
235	0.0122	0.0027	0.0095
236	0.0120	0.0027	0.0093
237	0.0119	0.0026	0.0092
238	0.0117	0.0026	0.0091
239	0.0116	0.0026	0.0090
240	0.0114	0.0025	0.0089
241	0.0113	0.0025	0.0088
242	0.0112	0.0025	0.0087
243	0.0110	0.0025	0.0086
244	0.0109	0.0024	0.0085
245	0.0108	0.0024	0.0084
246	0.0107	0.0024	0.0083
247	0.0105	0.0024	0.0082
248	0.0104	0.0023	0.0081
249	0.0103	0.0023	0.0080
250	0.0102	0.0023	0.0079
251	0.0101	0.0023	0.0079
252	0.0100	0.0022	0.0078
253	0.0099	0.0022	0.0077
254	0.0098	0.0022	0.0076
255	0.0097	0.0022	0.0076
256	0.0097	0.0022	0.0075

257	0.0096	0.0021	0.0074
258	0.0095	0.0021	0.0074
259	0.0094	0.0021	0.0073
260	0.0093	0.0021	0.0072
261	0.0092	0.0021	0.0072
262	0.0092	0.0020	0.0071
263	0.0091	0.0020	0.0071
264	0.0090	0.0020	0.0070
265	0.0089	0.0020	0.0069
266	0.0089	0.0020	0.0069
267	0.0088	0.0020	0.0068
268	0.0087	0.0019	0.0068
269	0.0087	0.0019	0.0067
270	0.0086	0.0019	0.0067
271	0.0085	0.0019	0.0066
272	0.0085	0.0019	0.0066
273	0.0084	0.0019	0.0065
274	0.0084	0.0019	0.0065
275	0.0083	0.0018	0.0064
276	0.0082	0.0018	0.0064
277	0.0082	0.0018	0.0064
278	0.0081	0.0018	0.0063
279	0.0081	0.0018	0.0063
280	0.0080	0.0018	0.0062
281	0.0080	0.0018	0.0062
282	0.0079	0.0018	0.0062
283	0.0079	0.0018	0.0061
284	0.0078	0.0017	0.0061
285	0.0078	0.0017	0.0060
286	0.0077	0.0017	0.0060
287	0.0077	0.0017	0.0060
288	0.0076	0.0017	0.0059

Total soil rain loss = 1.00(In)
Total effective rainfall = 4.15(In)
Peak flow rate in flood hydrograph = 56.71(CFS)

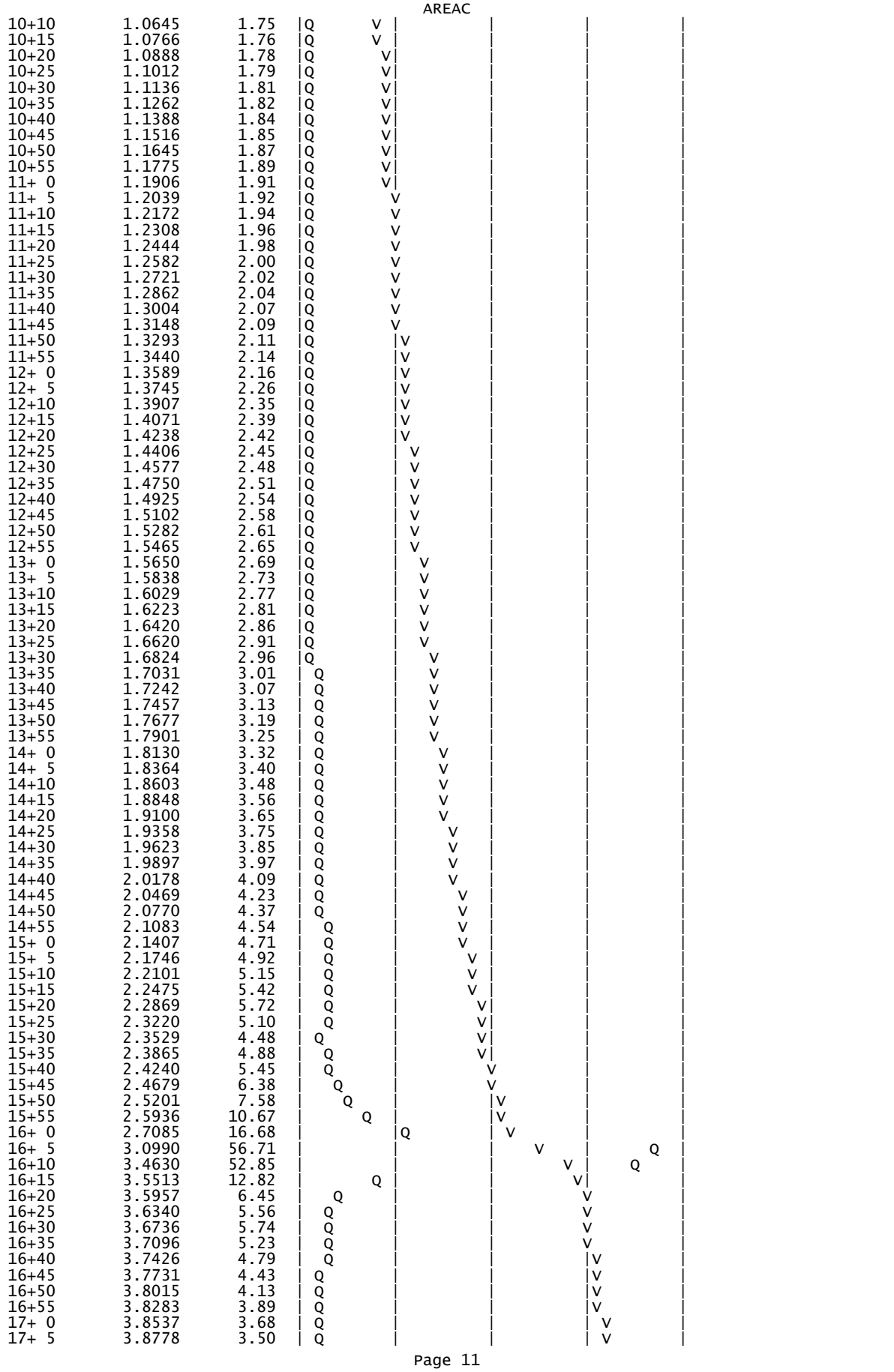
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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	15.0	30.0	45.0	60.0
0+ 5	0.0032	0.46	Q				
0+10	0.0096	0.94	Q				
0+15	0.0164	0.99	Q				
0+20	0.0233	1.00	Q				
0+25	0.0302	1.00	Q				
0+30	0.0371	1.00	Q				
0+35	0.0440	1.01	Q				
0+40	0.0510	1.01	Q				
0+45	0.0579	1.01	Q				
0+50	0.0649	1.02	Q				
0+55	0.0719	1.02	Q				
1+ 0	0.0790	1.02	Q				
1+ 5	0.0860	1.03	Q				
1+10	0.0931	1.03	Q				
1+15	0.1002	1.03	Q				
1+20	0.1074	1.03	Q				
1+25	0.1145	1.04	Q				
1+30	0.1217	1.04	QV				
1+35	0.1289	1.05	QV				
1+40	0.1361	1.05	QV				
1+45	0.1433	1.05	QV				
1+50	0.1506	1.06	QV				
1+55	0.1579	1.06	QV				
2+ 0	0.1652	1.06	QV				
2+ 5	0.1726	1.07	QV				
2+10	0.1799	1.07	QV				
2+15	0.1873	1.07	QV				
2+20	0.1948	1.08	QV				
2+25	0.2022	1.08	QV				
2+30	0.2097	1.09	QV				
2+35	0.2172	1.09	QV				
2+40	0.2247	1.09	QV				
2+45	0.2323	1.10	QV				
2+50	0.2398	1.10	Q V				
2+55	0.2475	1.10	Q V				
3+ 0	0.2551	1.11	Q V				
3+ 5	0.2628	1.11	Q V				

3+10	0.2704	1.12	Q V				
3+15	0.2782	1.12	Q V				
3+20	0.2859	1.13	Q V				
3+25	0.2937	1.13	Q V				
3+30	0.3015	1.13	Q V				
3+35	0.3093	1.14	Q V				
3+40	0.3172	1.14	Q V				
3+45	0.3251	1.15	Q V				
3+50	0.3330	1.15	Q V				
3+55	0.3410	1.16	Q V				
4+ 0	0.3490	1.16	Q V				
4+ 5	0.3570	1.17	Q V				
4+10	0.3651	1.17	Q V				
4+15	0.3732	1.17	Q V				
4+20	0.3813	1.18	Q V				
4+25	0.3894	1.18	Q V				
4+30	0.3976	1.19	Q V				
4+35	0.4059	1.19	Q V				
4+40	0.4141	1.20	Q V				
4+45	0.4224	1.20	Q V				
4+50	0.4307	1.21	Q V				
4+55	0.4391	1.21	Q V				
5+ 0	0.4475	1.22	Q V				
5+ 5	0.4559	1.22	Q V				
5+10	0.4644	1.23	Q V				
5+15	0.4729	1.24	Q V				
5+20	0.4815	1.24	Q V				
5+25	0.4900	1.25	Q V				
5+30	0.4987	1.25	Q V				
5+35	0.5073	1.26	Q V				
5+40	0.5160	1.26	Q V				
5+45	0.5248	1.27	Q V				
5+50	0.5336	1.28	Q V				
5+55	0.5424	1.28	Q V				
6+ 0	0.5513	1.29	Q V				
6+ 5	0.5602	1.29	Q V				
6+10	0.5691	1.30	Q V				
6+15	0.5781	1.31	Q V				
6+20	0.5872	1.31	Q V				
6+25	0.5962	1.32	Q V				
6+30	0.6054	1.33	Q V				
6+35	0.6145	1.33	Q V				
6+40	0.6238	1.34	Q V				
6+45	0.6330	1.35	Q V				
6+50	0.6424	1.35	Q V				
6+55	0.6517	1.36	Q V				
7+ 0	0.6611	1.37	Q V				
7+ 5	0.6706	1.37	Q V				
7+10	0.6801	1.38	Q V				
7+15	0.6897	1.39	Q V				
7+20	0.6993	1.40	Q V				
7+25	0.7090	1.40	Q V				
7+30	0.7187	1.41	Q V				
7+35	0.7285	1.42	Q V				
7+40	0.7383	1.43	Q V				
7+45	0.7482	1.44	Q V				
7+50	0.7582	1.44	Q V				
7+55	0.7682	1.45	Q V				
8+ 0	0.7782	1.46	Q V				
8+ 5	0.7884	1.47	Q V				
8+10	0.7985	1.48	Q V				
8+15	0.8088	1.49	Q V				
8+20	0.8191	1.50	Q V				
8+25	0.8295	1.51	|Q V				
8+30	0.8399	1.52	|Q V				
8+35	0.8504	1.53	|Q V				
8+40	0.8610	1.54	|Q V				
8+45	0.8716	1.55	|Q V				
8+50	0.8824	1.56	|Q V				
8+55	0.8931	1.57	|Q V				
9+ 0	0.9040	1.58	|Q V				
9+ 5	0.9149	1.59	|Q V				
9+10	0.9259	1.60	|Q V				
9+15	0.9370	1.61	|Q V				
9+20	0.9482	1.62	|Q V				
9+25	0.9594	1.63	|Q V				
9+30	0.9707	1.64	|Q V				
9+35	0.9822	1.66	|Q V				
9+40	0.9936	1.67	|Q V				
9+45	1.0052	1.68	|Q V				
9+50	1.0169	1.69	|Q V				
9+55	1.0286	1.71	|Q V				
10+ 0	1.0405	1.72	|Q V				
10+ 5	1.0524	1.73	|Q V				



10+10	1.0645	1.75	Q V
10+15	1.0766	1.76	Q V
10+20	1.0888	1.78	Q V
10+25	1.1012	1.79	Q V
10+30	1.1136	1.81	Q V
10+35	1.1262	1.82	Q V
10+40	1.1388	1.84	Q V
10+45	1.1516	1.85	Q V
10+50	1.1645	1.87	Q V
10+55	1.1775	1.89	Q V
11+ 0	1.1906	1.91	Q V
11+ 5	1.2039	1.92	Q V
11+10	1.2172	1.94	Q V
11+15	1.2308	1.96	Q V
11+20	1.2444	1.98	Q V
11+25	1.2582	2.00	Q V
11+30	1.2721	2.02	Q V
11+35	1.2862	2.04	Q V
11+40	1.3004	2.07	Q V
11+45	1.3148	2.09	Q V
11+50	1.3293	2.11	Q V
11+55	1.3440	2.14	Q V
12+ 0	1.3589	2.16	Q V
12+ 5	1.3745	2.26	Q V
12+10	1.3907	2.35	Q V
12+15	1.4071	2.39	Q V
12+20	1.4238	2.42	Q V
12+25	1.4406	2.45	Q V
12+30	1.4577	2.48	Q V
12+35	1.4750	2.51	Q V
12+40	1.4925	2.54	Q V
12+45	1.5102	2.58	Q V
12+50	1.5282	2.61	Q V
12+55	1.5465	2.65	Q V
13+ 0	1.5650	2.69	Q V
13+ 5	1.5838	2.73	Q V
13+10	1.6029	2.77	Q V
13+15	1.6223	2.81	Q V
13+20	1.6420	2.86	Q V
13+25	1.6620	2.91	Q V
13+30	1.6824	2.96	Q V
13+35	1.7031	3.01	Q V
13+40	1.7242	3.07	Q V
13+45	1.7457	3.13	Q V
13+50	1.7677	3.19	Q V
13+55	1.7901	3.25	Q V
14+ 0	1.8130	3.32	Q V
14+ 5	1.8364	3.40	Q V
14+10	1.8603	3.48	Q V
14+15	1.8848	3.56	Q V
14+20	1.9100	3.65	Q V
14+25	1.9358	3.75	Q V
14+30	1.9623	3.85	Q V
14+35	1.9897	3.97	Q V
14+40	2.0178	4.09	Q V
14+45	2.0469	4.23	Q V
14+50	2.0770	4.37	Q V
14+55	2.1083	4.54	Q V
15+ 0	2.1407	4.71	Q V
15+ 5	2.1746	4.92	Q V
15+10	2.2101	5.15	Q V
15+15	2.2475	5.42	Q V
15+20	2.2869	5.72	Q V
15+25	2.3220	5.10	Q V
15+30	2.3529	4.48	Q V
15+35	2.3865	4.88	Q V
15+40	2.4240	5.45	Q V
15+45	2.4679	6.38	Q V
15+50	2.5201	7.58	Q V
15+55	2.5936	10.67	Q V
16+ 0	2.7085	16.68	Q V
16+ 5	3.0990	56.71	Q V
16+10	3.4630	52.85	Q V
16+15	3.5513	12.82	Q V
16+20	3.5957	6.45	Q V
16+25	3.6340	5.56	Q V
16+30	3.6736	5.74	Q V
16+35	3.7096	5.23	Q V
16+40	3.7426	4.79	Q V
16+45	3.7731	4.43	Q V
16+50	3.8015	4.13	Q V
16+55	3.8283	3.89	Q V
17+ 0	3.8537	3.68	Q V
17+ 5	3.8778	3.50	Q V

17+10	3.9008	3.35	Q			V
17+15	3.9229	3.21	Q			V
17+20	3.9442	3.08	Q			V
17+25	3.9647	2.97	Q			V
17+30	3.9845	2.87	Q			V
17+35	4.0036	2.78	Q			V
17+40	4.0222	2.70	Q			V
17+45	4.0403	2.62	Q			V
17+50	4.0579	2.55	Q			V
17+55	4.0750	2.49	Q			V
18+ 0	4.0917	2.43	Q			V
18+ 5	4.1076	2.30	Q			V
18+10	4.1226	2.18	Q			V
18+15	4.1372	2.12	Q			V
18+20	4.1514	2.07	Q			V
18+25	4.1654	2.03	Q			V
18+30	4.1791	1.99	Q			V
18+35	4.1925	1.95	Q			V
18+40	4.2057	1.91	Q			V
18+45	4.2186	1.88	Q			V
18+50	4.2313	1.84	Q			V
18+55	4.2438	1.81	Q			V
19+ 0	4.2560	1.78	Q			V
19+ 5	4.2681	1.75	Q			V
19+10	4.2800	1.72	Q			V
19+15	4.2917	1.70	Q			V
19+20	4.3032	1.67	Q			V
19+25	4.3145	1.65	Q			V
19+30	4.3257	1.62	Q			V
19+35	4.3367	1.60	Q			V
19+40	4.3476	1.58	Q			V
19+45	4.3584	1.56	Q			V
19+50	4.3689	1.54	Q			V
19+55	4.3794	1.52	Q			V
20+ 0	4.3897	1.50	Q			V
20+ 5	4.3999	1.48	Q			V
20+10	4.4100	1.46	Q			V
20+15	4.4200	1.45	Q			V
20+20	4.4298	1.43	Q			V
20+25	4.4396	1.41	Q			V
20+30	4.4492	1.40	Q			V
20+35	4.4588	1.38	Q			V
20+40	4.4682	1.37	Q			V
20+45	4.4775	1.35	Q			V
20+50	4.4867	1.34	Q			V
20+55	4.4959	1.33	Q			V
21+ 0	4.5049	1.31	Q			V
21+ 5	4.5139	1.30	Q			V
21+10	4.5228	1.29	Q			V
21+15	4.5316	1.28	Q			V
21+20	4.5403	1.27	Q			V
21+25	4.5489	1.25	Q			V
21+30	4.5575	1.24	Q			V
21+35	4.5660	1.23	Q			V
21+40	4.5744	1.22	Q			V
21+45	4.5827	1.21	Q			V
21+50	4.5910	1.20	Q			V
21+55	4.5992	1.19	Q			V
22+ 0	4.6073	1.18	Q			V
22+ 5	4.6154	1.17	Q			V
22+10	4.6234	1.16	Q			V
22+15	4.6313	1.15	Q			V
22+20	4.6392	1.14	Q			V
22+25	4.6470	1.14	Q			V
22+30	4.6548	1.13	Q			V
22+35	4.6625	1.12	Q			V
22+40	4.6701	1.11	Q			V
22+45	4.6777	1.10	Q			V
22+50	4.6853	1.09	Q			V
22+55	4.6927	1.09	Q			V
23+ 0	4.7002	1.08	Q			V
23+ 5	4.7075	1.07	Q			V
23+10	4.7149	1.06	Q			V
23+15	4.7221	1.06	Q			V
23+20	4.7294	1.05	Q			V
23+25	4.7366	1.04	Q			V
23+30	4.7437	1.04	Q			V
23+35	4.7508	1.03	Q			V
23+40	4.7578	1.02	Q			V
23+45	4.7648	1.02	Q			V
23+50	4.7718	1.01	Q			V
23+55	4.7787	1.00	Q			V
24+ 0	4.7856	1.00	Q			V

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA D
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
4.42	1	0.78
Rainfall data for year 2		
4.42	6	1.20
Rainfall data for year 2		
4.42	24	2.18
Rainfall data for year 100		
4.42	1	1.27
Rainfall data for year 100		
4.42	6	2.86
Rainfall data for year 100		
4.42	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
69.0	86.2	4.42	1.000	0.262	0.036	0.009

Area-averaged adjusted loss rate Fm (In/Hr) = 0.009

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.16	0.036	69.0	86.2	1.60	0.704
4.26	0.964	98.0	98.0	0.20	0.954

Area-averaged catchment yield fraction, Y = 0.945
Area-averaged low loss fraction, Yb = 0.055

++
Watercourse length = 1155.00(Ft.)
Length from concentration point to centroid = 490.00(Ft.)
Elevation difference along watercourse = 108.50(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 4.42(Ac.)
Catchment Lag time = 0.025 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 330.9816
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.009(In/Hr)
Average low loss rate fraction (Yb) = 0.055 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 4.42(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.603(In)
30-minute factor = 1.000 Adjusted rainfall = 1.031(In)
1-hour factor = 1.000 Adjusted rainfall = 1.270(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
(K = 53.45 (CFS))		
1	61.143	32.684
2	98.623	20.034
3	100.000	0.736

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6025	0.6025
2	0.7418	0.1393
3	0.8377	0.0959
4	0.9132	0.0755
5	0.9765	0.0632
6	1.0313	0.0549
7	1.0802	0.0488
8	1.1243	0.0441
9	1.1647	0.0404
10	1.2022	0.0374
11	1.2370	0.0349
12	1.2697	0.0327
13	1.3166	0.0469
14	1.3616	0.0450
15	1.4049	0.0433
16	1.4466	0.0417
17	1.4869	0.0403
18	1.5259	0.0390
19	1.5638	0.0379
20	1.6005	0.0368
21	1.6363	0.0358
22	1.6712	0.0349
23	1.7052	0.0340
24	1.7384	0.0332
25	1.7709	0.0325
26	1.8026	0.0318
27	1.8337	0.0311
28	1.8642	0.0305
29	1.8941	0.0299
30	1.9234	0.0293
31	1.9522	0.0288
32	1.9805	0.0283
33	2.0083	0.0278
34	2.0357	0.0274
35	2.0626	0.0269
36	2.0891	0.0265
37	2.1152	0.0261
38	2.1409	0.0257
39	2.1663	0.0253
40	2.1913	0.0250
41	2.2159	0.0247
42	2.2403	0.0243
43	2.2643	0.0240
44	2.2880	0.0237
45	2.3114	0.0234
46	2.3345	0.0231

		AREAD
47	2.3574	0.0229
48	2.3800	0.0226
49	2.4023	0.0223
50	2.4244	0.0221
51	2.4463	0.0219
52	2.4679	0.0216
53	2.4893	0.0214
54	2.5104	0.0212
55	2.5314	0.0210
56	2.5522	0.0208
57	2.5727	0.0205
58	2.5931	0.0204
59	2.6132	0.0202
60	2.6332	0.0200
61	2.6530	0.0198
62	2.6726	0.0196
63	2.6921	0.0194
64	2.7113	0.0193
65	2.7304	0.0191
66	2.7494	0.0190
67	2.7682	0.0188
68	2.7868	0.0186
69	2.8053	0.0185
70	2.8237	0.0183
71	2.8419	0.0182
72	2.8600	0.0181
73	2.8767	0.0168
74	2.8934	0.0167
75	2.9099	0.0165
76	2.9263	0.0164
77	2.9426	0.0163
78	2.9588	0.0162
79	2.9748	0.0160
80	2.9907	0.0159
81	3.0065	0.0158
82	3.0222	0.0157
83	3.0378	0.0156
84	3.0533	0.0155
85	3.0686	0.0154
86	3.0839	0.0153
87	3.0991	0.0152
88	3.1141	0.0151
89	3.1291	0.0150
90	3.1440	0.0149
91	3.1587	0.0148
92	3.1734	0.0147
93	3.1880	0.0146
94	3.2025	0.0145
95	3.2169	0.0144
96	3.2312	0.0143
97	3.2455	0.0142
98	3.2596	0.0142
99	3.2737	0.0141
100	3.2877	0.0140
101	3.3016	0.0139
102	3.3154	0.0138
103	3.3292	0.0138
104	3.3429	0.0137
105	3.3565	0.0136
106	3.3700	0.0135
107	3.3834	0.0135
108	3.3968	0.0134
109	3.4101	0.0133
110	3.4234	0.0132
111	3.4365	0.0132
112	3.4496	0.0131
113	3.4627	0.0130
114	3.4756	0.0130
115	3.4885	0.0129
116	3.5014	0.0128
117	3.5142	0.0128
118	3.5269	0.0127
119	3.5395	0.0127
120	3.5521	0.0126
121	3.5646	0.0125
122	3.5771	0.0125
123	3.5895	0.0124
124	3.6019	0.0124
125	3.6142	0.0123
126	3.6264	0.0122
127	3.6386	0.0122
128	3.6507	0.0121
129	3.6628	0.0121
130	3.6748	0.0120

		AREAD
131	3.6868	0.0120
132	3.6987	0.0119
133	3.7106	0.0119
134	3.7224	0.0118
135	3.7341	0.0118
136	3.7458	0.0117
137	3.7575	0.0117
138	3.7691	0.0116
139	3.7807	0.0116
140	3.7922	0.0115
141	3.8037	0.0115
142	3.8151	0.0114
143	3.8265	0.0114
144	3.8378	0.0113
145	3.8491	0.0113
146	3.8603	0.0112
147	3.8715	0.0112
148	3.8827	0.0112
149	3.8938	0.0111
150	3.9049	0.0111
151	3.9159	0.0110
152	3.9269	0.0110
153	3.9378	0.0109
154	3.9487	0.0109
155	3.9596	0.0109
156	3.9704	0.0108
157	3.9812	0.0108
158	3.9919	0.0107
159	4.0026	0.0107
160	4.0133	0.0107
161	4.0239	0.0106
162	4.0345	0.0106
163	4.0450	0.0105
164	4.0555	0.0105
165	4.0660	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0972	0.0104
169	4.1075	0.0103
170	4.1178	0.0103
171	4.1281	0.0103
172	4.1383	0.0102
173	4.1485	0.0102
174	4.1587	0.0102
175	4.1688	0.0101
176	4.1789	0.0101
177	4.1889	0.0101
178	4.1990	0.0100
179	4.2089	0.0100
180	4.2189	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2486	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2780	0.0098
187	4.2878	0.0097
188	4.2975	0.0097
189	4.3072	0.0097
190	4.3168	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3456	0.0096
194	4.3551	0.0095
195	4.3646	0.0095
196	4.3741	0.0095
197	4.3836	0.0095
198	4.3930	0.0094
199	4.4024	0.0094
200	4.4118	0.0094
201	4.4211	0.0093
202	4.4304	0.0093
203	4.4397	0.0093
204	4.4490	0.0093
205	4.4582	0.0092
206	4.4675	0.0092
207	4.4766	0.0092
208	4.4858	0.0092
209	4.4949	0.0091
210	4.5041	0.0091
211	4.5131	0.0091
212	4.5222	0.0091
213	4.5313	0.0090
214	4.5403	0.0090

		AREAD
215	4.5493	0.0090
216	4.5582	0.0090
217	4.5672	0.0089
218	4.5761	0.0089
219	4.5850	0.0089
220	4.5938	0.0089
221	4.6027	0.0088
222	4.6115	0.0088
223	4.6203	0.0088
224	4.6291	0.0088
225	4.6379	0.0088
226	4.6466	0.0087
227	4.6553	0.0087
228	4.6640	0.0087
229	4.6727	0.0087
230	4.6813	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7157	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7497	0.0085
239	4.7582	0.0085
240	4.7666	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7918	0.0084
244	4.8002	0.0084
245	4.8085	0.0083
246	4.8168	0.0083
247	4.8251	0.0083
248	4.8334	0.0083
249	4.8416	0.0083
250	4.8499	0.0082
251	4.8581	0.0082
252	4.8663	0.0082
253	4.8745	0.0082
254	4.8827	0.0082
255	4.8908	0.0081
256	4.8989	0.0081
257	4.9070	0.0081
258	4.9151	0.0081
259	4.9232	0.0081
260	4.9313	0.0081
261	4.9393	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9633	0.0080
265	4.9713	0.0080
266	4.9792	0.0080
267	4.9872	0.0079
268	4.9951	0.0079
269	5.0030	0.0079
270	5.0109	0.0079
271	5.0187	0.0079
272	5.0266	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0578	0.0078
277	5.0656	0.0078
278	5.0733	0.0078
279	5.0811	0.0077
280	5.0888	0.0077
281	5.0965	0.0077
282	5.1042	0.0077
283	5.1118	0.0077
284	5.1195	0.0077
285	5.1271	0.0076
286	5.1348	0.0076
287	5.1424	0.0076
288	5.1500	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0004	0.0072
2	0.0076	0.0004	0.0072
3	0.0076	0.0004	0.0072
4	0.0077	0.0004	0.0072
5	0.0077	0.0004	0.0073

6	0.0077	0.0004	0.0073
7	0.0077	0.0004	0.0073
8	0.0078	0.0004	0.0073
9	0.0078	0.0004	0.0074
10	0.0078	0.0004	0.0074
11	0.0078	0.0004	0.0074
12	0.0078	0.0004	0.0074
13	0.0079	0.0004	0.0074
14	0.0079	0.0004	0.0075
15	0.0079	0.0004	0.0075
16	0.0080	0.0004	0.0075
17	0.0080	0.0004	0.0075
18	0.0080	0.0004	0.0076
19	0.0080	0.0004	0.0076
20	0.0081	0.0004	0.0076
21	0.0081	0.0004	0.0076
22	0.0081	0.0004	0.0077
23	0.0081	0.0004	0.0077
24	0.0082	0.0004	0.0077
25	0.0082	0.0005	0.0078
26	0.0082	0.0005	0.0078
27	0.0083	0.0005	0.0078
28	0.0083	0.0005	0.0078
29	0.0083	0.0005	0.0079
30	0.0083	0.0005	0.0079
31	0.0084	0.0005	0.0079
32	0.0084	0.0005	0.0079
33	0.0084	0.0005	0.0080
34	0.0085	0.0005	0.0080
35	0.0085	0.0005	0.0080
36	0.0085	0.0005	0.0081
37	0.0086	0.0005	0.0081
38	0.0086	0.0005	0.0081
39	0.0086	0.0005	0.0082
40	0.0086	0.0005	0.0082
41	0.0087	0.0005	0.0082
42	0.0087	0.0005	0.0082
43	0.0088	0.0005	0.0083
44	0.0088	0.0005	0.0083
45	0.0088	0.0005	0.0083
46	0.0088	0.0005	0.0084
47	0.0089	0.0005	0.0084
48	0.0089	0.0005	0.0084
49	0.0090	0.0005	0.0085
50	0.0090	0.0005	0.0085
51	0.0090	0.0005	0.0085
52	0.0091	0.0005	0.0086
53	0.0091	0.0005	0.0086
54	0.0091	0.0005	0.0086
55	0.0092	0.0005	0.0087
56	0.0092	0.0005	0.0087
57	0.0093	0.0005	0.0088
58	0.0093	0.0005	0.0088
59	0.0093	0.0005	0.0088
60	0.0094	0.0005	0.0089
61	0.0094	0.0005	0.0089
62	0.0095	0.0005	0.0089
63	0.0095	0.0005	0.0090
64	0.0095	0.0005	0.0090
65	0.0096	0.0005	0.0091
66	0.0096	0.0005	0.0091
67	0.0097	0.0005	0.0092
68	0.0097	0.0005	0.0092
69	0.0098	0.0005	0.0092
70	0.0098	0.0005	0.0093
71	0.0099	0.0005	0.0093
72	0.0099	0.0005	0.0094
73	0.0100	0.0005	0.0094
74	0.0100	0.0005	0.0094
75	0.0101	0.0006	0.0095
76	0.0101	0.0006	0.0095
77	0.0102	0.0006	0.0096
78	0.0102	0.0006	0.0096
79	0.0103	0.0006	0.0097
80	0.0103	0.0006	0.0097
81	0.0104	0.0006	0.0098
82	0.0104	0.0006	0.0098
83	0.0105	0.0006	0.0099
84	0.0105	0.0006	0.0099
85	0.0106	0.0006	0.0100
86	0.0106	0.0006	0.0100
87	0.0107	0.0006	0.0101
88	0.0107	0.0006	0.0101
89	0.0108	0.0006	0.0102

90	0.0109	0.0006	0.0103
91	0.0109	0.0006	0.0103
92	0.0110	0.0006	0.0104
93	0.0111	0.0006	0.0105
94	0.0111	0.0006	0.0105
95	0.0112	0.0006	0.0106
96	0.0112	0.0006	0.0106
97	0.0113	0.0006	0.0107
98	0.0114	0.0006	0.0108
99	0.0115	0.0006	0.0108
100	0.0115	0.0006	0.0109
101	0.0116	0.0006	0.0110
102	0.0117	0.0006	0.0110
103	0.0118	0.0006	0.0111
104	0.0118	0.0006	0.0112
105	0.0119	0.0007	0.0113
106	0.0120	0.0007	0.0113
107	0.0121	0.0007	0.0114
108	0.0121	0.0007	0.0115
109	0.0122	0.0007	0.0116
110	0.0123	0.0007	0.0116
111	0.0124	0.0007	0.0117
112	0.0125	0.0007	0.0118
113	0.0126	0.0007	0.0119
114	0.0127	0.0007	0.0120
115	0.0128	0.0007	0.0121
116	0.0128	0.0007	0.0121
117	0.0130	0.0007	0.0123
118	0.0130	0.0007	0.0123
119	0.0132	0.0007	0.0124
120	0.0132	0.0007	0.0125
121	0.0134	0.0007	0.0126
122	0.0135	0.0007	0.0127
123	0.0136	0.0007	0.0129
124	0.0137	0.0008	0.0129
125	0.0138	0.0008	0.0131
126	0.0139	0.0008	0.0131
127	0.0141	0.0008	0.0133
128	0.0142	0.0008	0.0134
129	0.0143	0.0008	0.0135
130	0.0144	0.0008	0.0136
131	0.0146	0.0008	0.0138
132	0.0147	0.0008	0.0139
133	0.0149	0.0008	0.0141
134	0.0150	0.0008	0.0142
135	0.0152	0.0008	0.0144
136	0.0153	0.0008	0.0145
137	0.0155	0.0008	0.0147
138	0.0156	0.0008	0.0148
139	0.0158	0.0008	0.0150
140	0.0159	0.0008	0.0151
141	0.0162	0.0008	0.0154
142	0.0163	0.0008	0.0155
143	0.0165	0.0008	0.0157
144	0.0167	0.0008	0.0159
145	0.0181	0.0008	0.0173
146	0.0182	0.0008	0.0174
147	0.0185	0.0008	0.0177
148	0.0186	0.0008	0.0179
149	0.0190	0.0008	0.0182
150	0.0191	0.0008	0.0183
151	0.0194	0.0008	0.0187
152	0.0196	0.0008	0.0188
153	0.0200	0.0008	0.0192
154	0.0202	0.0008	0.0194
155	0.0205	0.0008	0.0198
156	0.0208	0.0008	0.0200
157	0.0212	0.0008	0.0204
158	0.0214	0.0008	0.0206
159	0.0219	0.0008	0.0211
160	0.0221	0.0008	0.0213
161	0.0226	0.0008	0.0218
162	0.0229	0.0008	0.0221
163	0.0234	0.0008	0.0226
164	0.0237	0.0008	0.0229
165	0.0243	0.0008	0.0235
166	0.0247	0.0008	0.0239
167	0.0253	0.0008	0.0246
168	0.0257	0.0008	0.0249
169	0.0265	0.0008	0.0257
170	0.0269	0.0008	0.0261
171	0.0278	0.0008	0.0270
172	0.0283	0.0008	0.0275
173	0.0293	0.0008	0.0285

174	0.0299	0.0008	0.0291
175	0.0311	0.0008	0.0303
176	0.0318	0.0008	0.0310
177	0.0332	0.0008	0.0324
178	0.0340	0.0008	0.0332
179	0.0358	0.0008	0.0350
180	0.0368	0.0008	0.0360
181	0.0390	0.0008	0.0382
182	0.0403	0.0008	0.0395
183	0.0433	0.0008	0.0425
184	0.0450	0.0008	0.0442
185	0.0327	0.0008	0.0319
186	0.0349	0.0008	0.0341
187	0.0404	0.0008	0.0397
188	0.0441	0.0008	0.0434
189	0.0549	0.0008	0.0541
190	0.0632	0.0008	0.0624
191	0.0959	0.0008	0.0952
192	0.1393	0.0008	0.1385
193	0.6025	0.0008	0.6017
194	0.0755	0.0008	0.0747
195	0.0488	0.0008	0.0480
196	0.0374	0.0008	0.0366
197	0.0469	0.0008	0.0461
198	0.0417	0.0008	0.0409
199	0.0379	0.0008	0.0371
200	0.0349	0.0008	0.0341
201	0.0325	0.0008	0.0317
202	0.0305	0.0008	0.0297
203	0.0288	0.0008	0.0280
204	0.0274	0.0008	0.0266
205	0.0261	0.0008	0.0253
206	0.0250	0.0008	0.0242
207	0.0240	0.0008	0.0232
208	0.0231	0.0008	0.0223
209	0.0223	0.0008	0.0216
210	0.0216	0.0008	0.0208
211	0.0210	0.0008	0.0202
212	0.0204	0.0008	0.0196
213	0.0198	0.0008	0.0190
214	0.0193	0.0008	0.0185
215	0.0188	0.0008	0.0180
216	0.0183	0.0008	0.0176
217	0.0168	0.0008	0.0160
218	0.0164	0.0008	0.0156
219	0.0160	0.0008	0.0153
220	0.0157	0.0008	0.0149
221	0.0154	0.0008	0.0146
222	0.0151	0.0008	0.0143
223	0.0148	0.0008	0.0140
224	0.0145	0.0008	0.0137
225	0.0142	0.0008	0.0135
226	0.0140	0.0008	0.0132
227	0.0138	0.0008	0.0130
228	0.0135	0.0007	0.0128
229	0.0133	0.0007	0.0126
230	0.0131	0.0007	0.0124
231	0.0129	0.0007	0.0122
232	0.0127	0.0007	0.0120
233	0.0125	0.0007	0.0118
234	0.0124	0.0007	0.0117
235	0.0122	0.0007	0.0115
236	0.0120	0.0007	0.0114
237	0.0119	0.0007	0.0112
238	0.0117	0.0006	0.0111
239	0.0116	0.0006	0.0109
240	0.0114	0.0006	0.0108
241	0.0113	0.0006	0.0107
242	0.0112	0.0006	0.0105
243	0.0110	0.0006	0.0104
244	0.0109	0.0006	0.0103
245	0.0108	0.0006	0.0102
246	0.0107	0.0006	0.0101
247	0.0105	0.0006	0.0100
248	0.0104	0.0006	0.0099
249	0.0103	0.0006	0.0098
250	0.0102	0.0006	0.0097
251	0.0101	0.0006	0.0096
252	0.0100	0.0006	0.0095
253	0.0099	0.0005	0.0094
254	0.0098	0.0005	0.0093
255	0.0097	0.0005	0.0092
256	0.0097	0.0005	0.0091
257	0.0096	0.0005	0.0090

		AREAD	
258	0.0095	0.0005	0.0090
259	0.0094	0.0005	0.0089
260	0.0093	0.0005	0.0088
261	0.0092	0.0005	0.0087
262	0.0092	0.0005	0.0087
263	0.0091	0.0005	0.0086
264	0.0090	0.0005	0.0085
265	0.0089	0.0005	0.0084
266	0.0089	0.0005	0.0084
267	0.0088	0.0005	0.0083
268	0.0087	0.0005	0.0083
269	0.0087	0.0005	0.0082
270	0.0086	0.0005	0.0081
271	0.0085	0.0005	0.0081
272	0.0085	0.0005	0.0080
273	0.0084	0.0005	0.0080
274	0.0084	0.0005	0.0079
275	0.0083	0.0005	0.0078
276	0.0082	0.0005	0.0078
277	0.0082	0.0005	0.0077
278	0.0081	0.0004	0.0077
279	0.0081	0.0004	0.0076
280	0.0080	0.0004	0.0076
281	0.0080	0.0004	0.0075
282	0.0079	0.0004	0.0075
283	0.0079	0.0004	0.0074
284	0.0078	0.0004	0.0074
285	0.0078	0.0004	0.0073
286	0.0077	0.0004	0.0073
287	0.0077	0.0004	0.0072
288	0.0076	0.0004	0.0072

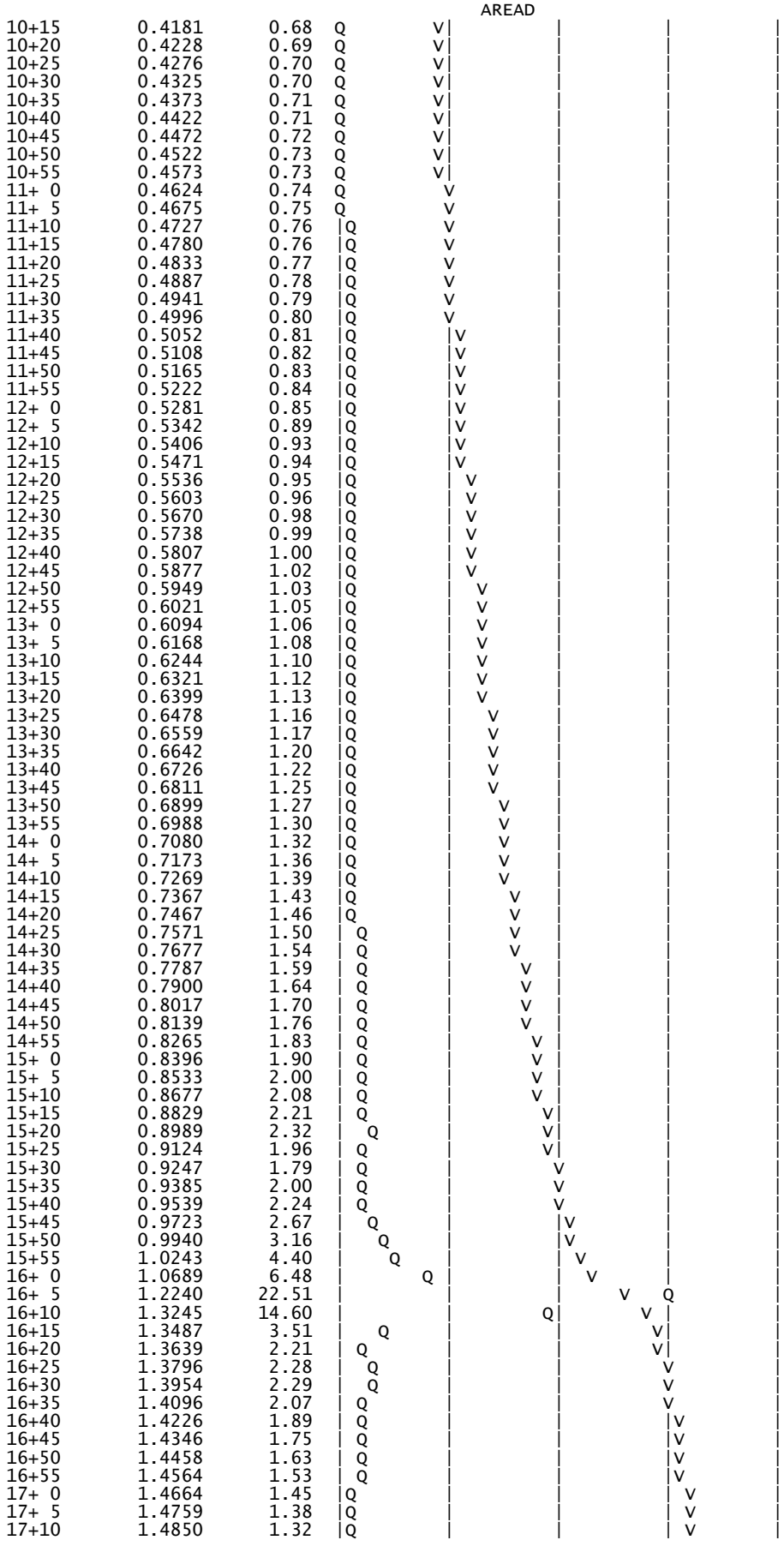
Total soil rain loss = 0.18(In)
Total effective rainfall = 4.97(In)
Peak flow rate in flood hydrograph = 22.51(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	7.5	15.0	22.5	30.0
0+ 5	0.0016	0.23	Q				
0+10	0.0042	0.38	Q				
0+15	0.0069	0.39	Q				
0+20	0.0095	0.39	Q				
0+25	0.0122	0.39	Q				
0+30	0.0149	0.39	Q				
0+35	0.0176	0.39	Q				
0+40	0.0203	0.39	Q				
0+45	0.0230	0.39	Q				
0+50	0.0257	0.39	Q				
0+55	0.0284	0.39	Q				
1+ 0	0.0311	0.40	Q				
1+ 5	0.0339	0.40	Q				
1+10	0.0366	0.40	Q				
1+15	0.0394	0.40	Q				
1+20	0.0421	0.40	Q				
1+25	0.0449	0.40	Q				
1+30	0.0477	0.40	QV				
1+35	0.0505	0.41	QV				
1+40	0.0533	0.41	QV				
1+45	0.0561	0.41	QV				
1+50	0.0589	0.41	QV				
1+55	0.0617	0.41	QV				
2+ 0	0.0646	0.41	QV				
2+ 5	0.0674	0.41	QV				
2+10	0.0703	0.41	QV				
2+15	0.0731	0.42	QV				
2+20	0.0760	0.42	QV				
2+25	0.0789	0.42	QV				
2+30	0.0818	0.42	QV				
2+35	0.0847	0.42	QV				
2+40	0.0876	0.42	QV				
2+45	0.0906	0.43	QV				
2+50	0.0935	0.43	Q V				
2+55	0.0965	0.43	Q V				
3+ 0	0.0994	0.43	Q V				
3+ 5	0.1024	0.43	Q V				
3+10	0.1054	0.43	Q V				

3+15	0.1084	0.43	Q V				
3+20	0.1114	0.44	Q V				
3+25	0.1144	0.44	Q V				
3+30	0.1174	0.44	Q V				
3+35	0.1205	0.44	Q V				
3+40	0.1235	0.44	Q V				
3+45	0.1266	0.44	Q V				
3+50	0.1296	0.45	Q V				
3+55	0.1327	0.45	Q V				
4+ 0	0.1358	0.45	Q V				
4+ 5	0.1389	0.45	Q V				
4+10	0.1421	0.45	Q V				
4+15	0.1452	0.46	Q V				
4+20	0.1484	0.46	Q V				
4+25	0.1515	0.46	Q V				
4+30	0.1547	0.46	Q V				
4+35	0.1579	0.46	Q V				
4+40	0.1611	0.46	Q V				
4+45	0.1643	0.47	Q V				
4+50	0.1675	0.47	Q V				
4+55	0.1708	0.47	Q V				
5+ 0	0.1740	0.47	Q V				
5+ 5	0.1773	0.48	Q V				
5+10	0.1806	0.48	Q V				
5+15	0.1839	0.48	Q V				
5+20	0.1872	0.48	Q V				
5+25	0.1905	0.48	Q V				
5+30	0.1939	0.49	Q V				
5+35	0.1972	0.49	Q V				
5+40	0.2006	0.49	Q V				
5+45	0.2040	0.49	Q V				
5+50	0.2074	0.49	Q V				
5+55	0.2108	0.50	Q V				
6+ 0	0.2143	0.50	Q V				
6+ 5	0.2177	0.50	Q V				
6+10	0.2212	0.50	Q V				
6+15	0.2247	0.51	Q V				
6+20	0.2282	0.51	Q V				
6+25	0.2317	0.51	Q V				
6+30	0.2353	0.51	Q V				
6+35	0.2388	0.52	Q V				
6+40	0.2424	0.52	Q V				
6+45	0.2460	0.52	Q V				
6+50	0.2496	0.52	Q V				
6+55	0.2532	0.53	Q V				
7+ 0	0.2569	0.53	Q V				
7+ 5	0.2606	0.53	Q V				
7+10	0.2643	0.54	Q V				
7+15	0.2680	0.54	Q V				
7+20	0.2717	0.54	Q V				
7+25	0.2755	0.54	Q V				
7+30	0.2792	0.55	Q V				
7+35	0.2830	0.55	Q V				
7+40	0.2868	0.55	Q V				
7+45	0.2907	0.56	Q V				
7+50	0.2945	0.56	Q V				
7+55	0.2984	0.56	Q V				
8+ 0	0.3023	0.57	Q V				
8+ 5	0.3063	0.57	Q V				
8+10	0.3102	0.57	Q V				
8+15	0.3142	0.58	Q V				
8+20	0.3182	0.58	Q V				
8+25	0.3222	0.58	Q V				
8+30	0.3263	0.59	Q V				
8+35	0.3303	0.59	Q V				
8+40	0.3344	0.60	Q V				
8+45	0.3386	0.60	Q V				
8+50	0.3427	0.60	Q V				
8+55	0.3469	0.61	Q V				
9+ 0	0.3511	0.61	Q V				
9+ 5	0.3554	0.62	Q V				
9+10	0.3596	0.62	Q V				
9+15	0.3639	0.62	Q V				
9+20	0.3683	0.63	Q V				
9+25	0.3726	0.63	Q V				
9+30	0.3770	0.64	Q V				
9+35	0.3814	0.64	Q V				
9+40	0.3859	0.65	Q V				
9+45	0.3904	0.65	Q V				
9+50	0.3949	0.66	Q V				
9+55	0.3995	0.66	Q V				
10+ 0	0.4041	0.67	Q V				
10+ 5	0.4087	0.67	Q V				
10+10	0.4134	0.68	Q V				



10+15	0.4181	0.68	
10+20	0.4228	0.69	
10+25	0.4276	0.70	
10+30	0.4325	0.70	
10+35	0.4373	0.71	
10+40	0.4422	0.71	
10+45	0.4472	0.72	
10+50	0.4522	0.73	
10+55	0.4573	0.73	
11+ 0	0.4624	0.74	
11+ 5	0.4675	0.75	
11+10	0.4727	0.76	
11+15	0.4780	0.76	
11+20	0.4833	0.77	
11+25	0.4887	0.78	
11+30	0.4941	0.79	
11+35	0.4996	0.80	
11+40	0.5052	0.81	
11+45	0.5108	0.82	
11+50	0.5165	0.83	
11+55	0.5222	0.84	
12+ 0	0.5281	0.85	
12+ 5	0.5342	0.89	
12+10	0.5406	0.93	
12+15	0.5471	0.94	
12+20	0.5536	0.95	
12+25	0.5603	0.96	
12+30	0.5670	0.98	
12+35	0.5738	0.99	
12+40	0.5807	1.00	
12+45	0.5877	1.02	
12+50	0.5949	1.03	
12+55	0.6021	1.05	
13+ 0	0.6094	1.06	
13+ 5	0.6168	1.08	
13+10	0.6244	1.10	
13+15	0.6321	1.12	
13+20	0.6399	1.13	
13+25	0.6478	1.16	
13+30	0.6559	1.17	
13+35	0.6642	1.20	
13+40	0.6726	1.22	
13+45	0.6811	1.25	
13+50	0.6899	1.27	
13+55	0.6988	1.30	
14+ 0	0.7080	1.32	
14+ 5	0.7173	1.36	
14+10	0.7269	1.39	
14+15	0.7367	1.43	
14+20	0.7467	1.46	
14+25	0.7571	1.50	
14+30	0.7677	1.54	
14+35	0.7787	1.59	
14+40	0.7900	1.64	
14+45	0.8017	1.70	
14+50	0.8139	1.76	
14+55	0.8265	1.83	
15+ 0	0.8396	1.90	
15+ 5	0.8533	2.00	
15+10	0.8677	2.08	
15+15	0.8829	2.21	
15+20	0.8989	2.32	
15+25	0.9124	1.96	
15+30	0.9247	1.79	
15+35	0.9385	2.00	
15+40	0.9539	2.24	
15+45	0.9723	2.67	
15+50	0.9940	3.16	
15+55	1.0243	4.40	
16+ 0	1.0689	6.48	
16+ 5	1.2240	22.51	
16+10	1.3245	14.60	
16+15	1.3487	3.51	
16+20	1.3639	2.21	
16+25	1.3796	2.28	
16+30	1.3954	2.29	
16+35	1.4096	2.07	
16+40	1.4226	1.89	
16+45	1.4346	1.75	
16+50	1.4458	1.63	
16+55	1.4564	1.53	
17+ 0	1.4664	1.45	
17+ 5	1.4759	1.38	
17+10	1.4850	1.32	

17+15	1.4937	1.26	Q			V
17+20	1.5020	1.21	Q			V
17+25	1.5101	1.17	Q			V
17+30	1.5179	1.13	Q			V
17+35	1.5254	1.09	Q			V
17+40	1.5327	1.06	Q			V
17+45	1.5398	1.03	Q			V
17+50	1.5467	1.00	Q			V
17+55	1.5534	0.97	Q			V
18+ 0	1.5599	0.95	Q			V
18+ 5	1.5660	0.89	Q			V
18+10	1.5718	0.84	Q			V
18+15	1.5775	0.82	Q			V
18+20	1.5830	0.80	Q			V
18+25	1.5884	0.79	Q			V
18+30	1.5937	0.77	Q			V
18+35	1.5989	0.75	Q			V
18+40	1.6040	0.74	Q			V
18+45	1.6090	0.72	Q			V
18+50	1.6139	0.71	Q			V
18+55	1.6187	0.70	Q			V
19+ 0	1.6235	0.69	Q			V
19+ 5	1.6281	0.68	Q			V
19+10	1.6327	0.67	Q			V
19+15	1.6372	0.66	Q			V
19+20	1.6417	0.65	Q			V
19+25	1.6461	0.64	Q			V
19+30	1.6504	0.63	Q			V
19+35	1.6547	0.62	Q			V
19+40	1.6589	0.61	Q			V
19+45	1.6630	0.60	Q			V
19+50	1.6671	0.59	Q			V
19+55	1.6711	0.59	Q			V
20+ 0	1.6751	0.58	Q			V
20+ 5	1.6791	0.57	Q			V
20+10	1.6830	0.57	Q			V
20+15	1.6868	0.56	Q			V
20+20	1.6906	0.55	Q			V
20+25	1.6944	0.55	Q			V
20+30	1.6981	0.54	Q			V
20+35	1.7018	0.54	Q			V
20+40	1.7055	0.53	Q			V
20+45	1.7091	0.52	Q			V
20+50	1.7127	0.52	Q			V
20+55	1.7162	0.51	Q			V
21+ 0	1.7197	0.51	Q			V
21+ 5	1.7232	0.50	Q			V
21+10	1.7266	0.50	Q			V
21+15	1.7300	0.49	Q			V
21+20	1.7334	0.49	Q			V
21+25	1.7367	0.49	Q			V
21+30	1.7400	0.48	Q			V
21+35	1.7433	0.48	Q			V
21+40	1.7466	0.47	Q			V
21+45	1.7498	0.47	Q			V
21+50	1.7530	0.46	Q			V
21+55	1.7561	0.46	Q			V
22+ 0	1.7593	0.46	Q			V
22+ 5	1.7624	0.45	Q			V
22+10	1.7655	0.45	Q			V
22+15	1.7686	0.45	Q			V
22+20	1.7716	0.44	Q			V
22+25	1.7747	0.44	Q			V
22+30	1.7777	0.44	Q			V
22+35	1.7806	0.43	Q			V
22+40	1.7836	0.43	Q			V
22+45	1.7865	0.43	Q			V
22+50	1.7894	0.42	Q			V
22+55	1.7923	0.42	Q			V
23+ 0	1.7952	0.42	Q			V
23+ 5	1.7981	0.41	Q			V
23+10	1.8009	0.41	Q			V
23+15	1.8037	0.41	Q			V
23+20	1.8065	0.41	Q			V
23+25	1.8093	0.40	Q			V
23+30	1.8121	0.40	Q			V
23+35	1.8148	0.40	Q			V
23+40	1.8175	0.40	Q			V
23+45	1.8202	0.39	Q			V
23+50	1.8229	0.39	Q			V
23+55	1.8256	0.39	Q			V
24+ 0	1.8283	0.39	Q			V

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA E
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1.20	1	0.78
Rainfall data for year 2		
1.20	6	1.20
Rainfall data for year 2		
1.20	24	2.18
Rainfall data for year 100		
1.20	1	1.27
Rainfall data for year 100		
1.20	6	2.86
Rainfall data for year 100		
1.20	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
44.0	64.0	1.20	1.000	0.623	0.046	0.029

Area-averaged adjusted loss rate Fm (In/Hr) = 0.029

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.06	0.046	44.0	64.0	5.63	0.326
1.14	0.954	98.0	98.0	0.20	0.954

Area-averaged catchment yield fraction, Y = 0.925
Area-averaged low loss fraction, Yb = 0.075

++
Watercourse length = 650.00(Ft.)
Length from concentration point to centroid = 120.00(Ft.)
Elevation difference along watercourse = 57.30(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 1.20(Ac.)
Catchment Lag time = 0.012 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 694.4138
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.029(In/Hr)
Average low loss rate fraction (Yb) = 0.075 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 1.20(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.603(In)
30-minute factor = 1.000 Adjusted rainfall = 1.032(In)
1-hour factor = 1.000 Adjusted rainfall = 1.270(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 14.51 (CFS))	
1	80.821	11.729
2	100.000	2.783

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6026	0.6026
2	0.7419	0.1393
3	0.8378	0.0960
4	0.9134	0.0755
5	0.9766	0.0632
6	1.0315	0.0549
7	1.0803	0.0488
8	1.1245	0.0442
9	1.1649	0.0404
10	1.2023	0.0374
11	1.2372	0.0349
12	1.2699	0.0327
13	1.3168	0.0469
14	1.3618	0.0450
15	1.4050	0.0432
16	1.4467	0.0417
17	1.4870	0.0403
18	1.5261	0.0390
19	1.5639	0.0378
20	1.6007	0.0368
21	1.6365	0.0358
22	1.6713	0.0349
23	1.7053	0.0340
24	1.7385	0.0332
25	1.7710	0.0325
26	1.8027	0.0318
27	1.8338	0.0311
28	1.8643	0.0305
29	1.8942	0.0299
30	1.9235	0.0293
31	1.9523	0.0288
32	1.9806	0.0283
33	2.0084	0.0278
34	2.0358	0.0274
35	2.0627	0.0269
36	2.0892	0.0265
37	2.1153	0.0261
38	2.1410	0.0257
39	2.1663	0.0253
40	2.1913	0.0250
41	2.2160	0.0247
42	2.2403	0.0243
43	2.2643	0.0240
44	2.2880	0.0237
45	2.3114	0.0234
46	2.3346	0.0231
47	2.3574	0.0229

		AREAE
48	2.3800	0.0226
49	2.4024	0.0223
50	2.4245	0.0221
51	2.4463	0.0219
52	2.4679	0.0216
53	2.4893	0.0214
54	2.5105	0.0212
55	2.5314	0.0210
56	2.5522	0.0208
57	2.5727	0.0205
58	2.5931	0.0204
59	2.6133	0.0202
60	2.6332	0.0200
61	2.6530	0.0198
62	2.6726	0.0196
63	2.6921	0.0194
64	2.7114	0.0193
65	2.7305	0.0191
66	2.7494	0.0190
67	2.7682	0.0188
68	2.7869	0.0186
69	2.8054	0.0185
70	2.8237	0.0183
71	2.8419	0.0182
72	2.8600	0.0181
73	2.8768	0.0168
74	2.8934	0.0167
75	2.9100	0.0165
76	2.9264	0.0164
77	2.9426	0.0163
78	2.9588	0.0162
79	2.9748	0.0160
80	2.9907	0.0159
81	3.0065	0.0158
82	3.0222	0.0157
83	3.0378	0.0156
84	3.0533	0.0155
85	3.0687	0.0154
86	3.0839	0.0153
87	3.0991	0.0152
88	3.1142	0.0151
89	3.1291	0.0150
90	3.1440	0.0149
91	3.1588	0.0148
92	3.1734	0.0147
93	3.1880	0.0146
94	3.2025	0.0145
95	3.2169	0.0144
96	3.2313	0.0143
97	3.2455	0.0142
98	3.2597	0.0142
99	3.2737	0.0141
100	3.2877	0.0140
101	3.3016	0.0139
102	3.3155	0.0138
103	3.3292	0.0138
104	3.3429	0.0137
105	3.3565	0.0136
106	3.3700	0.0135
107	3.3835	0.0135
108	3.3969	0.0134
109	3.4102	0.0133
110	3.4234	0.0132
111	3.4366	0.0132
112	3.4497	0.0131
113	3.4627	0.0130
114	3.4757	0.0130
115	3.4886	0.0129
116	3.5014	0.0128
117	3.5142	0.0128
118	3.5269	0.0127
119	3.5396	0.0127
120	3.5521	0.0126
121	3.5647	0.0125
122	3.5771	0.0125
123	3.5896	0.0124
124	3.6019	0.0124
125	3.6142	0.0123
126	3.6264	0.0122
127	3.6386	0.0122
128	3.6508	0.0121
129	3.6628	0.0121
130	3.6748	0.0120
131	3.6868	0.0120

		AREAE
132	3.6987	0.0119
133	3.7106	0.0119
134	3.7224	0.0118
135	3.7342	0.0118
136	3.7459	0.0117
137	3.7575	0.0117
138	3.7691	0.0116
139	3.7807	0.0116
140	3.7922	0.0115
141	3.8037	0.0115
142	3.8151	0.0114
143	3.8265	0.0114
144	3.8378	0.0113
145	3.8491	0.0113
146	3.8604	0.0112
147	3.8715	0.0112
148	3.8827	0.0112
149	3.8938	0.0111
150	3.9049	0.0111
151	3.9159	0.0110
152	3.9269	0.0110
153	3.9378	0.0109
154	3.9487	0.0109
155	3.9596	0.0109
156	3.9704	0.0108
157	3.9812	0.0108
158	3.9919	0.0107
159	4.0026	0.0107
160	4.0133	0.0107
161	4.0239	0.0106
162	4.0345	0.0106
163	4.0450	0.0105
164	4.0555	0.0105
165	4.0660	0.0105
166	4.0765	0.0104
167	4.0869	0.0104
168	4.0972	0.0104
169	4.1076	0.0103
170	4.1178	0.0103
171	4.1281	0.0103
172	4.1383	0.0102
173	4.1485	0.0102
174	4.1587	0.0102
175	4.1688	0.0101
176	4.1789	0.0101
177	4.1890	0.0101
178	4.1990	0.0100
179	4.2090	0.0100
180	4.2189	0.0100
181	4.2289	0.0099
182	4.2388	0.0099
183	4.2486	0.0099
184	4.2585	0.0098
185	4.2683	0.0098
186	4.2780	0.0098
187	4.2878	0.0097
188	4.2975	0.0097
189	4.3072	0.0097
190	4.3168	0.0097
191	4.3265	0.0096
192	4.3361	0.0096
193	4.3456	0.0096
194	4.3552	0.0095
195	4.3647	0.0095
196	4.3742	0.0095
197	4.3836	0.0095
198	4.3930	0.0094
199	4.4024	0.0094
200	4.4118	0.0094
201	4.4212	0.0093
202	4.4305	0.0093
203	4.4398	0.0093
204	4.4490	0.0093
205	4.4583	0.0092
206	4.4675	0.0092
207	4.4767	0.0092
208	4.4858	0.0092
209	4.4950	0.0091
210	4.5041	0.0091
211	4.5132	0.0091
212	4.5222	0.0091
213	4.5313	0.0090
214	4.5403	0.0090
215	4.5493	0.0090

		AREAE
216	4.5582	0.0090
217	4.5672	0.0089
218	4.5761	0.0089
219	4.5850	0.0089
220	4.5939	0.0089
221	4.6027	0.0088
222	4.6115	0.0088
223	4.6203	0.0088
224	4.6291	0.0088
225	4.6379	0.0088
226	4.6466	0.0087
227	4.6553	0.0087
228	4.6640	0.0087
229	4.6727	0.0087
230	4.6813	0.0086
231	4.6900	0.0086
232	4.6986	0.0086
233	4.7071	0.0086
234	4.7157	0.0086
235	4.7242	0.0085
236	4.7328	0.0085
237	4.7413	0.0085
238	4.7497	0.0085
239	4.7582	0.0085
240	4.7666	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7918	0.0084
244	4.8002	0.0084
245	4.8085	0.0083
246	4.8168	0.0083
247	4.8251	0.0083
248	4.8334	0.0083
249	4.8417	0.0083
250	4.8499	0.0082
251	4.8581	0.0082
252	4.8663	0.0082
253	4.8745	0.0082
254	4.8827	0.0082
255	4.8908	0.0081
256	4.8990	0.0081
257	4.9071	0.0081
258	4.9152	0.0081
259	4.9232	0.0081
260	4.9313	0.0081
261	4.9393	0.0080
262	4.9473	0.0080
263	4.9554	0.0080
264	4.9633	0.0080
265	4.9713	0.0080
266	4.9793	0.0080
267	4.9872	0.0079
268	4.9951	0.0079
269	5.0030	0.0079
270	5.0109	0.0079
271	5.0188	0.0079
272	5.0266	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0578	0.0078
277	5.0656	0.0078
278	5.0734	0.0078
279	5.0811	0.0077
280	5.0888	0.0077
281	5.0965	0.0077
282	5.1042	0.0077
283	5.1119	0.0077
284	5.1195	0.0077
285	5.1272	0.0076
286	5.1348	0.0076
287	5.1424	0.0076
288	5.1500	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0006	0.0070
2	0.0076	0.0006	0.0070
3	0.0076	0.0006	0.0071
4	0.0077	0.0006	0.0071
5	0.0077	0.0006	0.0071
6	0.0077	0.0006	0.0071

		AREAE	
7	0.0077	0.0006	0.0072
8	0.0078	0.0006	0.0072
9	0.0078	0.0006	0.0072
10	0.0078	0.0006	0.0072
11	0.0078	0.0006	0.0072
12	0.0078	0.0006	0.0073
13	0.0079	0.0006	0.0073
14	0.0079	0.0006	0.0073
15	0.0079	0.0006	0.0073
16	0.0080	0.0006	0.0074
17	0.0080	0.0006	0.0074
18	0.0080	0.0006	0.0074
19	0.0080	0.0006	0.0074
20	0.0081	0.0006	0.0075
21	0.0081	0.0006	0.0075
22	0.0081	0.0006	0.0075
23	0.0081	0.0006	0.0075
24	0.0082	0.0006	0.0076
25	0.0082	0.0006	0.0076
26	0.0082	0.0006	0.0076
27	0.0083	0.0006	0.0076
28	0.0083	0.0006	0.0077
29	0.0083	0.0006	0.0077
30	0.0083	0.0006	0.0077
31	0.0084	0.0006	0.0077
32	0.0084	0.0006	0.0078
33	0.0084	0.0006	0.0078
34	0.0085	0.0006	0.0078
35	0.0085	0.0006	0.0079
36	0.0085	0.0006	0.0079
37	0.0086	0.0006	0.0079
38	0.0086	0.0006	0.0079
39	0.0086	0.0006	0.0080
40	0.0086	0.0006	0.0080
41	0.0087	0.0007	0.0080
42	0.0087	0.0007	0.0081
43	0.0088	0.0007	0.0081
44	0.0088	0.0007	0.0081
45	0.0088	0.0007	0.0082
46	0.0088	0.0007	0.0082
47	0.0089	0.0007	0.0082
48	0.0089	0.0007	0.0082
49	0.0090	0.0007	0.0083
50	0.0090	0.0007	0.0083
51	0.0090	0.0007	0.0084
52	0.0091	0.0007	0.0084
53	0.0091	0.0007	0.0084
54	0.0091	0.0007	0.0085
55	0.0092	0.0007	0.0085
56	0.0092	0.0007	0.0085
57	0.0093	0.0007	0.0086
58	0.0093	0.0007	0.0086
59	0.0093	0.0007	0.0086
60	0.0094	0.0007	0.0087
61	0.0094	0.0007	0.0087
62	0.0095	0.0007	0.0087
63	0.0095	0.0007	0.0088
64	0.0095	0.0007	0.0088
65	0.0096	0.0007	0.0089
66	0.0096	0.0007	0.0089
67	0.0097	0.0007	0.0090
68	0.0097	0.0007	0.0090
69	0.0098	0.0007	0.0090
70	0.0098	0.0007	0.0091
71	0.0099	0.0007	0.0091
72	0.0099	0.0007	0.0092
73	0.0100	0.0007	0.0092
74	0.0100	0.0007	0.0092
75	0.0101	0.0008	0.0093
76	0.0101	0.0008	0.0093
77	0.0102	0.0008	0.0094
78	0.0102	0.0008	0.0094
79	0.0103	0.0008	0.0095
80	0.0103	0.0008	0.0095
81	0.0104	0.0008	0.0096
82	0.0104	0.0008	0.0096
83	0.0105	0.0008	0.0097
84	0.0105	0.0008	0.0097
85	0.0106	0.0008	0.0098
86	0.0106	0.0008	0.0098
87	0.0107	0.0008	0.0099
88	0.0107	0.0008	0.0099
89	0.0108	0.0008	0.0100
90	0.0109	0.0008	0.0100

91	0.0109	0.0008	0.0101
92	0.0110	0.0008	0.0102
93	0.0111	0.0008	0.0102
94	0.0111	0.0008	0.0103
95	0.0112	0.0008	0.0104
96	0.0112	0.0008	0.0104
97	0.0113	0.0008	0.0105
98	0.0114	0.0009	0.0105
99	0.0115	0.0009	0.0106
100	0.0115	0.0009	0.0107
101	0.0116	0.0009	0.0107
102	0.0117	0.0009	0.0108
103	0.0118	0.0009	0.0109
104	0.0118	0.0009	0.0109
105	0.0119	0.0009	0.0110
106	0.0120	0.0009	0.0111
107	0.0121	0.0009	0.0112
108	0.0121	0.0009	0.0112
109	0.0122	0.0009	0.0113
110	0.0123	0.0009	0.0114
111	0.0124	0.0009	0.0115
112	0.0125	0.0009	0.0115
113	0.0126	0.0009	0.0116
114	0.0127	0.0009	0.0117
115	0.0128	0.0010	0.0118
116	0.0128	0.0010	0.0119
117	0.0130	0.0010	0.0120
118	0.0130	0.0010	0.0121
119	0.0132	0.0010	0.0122
120	0.0132	0.0010	0.0122
121	0.0134	0.0010	0.0124
122	0.0135	0.0010	0.0124
123	0.0136	0.0010	0.0126
124	0.0137	0.0010	0.0127
125	0.0138	0.0010	0.0128
126	0.0139	0.0010	0.0129
127	0.0141	0.0011	0.0130
128	0.0142	0.0011	0.0131
129	0.0143	0.0011	0.0133
130	0.0144	0.0011	0.0133
131	0.0146	0.0011	0.0135
132	0.0147	0.0011	0.0136
133	0.0149	0.0011	0.0138
134	0.0150	0.0011	0.0138
135	0.0152	0.0011	0.0140
136	0.0153	0.0011	0.0141
137	0.0155	0.0012	0.0143
138	0.0156	0.0012	0.0144
139	0.0158	0.0012	0.0146
140	0.0159	0.0012	0.0147
141	0.0162	0.0012	0.0149
142	0.0163	0.0012	0.0151
143	0.0165	0.0012	0.0153
144	0.0167	0.0012	0.0154
145	0.0181	0.0014	0.0167
146	0.0182	0.0014	0.0168
147	0.0185	0.0014	0.0171
148	0.0186	0.0014	0.0172
149	0.0190	0.0014	0.0175
150	0.0191	0.0014	0.0177
151	0.0194	0.0015	0.0180
152	0.0196	0.0015	0.0181
153	0.0200	0.0015	0.0185
154	0.0202	0.0015	0.0187
155	0.0205	0.0015	0.0190
156	0.0208	0.0016	0.0192
157	0.0212	0.0016	0.0196
158	0.0214	0.0016	0.0198
159	0.0219	0.0016	0.0202
160	0.0221	0.0017	0.0204
161	0.0226	0.0017	0.0209
162	0.0229	0.0017	0.0211
163	0.0234	0.0018	0.0217
164	0.0237	0.0018	0.0219
165	0.0243	0.0018	0.0225
166	0.0247	0.0018	0.0228
167	0.0253	0.0019	0.0234
168	0.0257	0.0019	0.0238
169	0.0265	0.0020	0.0245
170	0.0269	0.0020	0.0249
171	0.0278	0.0021	0.0257
172	0.0283	0.0021	0.0262
173	0.0293	0.0022	0.0271
174	0.0299	0.0022	0.0276

175	0.0311	0.0023	0.0288
176	0.0318	0.0024	0.0294
177	0.0332	0.0024	0.0308
178	0.0340	0.0024	0.0316
179	0.0358	0.0024	0.0334
180	0.0368	0.0024	0.0344
181	0.0390	0.0024	0.0366
182	0.0403	0.0024	0.0379
183	0.0432	0.0024	0.0409
184	0.0450	0.0024	0.0426
185	0.0327	0.0024	0.0303
186	0.0349	0.0024	0.0325
187	0.0404	0.0024	0.0381
188	0.0442	0.0024	0.0418
189	0.0549	0.0024	0.0525
190	0.0632	0.0024	0.0608
191	0.0960	0.0024	0.0936
192	0.1393	0.0024	0.1369
193	0.6026	0.0024	0.6002
194	0.0755	0.0024	0.0731
195	0.0488	0.0024	0.0464
196	0.0374	0.0024	0.0350
197	0.0469	0.0024	0.0445
198	0.0417	0.0024	0.0393
199	0.0378	0.0024	0.0355
200	0.0349	0.0024	0.0325
201	0.0325	0.0024	0.0301
202	0.0305	0.0023	0.0282
203	0.0288	0.0022	0.0266
204	0.0274	0.0020	0.0253
205	0.0261	0.0020	0.0241
206	0.0250	0.0019	0.0231
207	0.0240	0.0018	0.0222
208	0.0231	0.0017	0.0214
209	0.0223	0.0017	0.0207
210	0.0216	0.0016	0.0200
211	0.0210	0.0016	0.0194
212	0.0204	0.0015	0.0188
213	0.0198	0.0015	0.0183
214	0.0193	0.0014	0.0178
215	0.0188	0.0014	0.0174
216	0.0183	0.0014	0.0170
217	0.0168	0.0013	0.0155
218	0.0164	0.0012	0.0152
219	0.0160	0.0012	0.0148
220	0.0157	0.0012	0.0145
221	0.0154	0.0012	0.0142
222	0.0151	0.0011	0.0139
223	0.0148	0.0011	0.0137
224	0.0145	0.0011	0.0134
225	0.0142	0.0011	0.0132
226	0.0140	0.0010	0.0129
227	0.0138	0.0010	0.0127
228	0.0135	0.0010	0.0125
229	0.0133	0.0010	0.0123
230	0.0131	0.0010	0.0121
231	0.0129	0.0010	0.0119
232	0.0127	0.0010	0.0118
233	0.0125	0.0009	0.0116
234	0.0124	0.0009	0.0114
235	0.0122	0.0009	0.0113
236	0.0120	0.0009	0.0111
237	0.0119	0.0009	0.0110
238	0.0117	0.0009	0.0108
239	0.0116	0.0009	0.0107
240	0.0114	0.0009	0.0106
241	0.0113	0.0008	0.0104
242	0.0112	0.0008	0.0103
243	0.0110	0.0008	0.0102
244	0.0109	0.0008	0.0101
245	0.0108	0.0008	0.0100
246	0.0107	0.0008	0.0099
247	0.0105	0.0008	0.0098
248	0.0104	0.0008	0.0097
249	0.0103	0.0008	0.0096
250	0.0102	0.0008	0.0095
251	0.0101	0.0008	0.0094
252	0.0100	0.0008	0.0093
253	0.0099	0.0007	0.0092
254	0.0098	0.0007	0.0091
255	0.0097	0.0007	0.0090
256	0.0097	0.0007	0.0089
257	0.0096	0.0007	0.0089
258	0.0095	0.0007	0.0088

259	0.0094	0.0007	0.0087
260	0.0093	0.0007	0.0086
261	0.0092	0.0007	0.0085
262	0.0092	0.0007	0.0085
263	0.0091	0.0007	0.0084
264	0.0090	0.0007	0.0083
265	0.0089	0.0007	0.0083
266	0.0089	0.0007	0.0082
267	0.0088	0.0007	0.0081
268	0.0087	0.0007	0.0081
269	0.0087	0.0006	0.0080
270	0.0086	0.0006	0.0080
271	0.0085	0.0006	0.0079
272	0.0085	0.0006	0.0078
273	0.0084	0.0006	0.0078
274	0.0084	0.0006	0.0077
275	0.0083	0.0006	0.0077
276	0.0082	0.0006	0.0076
277	0.0082	0.0006	0.0076
278	0.0081	0.0006	0.0075
279	0.0081	0.0006	0.0075
280	0.0080	0.0006	0.0074
281	0.0080	0.0006	0.0074
282	0.0079	0.0006	0.0073
283	0.0079	0.0006	0.0073
284	0.0078	0.0006	0.0072
285	0.0078	0.0006	0.0072
286	0.0077	0.0006	0.0071
287	0.0077	0.0006	0.0071
288	0.0076	0.0006	0.0071

Total soil rain loss = 0.31(In)
Total effective rainfall = 4.84(In)
Peak flow rate in flood hydrograph = 7.42(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0006	0.08	Q				
0+10	0.0013	0.10	Q				
0+15	0.0020	0.10	Q				
0+20	0.0027	0.10	Q				
0+25	0.0034	0.10	Q				
0+30	0.0041	0.10	Q				
0+35	0.0048	0.10	Q				
0+40	0.0055	0.10	Q				
0+45	0.0063	0.10	Q				
0+50	0.0070	0.10	Q				
0+55	0.0077	0.11	Q				
1+ 0	0.0084	0.11	Q				
1+ 5	0.0092	0.11	Q				
1+10	0.0099	0.11	Q				
1+15	0.0106	0.11	Q				
1+20	0.0114	0.11	Q				
1+25	0.0121	0.11	QV				
1+30	0.0128	0.11	QV				
1+35	0.0136	0.11	QV				
1+40	0.0143	0.11	QV				
1+45	0.0151	0.11	QV				
1+50	0.0158	0.11	QV				
1+55	0.0166	0.11	QV				
2+ 0	0.0173	0.11	QV				
2+ 5	0.0181	0.11	QV				
2+10	0.0188	0.11	QV				
2+15	0.0196	0.11	QV				
2+20	0.0204	0.11	QV				
2+25	0.0211	0.11	QV				
2+30	0.0219	0.11	QV				
2+35	0.0227	0.11	QV				
2+40	0.0235	0.11	QV				
2+45	0.0242	0.11	Q V				
2+50	0.0250	0.11	Q V				
2+55	0.0258	0.11	Q V				
3+ 0	0.0266	0.11	Q V				
3+ 5	0.0274	0.11	Q V				
3+10	0.0282	0.12	Q V				
3+15	0.0290	0.12	Q V				

3+20	0.0298	0.12	Q V				
3+25	0.0306	0.12	Q V				
3+30	0.0314	0.12	Q V				
3+35	0.0322	0.12	Q V				
3+40	0.0330	0.12	Q V				
3+45	0.0338	0.12	Q V				
3+50	0.0346	0.12	Q V				
3+55	0.0355	0.12	Q V				
4+ 0	0.0363	0.12	Q V				
4+ 5	0.0371	0.12	Q V				
4+10	0.0379	0.12	Q V				
4+15	0.0388	0.12	Q V				
4+20	0.0396	0.12	Q V				
4+25	0.0404	0.12	Q V				
4+30	0.0413	0.12	Q V				
4+35	0.0421	0.12	Q V				
4+40	0.0430	0.12	Q V				
4+45	0.0438	0.12	Q V				
4+50	0.0447	0.12	Q V				
4+55	0.0456	0.13	Q V				
5+ 0	0.0464	0.13	Q V				
5+ 5	0.0473	0.13	Q V				
5+10	0.0482	0.13	Q V				
5+15	0.0491	0.13	Q V				
5+20	0.0499	0.13	Q V				
5+25	0.0508	0.13	Q V				
5+30	0.0517	0.13	Q V				
5+35	0.0526	0.13	Q V				
5+40	0.0535	0.13	Q V				
5+45	0.0544	0.13	Q V				
5+50	0.0553	0.13	Q V				
5+55	0.0562	0.13	Q V				
6+ 0	0.0571	0.13	Q V				
6+ 5	0.0581	0.13	Q V				
6+10	0.0590	0.13	Q V				
6+15	0.0599	0.13	Q V				
6+20	0.0608	0.14	Q V				
6+25	0.0618	0.14	Q V				
6+30	0.0627	0.14	Q V				
6+35	0.0637	0.14	Q V				
6+40	0.0646	0.14	Q V				
6+45	0.0656	0.14	Q V				
6+50	0.0665	0.14	Q V				
6+55	0.0675	0.14	Q V				
7+ 0	0.0685	0.14	Q V				
7+ 5	0.0695	0.14	Q V				
7+10	0.0704	0.14	Q V				
7+15	0.0714	0.14	Q V				
7+20	0.0724	0.14	Q V				
7+25	0.0734	0.15	Q V				
7+30	0.0744	0.15	Q V				
7+35	0.0754	0.15	Q V				
7+40	0.0764	0.15	Q V				
7+45	0.0775	0.15	Q V				
7+50	0.0785	0.15	Q V				
7+55	0.0795	0.15	Q V				
8+ 0	0.0806	0.15	Q V				
8+ 5	0.0816	0.15	Q V				
8+10	0.0827	0.15	Q V				
8+15	0.0837	0.15	Q V				
8+20	0.0848	0.15	Q V				
8+25	0.0859	0.16	Q V				
8+30	0.0869	0.16	Q V				
8+35	0.0880	0.16	Q V				
8+40	0.0891	0.16	Q V				
8+45	0.0902	0.16	Q V				
8+50	0.0913	0.16	Q V				
8+55	0.0924	0.16	Q V				
9+ 0	0.0936	0.16	Q V				
9+ 5	0.0947	0.16	Q V				
9+10	0.0958	0.16	Q V				
9+15	0.0970	0.17	Q V				
9+20	0.0981	0.17	Q V				
9+25	0.0993	0.17	Q V				
9+30	0.1004	0.17	Q V				
9+35	0.1016	0.17	Q V				
9+40	0.1028	0.17	Q V				
9+45	0.1040	0.17	Q V				
9+50	0.1052	0.17	Q V				
9+55	0.1064	0.18	Q V				
10+ 0	0.1077	0.18	Q V				
10+ 5	0.1089	0.18	Q V				
10+10	0.1101	0.18	Q V				
10+15	0.1114	0.18	Q V				

10+20	0.1126	0.18	Q V| | | |
10+25	0.1139	0.19	Q V| | | |
10+30	0.1152	0.19	Q V| | | |
10+35	0.1165	0.19	Q V| | | |
10+40	0.1178	0.19	Q V| | | |
10+45	0.1191	0.19	Q V| | | |
10+50	0.1205	0.19	Q V| | | |
10+55	0.1218	0.20	Q V | | |
11+ 0	0.1232	0.20	Q V | | |
11+ 5	0.1245	0.20	Q V | | |
11+10	0.1259	0.20	Q V | | |
11+15	0.1273	0.20	Q V | | |
11+20	0.1287	0.20	Q V | | |
11+25	0.1302	0.21	Q V | | |
11+30	0.1316	0.21	Q V | | |
11+35	0.1331	0.21	Q |V | | |
11+40	0.1345	0.21	Q |V | | |
11+45	0.1360	0.22	Q |V | | |
11+50	0.1375	0.22	Q |V | | |
11+55	0.1390	0.22	Q |V | | |
12+ 0	0.1406	0.22	Q |V | | |
12+ 5	0.1422	0.24	Q |V | | |
12+10	0.1439	0.24	Q |V | | |
12+15	0.1456	0.25	Q | V | | |
12+20	0.1473	0.25	Q | V | | |
12+25	0.1491	0.25	|Q | V | | |
12+30	0.1508	0.26	|Q | V | | |
12+35	0.1526	0.26	|Q | V | | |
12+40	0.1544	0.26	|Q | V | | |
12+45	0.1563	0.27	|Q | V | | |
12+50	0.1581	0.27	|Q | V | | |
12+55	0.1600	0.27	|Q | V | | |
13+ 0	0.1620	0.28	|Q | V | | |
13+ 5	0.1639	0.28	|Q | V | | |
13+10	0.1659	0.29	|Q | V | | |
13+15	0.1679	0.29	|Q | V | | |
13+20	0.1699	0.30	|Q | V | | |
13+25	0.1720	0.30	|Q | V | | |
13+30	0.1741	0.31	|Q | V | | |
13+35	0.1763	0.31	|Q | V | | |
13+40	0.1785	0.32	|Q | V | | |
13+45	0.1807	0.33	|Q | V | | |
13+50	0.1830	0.33	|Q | V | | |
13+55	0.1853	0.34	|Q | V | | |
14+ 0	0.1877	0.34	|Q | V | | |
14+ 5	0.1901	0.35	|Q | V | | |
14+10	0.1926	0.36	|Q | V | | |
14+15	0.1951	0.37	|Q | V | | |
14+20	0.1978	0.38	|Q | V | | |
14+25	0.2004	0.39	|Q | V | | |
14+30	0.2032	0.40	|Q | V | | |
14+35	0.2060	0.41	|Q | V | | |
14+40	0.2090	0.42	|Q | V | | |
14+45	0.2120	0.44	|Q | V | | |
14+50	0.2152	0.46	|Q | V | | |
14+55	0.2185	0.48	|Q | V | | |
15+ 0	0.2219	0.50	|Q | V | | |
15+ 5	0.2255	0.53	| Q | V | | |
15+10	0.2293	0.55	| Q | V | | |
15+15	0.2333	0.58	| Q | V| | |
15+20	0.2375	0.61	| Q | V| | |
15+25	0.2408	0.47	|Q | V| | |
15+30	0.2440	0.47	|Q | V | |
15+35	0.2477	0.54	| Q | V | |
15+40	0.2518	0.60	| Q | V | |
15+45	0.2568	0.73	| Q | |V | |
15+50	0.2628	0.86	| Q | |V | |
15+55	0.2715	1.27	| Q | | V | |
16+ 0	0.2843	1.87	| Q | | V |
16+ 5	0.3354	7.42	| | | V Q|
16+10	0.3529	2.53	| Q | | V|
16+15	0.3580	0.75	| Q | | V|
16+20	0.3617	0.54	| Q | | V|
16+25	0.3660	0.62	| Q | | V |
16+30	0.3700	0.58	| Q | | V |
16+35	0.3736	0.53	| Q | | V |
16+40	0.3770	0.48	|Q | | |V |
16+45	0.3800	0.44	|Q | | |V |
16+50	0.3829	0.41	|Q | | |V |
16+55	0.3855	0.39	|Q | | |V |
17+ 0	0.3881	0.37	|Q | | | V |
17+ 5	0.3905	0.35	|Q | | | V |
17+10	0.3929	0.34	|Q | | | V |
17+15	0.3951	0.32	|Q | | | V |

17+20	0.3973	0.31	Q			V
17+25	0.3993	0.30	Q			V
17+30	0.4014	0.29	Q			V
17+35	0.4033	0.28	Q			V
17+40	0.4052	0.27	Q			V
17+45	0.4070	0.27	Q			V
17+50	0.4088	0.26	Q			V
17+55	0.4106	0.25	Q			V
18+ 0	0.4123	0.25	Q			V
18+ 5	0.4139	0.23	Q			V
18+10	0.4154	0.22	Q			V
18+15	0.4169	0.22	Q			V
18+20	0.4183	0.21	Q			V
18+25	0.4198	0.21	Q			V
18+30	0.4212	0.20	Q			V
18+35	0.4225	0.20	Q			V
18+40	0.4239	0.20	Q			V
18+45	0.4252	0.19	Q			V
18+50	0.4265	0.19	Q			V
18+55	0.4278	0.19	Q			V
19+ 0	0.4290	0.18	Q			V
19+ 5	0.4303	0.18	Q			V
19+10	0.4315	0.18	Q			V
19+15	0.4327	0.17	Q			V
19+20	0.4338	0.17	Q			V
19+25	0.4350	0.17	Q			V
19+30	0.4361	0.17	Q			V
19+35	0.4373	0.16	Q			V
19+40	0.4384	0.16	Q			V
19+45	0.4395	0.16	Q			V
19+50	0.4406	0.16	Q			V
19+55	0.4416	0.16	Q			V
20+ 0	0.4427	0.15	Q			V
20+ 5	0.4438	0.15	Q			V
20+10	0.4448	0.15	Q			V
20+15	0.4458	0.15	Q			V
20+20	0.4468	0.15	Q			V
20+25	0.4478	0.15	Q			V
20+30	0.4488	0.14	Q			V
20+35	0.4498	0.14	Q			V
20+40	0.4507	0.14	Q			V
20+45	0.4517	0.14	Q			V
20+50	0.4527	0.14	Q			V
20+55	0.4536	0.14	Q			V
21+ 0	0.4545	0.13	Q			V
21+ 5	0.4554	0.13	Q			V
21+10	0.4564	0.13	Q			V
21+15	0.4573	0.13	Q			V
21+20	0.4581	0.13	Q			V
21+25	0.4590	0.13	Q			V
21+30	0.4599	0.13	Q			V
21+35	0.4608	0.13	Q			V
21+40	0.4616	0.13	Q			V
21+45	0.4625	0.12	Q			V
21+50	0.4634	0.12	Q			V
21+55	0.4642	0.12	Q			V
22+ 0	0.4650	0.12	Q			V
22+ 5	0.4659	0.12	Q			V
22+10	0.4667	0.12	Q			V
22+15	0.4675	0.12	Q			V
22+20	0.4683	0.12	Q			V
22+25	0.4691	0.12	Q			V
22+30	0.4699	0.12	Q			V
22+35	0.4707	0.11	Q			V
22+40	0.4715	0.11	Q			V
22+45	0.4723	0.11	Q			V
22+50	0.4730	0.11	Q			V
22+55	0.4738	0.11	Q			V
23+ 0	0.4746	0.11	Q			V
23+ 5	0.4753	0.11	Q			V
23+10	0.4761	0.11	Q			V
23+15	0.4768	0.11	Q			V
23+20	0.4776	0.11	Q			V
23+25	0.4783	0.11	Q			V
23+30	0.4790	0.11	Q			V
23+35	0.4798	0.11	Q			V
23+40	0.4805	0.11	Q			V
23+45	0.4812	0.10	Q			V
23+50	0.4819	0.10	Q			V
23+55	0.4826	0.10	Q			V
24+ 0	0.4833	0.10	Q			V

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA F
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
3.38	1	0.78
Rainfall data for year 2		
3.38	6	1.20
Rainfall data for year 2		
3.38	24	2.18
Rainfall data for year 100		
3.38	1	1.27
Rainfall data for year 100		
3.38	6	2.86
Rainfall data for year 100		
3.38	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
44.0	64.0	3.38	1.000	0.623	0.019	0.012

Area-averaged adjusted loss rate Fm (In/Hr) = 0.012

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.06	0.019	44.0	64.0	5.63	0.326
3.32	0.981	98.0	98.0	0.20	0.954

Area-averaged catchment yield fraction, Y = 0.942
Area-averaged low loss fraction, Yb = 0.058

++
Watercourse length = 940.00(Ft.)
Length from concentration point to centroid = 210.00(Ft.)
Elevation difference along watercourse = 102.80(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 3.38(Ac.)
Catchment Lag time = 0.016 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 508.3595
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.012(In/Hr)
Average low loss rate fraction (Yb) = 0.058 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.603(In)
Computed peak 30-minute rainfall = 1.032(In)
Specified peak 1-hour rainfall = 1.270(In)
Computed peak 3-hour rainfall = 2.089(In)
Specified peak 6-hour rainfall = 2.860(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 3.38(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.603(In)
30-minute factor = 1.000 Adjusted rainfall = 1.031(In)
1-hour factor = 1.000 Adjusted rainfall = 1.270(In)
3-hour factor = 1.000 Adjusted rainfall = 2.089(In)
6-hour factor = 1.000 Adjusted rainfall = 2.860(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 40.88 (CFS))	
1	73.943	30.226
2	100.000	10.651

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.6025	0.6025
2	0.7418	0.1393
3	0.8378	0.0960
4	0.9133	0.0755
5	0.9765	0.0632
6	1.0314	0.0549
7	1.0802	0.0488
8	1.1244	0.0442
9	1.1648	0.0404
10	1.2022	0.0374
11	1.2371	0.0349
12	1.2698	0.0327
13	1.3167	0.0469
14	1.3617	0.0450
15	1.4049	0.0432
16	1.4466	0.0417
17	1.4869	0.0403
18	1.5259	0.0390
19	1.5638	0.0379
20	1.6006	0.0368
21	1.6364	0.0358
22	1.6712	0.0349
23	1.7052	0.0340
24	1.7385	0.0332
25	1.7709	0.0325
26	1.8027	0.0318
27	1.8338	0.0311
28	1.8642	0.0305
29	1.8941	0.0299
30	1.9235	0.0293
31	1.9523	0.0288
32	1.9805	0.0283
33	2.0084	0.0278
34	2.0357	0.0274
35	2.0626	0.0269
36	2.0891	0.0265
37	2.1152	0.0261
38	2.1410	0.0257
39	2.1663	0.0253
40	2.1913	0.0250
41	2.2159	0.0247
42	2.2403	0.0243
43	2.2643	0.0240
44	2.2880	0.0237
45	2.3114	0.0234
46	2.3345	0.0231
47	2.3574	0.0229

		AREAF
48	2.3800	0.0226
49	2.4023	0.0223
50	2.4244	0.0221
51	2.4463	0.0219
52	2.4679	0.0216
53	2.4893	0.0214
54	2.5105	0.0212
55	2.5314	0.0210
56	2.5522	0.0208
57	2.5727	0.0205
58	2.5931	0.0204
59	2.6132	0.0202
60	2.6332	0.0200
61	2.6530	0.0198
62	2.6726	0.0196
63	2.6921	0.0194
64	2.7113	0.0193
65	2.7305	0.0191
66	2.7494	0.0190
67	2.7682	0.0188
68	2.7869	0.0186
69	2.8053	0.0185
70	2.8237	0.0183
71	2.8419	0.0182
72	2.8600	0.0181
73	2.8768	0.0168
74	2.8934	0.0167
75	2.9099	0.0165
76	2.9263	0.0164
77	2.9426	0.0163
78	2.9588	0.0162
79	2.9748	0.0160
80	2.9907	0.0159
81	3.0065	0.0158
82	3.0222	0.0157
83	3.0378	0.0156
84	3.0533	0.0155
85	3.0686	0.0154
86	3.0839	0.0153
87	3.0991	0.0152
88	3.1141	0.0151
89	3.1291	0.0150
90	3.1440	0.0149
91	3.1587	0.0148
92	3.1734	0.0147
93	3.1880	0.0146
94	3.2025	0.0145
95	3.2169	0.0144
96	3.2313	0.0143
97	3.2455	0.0142
98	3.2596	0.0142
99	3.2737	0.0141
100	3.2877	0.0140
101	3.3016	0.0139
102	3.3154	0.0138
103	3.3292	0.0138
104	3.3429	0.0137
105	3.3565	0.0136
106	3.3700	0.0135
107	3.3835	0.0135
108	3.3968	0.0134
109	3.4101	0.0133
110	3.4234	0.0132
111	3.4365	0.0132
112	3.4497	0.0131
113	3.4627	0.0130
114	3.4757	0.0130
115	3.4886	0.0129
116	3.5014	0.0128
117	3.5142	0.0128
118	3.5269	0.0127
119	3.5395	0.0127
120	3.5521	0.0126
121	3.5647	0.0125
122	3.5771	0.0125
123	3.5895	0.0124
124	3.6019	0.0124
125	3.6142	0.0123
126	3.6264	0.0122
127	3.6386	0.0122
128	3.6507	0.0121
129	3.6628	0.0121
130	3.6748	0.0120
131	3.6868	0.0120

		AREAF
132	3.6987	0.0119
133	3.7106	0.0119
134	3.7224	0.0118
135	3.7341	0.0118
136	3.7459	0.0117
137	3.7575	0.0117
138	3.7691	0.0116
139	3.7807	0.0116
140	3.7922	0.0115
141	3.8037	0.0115
142	3.8151	0.0114
143	3.8265	0.0114
144	3.8378	0.0113
145	3.8491	0.0113
146	3.8603	0.0112
147	3.8715	0.0112
148	3.8827	0.0112
149	3.8938	0.0111
150	3.9049	0.0111
151	3.9159	0.0110
152	3.9269	0.0110
153	3.9378	0.0109
154	3.9487	0.0109
155	3.9596	0.0109
156	3.9704	0.0108
157	3.9812	0.0108
158	3.9919	0.0107
159	4.0026	0.0107
160	4.0133	0.0107
161	4.0239	0.0106
162	4.0345	0.0106
163	4.0450	0.0105
164	4.0555	0.0105
165	4.0660	0.0105
166	4.0764	0.0104
167	4.0868	0.0104
168	4.0972	0.0104
169	4.1075	0.0103
170	4.1178	0.0103
171	4.1281	0.0103
172	4.1383	0.0102
173	4.1485	0.0102
174	4.1587	0.0102
175	4.1688	0.0101
176	4.1789	0.0101
177	4.1889	0.0101
178	4.1990	0.0100
179	4.2090	0.0100
180	4.2189	0.0100
181	4.2288	0.0099
182	4.2387	0.0099
183	4.2486	0.0099
184	4.2584	0.0098
185	4.2682	0.0098
186	4.2780	0.0098
187	4.2878	0.0097
188	4.2975	0.0097
189	4.3072	0.0097
190	4.3168	0.0097
191	4.3264	0.0096
192	4.3360	0.0096
193	4.3456	0.0096
194	4.3551	0.0095
195	4.3647	0.0095
196	4.3741	0.0095
197	4.3836	0.0095
198	4.3930	0.0094
199	4.4024	0.0094
200	4.4118	0.0094
201	4.4211	0.0093
202	4.4305	0.0093
203	4.4397	0.0093
204	4.4490	0.0093
205	4.4583	0.0092
206	4.4675	0.0092
207	4.4767	0.0092
208	4.4858	0.0092
209	4.4950	0.0091
210	4.5041	0.0091
211	4.5132	0.0091
212	4.5222	0.0091
213	4.5313	0.0090
214	4.5403	0.0090
215	4.5493	0.0090

		AREAF
216	4.5582	0.0090
217	4.5672	0.0089
218	4.5761	0.0089
219	4.5850	0.0089
220	4.5939	0.0089
221	4.6027	0.0088
222	4.6115	0.0088
223	4.6203	0.0088
224	4.6291	0.0088
225	4.6379	0.0088
226	4.6466	0.0087
227	4.6553	0.0087
228	4.6640	0.0087
229	4.6727	0.0087
230	4.6813	0.0086
231	4.6899	0.0086
232	4.6985	0.0086
233	4.7071	0.0086
234	4.7157	0.0086
235	4.7242	0.0085
236	4.7327	0.0085
237	4.7412	0.0085
238	4.7497	0.0085
239	4.7582	0.0085
240	4.7666	0.0084
241	4.7750	0.0084
242	4.7834	0.0084
243	4.7918	0.0084
244	4.8002	0.0084
245	4.8085	0.0083
246	4.8168	0.0083
247	4.8251	0.0083
248	4.8334	0.0083
249	4.8417	0.0083
250	4.8499	0.0082
251	4.8581	0.0082
252	4.8663	0.0082
253	4.8745	0.0082
254	4.8827	0.0082
255	4.8908	0.0081
256	4.8989	0.0081
257	4.9071	0.0081
258	4.9151	0.0081
259	4.9232	0.0081
260	4.9313	0.0081
261	4.9393	0.0080
262	4.9473	0.0080
263	4.9553	0.0080
264	4.9633	0.0080
265	4.9713	0.0080
266	4.9792	0.0080
267	4.9872	0.0079
268	4.9951	0.0079
269	5.0030	0.0079
270	5.0109	0.0079
271	5.0187	0.0079
272	5.0266	0.0078
273	5.0344	0.0078
274	5.0422	0.0078
275	5.0500	0.0078
276	5.0578	0.0078
277	5.0656	0.0078
278	5.0733	0.0078
279	5.0811	0.0077
280	5.0888	0.0077
281	5.0965	0.0077
282	5.1042	0.0077
283	5.1119	0.0077
284	5.1195	0.0077
285	5.1271	0.0076
286	5.1348	0.0076
287	5.1424	0.0076
288	5.1500	0.0076

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0076	0.0004	0.0072
2	0.0076	0.0004	0.0072
3	0.0076	0.0004	0.0072
4	0.0077	0.0004	0.0072
5	0.0077	0.0004	0.0072
6	0.0077	0.0004	0.0073

	AREAF		
7	0.0077	0.0004	0.0073
8	0.0078	0.0004	0.0073
9	0.0078	0.0005	0.0073
10	0.0078	0.0005	0.0073
11	0.0078	0.0005	0.0074
12	0.0078	0.0005	0.0074
13	0.0079	0.0005	0.0074
14	0.0079	0.0005	0.0074
15	0.0079	0.0005	0.0075
16	0.0080	0.0005	0.0075
17	0.0080	0.0005	0.0075
18	0.0080	0.0005	0.0075
19	0.0080	0.0005	0.0076
20	0.0081	0.0005	0.0076
21	0.0081	0.0005	0.0076
22	0.0081	0.0005	0.0076
23	0.0081	0.0005	0.0077
24	0.0082	0.0005	0.0077
25	0.0082	0.0005	0.0077
26	0.0082	0.0005	0.0077
27	0.0083	0.0005	0.0078
28	0.0083	0.0005	0.0078
29	0.0083	0.0005	0.0078
30	0.0083	0.0005	0.0079
31	0.0084	0.0005	0.0079
32	0.0084	0.0005	0.0079
33	0.0084	0.0005	0.0079
34	0.0085	0.0005	0.0080
35	0.0085	0.0005	0.0080
36	0.0085	0.0005	0.0080
37	0.0086	0.0005	0.0081
38	0.0086	0.0005	0.0081
39	0.0086	0.0005	0.0081
40	0.0086	0.0005	0.0081
41	0.0087	0.0005	0.0082
42	0.0087	0.0005	0.0082
43	0.0088	0.0005	0.0082
44	0.0088	0.0005	0.0083
45	0.0088	0.0005	0.0083
46	0.0088	0.0005	0.0083
47	0.0089	0.0005	0.0084
48	0.0089	0.0005	0.0084
49	0.0090	0.0005	0.0084
50	0.0090	0.0005	0.0085
51	0.0090	0.0005	0.0085
52	0.0091	0.0005	0.0085
53	0.0091	0.0005	0.0086
54	0.0091	0.0005	0.0086
55	0.0092	0.0005	0.0087
56	0.0092	0.0005	0.0087
57	0.0093	0.0005	0.0087
58	0.0093	0.0005	0.0088
59	0.0093	0.0005	0.0088
60	0.0094	0.0005	0.0088
61	0.0094	0.0005	0.0089
62	0.0095	0.0005	0.0089
63	0.0095	0.0006	0.0090
64	0.0095	0.0006	0.0090
65	0.0096	0.0006	0.0090
66	0.0096	0.0006	0.0091
67	0.0097	0.0006	0.0091
68	0.0097	0.0006	0.0092
69	0.0098	0.0006	0.0092
70	0.0098	0.0006	0.0092
71	0.0099	0.0006	0.0093
72	0.0099	0.0006	0.0093
73	0.0100	0.0006	0.0094
74	0.0100	0.0006	0.0094
75	0.0101	0.0006	0.0095
76	0.0101	0.0006	0.0095
77	0.0102	0.0006	0.0096
78	0.0102	0.0006	0.0096
79	0.0103	0.0006	0.0097
80	0.0103	0.0006	0.0097
81	0.0104	0.0006	0.0098
82	0.0104	0.0006	0.0098
83	0.0105	0.0006	0.0099
84	0.0105	0.0006	0.0099
85	0.0106	0.0006	0.0100
86	0.0106	0.0006	0.0100
87	0.0107	0.0006	0.0101
88	0.0107	0.0006	0.0101
89	0.0108	0.0006	0.0102
90	0.0109	0.0006	0.0102

		AREAF	
91	0.0109	0.0006	0.0103
92	0.0110	0.0006	0.0103
93	0.0111	0.0006	0.0104
94	0.0111	0.0006	0.0105
95	0.0112	0.0006	0.0105
96	0.0112	0.0007	0.0106
97	0.0113	0.0007	0.0107
98	0.0114	0.0007	0.0107
99	0.0115	0.0007	0.0108
100	0.0115	0.0007	0.0108
101	0.0116	0.0007	0.0109
102	0.0117	0.0007	0.0110
103	0.0118	0.0007	0.0111
104	0.0118	0.0007	0.0111
105	0.0119	0.0007	0.0112
106	0.0120	0.0007	0.0113
107	0.0121	0.0007	0.0114
108	0.0121	0.0007	0.0114
109	0.0122	0.0007	0.0115
110	0.0123	0.0007	0.0116
111	0.0124	0.0007	0.0117
112	0.0125	0.0007	0.0117
113	0.0126	0.0007	0.0119
114	0.0127	0.0007	0.0119
115	0.0128	0.0007	0.0120
116	0.0128	0.0007	0.0121
117	0.0130	0.0008	0.0122
118	0.0130	0.0008	0.0123
119	0.0132	0.0008	0.0124
120	0.0132	0.0008	0.0125
121	0.0134	0.0008	0.0126
122	0.0135	0.0008	0.0127
123	0.0136	0.0008	0.0128
124	0.0137	0.0008	0.0129
125	0.0138	0.0008	0.0130
126	0.0139	0.0008	0.0131
127	0.0141	0.0008	0.0133
128	0.0142	0.0008	0.0133
129	0.0143	0.0008	0.0135
130	0.0144	0.0008	0.0136
131	0.0146	0.0008	0.0137
132	0.0147	0.0009	0.0138
133	0.0149	0.0009	0.0140
134	0.0150	0.0009	0.0141
135	0.0152	0.0009	0.0143
136	0.0153	0.0009	0.0144
137	0.0155	0.0009	0.0146
138	0.0156	0.0009	0.0147
139	0.0158	0.0009	0.0149
140	0.0159	0.0009	0.0150
141	0.0162	0.0009	0.0152
142	0.0163	0.0009	0.0153
143	0.0165	0.0010	0.0156
144	0.0167	0.0010	0.0157
145	0.0181	0.0010	0.0171
146	0.0182	0.0010	0.0172
147	0.0185	0.0010	0.0175
148	0.0186	0.0010	0.0177
149	0.0190	0.0010	0.0180
150	0.0191	0.0010	0.0181
151	0.0194	0.0010	0.0185
152	0.0196	0.0010	0.0186
153	0.0200	0.0010	0.0190
154	0.0202	0.0010	0.0192
155	0.0205	0.0010	0.0196
156	0.0208	0.0010	0.0198
157	0.0212	0.0010	0.0202
158	0.0214	0.0010	0.0204
159	0.0219	0.0010	0.0209
160	0.0221	0.0010	0.0211
161	0.0226	0.0010	0.0216
162	0.0229	0.0010	0.0219
163	0.0234	0.0010	0.0224
164	0.0237	0.0010	0.0227
165	0.0243	0.0010	0.0233
166	0.0247	0.0010	0.0237
167	0.0253	0.0010	0.0244
168	0.0257	0.0010	0.0247
169	0.0265	0.0010	0.0255
170	0.0269	0.0010	0.0259
171	0.0278	0.0010	0.0268
172	0.0283	0.0010	0.0273
173	0.0293	0.0010	0.0283
174	0.0299	0.0010	0.0289

175	0.0311	0.0010	0.0301
176	0.0318	0.0010	0.0308
177	0.0332	0.0010	0.0322
178	0.0340	0.0010	0.0330
179	0.0358	0.0010	0.0348
180	0.0368	0.0010	0.0358
181	0.0390	0.0010	0.0380
182	0.0403	0.0010	0.0393
183	0.0432	0.0010	0.0423
184	0.0450	0.0010	0.0440
185	0.0327	0.0010	0.0317
186	0.0349	0.0010	0.0339
187	0.0404	0.0010	0.0395
188	0.0442	0.0010	0.0432
189	0.0549	0.0010	0.0539
190	0.0632	0.0010	0.0622
191	0.0960	0.0010	0.0950
192	0.1393	0.0010	0.1383
193	0.6025	0.0010	0.6015
194	0.0755	0.0010	0.0745
195	0.0488	0.0010	0.0478
196	0.0374	0.0010	0.0364
197	0.0469	0.0010	0.0459
198	0.0417	0.0010	0.0407
199	0.0379	0.0010	0.0369
200	0.0349	0.0010	0.0339
201	0.0325	0.0010	0.0315
202	0.0305	0.0010	0.0295
203	0.0288	0.0010	0.0278
204	0.0274	0.0010	0.0264
205	0.0261	0.0010	0.0251
206	0.0250	0.0010	0.0240
207	0.0240	0.0010	0.0230
208	0.0231	0.0010	0.0221
209	0.0223	0.0010	0.0214
210	0.0216	0.0010	0.0206
211	0.0210	0.0010	0.0200
212	0.0204	0.0010	0.0194
213	0.0198	0.0010	0.0188
214	0.0193	0.0010	0.0183
215	0.0188	0.0010	0.0178
216	0.0183	0.0010	0.0174
217	0.0168	0.0010	0.0158
218	0.0164	0.0010	0.0154
219	0.0160	0.0009	0.0151
220	0.0157	0.0009	0.0148
221	0.0154	0.0009	0.0145
222	0.0151	0.0009	0.0142
223	0.0148	0.0009	0.0139
224	0.0145	0.0008	0.0137
225	0.0142	0.0008	0.0134
226	0.0140	0.0008	0.0132
227	0.0138	0.0008	0.0130
228	0.0135	0.0008	0.0127
229	0.0133	0.0008	0.0125
230	0.0131	0.0008	0.0123
231	0.0129	0.0007	0.0122
232	0.0127	0.0007	0.0120
233	0.0125	0.0007	0.0118
234	0.0124	0.0007	0.0116
235	0.0122	0.0007	0.0115
236	0.0120	0.0007	0.0113
237	0.0119	0.0007	0.0112
238	0.0117	0.0007	0.0110
239	0.0116	0.0007	0.0109
240	0.0114	0.0007	0.0108
241	0.0113	0.0007	0.0106
242	0.0112	0.0006	0.0105
243	0.0110	0.0006	0.0104
244	0.0109	0.0006	0.0103
245	0.0108	0.0006	0.0102
246	0.0107	0.0006	0.0100
247	0.0105	0.0006	0.0099
248	0.0104	0.0006	0.0098
249	0.0103	0.0006	0.0097
250	0.0102	0.0006	0.0096
251	0.0101	0.0006	0.0095
252	0.0100	0.0006	0.0094
253	0.0099	0.0006	0.0094
254	0.0098	0.0006	0.0093
255	0.0097	0.0006	0.0092
256	0.0097	0.0006	0.0091
257	0.0096	0.0006	0.0090
258	0.0095	0.0005	0.0089

		AREAF	
259	0.0094	0.0005	0.0089
260	0.0093	0.0005	0.0088
261	0.0092	0.0005	0.0087
262	0.0092	0.0005	0.0086
263	0.0091	0.0005	0.0086
264	0.0090	0.0005	0.0085
265	0.0089	0.0005	0.0084
266	0.0089	0.0005	0.0084
267	0.0088	0.0005	0.0083
268	0.0087	0.0005	0.0082
269	0.0087	0.0005	0.0082
270	0.0086	0.0005	0.0081
271	0.0085	0.0005	0.0080
272	0.0085	0.0005	0.0080
273	0.0084	0.0005	0.0079
274	0.0084	0.0005	0.0079
275	0.0083	0.0005	0.0078
276	0.0082	0.0005	0.0078
277	0.0082	0.0005	0.0077
278	0.0081	0.0005	0.0077
279	0.0081	0.0005	0.0076
280	0.0080	0.0005	0.0076
281	0.0080	0.0005	0.0075
282	0.0079	0.0005	0.0075
283	0.0079	0.0005	0.0074
284	0.0078	0.0005	0.0074
285	0.0078	0.0005	0.0073
286	0.0077	0.0004	0.0073
287	0.0077	0.0004	0.0072
288	0.0076	0.0004	0.0072

Total soil rain loss = 0.20(In)
Total effective rainfall = 4.95(In)
Peak flow rate in flood hydrograph = 19.66(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	5.0	10.0	15.0	20.0
0+ 5	0.0015	0.22	Q	|	|	|	|
0+10	0.0035	0.29	Q	|	|	|	|
0+15	0.0055	0.29	Q	|	|	|	|
0+20	0.0076	0.29	Q	|	|	|	|
0+25	0.0096	0.30	Q	|	|	|	|
0+30	0.0116	0.30	Q	|	|	|	|
0+35	0.0137	0.30	Q	|	|	|	|
0+40	0.0157	0.30	Q	|	|	|	|
0+45	0.0178	0.30	Q	|	|	|	|
0+50	0.0199	0.30	Q	|	|	|	|
0+55	0.0219	0.30	Q	|	|	|	|
1+ 0	0.0240	0.30	Q	|	|	|	|
1+ 5	0.0261	0.30	Q	|	|	|	|
1+10	0.0282	0.30	Q	|	|	|	|
1+15	0.0303	0.31	Q	|	|	|	|
1+20	0.0324	0.31	Q	|	|	|	|
1+25	0.0345	0.31	Q	|	|	|	|
1+30	0.0367	0.31	QV	|	|	|	|
1+35	0.0388	0.31	QV	|	|	|	|
1+40	0.0409	0.31	QV	|	|	|	|
1+45	0.0431	0.31	QV	|	|	|	|
1+50	0.0452	0.31	QV	|	|	|	|
1+55	0.0474	0.31	QV	|	|	|	|
2+ 0	0.0495	0.31	QV	|	|	|	|
2+ 5	0.0517	0.32	QV	|	|	|	|
2+10	0.0539	0.32	QV	|	|	|	|
2+15	0.0561	0.32	QV	|	|	|	|
2+20	0.0583	0.32	QV	|	|	|	|
2+25	0.0605	0.32	QV	|	|	|	|
2+30	0.0627	0.32	QV	|	|	|	|
2+35	0.0649	0.32	QV	|	|	|	|
2+40	0.0671	0.32	QV	|	|	|	|
2+45	0.0694	0.32	QV	|	|	|	|
2+50	0.0716	0.33	Q V	|	|	|	|
2+55	0.0739	0.33	Q V	|	|	|	|
3+ 0	0.0761	0.33	Q V	|	|	|	|
3+ 5	0.0784	0.33	Q V	|	|	|	|
3+10	0.0807	0.33	Q V	|	|	|	|
3+15	0.0829	0.33	Q V	|	|	|	|

3+20	0.0852	0.33	Q V	|	|	|	|
3+25	0.0875	0.33	Q V	|	|	|	|
3+30	0.0898	0.34	Q V	|	|	|	|
3+35	0.0922	0.34	Q V	|	|	|	|
3+40	0.0945	0.34	Q V	|	|	|	|
3+45	0.0968	0.34	Q V	|	|	|	|
3+50	0.0992	0.34	Q V	|	|	|	|
3+55	0.1015	0.34	Q V	|	|	|	|
4+ 0	0.1039	0.34	Q V	|	|	|	|
4+ 5	0.1063	0.34	Q V	|	|	|	|
4+10	0.1086	0.35	Q V	|	|	|	|
4+15	0.1110	0.35	Q V	|	|	|	|
4+20	0.1134	0.35	Q V	|	|	|	|
4+25	0.1159	0.35	Q V	|	|	|	|
4+30	0.1183	0.35	Q V	|	|	|	|
4+35	0.1207	0.35	Q V	|	|	|	|
4+40	0.1231	0.35	Q V	|	|	|	|
4+45	0.1256	0.36	Q V	|	|	|	|
4+50	0.1281	0.36	Q V	|	|	|	|
4+55	0.1305	0.36	Q V	|	|	|	|
5+ 0	0.1330	0.36	Q V	|	|	|	|
5+ 5	0.1355	0.36	Q V	|	|	|	|
5+10	0.1380	0.36	Q V	|	|	|	|
5+15	0.1405	0.37	Q V	|	|	|	|
5+20	0.1431	0.37	Q V	|	|	|	|
5+25	0.1456	0.37	Q V	|	|	|	|
5+30	0.1482	0.37	Q V	|	|	|	|
5+35	0.1507	0.37	Q V	|	|	|	|
5+40	0.1533	0.37	Q V	|	|	|	|
5+45	0.1559	0.38	Q V	|	|	|	|
5+50	0.1585	0.38	Q V	|	|	|	|
5+55	0.1611	0.38	Q V	|	|	|	|
6+ 0	0.1637	0.38	Q V	|	|	|	|
6+ 5	0.1664	0.38	Q V	|	|	|	|
6+10	0.1690	0.38	Q V	|	|	|	|
6+15	0.1717	0.39	Q V	|	|	|	|
6+20	0.1743	0.39	Q V	|	|	|	|
6+25	0.1770	0.39	Q V	|	|	|	|
6+30	0.1797	0.39	Q V	|	|	|	|
6+35	0.1824	0.39	Q V	|	|	|	|
6+40	0.1852	0.40	Q V	|	|	|	|
6+45	0.1879	0.40	Q V	|	|	|	|
6+50	0.1907	0.40	Q V	|	|	|	|
6+55	0.1934	0.40	Q V	|	|	|	|
7+ 0	0.1962	0.40	Q V	|	|	|	|
7+ 5	0.1990	0.41	Q V	|	|	|	|
7+10	0.2019	0.41	Q V	|	|	|	|
7+15	0.2047	0.41	Q V	|	|	|	|
7+20	0.2075	0.41	Q V	|	|	|	|
7+25	0.2104	0.42	Q V	|	|	|	|
7+30	0.2133	0.42	Q V	|	|	|	|
7+35	0.2162	0.42	Q V	|	|	|	|
7+40	0.2191	0.42	Q V	|	|	|	|
7+45	0.2220	0.43	Q V	|	|	|	|
7+50	0.2249	0.43	Q V	|	|	|	|
7+55	0.2279	0.43	Q V	|	|	|	|
8+ 0	0.2309	0.43	Q V	|	|	|	|
8+ 5	0.2339	0.44	Q V	|	|	|	|
8+10	0.2369	0.44	Q V	|	|	|	|
8+15	0.2399	0.44	Q V	|	|	|	|
8+20	0.2430	0.44	Q V	|	|	|	|
8+25	0.2461	0.45	Q V	|	|	|	|
8+30	0.2491	0.45	Q V	|	|	|	|
8+35	0.2523	0.45	Q V	|	|	|	|
8+40	0.2554	0.45	Q V	|	|	|	|
8+45	0.2585	0.46	Q V	|	|	|	|
8+50	0.2617	0.46	Q V	|	|	|	|
8+55	0.2649	0.46	Q V	|	|	|	|
9+ 0	0.2681	0.47	Q V	|	|	|	|
9+ 5	0.2714	0.47	Q V	|	|	|	|
9+10	0.2746	0.47	Q V	|	|	|	|
9+15	0.2779	0.48	Q V	|	|	|	|
9+20	0.2812	0.48	Q V	|	|	|	|
9+25	0.2845	0.48	Q V	|	|	|	|
9+30	0.2879	0.49	Q V	|	|	|	|
9+35	0.2913	0.49	Q V	|	|	|	|
9+40	0.2947	0.49	Q V	|	|	|	|
9+45	0.2981	0.50	Q V	|	|	|	|
9+50	0.3015	0.50	|Q V	|	|	|	|
9+55	0.3050	0.51	|Q V	|	|	|	|
10+ 0	0.3085	0.51	|Q V	|	|	|	|
10+ 5	0.3121	0.51	|Q V	|	|	|	|
10+10	0.3156	0.52	|Q V|	|	|	|	|
10+15	0.3192	0.52	|Q V|	|	|	|	|

10+20	0.3229	0.53	Q V
10+25	0.3265	0.53	Q V
10+30	0.3302	0.53	Q V
10+35	0.3339	0.54	Q V
10+40	0.3377	0.54	Q V
10+45	0.3415	0.55	Q V
10+50	0.3453	0.55	Q V
10+55	0.3491	0.56	Q V
11+ 0	0.3530	0.56	Q V
11+ 5	0.3569	0.57	Q V
11+10	0.3609	0.58	Q V
11+15	0.3649	0.58	Q V
11+20	0.3690	0.59	Q V
11+25	0.3730	0.59	Q V
11+30	0.3772	0.60	Q V
11+35	0.3813	0.61	Q V
11+40	0.3856	0.61	Q V
11+45	0.3898	0.62	Q V
11+50	0.3941	0.63	Q V
11+55	0.3985	0.63	Q V
12+ 0	0.4029	0.64	Q V
12+ 5	0.4076	0.68	Q V
12+10	0.4125	0.70	Q V
12+15	0.4174	0.71	Q V
12+20	0.4223	0.72	Q V
12+25	0.4274	0.73	Q V
12+30	0.4324	0.74	Q V
12+35	0.4376	0.75	Q V
12+40	0.4429	0.76	Q V
12+45	0.4482	0.77	Q V
12+50	0.4536	0.78	Q V
12+55	0.4590	0.80	Q V
13+ 0	0.4646	0.81	Q V
13+ 5	0.4702	0.82	Q V
13+10	0.4760	0.83	Q V
13+15	0.4818	0.85	Q V
13+20	0.4877	0.86	Q V
13+25	0.4938	0.88	Q V
13+30	0.4999	0.89	Q V
13+35	0.5062	0.91	Q V
13+40	0.5126	0.93	Q V
13+45	0.5191	0.95	Q V
13+50	0.5257	0.96	Q V
13+55	0.5325	0.99	Q V
14+ 0	0.5395	1.01	Q V
14+ 5	0.5466	1.03	Q V
14+10	0.5539	1.06	Q V
14+15	0.5614	1.09	Q V
14+20	0.5690	1.11	Q V
14+25	0.5769	1.15	Q V
14+30	0.5850	1.18	Q V
14+35	0.5934	1.22	Q V
14+40	0.6020	1.25	Q V
14+45	0.6110	1.30	Q V
14+50	0.6202	1.34	Q V
14+55	0.6299	1.40	Q V
15+ 0	0.6399	1.45	Q V
15+ 5	0.6504	1.53	Q V
15+10	0.6614	1.59	Q V
15+15	0.6731	1.70	Q V
15+20	0.6853	1.78	Q V
15+25	0.6952	1.43	Q V
15+30	0.7045	1.36	Q V
15+35	0.7152	1.55	Q V
15+40	0.7271	1.72	Q V
15+45	0.7415	2.09	Q V
15+50	0.7584	2.46	Q V
15+55	0.7828	3.53	Q V
16+ 0	0.8185	5.19	Q V
16+ 5	0.9539	19.66	Q V
16+10	1.0135	8.66	Q V
16+15	1.0289	2.24	Q V
16+20	1.0400	1.61	Q V
16+25	1.0523	1.78	Q V
16+30	1.0641	1.72	Q V
16+35	1.0748	1.55	Q V
16+40	1.0845	1.42	Q V
16+45	1.0936	1.31	Q V
16+50	1.1020	1.23	Q V
16+55	1.1100	1.15	Q V
17+ 0	1.1175	1.09	Q V
17+ 5	1.1247	1.04	Q V
17+10	1.1315	0.99	Q V
17+15	1.1380	0.95	Q V

17+20	1.1443	0.91	Q			V
17+25	1.1504	0.88	Q			V
17+30	1.1563	0.85	Q			V
17+35	1.1619	0.82	Q			V
17+40	1.1674	0.80	Q			V
17+45	1.1728	0.77	Q			V
17+50	1.1780	0.75	Q			V
17+55	1.1830	0.73	Q			V
18+ 0	1.1879	0.71	Q			V
18+ 5	1.1925	0.66	Q			V
18+10	1.1969	0.64	Q			V
18+15	1.2012	0.62	Q			V
18+20	1.2053	0.61	Q			V
18+25	1.2094	0.60	Q			V
18+30	1.2135	0.58	Q			V
18+35	1.2174	0.57	Q			V
18+40	1.2213	0.56	Q			V
18+45	1.2251	0.55	Q			V
18+50	1.2288	0.54	Q			V
18+55	1.2324	0.53	Q			V
19+ 0	1.2360	0.52	Q			V
19+ 5	1.2396	0.51	Q			V
19+10	1.2431	0.51	Q			V
19+15	1.2465	0.50	Q			V
19+20	1.2499	0.49	Q			V
19+25	1.2532	0.48	Q			V
19+30	1.2565	0.48	Q			V
19+35	1.2598	0.47	Q			V
19+40	1.2630	0.46	Q			V
19+45	1.2661	0.46	Q			V
19+50	1.2692	0.45	Q			V
19+55	1.2723	0.45	Q			V
20+ 0	1.2754	0.44	Q			V
20+ 5	1.2784	0.44	Q			V
20+10	1.2813	0.43	Q			V
20+15	1.2843	0.43	Q			V
20+20	1.2872	0.42	Q			V
20+25	1.2900	0.42	Q			V
20+30	1.2929	0.41	Q			V
20+35	1.2957	0.41	Q			V
20+40	1.2984	0.40	Q			V
20+45	1.3012	0.40	Q			V
20+50	1.3039	0.39	Q			V
20+55	1.3066	0.39	Q			V
21+ 0	1.3093	0.39	Q			V
21+ 5	1.3119	0.38	Q			V
21+10	1.3145	0.38	Q			V
21+15	1.3171	0.38	Q			V
21+20	1.3197	0.37	Q			V
21+25	1.3222	0.37	Q			V
21+30	1.3247	0.37	Q			V
21+35	1.3272	0.36	Q			V
21+40	1.3297	0.36	Q			V
21+45	1.3322	0.36	Q			V
21+50	1.3346	0.35	Q			V
21+55	1.3370	0.35	Q			V
22+ 0	1.3394	0.35	Q			V
22+ 5	1.3418	0.35	Q			V
22+10	1.3442	0.34	Q			V
22+15	1.3465	0.34	Q			V
22+20	1.3488	0.34	Q			V
22+25	1.3511	0.33	Q			V
22+30	1.3534	0.33	Q			V
22+35	1.3557	0.33	Q			V
22+40	1.3579	0.33	Q			V
22+45	1.3602	0.32	Q			V
22+50	1.3624	0.32	Q			V
22+55	1.3646	0.32	Q			V
23+ 0	1.3668	0.32	Q			V
23+ 5	1.3689	0.32	Q			V
23+10	1.3711	0.31	Q			V
23+15	1.3733	0.31	Q			V
23+20	1.3754	0.31	Q			V
23+25	1.3775	0.31	Q			V
23+30	1.3796	0.31	Q			V
23+35	1.3817	0.30	Q			V
23+40	1.3838	0.30	Q			V
23+45	1.3858	0.30	Q			V
23+50	1.3879	0.30	Q			V
23+55	1.3899	0.30	Q			V
24+ 0	1.3919	0.29	Q			V

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

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Study date 03/16/20

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

TRI-8 Builders - S/N 615

TRACT NO. 20320 (TERRACINA PROJECT)
ONSITE-PROPOSED CONDITION
AREA G
100YR-24HR

Storm Event Year = 100

Antecedent Moisture Condition = 3

English (in-lb) Input Units Used

English Rainfall Data (Inches) Input Values Used

English Units used in output format

Area averaged rainfall intensity isohyetal data:

Sub-Area (Ac.)	Duration (hours)	Isohyetal (In)
Rainfall data for year 10		
1.36	1	0.78
Rainfall data for year 2		
1.36	6	2.18
Rainfall data for year 2		
1.36	24	2.86
Rainfall data for year 100		
1.36	1	1.20
Rainfall data for year 100		
1.36	6	1.27
Rainfall data for year 100		
1.36	24	5.15

++

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

SCS curve No.(AMCII)	SCS curve NO.(AMC 3)	Area (Ac.)	Area Fraction	Fp(Fig C6) (In/Hr)	Ap (dec.)	Fm (In/Hr)
44.0	64.0	1.36	1.000	0.623	0.036	0.022

Area-averaged adjusted loss rate Fm (In/Hr) = 0.022

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

Area (Ac.)	Area Fract	SCS CN (AMC2)	SCS CN (AMC3)	S	Pervious Yield Fr
0.05	0.036	44.0	64.0	5.63	0.326
1.31	0.964	98.0	98.0	0.20	0.954

Area-averaged catchment yield fraction, Y = 0.931
Area-averaged low loss fraction, Yb = 0.069

++
Watercourse length = 650.00(Ft.)
Length from concentration point to centroid = 200.00(Ft.)
Elevation difference along watercourse = 87.70(Ft.)
Mannings friction factor along watercourse = 0.015
Watershed area = 1.36(Ac.)
Catchment Lag time = 0.013 hours

Unit interval = 5.000 minutes
Unit interval percentage of lag time = 620.0638
Hydrograph baseflow = 0.00(CFS)
Average maximum watershed loss rate(Fm) = 0.022(In/Hr)
Average low loss rate fraction (Yb) = 0.069 (decimal)
FOOTHILL S-Graph Selected
Computed peak 5-minute rainfall = 0.569(In)
Computed peak 30-minute rainfall = 0.975(In)
Specified peak 1-hour rainfall = 1.200(In)
Computed peak 3-hour rainfall = 1.242(In)
Specified peak 6-hour rainfall = 1.270(In)
Specified peak 24-hour rainfall = 5.150(In)

Rainfall depth area reduction factors:
Using a total area of 1.36(Ac.) (Ref: fig. E-4)

5-minute factor = 1.000 Adjusted rainfall = 0.569(In)
30-minute factor = 1.000 Adjusted rainfall = 0.975(In)
1-hour factor = 1.000 Adjusted rainfall = 1.200(In)
3-hour factor = 1.000 Adjusted rainfall = 1.242(In)
6-hour factor = 1.000 Adjusted rainfall = 1.270(In)
24-hour factor = 1.000 Adjusted rainfall = 5.150(In)

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

Interval Number	'S' Graph Mean values	Unit Hydrograph ((CFS))
	(K = 16.45 (CFS))	
1	78.533	12.917
2	100.000	3.531

Peak Unit Number	Adjusted mass rainfall (In)	Unit rainfall (In)
1	0.5694	0.5694
2	0.7010	0.1316
3	0.7917	0.0907
4	0.8630	0.0714
5	0.9228	0.0598
6	0.9746	0.0519
7	1.0208	0.0461
8	1.0625	0.0417
9	1.1007	0.0382
10	1.1361	0.0353
11	1.1690	0.0330
12	1.1999	0.0309
13	1.2030	0.0030
14	1.2058	0.0028
15	1.2084	0.0026
16	1.2109	0.0025
17	1.2132	0.0023
18	1.2154	0.0022
19	1.2175	0.0021
20	1.2195	0.0020
21	1.2214	0.0019
22	1.2232	0.0018
23	1.2249	0.0017
24	1.2266	0.0017
25	1.2282	0.0016
26	1.2297	0.0015
27	1.2312	0.0015
28	1.2326	0.0014
29	1.2340	0.0014
30	1.2353	0.0013
31	1.2366	0.0013
32	1.2378	0.0012
33	1.2390	0.0012
34	1.2402	0.0012
35	1.2413	0.0011
36	1.2424	0.0011
37	1.2435	0.0011
38	1.2446	0.0010
39	1.2456	0.0010
40	1.2466	0.0010
41	1.2476	0.0010
42	1.2485	0.0010
43	1.2494	0.0009
44	1.2504	0.0009
45	1.2512	0.0009
46	1.2521	0.0009
47	1.2530	0.0009

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48	1.2538	0.0008
49	1.2546	0.0008
50	1.2554	0.0008
51	1.2562	0.0008
52	1.2570	0.0008
53	1.2577	0.0008
54	1.2585	0.0007
55	1.2592	0.0007
56	1.2599	0.0007
57	1.2606	0.0007
58	1.2613	0.0007
59	1.2620	0.0007
60	1.2627	0.0007
61	1.2633	0.0007
62	1.2640	0.0007
63	1.2646	0.0006
64	1.2653	0.0006
65	1.2659	0.0006
66	1.2665	0.0006
67	1.2671	0.0006
68	1.2677	0.0006
69	1.2683	0.0006
70	1.2689	0.0006
71	1.2694	0.0006
72	1.2700	0.0006
73	1.2878	0.0178
74	1.3056	0.0178
75	1.3234	0.0178
76	1.3413	0.0178
77	1.3591	0.0178
78	1.3769	0.0178
79	1.3947	0.0178
80	1.4126	0.0178
81	1.4304	0.0178
82	1.4482	0.0178
83	1.4661	0.0178
84	1.4839	0.0178
85	1.5018	0.0178
86	1.5196	0.0178
87	1.5374	0.0178
88	1.5553	0.0178
89	1.5731	0.0178
90	1.5910	0.0179
91	1.6088	0.0179
92	1.6267	0.0179
93	1.6446	0.0179
94	1.6624	0.0179
95	1.6803	0.0179
96	1.6981	0.0179
97	1.7160	0.0179
98	1.7339	0.0179
99	1.7517	0.0179
100	1.7696	0.0179
101	1.7875	0.0179
102	1.8054	0.0179
103	1.8232	0.0179
104	1.8411	0.0179
105	1.8590	0.0179
106	1.8769	0.0179
107	1.8948	0.0179
108	1.9126	0.0179
109	1.9305	0.0179
110	1.9484	0.0179
111	1.9663	0.0179
112	1.9842	0.0179
113	2.0021	0.0179
114	2.0200	0.0179
115	2.0379	0.0179
116	2.0558	0.0179
117	2.0737	0.0179
118	2.0916	0.0179
119	2.1095	0.0179
120	2.1274	0.0179
121	2.1453	0.0179
122	2.1632	0.0179
123	2.1811	0.0179
124	2.1990	0.0179
125	2.2169	0.0179
126	2.2348	0.0179
127	2.2527	0.0179
128	2.2706	0.0179
129	2.2885	0.0179
130	2.3065	0.0179
131	2.3244	0.0179

		AREAG
132	2.3423	0.0179
133	2.3602	0.0179
134	2.3781	0.0179
135	2.3961	0.0179
136	2.4140	0.0179
137	2.4319	0.0179
138	2.4498	0.0179
139	2.4678	0.0179
140	2.4857	0.0179
141	2.5036	0.0179
142	2.5216	0.0179
143	2.5395	0.0179
144	2.5574	0.0179
145	2.5754	0.0179
146	2.5933	0.0179
147	2.6112	0.0179
148	2.6292	0.0179
149	2.6471	0.0179
150	2.6651	0.0179
151	2.6830	0.0179
152	2.7010	0.0179
153	2.7189	0.0179
154	2.7368	0.0179
155	2.7548	0.0179
156	2.7727	0.0179
157	2.7907	0.0180
158	2.8086	0.0180
159	2.8266	0.0180
160	2.8445	0.0180
161	2.8625	0.0180
162	2.8805	0.0180
163	2.8984	0.0180
164	2.9164	0.0180
165	2.9343	0.0180
166	2.9523	0.0180
167	2.9703	0.0180
168	2.9882	0.0180
169	3.0062	0.0180
170	3.0241	0.0180
171	3.0421	0.0180
172	3.0601	0.0180
173	3.0780	0.0180
174	3.0960	0.0180
175	3.1140	0.0180
176	3.1320	0.0180
177	3.1499	0.0180
178	3.1679	0.0180
179	3.1859	0.0180
180	3.2038	0.0180
181	3.2218	0.0180
182	3.2398	0.0180
183	3.2578	0.0180
184	3.2757	0.0180
185	3.2937	0.0180
186	3.3117	0.0180
187	3.3297	0.0180
188	3.3477	0.0180
189	3.3657	0.0180
190	3.3836	0.0180
191	3.4016	0.0180
192	3.4196	0.0180
193	3.4376	0.0180
194	3.4556	0.0180
195	3.4736	0.0180
196	3.4916	0.0180
197	3.5096	0.0180
198	3.5275	0.0180
199	3.5455	0.0180
200	3.5635	0.0180
201	3.5815	0.0180
202	3.5995	0.0180
203	3.6175	0.0180
204	3.6355	0.0180
205	3.6535	0.0180
206	3.6715	0.0180
207	3.6895	0.0180
208	3.7075	0.0180
209	3.7255	0.0180
210	3.7435	0.0180
211	3.7615	0.0180
212	3.7795	0.0180
213	3.7975	0.0180
214	3.8155	0.0180
215	3.8335	0.0180

		AREAG
216	3.8515	0.0180
217	3.8695	0.0180
218	3.8876	0.0180
219	3.9056	0.0180
220	3.9236	0.0180
221	3.9416	0.0180
222	3.9596	0.0180
223	3.9776	0.0180
224	3.9956	0.0180
225	4.0136	0.0180
226	4.0317	0.0180
227	4.0497	0.0180
228	4.0677	0.0180
229	4.0857	0.0180
230	4.1037	0.0180
231	4.1217	0.0180
232	4.1398	0.0180
233	4.1578	0.0180
234	4.1758	0.0180
235	4.1938	0.0180
236	4.2118	0.0180
237	4.2299	0.0180
238	4.2479	0.0180
239	4.2659	0.0180
240	4.2839	0.0180
241	4.3020	0.0180
242	4.3200	0.0180
243	4.3380	0.0180
244	4.3561	0.0180
245	4.3741	0.0180
246	4.3921	0.0180
247	4.4101	0.0180
248	4.4282	0.0180
249	4.4462	0.0180
250	4.4642	0.0180
251	4.4823	0.0180
252	4.5003	0.0180
253	4.5183	0.0180
254	4.5364	0.0180
255	4.5544	0.0180
256	4.5724	0.0180
257	4.5905	0.0180
258	4.6085	0.0180
259	4.6266	0.0180
260	4.6446	0.0180
261	4.6626	0.0180
262	4.6807	0.0180
263	4.6987	0.0180
264	4.7168	0.0180
265	4.7348	0.0180
266	4.7529	0.0180
267	4.7709	0.0180
268	4.7889	0.0180
269	4.8070	0.0180
270	4.8250	0.0180
271	4.8431	0.0180
272	4.8611	0.0180
273	4.8792	0.0180
274	4.8972	0.0180
275	4.9153	0.0180
276	4.9333	0.0181
277	4.9514	0.0181
278	4.9694	0.0181
279	4.9875	0.0181
280	5.0055	0.0181
281	5.0236	0.0181
282	5.0417	0.0181
283	5.0597	0.0181
284	5.0778	0.0181
285	5.0958	0.0181
286	5.1139	0.0181
287	5.1319	0.0181
288	5.1500	0.0181

Unit Period (number)	Unit Rainfall (In)	Unit Soil-Loss (In)	Effective Rainfall (In)
1	0.0181	0.0012	0.0168
2	0.0181	0.0012	0.0168
3	0.0181	0.0012	0.0168
4	0.0181	0.0012	0.0168
5	0.0181	0.0012	0.0168
6	0.0181	0.0012	0.0168

7	0.0181	0.0012	0.0168
8	0.0181	0.0012	0.0168
9	0.0181	0.0012	0.0168
10	0.0180	0.0012	0.0168
11	0.0180	0.0012	0.0168
12	0.0180	0.0012	0.0168
13	0.0180	0.0012	0.0168
14	0.0180	0.0012	0.0168
15	0.0180	0.0012	0.0168
16	0.0180	0.0012	0.0168
17	0.0180	0.0012	0.0168
18	0.0180	0.0012	0.0168
19	0.0180	0.0012	0.0168
20	0.0180	0.0012	0.0168
21	0.0180	0.0012	0.0168
22	0.0180	0.0012	0.0168
23	0.0180	0.0012	0.0168
24	0.0180	0.0012	0.0168
25	0.0180	0.0012	0.0168
26	0.0180	0.0012	0.0168
27	0.0180	0.0012	0.0168
28	0.0180	0.0012	0.0168
29	0.0180	0.0012	0.0168
30	0.0180	0.0012	0.0168
31	0.0180	0.0012	0.0168
32	0.0180	0.0012	0.0168
33	0.0180	0.0012	0.0168
34	0.0180	0.0012	0.0168
35	0.0180	0.0012	0.0168
36	0.0180	0.0012	0.0168
37	0.0180	0.0012	0.0168
38	0.0180	0.0012	0.0168
39	0.0180	0.0012	0.0168
40	0.0180	0.0012	0.0168
41	0.0180	0.0012	0.0168
42	0.0180	0.0012	0.0168
43	0.0180	0.0012	0.0168
44	0.0180	0.0012	0.0168
45	0.0180	0.0012	0.0168
46	0.0180	0.0012	0.0168
47	0.0180	0.0012	0.0168
48	0.0180	0.0012	0.0168
49	0.0180	0.0012	0.0168
50	0.0180	0.0012	0.0168
51	0.0180	0.0012	0.0168
52	0.0180	0.0012	0.0168
53	0.0180	0.0012	0.0168
54	0.0180	0.0012	0.0168
55	0.0180	0.0012	0.0168
56	0.0180	0.0012	0.0168
57	0.0180	0.0012	0.0168
58	0.0180	0.0012	0.0168
59	0.0180	0.0012	0.0168
60	0.0180	0.0012	0.0168
61	0.0180	0.0012	0.0168
62	0.0180	0.0012	0.0168
63	0.0180	0.0012	0.0168
64	0.0180	0.0012	0.0168
65	0.0180	0.0012	0.0168
66	0.0180	0.0012	0.0168
67	0.0180	0.0012	0.0167
68	0.0180	0.0012	0.0167
69	0.0180	0.0012	0.0167
70	0.0180	0.0012	0.0167
71	0.0180	0.0012	0.0167
72	0.0180	0.0012	0.0167
73	0.0180	0.0012	0.0167
74	0.0180	0.0012	0.0167
75	0.0180	0.0012	0.0167
76	0.0180	0.0012	0.0167
77	0.0180	0.0012	0.0167
78	0.0180	0.0012	0.0167
79	0.0180	0.0012	0.0167
80	0.0180	0.0012	0.0167
81	0.0180	0.0012	0.0167
82	0.0180	0.0012	0.0167
83	0.0180	0.0012	0.0167
84	0.0180	0.0012	0.0167
85	0.0180	0.0012	0.0167
86	0.0180	0.0012	0.0167
87	0.0180	0.0012	0.0167
88	0.0180	0.0012	0.0167
89	0.0179	0.0012	0.0167
90	0.0179	0.0012	0.0167

91	0.0179	0.0012	0.0167
92	0.0179	0.0012	0.0167
93	0.0179	0.0012	0.0167
94	0.0179	0.0012	0.0167
95	0.0179	0.0012	0.0167
96	0.0179	0.0012	0.0167
97	0.0179	0.0012	0.0167
98	0.0179	0.0012	0.0167
99	0.0179	0.0012	0.0167
100	0.0179	0.0012	0.0167
101	0.0179	0.0012	0.0167
102	0.0179	0.0012	0.0167
103	0.0179	0.0012	0.0167
104	0.0179	0.0012	0.0167
105	0.0179	0.0012	0.0167
106	0.0179	0.0012	0.0167
107	0.0179	0.0012	0.0167
108	0.0179	0.0012	0.0167
109	0.0179	0.0012	0.0167
110	0.0179	0.0012	0.0167
111	0.0179	0.0012	0.0167
112	0.0179	0.0012	0.0167
113	0.0179	0.0012	0.0167
114	0.0179	0.0012	0.0167
115	0.0179	0.0012	0.0167
116	0.0179	0.0012	0.0167
117	0.0179	0.0012	0.0167
118	0.0179	0.0012	0.0167
119	0.0179	0.0012	0.0167
120	0.0179	0.0012	0.0167
121	0.0179	0.0012	0.0167
122	0.0179	0.0012	0.0167
123	0.0179	0.0012	0.0167
124	0.0179	0.0012	0.0166
125	0.0179	0.0012	0.0166
126	0.0179	0.0012	0.0166
127	0.0179	0.0012	0.0166
128	0.0179	0.0012	0.0166
129	0.0179	0.0012	0.0166
130	0.0179	0.0012	0.0166
131	0.0179	0.0012	0.0166
132	0.0179	0.0012	0.0166
133	0.0179	0.0012	0.0166
134	0.0178	0.0012	0.0166
135	0.0178	0.0012	0.0166
136	0.0178	0.0012	0.0166
137	0.0178	0.0012	0.0166
138	0.0178	0.0012	0.0166
139	0.0178	0.0012	0.0166
140	0.0178	0.0012	0.0166
141	0.0178	0.0012	0.0166
142	0.0178	0.0012	0.0166
143	0.0178	0.0012	0.0166
144	0.0178	0.0012	0.0166
145	0.0006	0.0000	0.0005
146	0.0006	0.0000	0.0005
147	0.0006	0.0000	0.0005
148	0.0006	0.0000	0.0006
149	0.0006	0.0000	0.0006
150	0.0006	0.0000	0.0006
151	0.0006	0.0000	0.0006
152	0.0007	0.0000	0.0006
153	0.0007	0.0000	0.0006
154	0.0007	0.0000	0.0006
155	0.0007	0.0000	0.0007
156	0.0007	0.0000	0.0007
157	0.0007	0.0001	0.0007
158	0.0008	0.0001	0.0007
159	0.0008	0.0001	0.0007
160	0.0008	0.0001	0.0007
161	0.0008	0.0001	0.0008
162	0.0009	0.0001	0.0008
163	0.0009	0.0001	0.0008
164	0.0009	0.0001	0.0008
165	0.0010	0.0001	0.0009
166	0.0010	0.0001	0.0009
167	0.0010	0.0001	0.0010
168	0.0010	0.0001	0.0010
169	0.0011	0.0001	0.0010
170	0.0011	0.0001	0.0011
171	0.0012	0.0001	0.0011
172	0.0012	0.0001	0.0012
173	0.0013	0.0001	0.0012
174	0.0014	0.0001	0.0013

175	0.0015	0.0001	0.0014
176	0.0015	0.0001	0.0014
177	0.0017	0.0001	0.0015
178	0.0017	0.0001	0.0016
179	0.0019	0.0001	0.0018
180	0.0020	0.0001	0.0018
181	0.0022	0.0002	0.0020
182	0.0023	0.0002	0.0022
183	0.0026	0.0002	0.0025
184	0.0028	0.0002	0.0026
185	0.0309	0.0019	0.0290
186	0.0330	0.0019	0.0311
187	0.0382	0.0019	0.0363
188	0.0417	0.0019	0.0399
189	0.0519	0.0019	0.0500
190	0.0598	0.0019	0.0579
191	0.0907	0.0019	0.0888
192	0.1316	0.0019	0.1297
193	0.5694	0.0019	0.5675
194	0.0714	0.0019	0.0695
195	0.0461	0.0019	0.0443
196	0.0353	0.0019	0.0335
197	0.0030	0.0002	0.0028
198	0.0025	0.0002	0.0023
199	0.0021	0.0001	0.0019
200	0.0018	0.0001	0.0017
201	0.0016	0.0001	0.0015
202	0.0014	0.0001	0.0013
203	0.0013	0.0001	0.0012
204	0.0012	0.0001	0.0011
205	0.0011	0.0001	0.0010
206	0.0010	0.0001	0.0009
207	0.0009	0.0001	0.0009
208	0.0009	0.0001	0.0008
209	0.0008	0.0001	0.0008
210	0.0008	0.0001	0.0007
211	0.0007	0.0001	0.0007
212	0.0007	0.0000	0.0006
213	0.0007	0.0000	0.0006
214	0.0006	0.0000	0.0006
215	0.0006	0.0000	0.0006
216	0.0006	0.0000	0.0005
217	0.0178	0.0012	0.0166
218	0.0178	0.0012	0.0166
219	0.0178	0.0012	0.0166
220	0.0178	0.0012	0.0166
221	0.0178	0.0012	0.0166
222	0.0178	0.0012	0.0166
223	0.0179	0.0012	0.0166
224	0.0179	0.0012	0.0166
225	0.0179	0.0012	0.0166
226	0.0179	0.0012	0.0166
227	0.0179	0.0012	0.0166
228	0.0179	0.0012	0.0167
229	0.0179	0.0012	0.0167
230	0.0179	0.0012	0.0167
231	0.0179	0.0012	0.0167
232	0.0179	0.0012	0.0167
233	0.0179	0.0012	0.0167
234	0.0179	0.0012	0.0167
235	0.0179	0.0012	0.0167
236	0.0179	0.0012	0.0167
237	0.0179	0.0012	0.0167
238	0.0179	0.0012	0.0167
239	0.0179	0.0012	0.0167
240	0.0179	0.0012	0.0167
241	0.0179	0.0012	0.0167
242	0.0179	0.0012	0.0167
243	0.0179	0.0012	0.0167
244	0.0179	0.0012	0.0167
245	0.0180	0.0012	0.0167
246	0.0180	0.0012	0.0167
247	0.0180	0.0012	0.0167
248	0.0180	0.0012	0.0167
249	0.0180	0.0012	0.0167
250	0.0180	0.0012	0.0167
251	0.0180	0.0012	0.0167
252	0.0180	0.0012	0.0167
253	0.0180	0.0012	0.0167
254	0.0180	0.0012	0.0167
255	0.0180	0.0012	0.0167
256	0.0180	0.0012	0.0167
257	0.0180	0.0012	0.0168
258	0.0180	0.0012	0.0168

259	0.0180	0.0012	0.0168
260	0.0180	0.0012	0.0168
261	0.0180	0.0012	0.0168
262	0.0180	0.0012	0.0168
263	0.0180	0.0012	0.0168
264	0.0180	0.0012	0.0168
265	0.0180	0.0012	0.0168
266	0.0180	0.0012	0.0168
267	0.0180	0.0012	0.0168
268	0.0180	0.0012	0.0168
269	0.0180	0.0012	0.0168
270	0.0180	0.0012	0.0168
271	0.0180	0.0012	0.0168
272	0.0180	0.0012	0.0168
273	0.0180	0.0012	0.0168
274	0.0180	0.0012	0.0168
275	0.0180	0.0012	0.0168
276	0.0180	0.0012	0.0168
277	0.0180	0.0012	0.0168
278	0.0180	0.0012	0.0168
279	0.0180	0.0012	0.0168
280	0.0180	0.0012	0.0168
281	0.0180	0.0012	0.0168
282	0.0180	0.0012	0.0168
283	0.0180	0.0012	0.0168
284	0.0180	0.0012	0.0168
285	0.0181	0.0012	0.0168
286	0.0181	0.0012	0.0168
287	0.0181	0.0012	0.0168
288	0.0181	0.0012	0.0168

Total soil rain loss = 0.29(In)
Total effective rainfall = 4.86(In)
Peak flow rate in flood hydrograph = 7.79(CFS)

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

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0015	0.22	Q				
0+10	0.0034	0.28	VQ				
0+15	0.0053	0.28	VQ				
0+20	0.0072	0.28	VQ				
0+25	0.0091	0.28	VQ				
0+30	0.0110	0.28	VQ				
0+35	0.0129	0.28	VQ				
0+40	0.0148	0.28	|Q				
0+45	0.0167	0.28	|Q				
0+50	0.0186	0.28	|Q				
0+55	0.0205	0.28	|Q				
1+ 0	0.0224	0.28	|Q				
1+ 5	0.0244	0.28	|Q				
1+10	0.0263	0.28	|Q				
1+15	0.0282	0.28	|QV				
1+20	0.0301	0.28	|QV				
1+25	0.0320	0.28	|QV				
1+30	0.0339	0.28	|QV				
1+35	0.0358	0.28	|QV				
1+40	0.0377	0.28	|QV				
1+45	0.0396	0.28	|QV				
1+50	0.0415	0.28	|Q V				
1+55	0.0434	0.28	|Q V				
2+ 0	0.0453	0.28	|Q V				
2+ 5	0.0472	0.28	|Q V				
2+10	0.0491	0.28	|Q V				
2+15	0.0510	0.28	|Q V				
2+20	0.0529	0.28	|Q V				
2+25	0.0548	0.28	|Q V				
2+30	0.0567	0.28	|Q V				
2+35	0.0586	0.28	|Q V				
2+40	0.0605	0.28	|Q V				
2+45	0.0624	0.28	|Q V				
2+50	0.0643	0.28	|Q V				
2+55	0.0662	0.28	|Q V				
3+ 0	0.0681	0.28	|Q V				
3+ 5	0.0700	0.28	|Q V				
3+10	0.0719	0.28	|Q V				
3+15	0.0738	0.28	|Q V				

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 3+20       0.0757      0.28  |Q   V    |          |          |          |
 3+25       0.0776      0.28  |Q   V    |          |          |          |
 3+30       0.0795      0.28  |Q   V    |          |          |          |
 3+35       0.0814      0.28  |Q   V    |          |          |          |
 3+40       0.0833      0.28  |Q    V   |          |          |          |
 3+45       0.0852      0.28  |Q    V   |          |          |          |
 3+50       0.0871      0.28  |Q    V   |          |          |          |
 3+55       0.0890      0.28  |Q    V   |          |          |          |
 4+ 0       0.0909      0.28  |Q    V   |          |          |          |
 4+ 5       0.0928      0.28  |Q    V   |          |          |          |
 4+10       0.0947      0.28  |Q    V   |          |          |          |
 4+15       0.0966      0.28  |Q     V  |          |          |          |
 4+20       0.0985      0.28  |Q     V  |          |          |          |
 4+25       0.1004      0.28  |Q     V  |          |          |          |
 4+30       0.1023      0.28  |Q     V  |          |          |          |
 4+35       0.1042      0.28  |Q     V  |          |          |          |
 4+40       0.1061      0.28  |Q     V  |          |          |          |
 4+45       0.1080      0.28  |Q     V  |          |          |          |
 4+50       0.1099      0.28  |Q     V  |          |          |          |
 4+55       0.1118      0.28  |Q      V |          |          |          |
 5+ 0       0.1137      0.28  |Q      V |          |          |          |
 5+ 5       0.1156      0.28  |Q      V |          |          |          |
 5+10       0.1175      0.28  |Q      V |          |          |          |
 5+15       0.1194      0.28  |Q      V |          |          |          |
 5+20       0.1213      0.28  |Q      V |          |          |          |
 5+25       0.1232      0.28  |Q      V |          |          |          |
 5+30       0.1251      0.28  |Q       V|          |          |          |
 5+35       0.1270      0.28  |Q       V|          |          |          |
 5+40       0.1289      0.28  |Q       V|          |          |          |
 5+45       0.1308      0.28  |Q       V|          |          |          |
 5+50       0.1327      0.28  |Q       V|          |          |          |
 5+55       0.1346      0.28  |Q       V|          |          |          |
 6+ 0       0.1365      0.28  |Q       V|          |          |          |
 6+ 5       0.1384      0.28  |Q        V          |          |          |
 6+10       0.1403      0.28  |Q        V          |          |          |
 6+15       0.1422      0.28  |Q        V          |          |          |
 6+20       0.1441      0.28  |Q        V          |          |          |
 6+25       0.1460      0.28  |Q        V          |          |          |
 6+30       0.1479      0.28  |Q        V          |          |          |
 6+35       0.1497      0.28  |Q        V          |          |          |
 6+40       0.1516      0.28  |Q         |V         |          |          |
 6+45       0.1535      0.28  |Q         |V         |          |          |
 6+50       0.1554      0.28  |Q         |V         |          |          |
 6+55       0.1573      0.28  |Q         |V         |          |          |
 7+ 0       0.1592      0.28  |Q         |V         |          |          |
 7+ 5       0.1611      0.28  |Q         |V         |          |          |
 7+10       0.1630      0.28  |Q         |V         |          |          |
 7+15       0.1649      0.28  |Q         |V         |          |          |
 7+20       0.1668      0.27  |Q         | V        |          |          |
 7+25       0.1687      0.27  |Q         | V        |          |          |
 7+30       0.1706      0.27  |Q         | V        |          |          |
 7+35       0.1725      0.27  |Q         | V        |          |          |
 7+40       0.1744      0.27  |Q         | V        |          |          |
 7+45       0.1763      0.27  |Q         | V        |          |          |
 7+50       0.1782      0.27  |Q         | V        |          |          |
 7+55       0.1800      0.27  |Q         |  V       |          |          |
 8+ 0       0.1819      0.27  |Q         |  V       |          |          |
 8+ 5       0.1838      0.27  |Q         |  V       |          |          |
 8+10       0.1857      0.27  |Q         |  V       |          |          |
 8+15       0.1876      0.27  |Q         |  V       |          |          |
 8+20       0.1895      0.27  |Q         |  V       |          |          |
 8+25       0.1914      0.27  |Q         |  V       |          |          |
 8+30       0.1933      0.27  |Q         |   V      |          |          |
 8+35       0.1952      0.27  |Q         |   V      |          |          |
 8+40       0.1971      0.27  |Q         |   V      |          |          |
 8+45       0.1990      0.27  |Q         |   V      |          |          |
 8+50       0.2009      0.27  |Q         |   V      |          |          |
 8+55       0.2027      0.27  |Q         |   V      |          |          |
 9+ 0       0.2046      0.27  |Q         |   V      |          |          |
 9+ 5       0.2065      0.27  |Q         |    V     |          |          |
 9+10       0.2084      0.27  |Q         |    V     |          |          |
 9+15       0.2103      0.27  |Q         |    V     |          |          |
 9+20       0.2122      0.27  |Q         |    V     |          |          |
 9+25       0.2141      0.27  |Q         |    V     |          |          |
 9+30       0.2160      0.27  |Q         |    V     |          |          |
 9+35       0.2179      0.27  |Q         |    V     |          |          |
 9+40       0.2197      0.27  |Q         |    V     |          |          |
 9+45       0.2216      0.27  |Q         |     V    |          |          |
 9+50       0.2235      0.27  |Q         |     V    |          |          |
 9+55       0.2254      0.27  |Q         |     V    |          |          |
10+ 0       0.2273      0.27  |Q         |     V    |          |          |
10+ 5       0.2292      0.27  |Q         |     V    |          |          |
10+10       0.2311      0.27  |Q         |     V    |          |          |
10+15       0.2330      0.27  |Q         |     V    |          |          |
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10+20	0.2348	0.27	
10+25	0.2367	0.27	
10+30	0.2386	0.27	
10+35	0.2405	0.27	
10+40	0.2424	0.27	
10+45	0.2443	0.27	
10+50	0.2462	0.27	
10+55	0.2480	0.27	
11+ 0	0.2499	0.27	
11+ 5	0.2518	0.27	
11+10	0.2537	0.27	
11+15	0.2556	0.27	
11+20	0.2575	0.27	
11+25	0.2593	0.27	
11+30	0.2612	0.27	
11+35	0.2631	0.27	
11+40	0.2650	0.27	
11+45	0.2669	0.27	
11+50	0.2687	0.27	
11+55	0.2706	0.27	
12+ 0	0.2725	0.27	
12+ 5	0.2729	0.07	
12+10	0.2730	0.01	
12+15	0.2731	0.01	
12+20	0.2731	0.01	
12+25	0.2732	0.01	
12+30	0.2733	0.01	
12+35	0.2733	0.01	
12+40	0.2734	0.01	
12+45	0.2735	0.01	
12+50	0.2735	0.01	
12+55	0.2736	0.01	
13+ 0	0.2737	0.01	
13+ 5	0.2738	0.01	
13+10	0.2738	0.01	
13+15	0.2739	0.01	
13+20	0.2740	0.01	
13+25	0.2741	0.01	
13+30	0.2742	0.01	
13+35	0.2743	0.01	
13+40	0.2744	0.01	
13+45	0.2745	0.01	
13+50	0.2746	0.01	
13+55	0.2747	0.02	
14+ 0	0.2748	0.02	
14+ 5	0.2749	0.02	
14+10	0.2750	0.02	
14+15	0.2752	0.02	
14+20	0.2753	0.02	
14+25	0.2754	0.02	
14+30	0.2756	0.02	
14+35	0.2757	0.02	
14+40	0.2759	0.02	
14+45	0.2761	0.02	
14+50	0.2762	0.03	
14+55	0.2764	0.03	
15+ 0	0.2766	0.03	
15+ 5	0.2769	0.03	
15+10	0.2771	0.04	
15+15	0.2774	0.04	
15+20	0.2777	0.04	
15+25	0.2803	0.38	
15+30	0.2838	0.50	
15+35	0.2878	0.58	
15+40	0.2922	0.64	
15+45	0.2976	0.79	
15+50	0.3040	0.92	
15+55	0.3133	1.35	
16+ 0	0.3270	1.99	
16+ 5	0.3806	7.79	
16+10	0.4006	2.90	
16+15	0.4062	0.82	
16+20	0.4103	0.59	
16+25	0.4114	0.15	
16+30	0.4116	0.04	
16+35	0.4119	0.03	
16+40	0.4121	0.03	
16+45	0.4122	0.03	
16+50	0.4124	0.02	
16+55	0.4125	0.02	
17+ 0	0.4127	0.02	
17+ 5	0.4128	0.02	
17+10	0.4129	0.02	
17+15	0.4130	0.01	

17+20	0.4131	0.01	Q	|	|	V	|
17+25	0.4132	0.01	Q	|	|	V	|
17+30	0.4132	0.01	Q	|	|	V	|
17+35	0.4133	0.01	Q	|	|	V	|
17+40	0.4134	0.01	Q	|	|	V	|
17+45	0.4135	0.01	Q	|	|	V	|
17+50	0.4135	0.01	Q	|	|	V	|
17+55	0.4136	0.01	Q	|	|	V	|
18+ 0	0.4137	0.01	Q	|	|	V	|
18+ 5	0.4152	0.22	Q	|	|	V	|
18+10	0.4170	0.27	|Q	|	|	V	|
18+15	0.4189	0.27	|Q	|	|	V	|
18+20	0.4208	0.27	|Q	|	|	V	|
18+25	0.4227	0.27	|Q	|	|	V	|
18+30	0.4246	0.27	|Q	|	|	V	|
18+35	0.4264	0.27	|Q	|	|	|V	|
18+40	0.4283	0.27	|Q	|	|	|V	|
18+45	0.4302	0.27	|Q	|	|	|V	|
18+50	0.4321	0.27	|Q	|	|	|V	|
18+55	0.4340	0.27	|Q	|	|	|V	|
19+ 0	0.4359	0.27	|Q	|	|	|V	|
19+ 5	0.4378	0.27	|Q	|	|	|V	|
19+10	0.4396	0.27	|Q	|	|	|V	|
19+15	0.4415	0.27	|Q	|	|	| V	|
19+20	0.4434	0.27	|Q	|	|	| V	|
19+25	0.4453	0.27	|Q	|	|	| V	|
19+30	0.4472	0.27	|Q	|	|	| V	|
19+35	0.4491	0.27	|Q	|	|	| V	|
19+40	0.4510	0.27	|Q	|	|	| V	|
19+45	0.4529	0.27	|Q	|	|	| V	|
19+50	0.4548	0.27	|Q	|	|	| V	|
19+55	0.4566	0.27	|Q	|	|	| V	|
20+ 0	0.4585	0.27	|Q	|	|	| V	|
20+ 5	0.4604	0.27	|Q	|	|	| V	|
20+10	0.4623	0.27	|Q	|	|	| V	|
20+15	0.4642	0.27	|Q	|	|	| V	|
20+20	0.4661	0.27	|Q	|	|	| V	|
20+25	0.4680	0.27	|Q	|	|	| V	|
20+30	0.4699	0.28	|Q	|	|	| V	|
20+35	0.4718	0.28	|Q	|	|	| V	|
20+40	0.4737	0.28	|Q	|	|	| V	|
20+45	0.4756	0.28	|Q	|	|	| V	|
20+50	0.4775	0.28	|Q	|	|	| V	|
20+55	0.4794	0.28	|Q	|	|	| V	|
21+ 0	0.4813	0.28	|Q	|	|	| V	|
21+ 5	0.4832	0.28	|Q	|	|	| V	|
21+10	0.4851	0.28	|Q	|	|	| V	|
21+15	0.4870	0.28	|Q	|	|	| V	|
21+20	0.4889	0.28	|Q	|	|	| V	|
21+25	0.4908	0.28	|Q	|	|	| V	|
21+30	0.4927	0.28	|Q	|	|	| V	|
21+35	0.4945	0.28	|Q	|	|	| V	|
21+40	0.4964	0.28	|Q	|	|	| V	|
21+45	0.4983	0.28	|Q	|	|	| V	|
21+50	0.5002	0.28	|Q	|	|	| V	|
21+55	0.5021	0.28	|Q	|	|	| V	|
22+ 0	0.5040	0.28	|Q	|	|	| V	|
22+ 5	0.5059	0.28	|Q	|	|	| V	|
22+10	0.5078	0.28	|Q	|	|	| V	|
22+15	0.5097	0.28	|Q	|	|	| V	|
22+20	0.5116	0.28	|Q	|	|	| V	|
22+25	0.5135	0.28	|Q	|	|	| V	|
22+30	0.5154	0.28	|Q	|	|	| V	|
22+35	0.5173	0.28	|Q	|	|	| V	|
22+40	0.5192	0.28	|Q	|	|	| V	|
22+45	0.5212	0.28	|Q	|	|	| V	|
22+50	0.5231	0.28	|Q	|	|	| V	|
22+55	0.5250	0.28	|Q	|	|	| V	|
23+ 0	0.5269	0.28	|Q	|	|	| V	|
23+ 5	0.5288	0.28	|Q	|	|	| V	|
23+10	0.5307	0.28	|Q	|	|	| V	|
23+15	0.5326	0.28	|Q	|	|	| V	|
23+20	0.5345	0.28	|Q	|	|	| V	|
23+25	0.5364	0.28	|Q	|	|	| V	|
23+30	0.5383	0.28	|Q	|	|	| V	|
23+35	0.5402	0.28	|Q	|	|	| V	|
23+40	0.5421	0.28	|Q	|	|	| V	|
23+45	0.5440	0.28	|Q	|	|	| V	|
23+50	0.5459	0.28	|Q	|	|	| V	|
23+55	0.5478	0.28	|Q	|	|	| V	|
24+ 0	0.5497	0.28	|Q	|	|	| V	|

APPENDIX E: HYDRAULIC ANALYSIS FOR PROPOSED DRAINAGE FACILITIES BASED ON NORMAL-DEPTH METHOD (FLOWMASTER)

APPENDIX E.1: CATCH BASINS

CATCH BASIN #1 (SUMP)
Worksheet for Curb Inlet In Sag

Project Description	
Worksheet	CATCH BASIN #1
Type	Curb Inlet In Sag
Solve For	Spread

Input Data		
Discharge	9.1	cfs
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Curb Opening Leng	7.0	ft
Opening Height	0.70	ft
Curb Throat Type	Horizontal	
Local Depression	4.0	in
Local Depression W	4.0	ft

Results		
Spread	21.3	ft
Throat Incline Ang	0.00	degree
Depth	0.55	ft
Gutter Depressio	1.5	in
Total Depression	5.5	in

CATCH BASIN #2 (SUMP)
Worksheet for Curb Inlet In Sag

Project Description	
Worksheet	CATCH BASIN #2
Type	Curb Inlet In Sag
Solve For	Spread

Input Data		
Discharge	15.0	cfs
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Curb Opening Leng	7.0	ft
Opening Height	0.70	ft
Curb Throat Type	Horizontal	
Local Depression	4.0	in
Local Depression W	4.0	ft

Results		
Spread	29.8	ft
Throat Incline Ang	0.00	degree
Depth	0.72	ft
Gutter Depressio	1.5	in
Total Depression	5.5	in

CATCH BASIN #3 (ON GRADE)
Worksheet for Curb Inlet On Grade

Project Description	
Worksheet	CATCH BASIN #3 (C
Type	Curb Inlet On Grade
Solve For	Efficiency

Input Data		
Discharge	2.9	cfs
Slope	0.010	ft/ft
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Mannings Coefficie	0.013	
Curb Opening Len	14.0	ft
Local Depression	4.0	in
Local Depression \	4.0	ft

Results		
Efficiency	1.00	
Intercepted Flow	2.9	cfs
Bypass Flow	0.0	cfs
Spread	8.8	ft
Depth	0.30	ft
Flow Area	0.9	ft²
Gutter Depression	1.5	in
Total Depression	5.5	in
Velocity	3.24	ft/s
Equivalent Cross Slo	0.094	ft/ft
Length Factor	1.06	
Total Interception Ler	13.2	ft

CATCH BASIN #4 (ON GRADE)
Worksheet for Curb Inlet On Grade

Project Description	
Worksheet	CATCH BASIN #4 (C
Type	Curb Inlet On Grade
Solve For	Efficiency

Input Data		
Discharge	2.3	cfs
Slope	0.010	ft/ft
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Mannings Coefficie	0.013	
Curb Opening Leng	14.0	ft
Local Depression	4.0	in
Local Depression V	4.0	ft

Results		
Efficiency	1.00	
Intercepted Flow	2.3	cfs
Bypass Flow	0.0	cfs
Spread	7.8	ft
Depth	0.28	ft
Flow Area	0.7	ft²
Gutter Depression	1.5	in
Total Depression	5.5	in
Velocity	3.12	ft/s
Equivalent Cross Slo	0.100	ft/ft
Length Factor	1.22	
Total Interception Ler	11.5	ft

CATCH BASIN #5 (SUMP)
Worksheet for Curb Inlet In Sag

Project Description	
Worksheet	CATCH BASIN #5
Type	Curb Inlet In Sag
Solve For	Spread

Input Data		
Discharge	26.6	cfs
Gutter Width	2	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Curb Opening Leng	14	ft
Opening Height	0.70	ft
Curb Throat Type	Horizontal	
Local Depression	4.0	in
Local Depression W	4	ft

Results		
Spread	33	ft
Throat Incline Ang	0.00	degree
Depth	0.79	ft
Gutter Depressio	1.5	in
Total Depression	5.5	in

CATCH BASIN #6 (SUMP)
Worksheet for Curb Inlet In Sag

Project Description	
Worksheet	CATCH BASIN #6
Type	Curb Inlet In Sag
Solve For	Spread

Input Data		
Discharge	10.2	cfs
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Curb Opening Leng	4.0	ft
Opening Height	0.70	ft
Curb Throat Type	Horizontal	
Local Depression	4.0	in
Local Depression W	4.0	ft

Results		
Spread	27.0	ft
Throat Incline Ang	0.00	degree
Depth	0.67	ft
Gutter Depressio	1.5	in
Total Depression	5.5	in

CATCH BASIN #7 (SUMP)
Worksheet for Curb Inlet In Sag

Project Description	
Worksheet	CATCH BASIN #7
Type	Curb Inlet In Sag
Solve For	Spread

Input Data		
Discharge	12.6	cfs
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Curb Opening Leng	4.0	ft
Opening Height	0.70	ft
Curb Throat Type	Horizontal	
Local Depression	4.0	in
Local Depression W	4.0	ft

Results		
Spread	31.0	ft
Throat Incline Ang	0.00	degree
Depth	0.75	ft
Gutter Depressio	1.5	in
Total Depression	5.5	in

CATCH BASIN #8 (ON GRADE)
Worksheet for Curb Inlet On Grade

Project Description	
Worksheet	CATCH BASIN #8 (C
Type	Curb Inlet On Grade
Solve For	Efficiency

Input Data		
Discharge	2.4	cfs
Slope	0.054	ft/ft
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Mannings Coefficie	0.013	
Curb Opening Leng	14.0	ft
Local Depression	4.0	in
Local Depression V	4.0	ft

Results		
Efficiency	0.95	
Intercepted Flow	2.3	cfs
Bypass Flow	0.1	cfs
Spread	4.9	ft
Depth	0.22	ft
Flow Area	0.4	ft²
Gutter Depression	1.5	in
Total Depression	5.5	in
Velocity	6.58	ft/s
Equivalent Cross Slo	0.123	ft/ft
Length Factor	0.81	
Total Interception Ler	17.2	ft

CATCH BASIN #9 (ON GRADE)
Worksheet for Curb Inlet On Grade

Project Description	
Worksheet	CATCH BASIN #9 (C
Type	Curb Inlet On Grade
Solve For	Efficiency

Input Data		
Discharge	4.8	cfs
Slope	0.047	ft/ft
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Mannings Coefficie	0.013	
Curb Opening Leng	21.0	ft
Local Depression	4.0	in
Local Depression V	4.0	ft

Results		
Efficiency	0.97	
Intercepted Flow	4.6	cfs
Bypass Flow	0.2	cfs
Spread	7.7	ft
Depth	0.28	ft
Flow Area	0.7	ft²
Gutter Depression	1.5	in
Total Depression	5.5	in
Velocity	6.72	ft/s
Equivalent Cross Slo	0.101	ft/ft
Length Factor	0.85	
Total Interception Ler	24.8	ft

CATCH BASIN #10 (ON GRADE)
Worksheet for Curb Inlet On Grade

Project Description	
Worksheet	CATCH BASIN #10 (C
Type	Curb Inlet On Grade
Solve For	Efficiency

Input Data		
Discharge	5.4	cfs
Slope	0.050	ft/ft
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Mannings Coefficie	0.013	
Curb Opening Leng	28.0	ft
Local Depression	4.0	in
Local Depression V	4.0	ft

Results		
Efficiency	1.00	
Intercepted Flow	5.4	cfs
Bypass Flow	0.0	cfs
Spread	8.0	ft
Depth	0.29	ft
Flow Area	0.8	ft²
Gutter Depression	1.5	in
Total Depression	5.5	in
Velocity	7.02	ft/s
Equivalent Cross Slo	0.099	ft/ft
Length Factor	1.04	
Total Interception Ler	26.9	ft

CATCH BASIN #11 (SUMP)
Worksheet for Curb Inlet In Sag

Project Description	
Worksheet	CATCH BASIN #1
Type	Curb Inlet In Sag
Solve For	Spread

Input Data		
Discharge	2.7	cfs
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Curb Opening Leng	4.0	ft
Opening Height	0.70	ft
Curb Throat Type	Horizontal	
Local Depression	4.0	in
Local Depression W	4.0	ft

Results		
Spread	11.1	ft
Throat Incline Ang	0.00	degree
Depth	0.35	ft
Gutter Depressio	1.5	in
Total Depression	5.5	in

CATCH BASIN #12 (SUMP)
Worksheet for Curb Inlet In Sag

Project Description	
Worksheet	CATCH BASIN #1
Type	Curb Inlet In Sag
Solve For	Spread

Input Data		
Discharge	12.5	cfs
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Curb Opening Leng	7.0	ft
Opening Height	0.70	ft
Curb Throat Type	Horizontal	
Local Depression	4.0	in
Local Depression W	4.0	ft

Results		
Spread	26.4	ft
Throat Incline Ang	0.00	degree
Depth	0.65	ft
Gutter Depressio	1.5	in
Total Depression	5.5	in

CATCH BASIN #13 (SUMP)
Worksheet for Curb Inlet In Sag

Project Description	
Worksheet	CATCH BASIN #1
Type	Curb Inlet In Sag
Solve For	Spread

Input Data		
Discharge	38.8	cfs
Gutter Width	2.0	ft
Gutter Cross Slope	0.083	ft/ft
Road Cross Slope	0.020	ft/ft
Curb Opening Leng	21.0	ft
Opening Height	0.70	ft
Curb Throat Type	Horizontal	
Local Depression	4.0	in
Local Depression W	4.0	ft

Results		
Spread	35.5	ft
Throat Incline Ang	0.00	degree
Depth	0.84	ft
Gutter Depressio	1.5	in
Total Depression	5.5	in

APPENDIX E.2: STORM DRAIN PIPE SIZES

LINE "A" - 24" RCP
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "A" - 24" RC
Flow Element	Circular Channel
Method	Manning's Formul
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	24	in
Discharge	14.80	cfs

Results		
Depth	1.18	ft
Flow Area	1.9	ft²
Wetted Perime	3.50	ft
Top Width	1.97	ft
Critical Depth	1.39	ft
Percent Full	59.0	%
Critical Slope	0.006	ft/ft
Velocity	7.68	ft/s
Velocity Head	0.92	ft
Specific Energy	2.10	ft
Froude Numbe	1.37	
Maximum Disc	24.33	cfs
Discharge Full	22.62	cfs
Slope Full	0.004	ft/ft
Flow Type	Supercritical	

LINE "A" - 30" RCP (Q=29.8 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "A" - 30" RCP (Q=29.8
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	30	in
Discharge	29.8	cfs

Results		
Depth	1.58	ft
Flow Area	3.3	ft²
Wetted Perime	5	ft
Top Width	2	ft
Critical Depth	1.86	ft
Percent Full	63.2	%
Critical Slope	0.006	ft/ft
Velocity	9.11	ft/s
Velocity Head	1.29	ft
Specific Energy	2.87	ft
Froude Numbe	1.38	
Maximum Disc	44.1	cfs
Discharge Full	41.0	cfs
Slope Full	0.005	ft/ft
Flow Type	Supercritical	

LINE "A" - 30" RCP (Q=36.3 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "A" - 30" RCP (Q=36.3
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	30	in
Discharge	36.3	cfs

Results		
Depth	1.83	ft
Flow Area	3.8	ft²
Wetted Perime	5	ft
Top Width	2	ft
Critical Depth	2.04	ft
Percent Full	73.1	%
Critical Slope	0.008	ft/ft
Velocity	9.44	ft/s
Velocity Head	1.38	ft
Specific Energy	3.21	ft
Froude Numbe	1.26	
Maximum Disc	44.1	cfs
Discharge Full	41.0	cfs
Slope Full	0.008	ft/ft
Flow Type	Supercritical	

LINE "B" - 18" RCP (Q=2.3 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "B" - 18" RCP (Q=2.3
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).010	ft/ft
Diameter	18	in
Discharge	2.30	cfs

Results		
Depth	0.48	ft
Flow Area	0.5	ft²
Wetted Perime	1.80	ft
Top Width	1.40	ft
Critical Depth	0.57	ft
Percent Full	31.8	%
Critical Slope	0.005	ft/ft
Velocity	4.76	ft/s
Velocity Head	0.35	ft
Specific Energy	0.83	ft
Froude Numbe	1.43	
Maximum Disc	11.30	cfs
Discharge Full	10.50	cfs
Slope Full	4.795e-4	ft/ft
Flow Type	Supercritical	

LINE "B" - 18" RCP (Q=5.2 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "B" - 18" RCP (Q=5.2
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	18	in
Discharge	5.20	cfs

Results		
Depth	0.75	ft
Flow Area	0.9	ft²
Wetted Perime	2.35	ft
Top Width	1.50	ft
Critical Depth	0.88	ft
Percent Full	49.7	%
Critical Slope	0.006	ft/ft
Velocity	5.93	ft/s
Velocity Head	0.55	ft
Specific Energy	1.29	ft
Froude Numbe	1.37	
Maximum Disc	11.30	cfs
Discharge Full	10.50	cfs
Slope Full	0.002	ft/ft
Flow Type	Supercritical	

LINE "C" - 18" RCP
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "C" - 18" RC
Flow Element	Circular Channel
Method	Manning's Formul
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).010	ft/ft
Diameter	18	in
Discharge	5.00	cfs

Results		
Depth	0.73	ft
Flow Area	0.9	ft²
Wetted Perime	2.31	ft
Top Width	1.50	ft
Critical Depth	0.86	ft
Percent Full	48.6	%
Critical Slope	0.006	ft/ft
Velocity	5.87	ft/s
Velocity Head	0.54	ft
Specific Energy	1.26	ft
Froude Numbe	1.37	
Maximum Disc	11.30	cfs
Discharge Full	10.50	cfs
Slope Full	0.002	ft/ft
Flow Type	Supercritical	

LINE "C" - 24" RCP
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "C" - 24" RC
Flow Element	Circular Channel
Method	Manning's Formul
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	24	in
Discharge	17.80	cfs

Results		
Depth	1.34	ft
Flow Area	2.2	ft²
Wetted Perime	3.83	ft
Top Width	1.88	ft
Critical Depth	1.52	ft
Percent Full	66.8	%
Critical Slope	0.007	ft/ft
Velocity	7.98	ft/s
Velocity Head	0.99	ft
Specific Energy	2.33	ft
Froude Numbe	1.29	
Maximum Disc	24.33	cfs
Discharge Full	22.62	cfs
Slope Full	0.006	ft/ft
Flow Type	Supercritical	

LINE "C" - 36" RCP
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "C" - 36" RC
Flow Element	Circular Channel
Method	Manning's Formul
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).010	ft/ft
Diameter	36	in
Discharge	56.7	cfs

Results		
Depth	2.12	ft
Flow Area	5.4	ft²
Wetted Perime	6	ft
Top Width	3	ft
Critical Depth	2.44	ft
Percent Full	70.8	%
Critical Slope	0.007	ft/ft
Velocity	10.59	ft/s
Velocity Head	1.74	ft
Specific Energy	3.87	ft
Froude Numbe	1.33	
Maximum Disc	71.7	cfs
Discharge Full	66.7	cfs
Slope Full	0.007	ft/ft
Flow Type	Supercritical	

LATERAL "C-1" - 18" RCP
Worksheet for Circular Channel

Project Description	
Worksheet	LATERAL "C-1" - 18"
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	18	in
Discharge	6.50	cfs

Results		
Depth	0.85	ft
Flow Area	1.0	ft²
Wetted Perime	2.56	ft
Top Width	1.49	ft
Critical Depth	0.99	ft
Percent Full	56.9	%
Critical Slope	0.006	ft/ft
Velocity	6.26	ft/s
Velocity Head	0.61	ft
Specific Energy	1.46	ft
Froude Numbe	1.32	
Maximum Disc	11.30	cfs
Discharge Full	10.50	cfs
Slope Full	0.004	ft/ft
Flow Type	Supercritical	

LATERAL "C-2" - 24" RCP
Worksheet for Circular Channel

Project Description	
Worksheet	LATERAL "C-2" - 24"
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	24	in
Discharge	12.80	cfs

Results		
Depth	1.08	ft
Flow Area	1.7	ft²
Wetted Perime	3.30	ft
Top Width	1.99	ft
Critical Depth	1.29	ft
Percent Full	53.8	%
Critical Slope	0.006	ft/ft
Velocity	7.42	ft/s
Velocity Head	0.86	ft
Specific Energy	1.93	ft
Froude Numbe	1.41	
Maximum Disc	24.33	cfs
Discharge Full	22.62	cfs
Slope Full	0.003	ft/ft
Flow Type	Supercritical	

CONNECTOR PIPE "C"
Worksheet for Circular Channel

Project Description	
Worksheet	CONNECTOR PI
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).010	ft/ft
Diameter	18	in
Discharge	6.3	cfs

Results		
Depth	0.84	ft
Flow Area	1.0	ft²
Wetted Perime	3	ft
Top Width	1	ft
Critical Depth	0.97	ft
Percent Full	55.8	%
Critical Slope	0.006	ft/ft
Velocity	6.21	ft/s
Velocity Head	0.60	ft
Specific Energ	1.44	ft
Froude Numbe	1.33	
Maximum Disc	11.3	cfs
Discharge Full	10.5	cfs
Slope Full	0.004	ft/ft
Flow Type	Supercritical	

LINE "D" - 36" RCP (Q=26.6 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "D" - 36" RCP (Q=26.6
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.005	ft/ft
Diameter	36	in
Discharge	26.6	cfs

Results		
Depth	1.61	ft
Flow Area	3.9	ft²
Wetted Perime	5	ft
Top Width	3	ft
Critical Depth	1.67	ft
Percent Full	53.7	%
Critical Slope	0.004	ft/ft
Velocity	6.87	ft/s
Velocity Head	0.73	ft
Specific Energy	2.35	ft
Froude Numbe	1.07	
Maximum Disc	50.7	cfs
Discharge Full	47.2	cfs
Slope Full	0.002	ft/ft
Flow Type	Supercritical	

LINE "D" - 36" RCP (Q=36.5 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "D" - 36" RCP (Q=36.5
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.005	ft/ft
Diameter	36	in
Discharge	36.5	cfs

Results		
Depth	1.98	ft
Flow Area	5.0	ft²
Wetted Perime	6	ft
Top Width	3	ft
Critical Depth	1.96	ft
Percent Full	66.1	%
Critical Slope	0.005	ft/ft
Velocity	7.37	ft/s
Velocity Head	0.84	ft
Specific Energy	2.83	ft
Froude Numbe	0.98	
Maximum Disc	50.7	cfs
Discharge Full	47.2	cfs
Slope Full	0.003	ft/ft
Flow Type	Subcritical	

LATERAL "D"
Worksheet for Circular Channel

Project Description	
Worksheet	LATERAL "D"
Flow Element	Circular Chann
Method	Manning's Forr
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).005	ft/ft
Diameter	24	in
Discharge	9.90	cfs

Results		
Depth	1.14	ft
Flow Area	1.8	ft²
Wetted Perime	3.42	ft
Top Width	1.98	ft
Critical Depth	1.13	ft
Percent Full	56.9	%
Critical Slope	0.005	ft/ft
Velocity	5.36	ft/s
Velocity Head	0.45	ft
Specific Energy	1.59	ft
Froude Numbe	0.98	
Maximum Disc	17.21	cfs
Discharge Full	16.00	cfs
Slope Full	0.002	ft/ft
Flow Type	Subcritical	

LINE "F"
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "F"
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	18	in
Discharge	10.20	cfs

Results		
Depth	1.19	ft
Flow Area	1.5	ft²
Wetted Perime	3.30	ft
Top Width	1.21	ft
Critical Depth	1.23	ft
Percent Full	79.5	%
Critical Slope	0.009	ft/ft
Velocity	6.77	ft/s
Velocity Head	0.71	ft
Specific Energy	1.90	ft
Froude Numbe	1.07	
Maximum Disc	11.30	cfs
Discharge Full	10.50	cfs
Slope Full	0.009	ft/ft
Flow Type	Supercritical	

LINE "G"
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "G"
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	24	in
Discharge	12.60	cfs

Results		
Depth	1.07	ft
Flow Area	1.7	ft²
Wetted Perime	3.28	ft
Top Width	2.00	ft
Critical Depth	1.28	ft
Percent Full	53.3	%
Critical Slope	0.006	ft/ft
Velocity	7.39	ft/s
Velocity Head	0.85	ft
Specific Energy	1.92	ft
Froude Numbe	1.41	
Maximum Disc	24.33	cfs
Discharge Full	22.62	cfs
Slope Full	0.003	ft/ft
Flow Type	Supercritical	

LINE "H" - 18" RCP (Q=2.3 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "H" - 18" RCP (Q=2.3
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).005	ft/ft
Diameter	18	in
Discharge	2.30	cfs

Results		
Depth	0.57	ft
Flow Area	0.6	ft²
Wetted Perime	2.00	ft
Top Width	1.46	ft
Critical Depth	0.57	ft
Percent Full	38.2	%
Critical Slope	0.005	ft/ft
Velocity	3.71	ft/s
Velocity Head	0.21	ft
Specific Energy	0.79	ft
Froude Numbe	1.00	
Maximum Disc	7.99	cfs
Discharge Full	7.43	cfs
Slope Full	4.795e-4	ft/ft
Flow Type	Supercritical	

LINE "H" - 18" RCP (Q=4.6 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "H" - 18" RCP (Q=4.6
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.005	ft/ft
Diameter	18	in
Discharge	4.6	cfs

Results		
Depth	0.85	ft
Flow Area	1.0	ft²
Wetted Perime	3	ft
Top Width	1	ft
Critical Depth	0.82	ft
Percent Full	56.9	%
Critical Slope	0.006	ft/ft
Velocity	4.43	ft/s
Velocity Head	0.30	ft
Specific Energy	1.16	ft
Froude Numbe	0.93	
Maximum Disc	8.0	cfs
Discharge Full	7.4	cfs
Slope Full	0.002	ft/ft
Flow Type	Subcritical	

LINE "I"
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "I"
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.005	ft/ft
Diameter	18	in
Discharge	2.30	cfs

Results		
Depth	0.57	ft
Flow Area	0.6	ft²
Wetted Perime	2.00	ft
Top Width	1.46	ft
Critical Depth	0.57	ft
Percent Full	38.2	%
Critical Slope	0.005	ft/ft
Velocity	3.71	ft/s
Velocity Head	0.21	ft
Specific Energy	0.79	ft
Froude Numbe	1.00	
Maximum Disc	7.99	cfs
Discharge Full	7.43	cfs
Slope Full	4.795e-4	ft/ft
Flow Type	Supercritical	

LINE "J"
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "J"
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	18	in
Discharge	2.4	cfs

Results		
Depth	0.49	ft
Flow Area	0.5	ft²
Wetted Perime	2	ft
Top Width	1	ft
Critical Depth	0.59	ft
Percent Full	32.5	%
Critical Slope	0.005	ft/ft
Velocity	4.82	ft/s
Velocity Head	0.36	ft
Specific Energy	0.85	ft
Froude Numbe	1.43	
Maximum Disc	11.3	cfs
Discharge Full	10.5	cfs
Slope Full	0.001	ft/ft
Flow Type	Supercritical	

LINE "K" - 18" RCP
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "K" - 18" RC
Flow Element	Circular Channel
Method	Manning's Formul
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).005	ft/ft
Diameter	18	in
Discharge	5.60	cfs

Results		
Depth	0.97	ft
Flow Area	1.2	ft²
Wetted Perime	2.81	ft
Top Width	1.43	ft
Critical Depth	0.91	ft
Percent Full	64.9	%
Critical Slope	0.006	ft/ft
Velocity	4.62	ft/s
Velocity Head	0.33	ft
Specific Energy	1.30	ft
Froude Numbe	0.88	
Maximum Disc	7.99	cfs
Discharge Full	7.43	cfs
Slope Full	0.003	ft/ft
Flow Type	Subcritical	

LINE "K" - 24" RCP
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "K" - 24" RC
Flow Element	Circular Channel
Method	Manning's Formul
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).005	ft/ft
Diameter	24	in
Discharge	10.2	cfs

Results		
Depth	1.16	ft
Flow Area	1.9	ft²
Wetted Perime	3	ft
Top Width	2	ft
Critical Depth	1.14	ft
Percent Full	58.0	%
Critical Slope	0.005	ft/ft
Velocity	5.40	ft/s
Velocity Head	0.45	ft
Specific Energ	1.61	ft
Froude Numbe	0.97	
Maximum Disc	17.2	cfs
Discharge Full	16.0	cfs
Slope Full	0.002	ft/ft
Flow Type	Subcritical	

LINE "L"
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "L"
Flow Element	Circular Chann
Method	Manning's Forr
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.005	ft/ft
Diameter	18	in
Discharge	3.20	cfs

Results		
Depth	0.69	ft
Flow Area	0.8	ft²
Wetted Perime	2.23	ft
Top Width	1.49	ft
Critical Depth	0.68	ft
Percent Full	45.9	%
Critical Slope	0.005	ft/ft
Velocity	4.05	ft/s
Velocity Head	0.25	ft
Specific Energy	0.94	ft
Froude Numbe	0.98	
Maximum Disc	7.99	cfs
Discharge Full	7.43	cfs
Slope Full	0.001	ft/ft
Flow Type	Subcritical	

LINE "M' - 18" RCP
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "M' - 18" RC
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).005	ft/ft
Diameter	18	in
Discharge	2.70	cfs

Results		
Depth	0.63	ft
Flow Area	0.7	ft²
Wetted Perime	2.11	ft
Top Width	1.48	ft
Critical Depth	0.62	ft
Percent Full	41.7	%
Critical Slope	0.005	ft/ft
Velocity	3.87	ft/s
Velocity Head	0.23	ft
Specific Energy	0.86	ft
Froude Numbe	0.99	
Maximum Disc	7.99	cfs
Discharge Full	7.43	cfs
Slope Full	0.001	ft/ft
Flow Type	Subcritical	

LINE "M' - 24" RCP
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "M' - 24" RC
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.005	ft/ft
Diameter	24	in
Discharge	15.20	cfs

Results		
Depth	1.56	ft
Flow Area	2.6	ft²
Wetted Perime	4.32	ft
Top Width	1.66	ft
Critical Depth	1.41	ft
Percent Full	77.8	%
Critical Slope	0.006	ft/ft
Velocity	5.79	ft/s
Velocity Head	0.52	ft
Specific Energy	2.08	ft
Froude Numbe	0.81	
Maximum Disc	17.21	cfs
Discharge Full	16.00	cfs
Slope Full	0.005	ft/ft
Flow Type	Subcritical	

LINE "N"
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "N"
Flow Element	Circular Chann
Method	Manning's Forr
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).010	ft/ft
Diameter	18	in
Discharge	0.9	cfs

Results		
Depth	0.30	ft
Flow Area	0.2	ft²
Wetted Perime	1	ft
Top Width	1	ft
Critical Depth	0.35	ft
Percent Full	19.8	%
Critical Slope	0.005	ft/ft
Velocity	3.63	ft/s
Velocity Head	0.21	ft
Specific Energy	0.50	ft
Froude Numbe	1.41	
Maximum Disc	11.3	cfs
Discharge Full	10.5	cfs
Slope Full	7.342e-5	ft/ft
Flow Type	Supercritical	

LINE "O"
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "O"
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	30	in
Discharge	38.8	cfs

Results		
Depth	1.94	ft
Flow Area	4.1	ft²
Wetted Perime	5	ft
Top Width	2	ft
Critical Depth	2.10	ft
Percent Full	77.5	%
Critical Slope	0.009	ft/ft
Velocity	9.51	ft/s
Velocity Head	1.40	ft
Specific Energy	3.34	ft
Froude Numbe	1.20	
Maximum Disc	44.1	cfs
Discharge Full	41.0	cfs
Slope Full	0.009	ft/ft
Flow Type	Supercritical	

LINE "P" - 42" RCP (Q=87.4 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "P" - 42" RCP (Q=87.4
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	42	in
Discharge	87.4	cfs

Results		
Depth	2.52	ft
Flow Area	7.4	ft²
Wetted Perime	7	ft
Top Width	3	ft
Critical Depth	2.91	ft
Percent Full	72.1	%
Critical Slope	0.007	ft/ft
Velocity	11.78	ft/s
Velocity Head	2.16	ft
Specific Energy	4.68	ft
Froude Numbe	1.35	
Maximum Disc	108.2	cfs
Discharge Full	100.6	cfs
Slope Full	0.008	ft/ft
Flow Type	Supercritical	

LINE "P" - 42" RCP (Q=97.2 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "P" - 42" RCP (Q=97.2
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	42	in
Discharge	97.2	cfs

Results		
Depth	2.77	ft
Flow Area	8.2	ft²
Wetted Perime	8	ft
Top Width	3	ft
Critical Depth	3.04	ft
Percent Full	79.1	%
Critical Slope	0.009	ft/ft
Velocity	11.91	ft/s
Velocity Head	2.21	ft
Specific Energy	4.97	ft
Froude Numbe	1.24	
Maximum Disc	108.2	cfs
Discharge Full	100.6	cfs
Slope Full	0.009	ft/ft
Flow Type	Supercritical	

LINE "P" - 42" RCP (Q=106.6 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "P" - 42" RCP (Q=106.6
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.020	ft/ft
Diameter	42	in
Discharge	106.6	cfs

Results		
Depth	2.26	ft
Flow Area	6.6	ft²
Wetted Perime	6.53	ft
Top Width	3.35	ft
Critical Depth	3.14	ft
Percent Full	64.6	%
Critical Slope	0.010	ft/ft
Velocity	16.23	ft/s
Velocity Head	4.09	ft
Specific Energy	6.35	ft
Froude Numbe	2.04	
Maximum Disc	153.0	cfs
Discharge Full	142.3	cfs
Slope Full	0.011	ft/ft
Flow Type	Supercritical	

LINE "P" - 42" RCP (Q=163.1 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "P" - 42" RCP (Q=163.1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.030	ft/ft
Diameter	42	in
Discharge	163.1	cfs

Results		
Depth	2.69	ft
Flow Area	7.9	ft²
Wetted Perime	7.47	ft
Top Width	2.96	ft
Critical Depth	3.42	ft
Percent Full	76.7	%
Critical Slope	0.023	ft/ft
Velocity	20.58	ft/s
Velocity Head	6.58	ft
Specific Energy	9.27	ft
Froude Numbe	2.22	
Maximum Disc	187.4	cfs
Discharge Full	174.3	cfs
Slope Full	0.026	ft/ft
Flow Type	Supercritical	

LINE "P" - 42" RCP (Q=165.8 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "P" - 42" RCP (Q=165.8
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.030	ft/ft
Diameter	42	in
Discharge	165.8	cfs

Results		
Depth	2.73	ft
Flow Area	8.0	ft²
Wetted Perime	7.57	ft
Top Width	2.90	ft
Critical Depth	3.42	ft
Percent Full	77.9	%
Critical Slope	0.024	ft/ft
Velocity	20.61	ft/s
Velocity Head	6.60	ft
Specific Energy	9.33	ft
Froude Numbe	2.18	
Maximum Disc	187.4	cfs
Discharge Full	174.3	cfs
Slope Full	0.027	ft/ft
Flow Type	Supercritical	

LINE "P" - 42" RCP (Q=170.6 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "P" - 42" RCP (Q=170.6
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.035	ft/ft
Diameter	42	in
Discharge	170.6	cfs

Results		
Depth	2.61	ft
Flow Area	7.7	ft²
Wetted Perime	7.30	ft
Top Width	3.05	ft
Critical Depth	3.43	ft
Percent Full	74.6	%
Critical Slope	0.026	ft/ft
Velocity	22.16	ft/s
Velocity Head	7.63	ft
Specific Energy	10.24	ft
Froude Numbe	2.46	
Maximum Disc	202.5	cfs
Discharge Full	188.2	cfs
Slope Full	0.029	ft/ft
Flow Type	Supercritical	

LATERAL "P-1"
Worksheet for Circular Channel

Project Description	
Worksheet	LATERAL "P-1
Flow Element	Circular Chann
Method	Manning's Forr
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	18	in
Discharge	9.8	cfs

Results		
Depth	1.15	ft
Flow Area	1.5	ft²
Wetted Perime	3.20	ft
Top Width	1.27	ft
Critical Depth	1.21	ft
Percent Full	76.5	%
Critical Slope	0.009	ft/ft
Velocity	6.75	ft/s
Velocity Head	0.71	ft
Specific Energy	1.86	ft
Froude Numbe	1.11	
Maximum Disc	11.3	cfs
Discharge Full	10.5	cfs
Slope Full	0.009	ft/ft
Flow Type	Supercritical	

LATERAL "P-2"
Worksheet for Circular Channel

Project Description	
Worksheet	LATERAL "P-2
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	18	in
Discharge	8.6	cfs

Results		
Depth	1.03	ft
Flow Area	1.3	ft²
Wetted Perime	2.94	ft
Top Width	1.39	ft
Critical Depth	1.14	ft
Percent Full	68.8	%
Critical Slope	0.008	ft/ft
Velocity	6.63	ft/s
Velocity Head	0.68	ft
Specific Energy	1.72	ft
Froude Numbe	1.21	
Maximum Disc	11.3	cfs
Discharge Full	10.5	cfs
Slope Full	0.007	ft/ft
Flow Type	Supercritical	

LATERAL "P-3"
Worksheet for Circular Channel

Project Description	
Worksheet	LATERAL "P-3
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.005	ft/ft
Diameter	18	in
Discharge	0.8	cfs

Results		
Depth	0.33	ft
Flow Area	0.3	ft²
Wetted Perime	1.47	ft
Top Width	1.25	ft
Critical Depth	0.33	ft
Percent Full	22.2	%
Critical Slope	0.005	ft/ft
Velocity	2.75	ft/s
Velocity Head	0.12	ft
Specific Energy	0.45	ft
Froude Numbe	1.00	
Maximum Disc	8.0	cfs
Discharge Full	7.4	cfs
Slope Full	5.801e-5	ft/ft
Flow Type	Supercritical	

LATERAL "P-4" - 30" RCP (Q=44.6 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LATERAL "P-4" - 30" RCP (Q=4
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).030	ft/ft
Diameter	30	in
Discharge	44.6	cfs

Results		
Depth	1.44	ft
Flow Area	2.9	ft²
Wetted Perime	4.30	ft
Top Width	2.47	ft
Critical Depth	2.22	ft
Percent Full	57.4	%
Critical Slope	0.011	ft/ft
Velocity	15.29	ft/s
Velocity Head	3.63	ft
Specific Energy	5.07	ft
Froude Numbe	2.48	
Maximum Disc	76.4	cfs
Discharge Full	71.0	cfs
Slope Full	0.012	ft/ft
Flow Type	Supercritical	

LATERAL "P-4" - 30" RCP (Q=56.5 CFS)
Worksheet for Circular Channel

Project Description	
Worksheet	LATERAL "P-4" - 30" RCP (Q=4
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	).013	
Slope	).030	ft/ft
Diameter	30	in
Discharge	56.5	cfs

Results		
Depth	1.68	ft
Flow Area	3.5	ft²
Wetted Perime	4.81	ft
Top Width	2.34	ft
Critical Depth	2.37	ft
Percent Full	67.4	%
Critical Slope	0.016	ft/ft
Velocity	16.06	ft/s
Velocity Head	4.01	ft
Specific Energy	5.69	ft
Froude Numbe	2.31	
Maximum Disc	76.4	cfs
Discharge Full	71.0	cfs
Slope Full	0.019	ft/ft
Flow Type	Supercritical	

LATERAL "P-5"
Worksheet for Circular Channel

Project Description	
Worksheet	LATERAL "P-5
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.005	ft/ft
Diameter	18	in
Discharge	2.7	cfs

Results		
Depth	0.63	ft
Flow Area	0.7	ft²
Wetted Perime	2.11	ft
Top Width	1.48	ft
Critical Depth	0.62	ft
Percent Full	41.7	%
Critical Slope	0.005	ft/ft
Velocity	3.87	ft/s
Velocity Head	0.23	ft
Specific Energy	0.86	ft
Froude Numbe	0.99	
Maximum Disc	8.0	cfs
Discharge Full	7.4	cfs
Slope Full	0.001	ft/ft
Flow Type	Subcritical	

LATERAL "P-6"
Worksheet for Circular Channel

Project Description	
Worksheet	LATERAL "P-6
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.005	ft/ft
Diameter	18	in
Discharge	4.8	cfs

Results		
Depth	0.88	ft
Flow Area	1.1	ft²
Wetted Perime	2.61	ft
Top Width	1.48	ft
Critical Depth	0.84	ft
Percent Full	58.5	%
Critical Slope	0.006	ft/ft
Velocity	4.47	ft/s
Velocity Head	0.31	ft
Specific Energy	1.19	ft
Froude Numbe	0.92	
Maximum Disc	8.0	cfs
Discharge Full	7.4	cfs
Slope Full	0.002	ft/ft
Flow Type	Subcritical	

CONNECTOR PIPE "P"
Worksheet for Circular Channel

Project Description	
Worksheet	CONNECTOR PI
Flow Element	Circular Channel
Method	Manning's Formu
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	24	in
Discharge	11.9	cfs

Results		
Depth	1.03	ft
Flow Area	1.6	ft²
Wetted Perime	3	ft
Top Width	2	ft
Critical Depth	1.24	ft
Percent Full	51.5	%
Critical Slope	0.006	ft/ft
Velocity	7.29	ft/s
Velocity Head	0.83	ft
Specific Energy	1.86	ft
Froude Numbe	1.42	
Maximum Disc	24.3	cfs
Discharge Full	22.6	cfs
Slope Full	0.003	ft/ft
Flow Type	Supercritical	

LINE "Q"
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "Q"
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	42	in
Discharge	75.4	cfs

Results		
Depth	2.26	ft
Flow Area	6.6	ft²
Wetted Perime	6.53	ft
Top Width	3.35	ft
Critical Depth	2.72	ft
Percent Full	64.6	%
Critical Slope	0.006	ft/ft
Velocity	11.47	ft/s
Velocity Head	2.05	ft
Specific Energy	4.31	ft
Froude Numbe	1.44	
Maximum Disc	108.2	cfs
Discharge Full	100.6	cfs
Slope Full	0.006	ft/ft
Flow Type	Supercritical	

LINE "R"
Worksheet for Circular Channel

Project Description	
Worksheet	LINE "R"
Flow Element	Circular Chann
Method	Manning's For
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.010	ft/ft
Diameter	18	in
Discharge	1.5	cfs

Results		
Depth	0.38	ft
Flow Area	0.4	ft²
Wetted Perime	2	ft
Top Width	1	ft
Critical Depth	0.46	ft
Percent Full	25.5	%
Critical Slope	0.005	ft/ft
Velocity	4.22	ft/s
Velocity Head	0.28	ft
Specific Energy	0.66	ft
Froude Numbe	1.42	
Maximum Disc	11.3	cfs
Discharge Full	10.5	cfs
Slope Full	2.039e-4	ft/ft
Flow Type	Supercritical	

APPENDIX E.3: PARKWAY DRAINS

PARKWAY DRAIN #1
Worksheet for Rectangular Channel

Project Description	
Worksheet	PARKWAY DRA
Flow Element	Rectangular Cha
Method	Manning's Formu
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.020	ft/ft
Bottom Width	1.5	ft
Discharge	1.5	cfs

Results		
Depth	0.21	ft
Flow Area	0.3	ft²
Wetted Perim	1.9	ft
Top Width	1.5	ft
Critical Depth	0.31	ft
Critical Slope	0.006	ft/ft
Velocity	4.82	ft/s
Velocity Head	0.36	ft
Specific Energ	0.57	ft
Froude Numb	1.86	
Flow Type	Supercritical	

PARKWAY DRAIN #2
Worksheet for Rectangular Channel

Project Description	
Worksheet	PARKWAY DRA
Flow Element	Rectangular Cha
Method	Manning's Formu
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.020	ft/ft
Bottom Width	2.5	ft
Discharge	2.3	cfs

Results		
Depth	0.19	ft
Flow Area	0.5	ft²
Wetted Perim	2.9	ft
Top Width	2.5	ft
Critical Depth	0.30	ft
Critical Slope	0.005	ft/ft
Velocity	4.85	ft/s
Velocity Head	0.37	ft
Specific Energ	0.56	ft
Froude Numb	1.97	
Flow Type	Supercritical	

PARKWAY DRAIN #3
Worksheet for Rectangular Channel

Project Description	
Worksheet	PARKWAY DRA
Flow Element	Rectangular Cha
Method	Manning's Formu
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.020	ft/ft
Bottom Width	3.0	ft
Discharge	3.2	cfs

Results		
Depth	0.21	ft
Flow Area	0.6	ft²
Wetted Perim	3.4	ft
Top Width	3.0	ft
Critical Depth	0.33	ft
Critical Slope	0.005	ft/ft
Velocity	5.18	ft/s
Velocity Head	0.42	ft
Specific Energ	0.62	ft
Froude Numb	2.01	
Flow Type	Supercritical	

PARKWAY DRAIN #6
Worksheet for Rectangular Channel

Project Description	
Worksheet	PARKWAY DRA
Flow Element	Rectangular Cha
Method	Manning's Formu
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.013	
Slope	0.020	ft/ft
Bottom Width	1.5	ft
Discharge	2.1	cfs

Results		
Depth	0.26	ft
Flow Area	0.4	ft²
Wetted Perim	2.0	ft
Top Width	1.5	ft
Critical Depth	0.39	ft
Critical Slope	0.006	ft/ft
Velocity	5.39	ft/s
Velocity Head	0.45	ft
Specific Energ	0.71	ft
Froude Numb	1.87	
Flow Type	Supercritical	

APPENDIX E.4: LINE "B" V-DITCH

CONCRETE V-DITCH - LINE "B"
Worksheet for Triangular Channel

Project Description	
Worksheet	CONCRETE V-DITCH -
Flow Element	Triangular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Mannings Coeffic	0.015	
Slope	0.020	ft/ft
Left Side Slope	1.00	H : V
Right Side Slope	1.00	H : V
Discharge	5.2	cfs

Results		
Depth	0.89	ft
Flow Area	0.8	ft²
Wetted Perim	2.5	ft
Top Width	1.8	ft
Critical Depth	1.11	ft
Critical Slope	0.006	ft/ft
Velocity	6.50	ft/s
Velocity Head	0.66	ft
Specific Energ	1.55	ft
Froude Numb	1.71	
Flow Type	Supercritical	

APPENDIX F: HYDRAULIC ANALYSIS FOR PROPOSED STREET FLOW CAPACITIES BASED ON NORMAL-DEPTH METHOD (FLOWMASTER)

SECTION A-A (STREET I FULL STREET CAPACITY @ RW-RW)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION A-A (STREET I FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0254	ft/ft
Water Surface Elev	0.91	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	0.00 to 0.91	
Discharge	213.16	cfs
Flow Area	24.7	ft²
Wetted Perimeter	61.37	ft
Top Width	60.00	ft
Actual Depth	0.91	ft
Critical Elevation	1.23	ft
Critical Slope	0.0038	ft/ft
Velocity	8.62	ft/s
Velocity Head	1.15	ft
Specific Energy	2.06	ft
Froude Number	2.37	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

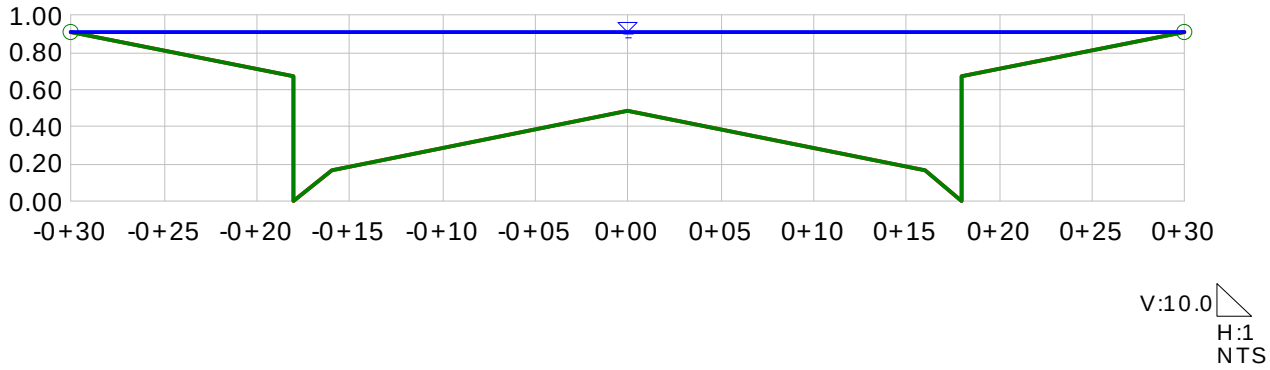
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION A-A (STREET I FULL STREET CAPACITY @ RW-RW)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION A-A (STREET I FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0254	ft/ft
Water Surface Elev	0.91	ft
Elevation Range	.00 to 0.91	
Discharge	213.16	cfs



SECTION A-A (STREET I FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION A-A (STREET I FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0254	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	104.41	cfs
Flow Area	13.2	ft²
Wetted Perimeter	37.36	ft
Top Width	36.00	ft
Actual Depth	0.67	ft
Critical Elevation	0.95	ft
Critical Slope	0.0044	ft/ft
Velocity	7.90	ft/s
Velocity Head	0.97	ft
Specific Energy	1.64	ft
Froude Number	2.30	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

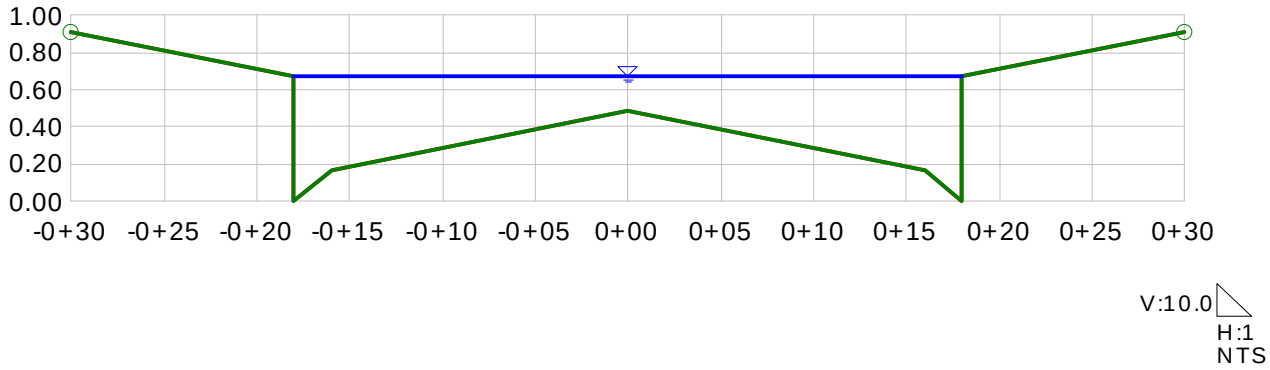
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION A-A (STREET I FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION A-A (STREET I FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0254	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.91	
Discharge	104.41	cfs



SECTION B-B (STREET G FULL STREET CAPACITY @ RW-RW)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION B-B (STREET G FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0312	ft/ft
Water Surface Elev	0.91	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	251.44	cfs
Flow Area	26.3	ft²
Wetted Perimeter	65.37	ft
Top Width	64.00	ft
Actual Depth	0.91	ft
Critical Elevation	1.28	ft
Critical Slope	0.0037	ft/ft
Velocity	9.55	ft/s
Velocity Head	1.42	ft
Specific Energy	2.33	ft
Froude Number	2.62	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+32	0+32	0.015

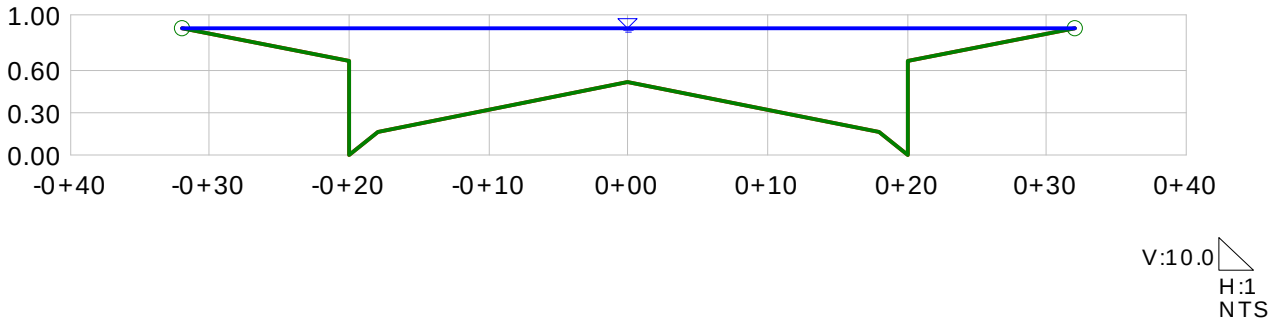
Natural Channel Points

Station (ft)	Elevation (ft)
-0+32	0.91
-0+20	0.67
-0+20	0.00
-0+18	0.17
0+00	0.53
0+18	0.17
0+20	0.00
0+20	0.67
0+32	0.91

SECTION B-B (STREET G FULL STREET CAPACITY @ RW-RW)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION B-B (STREET G FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0312	ft/ft
Water Surface Elev	0.91	ft
Elevation Range	.00 to 0.91	
Discharge	251.44	cfs



SECTION B-B (STREET G FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION B-B (STREET G FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0312	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	117.00	cfs
Flow Area	13.9	ft²
Wetted Perimeter	41.36	ft
Top Width	40.00	ft
Actual Depth	0.67	ft
Critical Elevation	0.97	ft
Critical Slope	0.0043	ft/ft
Velocity	8.44	ft/s
Velocity Head	1.11	ft
Specific Energy	1.78	ft
Froude Number	2.53	
Flow Type	Supercritical	

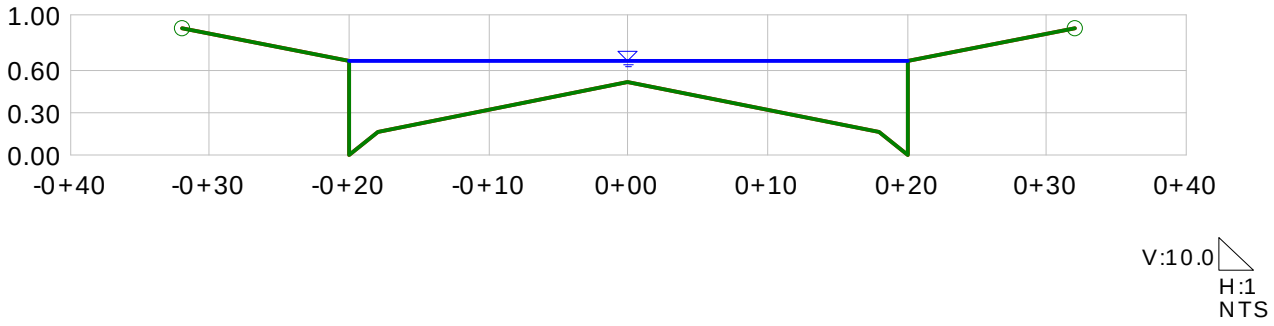
Roughness Segments		
Start Station	End Station	Mannings Coefficient
-0+32	0+32	0.015

Natural Channel Points	
Station (ft)	Elevation (ft)
-0+32	0.91
-0+20	0.67
-0+20	0.00
-0+18	0.17
0+00	0.53
0+18	0.17
0+20	0.00
0+20	0.67
0+32	0.91

SECTION B-B (STREET G FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION B-B (STREET G FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0312	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.91	
Discharge	117.00	cfs



SECTION C-C (STREET G FULL STREET CAPACITY @ RW-RW)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION C-C (STREET G FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0312	ft/ft
Water Surface Elev	0.91	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	251.44	cfs
Flow Area	26.3	ft²
Wetted Perimeter	65.37	ft
Top Width	64.00	ft
Actual Depth	0.91	ft
Critical Elevation	1.28	ft
Critical Slope	0.0037	ft/ft
Velocity	9.55	ft/s
Velocity Head	1.42	ft
Specific Energy	2.33	ft
Froude Number	2.62	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+32	0+32	0.015

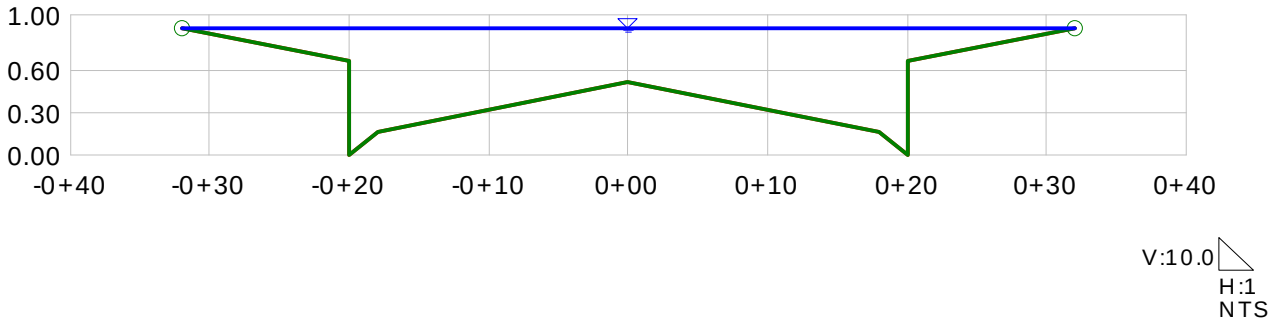
Natural Channel Points

Station (ft)	Elevation (ft)
-0+32	0.91
-0+20	0.67
-0+20	0.00
-0+18	0.17
0+00	0.53
0+18	0.17
0+20	0.00
0+20	0.67
0+32	0.91

SECTION C-C (STREET G FULL STREET CAPACITY @ RW-RW)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION C-C (STREET G FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0312	ft/ft
Water Surface Elev	0.91	ft
Elevation Range	.00 to 0.91	
Discharge	251.44	cfs



SECTION C-C (STREET G FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION C-C (STREET G FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0312	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	117.00	cfs
Flow Area	13.9	ft²
Wetted Perimeter	41.36	ft
Top Width	40.00	ft
Actual Depth	0.67	ft
Critical Elevation	0.97	ft
Critical Slope	0.0043	ft/ft
Velocity	8.44	ft/s
Velocity Head	1.11	ft
Specific Energy	1.78	ft
Froude Number	2.53	
Flow Type	Supercritical	

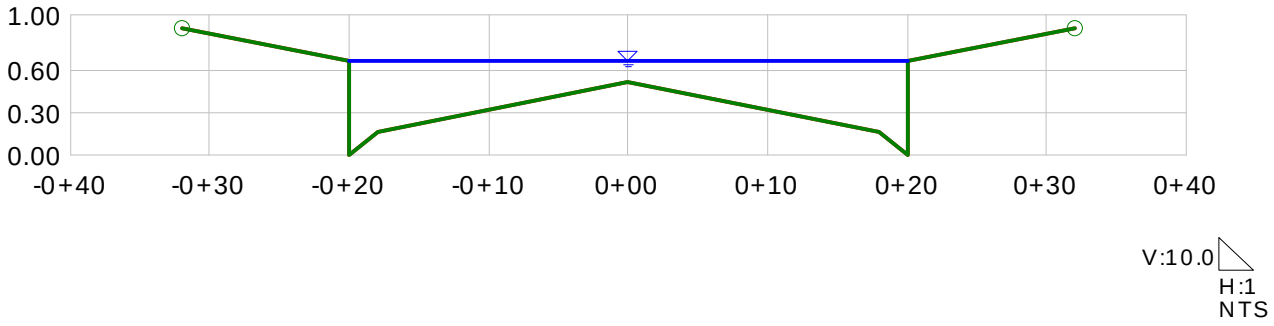
Roughness Segments		
Start Station	End Station	Mannings Coefficient
-0+32	0+32	0.015

Natural Channel Points	
Station (ft)	Elevation (ft)
-0+32	0.91
-0+20	0.67
-0+20	0.00
-0+18	0.17
0+00	0.53
0+18	0.17
0+20	0.00
0+20	0.67
0+32	0.91

SECTION C-C (STREET G FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION C-C (STREET G FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0312	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.91	
Discharge	117.00	cfs



SECTION D-D (STREET H FULL STREET CAPACITY @ RW-RW)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION D-D (STREET H FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0353	ft/ft
Water Surface Elev	0.91	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	251.29	cfs
Flow Area	24.7	ft²
Wetted Perimeter	61.37	ft
Top Width	60.00	ft
Actual Depth	0.91	ft
Critical Elevation	1.31	ft
Critical Slope	0.0037	ft/ft
Velocity	10.16	ft/s
Velocity Head	1.60	ft
Specific Energy	2.51	ft
Froude Number	2.79	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

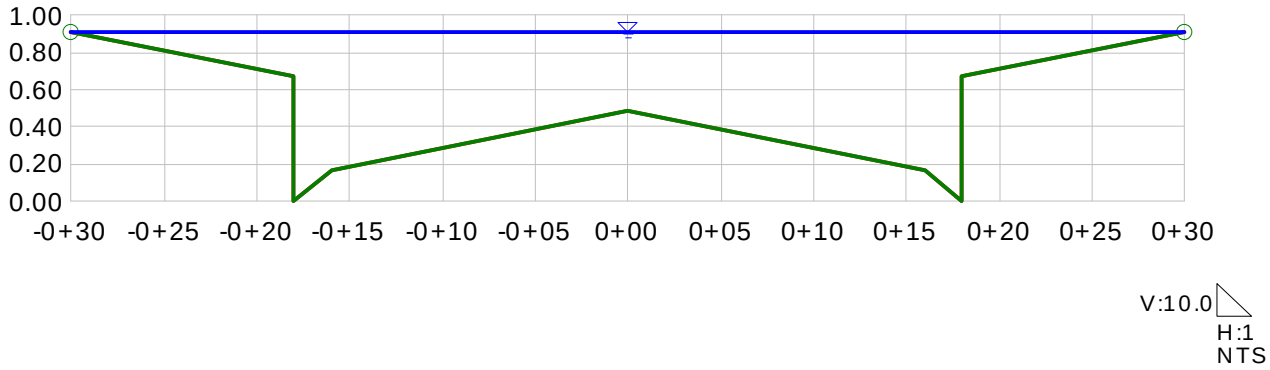
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION D-D (STREET H FULL STREET CAPACITY @ RW-RW)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION D-D (STREET H FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0353	ft/ft
Water Surface Elev	0.91	ft
Elevation Range	.00 to 0.91	
Discharge	251.29	cfs



SECTION D-D (STREET H FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION D-D (STREET H FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0353	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	123.09	cfs
Flow Area	13.2	ft²
Wetted Perimeter	37.36	ft
Top Width	36.00	ft
Actual Depth	0.67	ft
Critical Elevation	1.01	ft
Critical Slope	0.0043	ft/ft
Velocity	9.31	ft/s
Velocity Head	1.35	ft
Specific Energy	2.02	ft
Froude Number	2.71	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

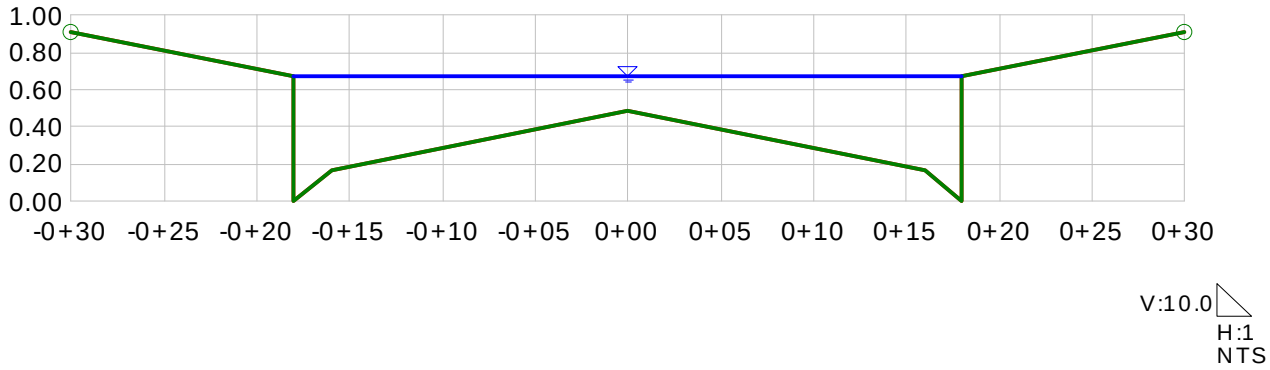
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION D-D (STREET H FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION D-D (STREET H FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0353	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.91	
Discharge	123.09	cfs



SECTION E-E (WABASH AVE FULL STREET CAPACITY @ RW-RW)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION E-E (WABASH AVE FULL STRE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0538	ft/ft
Water Surface Elev	0.87	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.87	
Discharge	322.93	cfs
Flow Area	27.2	ft²
Wetted Perimeter	73.37	ft
Top Width	72.00	ft
Actual Depth	0.87	ft
Critical Elevation	1.35	ft
Critical Slope	0.0036	ft/ft
Velocity	11.86	ft/s
Velocity Head	2.19	ft
Specific Energy	3.06	ft
Froude Number	3.40	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+36	0+36	0.015

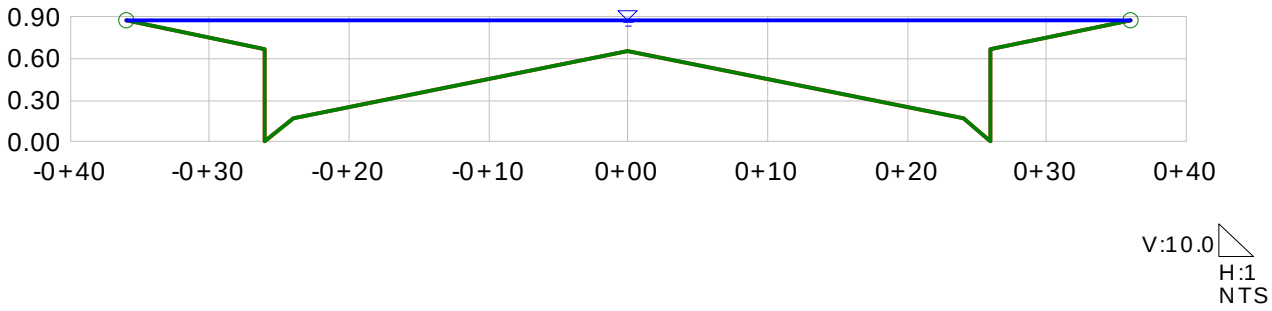
Natural Channel Points

Station (ft)	Elevation (ft)
-0+36	0.87
-0+26	0.67
-0+26	0.00
-0+24	0.17
0+00	0.65
0+24	0.17
0+26	0.00
0+26	0.67
0+36	0.87

SECTION E-E (WABASH AVE FULL STREET CAPACITY @ RW-RW)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION E-E (WABASH AVE FULL STRE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0538	ft/ft
Water Surface Elev	0.87	ft
Elevation Range	.00 to 0.87	
Discharge	322.93	cfs



SECTION E-E (WABASH AVE FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION E-E (WABASH AVE FULL STRE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0538	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.87	
Discharge	144.95	cfs
Flow Area	14.8	ft²
Wetted Perimeter	53.36	ft
Top Width	52.00	ft
Actual Depth	0.67	ft
Critical Elevation	0.99	ft
Critical Slope	0.0043	ft/ft
Velocity	9.78	ft/s
Velocity Head	1.49	ft
Specific Energy	2.16	ft
Froude Number	3.23	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+36	0+36	0.015

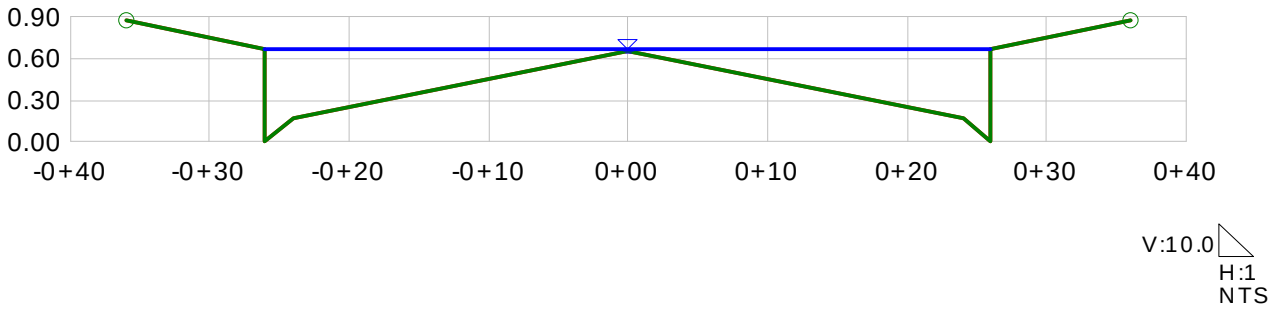
Natural Channel Points

Station (ft)	Elevation (ft)
-0+36	0.87
-0+26	0.67
-0+26	0.00
-0+24	0.17
0+00	0.65
0+24	0.17
0+26	0.00
0+26	0.67
0+36	0.87

SECTION E-E (WABASH AVE FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION E-E (WABASH AVE FULL STRE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0538	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.87	
Discharge	144.95	cfs



SECTION F-F (RESERVOIR RD HALF STREET CAPACITY @ CL)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION F-F (RESERVOIR RD HALF ST
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0540	ft/ft
Water Surface Elev	0.53	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.77	
Discharge	32.63	cfs
Flow Area	4.1	ft²
Wetted Perimeter	20.54	ft
Top Width	20.00	ft
Actual Depth	0.53	ft
Critical Elevation	0.78	ft
Critical Slope	0.0048	ft/ft
Velocity	7.90	ft/s
Velocity Head	0.97	ft
Specific Energy	1.50	ft
Froude Number	3.07	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+25	0.015

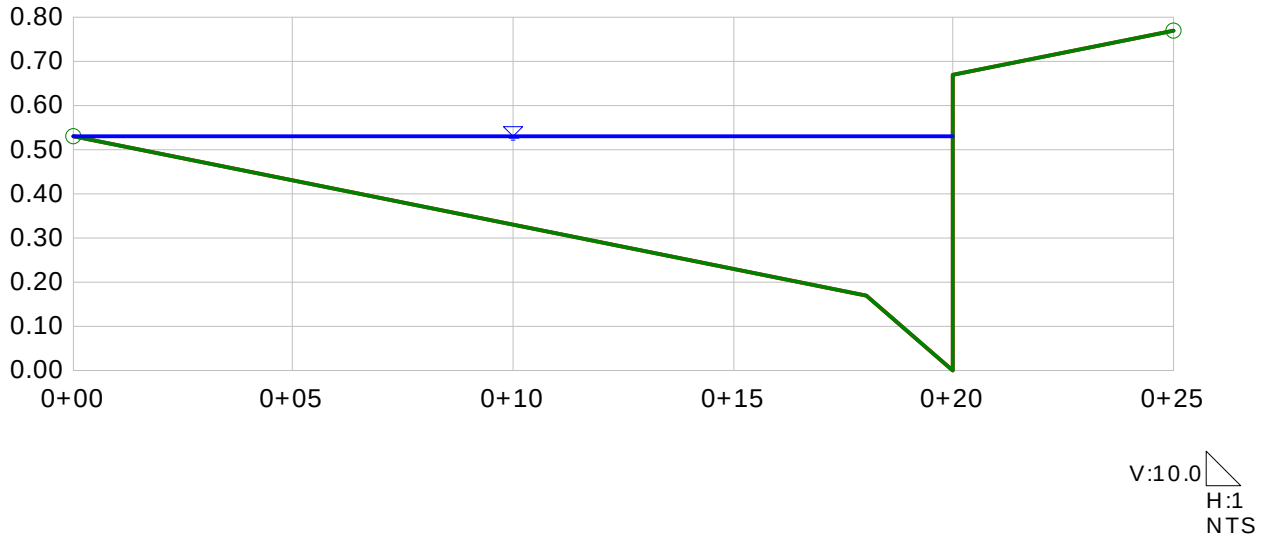
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	0.53
0+18	0.17
0+20	0.00
0+20	0.67
0+25	0.77

SECTION F-F (RESERVOIR RD HALF STREET CAPACITY @ CL)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION F-F (RESERVOIR RD HALF ST
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0540	ft/ft
Water Surface Elev	0.53	ft
Elevation Range	.00 to 0.77	
Discharge	32.63	cfs



SECTION G-G (RESERVOIR RD HALF STREET CAPACITY @ CL)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION G-G (RESERVOIR RD HALF ST
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0480	ft/ft
Water Surface Elev	0.53	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.77	
Discharge	30.76	cfs
Flow Area	4.1	ft²
Wetted Perimeter	20.54	ft
Top Width	20.00	ft
Actual Depth	0.53	ft
Critical Elevation	0.76	ft
Critical Slope	0.0048	ft/ft
Velocity	7.45	ft/s
Velocity Head	0.86	ft
Specific Energy	1.39	ft
Froude Number	2.89	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+25	0.015

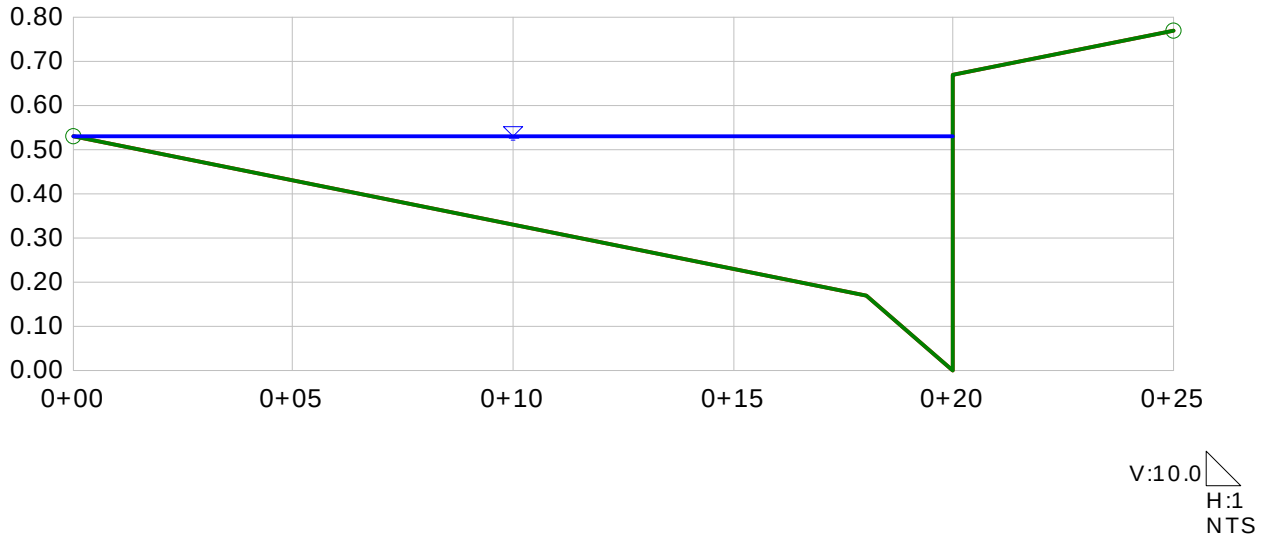
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	0.53
0+18	0.17
0+20	0.00
0+20	0.67
0+25	0.77

SECTION G-G (RESERVOIR RD HALF STREET CAPACITY @ CL)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION G-G (RESERVOIR RD HALF ST
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0480	ft/ft
Water Surface Elev	0.53	ft
Elevation Range	.00 to 0.77	
Discharge	30.76	cfs



SECTION H-H (RESERVOIR RD HALF STREET CAPACITY @ CL)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION H-H (RESERVOIR RD HALF ST
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0500	ft/ft
Water Surface Elev	0.53	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.77	
Discharge	31.40	cfs
Flow Area	4.1	ft²
Wetted Perimeter	20.54	ft
Top Width	20.00	ft
Actual Depth	0.53	ft
Critical Elevation	0.77	ft
Critical Slope	0.0048	ft/ft
Velocity	7.60	ft/s
Velocity Head	0.90	ft
Specific Energy	1.43	ft
Froude Number	2.95	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00	0+25	0.015

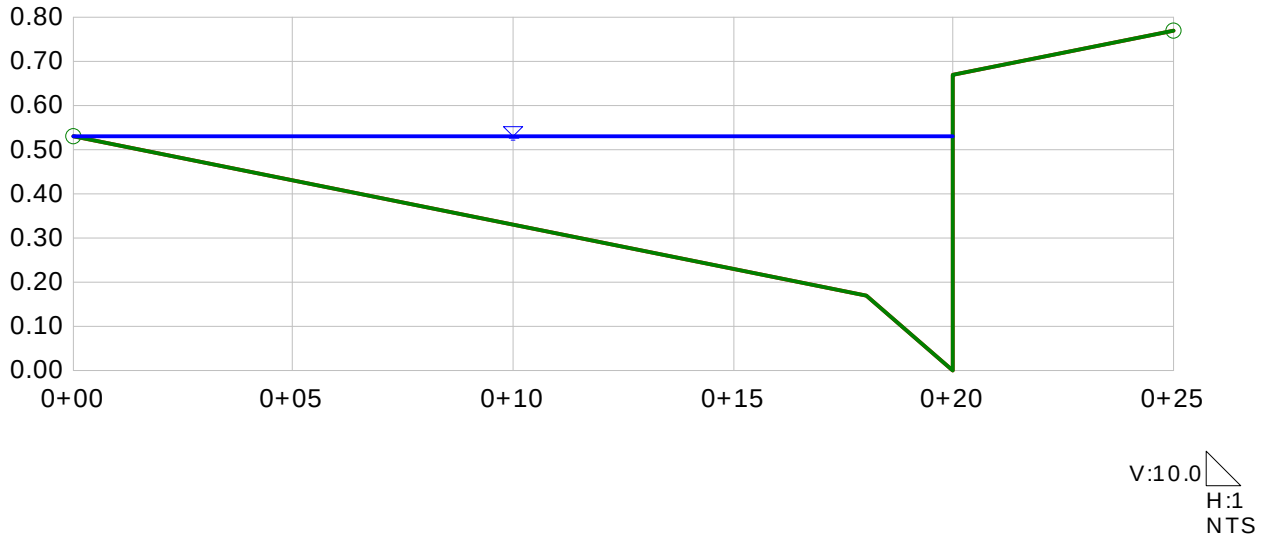
Natural Channel Points

Station (ft)	Elevation (ft)
0+00	0.53
0+18	0.17
0+20	0.00
0+20	0.67
0+25	0.77

SECTION H-H (RESERVOIR RD HALF STREET CAPACITY @ CL)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION H-H (RESERVOIR RD HALF ST
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0500	ft/ft
Water Surface Elev	0.53	ft
Elevation Range	.00 to 0.77	
Discharge	31.40	cfs



SECTION I-I (STREET A FULL STREET CAPACITY @ RW-RW)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION I-I (STREET A FULL STREET (
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	).0600	ft/ft
Water Surface Elev	0.91	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	).00 to 0.91	
Discharge	327.61	cfs
Flow Area	24.7	ft²
Wetted Perimeter	61.37	ft
Top Width	60.00	ft
Actual Depth	0.91	ft
Critical Elevation	1.47	ft
Critical Slope	0.0035	ft/ft
Velocity	13.24	ft/s
Velocity Head	2.73	ft
Specific Energy	3.64	ft
Froude Number	3.64	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

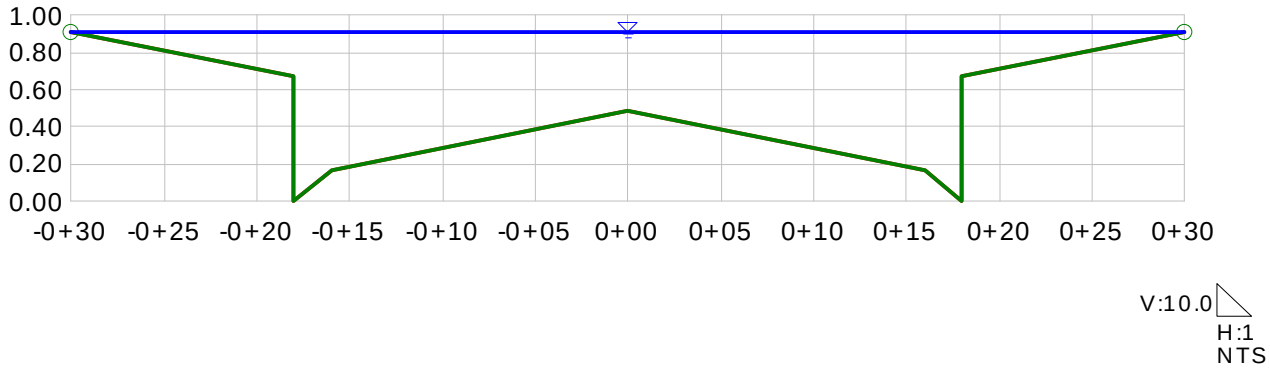
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION I-I (STREET A FULL STREET CAPACITY @ RW-RW)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION I-I (STREET A FULL STREET (
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0600	ft/ft
Water Surface Elev	0.91	ft
Elevation Range	.00 to 0.91	
Discharge	327.61	cfs



SECTION I-I (STREET A FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION I-I (STREET A FULL STREET (
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	).0600	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	).00 to 0.91	
Discharge	160.48	cfs
Flow Area	13.2	ft²
Wetted Perimeter	37.36	ft
Top Width	36.00	ft
Actual Depth	0.67	ft
Critical Elevation	1.10	ft
Critical Slope	0.0040	ft/ft
Velocity	12.14	ft/s
Velocity Head	2.29	ft
Specific Energy	2.96	ft
Froude Number	3.53	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

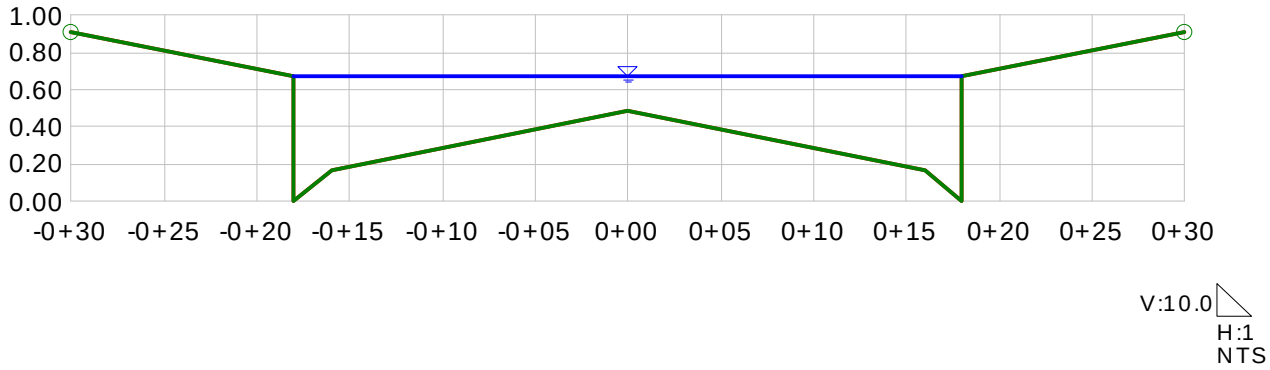
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION I-I (STREET A FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION I-I (STREET A FULL STREET (
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0600	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.91	
Discharge	160.48	cfs



SECTION J-J (STREET B FULL STREET CAPACITY @ RW-RW)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION J-J (STREET B FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0543	ft/ft
Water Surface Elev	0.91	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	311.66	cfs
Flow Area	24.7	ft²
Wetted Perimeter	61.37	ft
Top Width	60.00	ft
Actual Depth	0.91	ft
Critical Elevation	1.44	ft
Critical Slope	0.0035	ft/ft
Velocity	12.60	ft/s
Velocity Head	2.47	ft
Specific Energy	3.38	ft
Froude Number	3.46	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

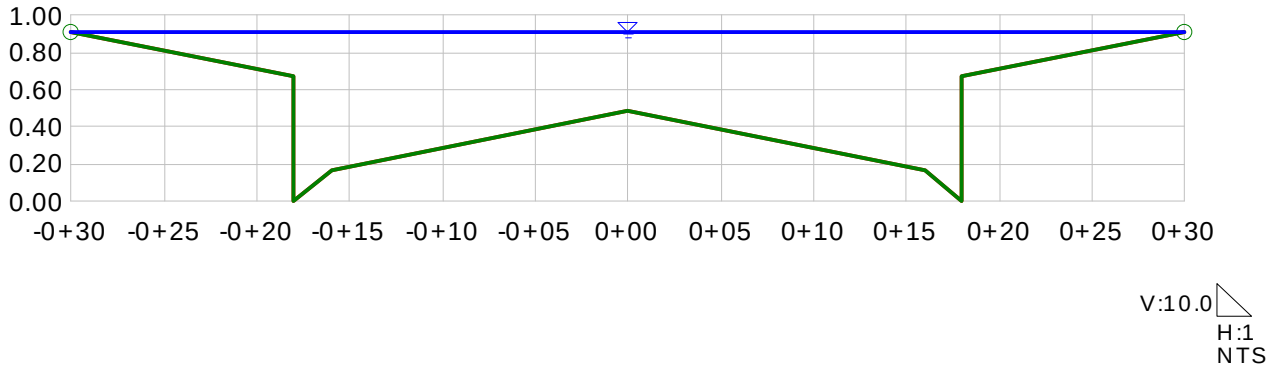
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION J-J (STREET B FULL STREET CAPACITY @ RW-RW)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION J-J (STREET B FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0543	ft/ft
Water Surface Elev	0.91	ft
Elevation Range	.00 to 0.91	
Discharge	311.66	cfs



SECTION J-J (STREET B FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION J-J (STREET B FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0543	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	152.67	cfs
Flow Area	13.2	ft²
Wetted Perimeter	37.36	ft
Top Width	36.00	ft
Actual Depth	0.67	ft
Critical Elevation	1.08	ft
Critical Slope	0.0041	ft/ft
Velocity	11.55	ft/s
Velocity Head	2.07	ft
Specific Energy	2.74	ft
Froude Number	3.36	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

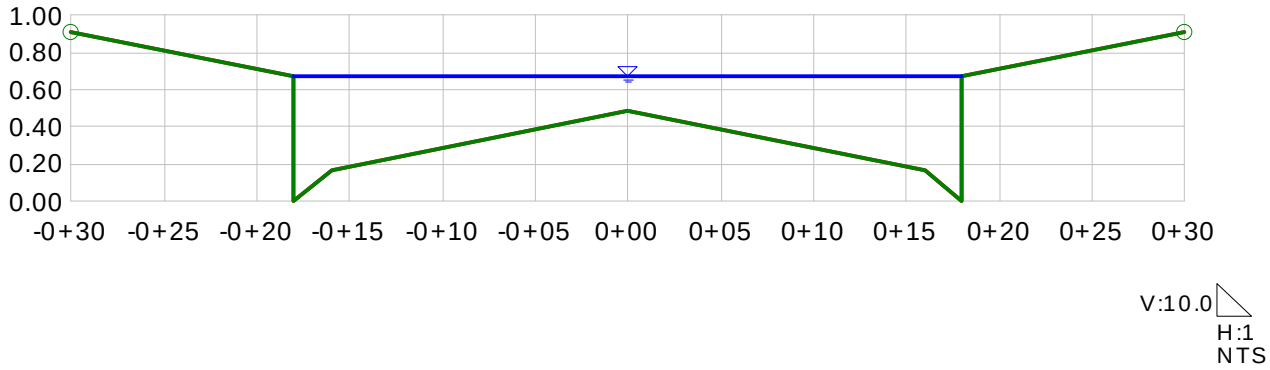
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION J-J (STREET B FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION J-J (STREET B FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0543	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.91	
Discharge	152.67	cfs



SECTION K-K (STREET E FULL STREET CAPACITY @ RW-RW)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION K-K (STREET E FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0500	ft/ft
Water Surface Elev	0.91	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	299.07	cfs
Flow Area	24.7	ft²
Wetted Perimeter	61.37	ft
Top Width	60.00	ft
Actual Depth	0.91	ft
Critical Elevation	1.42	ft
Critical Slope	0.0036	ft/ft
Velocity	12.09	ft/s
Velocity Head	2.27	ft
Specific Energy	3.18	ft
Froude Number	3.32	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

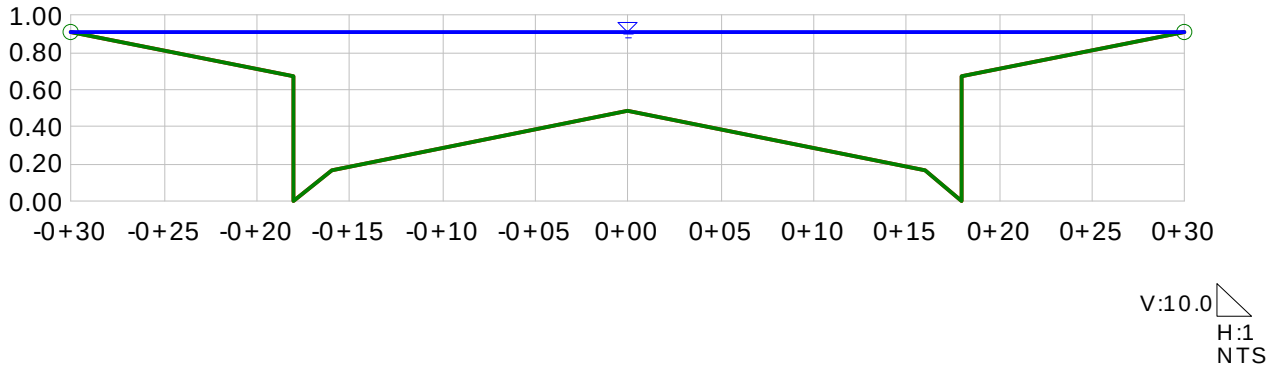
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION K-K (STREET E FULL STREET CAPACITY @ RW-RW)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION K-K (STREET E FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0500	ft/ft
Water Surface Elev	0.91	ft
Elevation Range	.00 to 0.91	
Discharge	299.07	cfs



SECTION K-K (STREET E FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION K-K (STREET E FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0500	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	146.50	cfs
Flow Area	13.2	ft²
Wetted Perimeter	37.36	ft
Top Width	36.00	ft
Actual Depth	0.67	ft
Critical Elevation	1.07	ft
Critical Slope	0.0041	ft/ft
Velocity	11.08	ft/s
Velocity Head	1.91	ft
Specific Energy	2.58	ft
Froude Number	3.22	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

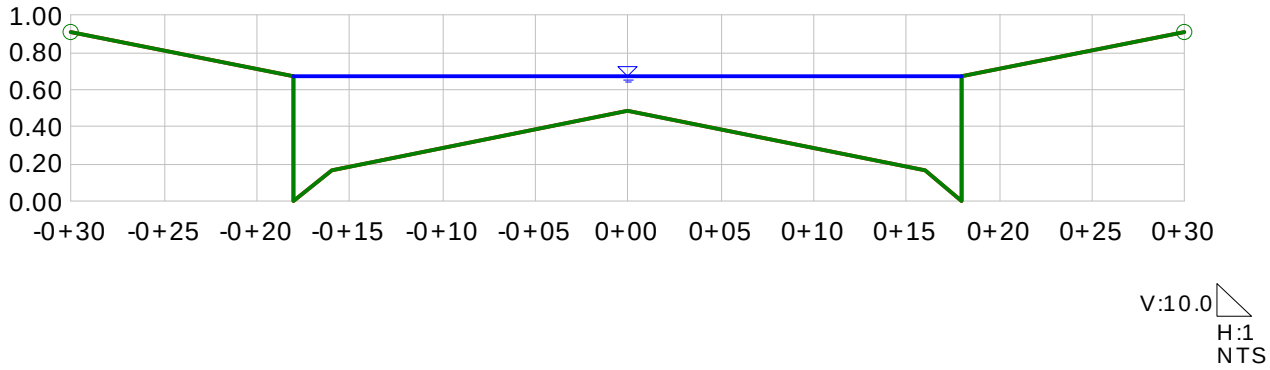
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION K-K (STREET E FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION K-K (STREET E FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0500	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.91	
Discharge	146.50	cfs



SECTION L-L (STREET D FULL STREET CAPACITY @ RW-RW)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION L-L (STREET D FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.1400	ft/ft
Water Surface Elev	0.91	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	500.44	cfs
Flow Area	24.7	ft²
Wetted Perimeter	61.37	ft
Top Width	60.00	ft
Actual Depth	0.91	ft
Critical Elevation	1.79	ft
Critical Slope	0.0032	ft/ft
Velocity	20.23	ft/s
Velocity Head	6.36	ft
Specific Energy	7.27	ft
Froude Number	5.55	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

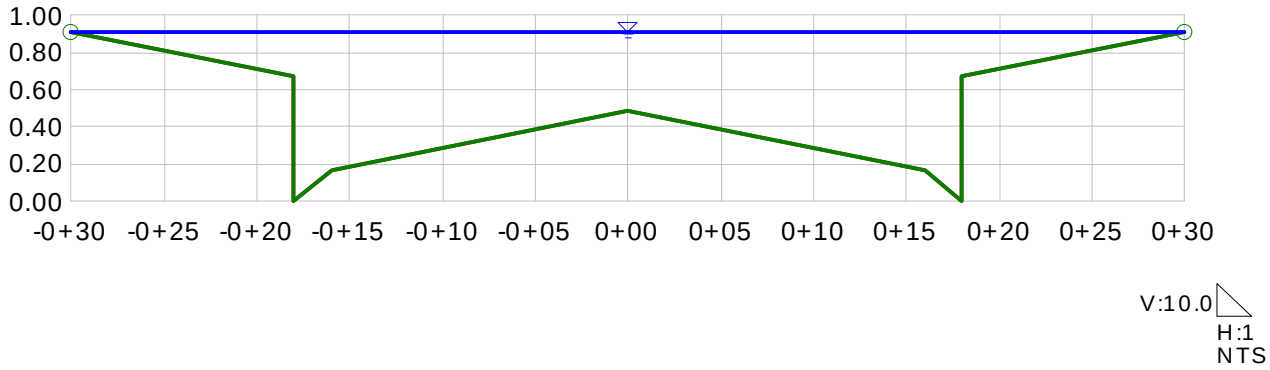
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION L-L (STREET D FULL STREET CAPACITY @ RW-RW)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION L-L (STREET D FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.1400	ft/ft
Water Surface Elev	0.91	ft
Elevation Range	.00 to 0.91	
Discharge	500.44	cfs



SECTION L-L (STREET D FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION L-L (STREET D FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.1400	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	245.14	cfs
Flow Area	13.2	ft²
Wetted Perimeter	37.36	ft
Top Width	36.00	ft
Actual Depth	0.67	ft
Critical Elevation	1.30	ft
Critical Slope	0.0037	ft/ft
Velocity	18.54	ft/s
Velocity Head	5.34	ft
Specific Energy	6.01	ft
Froude Number	5.39	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

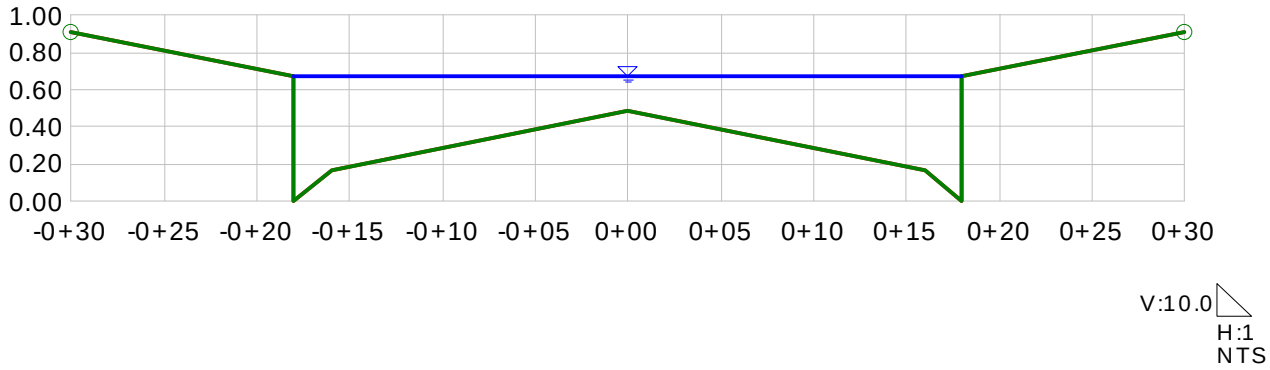
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION L-L (STREET D FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION L-L (STREET D FULL STREET
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.1400	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.91	
Discharge	245.14	cfs



SECTION M-M (STREET F FULL STREET CAPACITY @ RW-RW)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION M-M (STREET F FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0302	ft/ft
Water Surface Elev	0.91	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	232.43	cfs
Flow Area	24.7	ft²
Wetted Perimeter	61.37	ft
Top Width	60.00	ft
Actual Depth	0.91	ft
Critical Elevation	1.27	ft
Critical Slope	0.0037	ft/ft
Velocity	9.39	ft/s
Velocity Head	1.37	ft
Specific Energy	2.28	ft
Froude Number	2.58	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

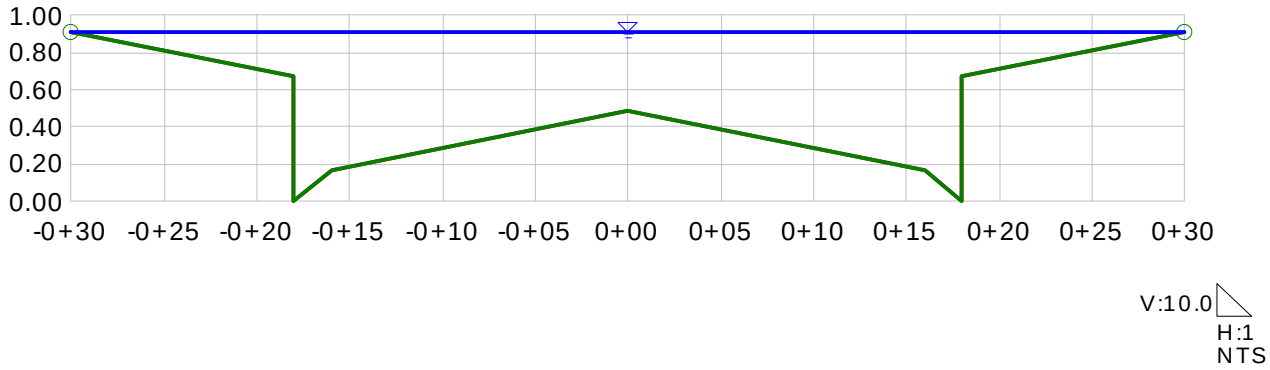
Natural Channel Points

Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION M-M (STREET F FULL STREET CAPACITY @ RW-RW)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION M-M (STREET F FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0302	ft/ft
Water Surface Elev	0.91	ft
Elevation Range	.00 to 0.91	
Discharge	232.43	cfs



SECTION M-M (STREET F FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION M-M (STREET F FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0302	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.91	
Discharge	113.89	cfs
Flow Area	13.2	ft²
Wetted Perimeter	37.36	ft
Top Width	36.00	ft
Actual Depth	0.67	ft
Critical Elevation	0.98	ft
Critical Slope	0.0043	ft/ft
Velocity	8.62	ft/s
Velocity Head	1.15	ft
Specific Energy	1.82	ft
Froude Number	2.51	
Flow Type	Supercritical	

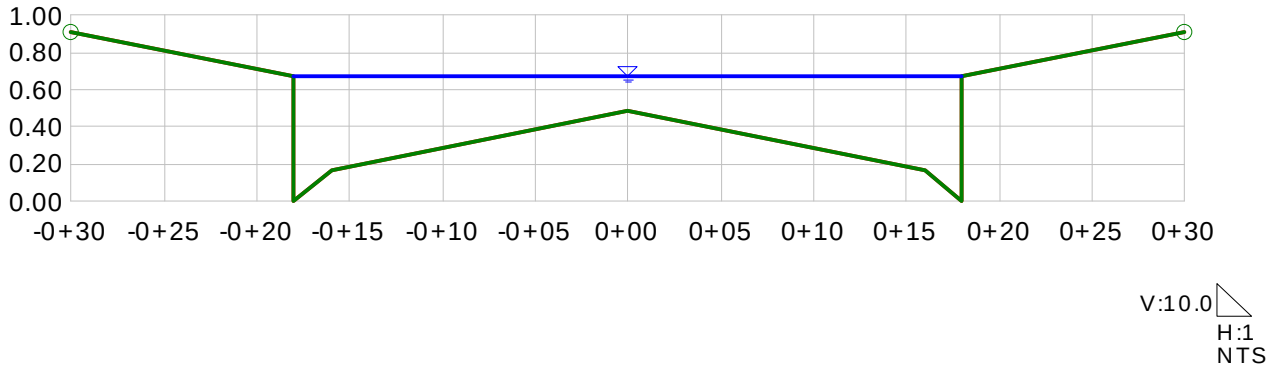
Roughness Segments		
Start Station	End Station	Mannings Coefficient
-0+30	0+30	0.015

Natural Channel Points	
Station (ft)	Elevation (ft)
-0+30	0.91
-0+18	0.67
-0+18	0.00
-0+16	0.17
0+00	0.49
0+16	0.17
0+18	0.00
0+18	0.67
0+30	0.91

SECTION M-M (STREET F FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION M-M (STREET F FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0302	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.91	
Discharge	113.89	cfs



SECTION N-N (WABASH AVE INTERIM FULL STREET CAPACITY @ TOP OF SLOPE)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION N-N (WABASH AVE INTERIM FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0100	ft/ft
Water Surface Elev	0.77	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.77	
Discharge	107.24	cfs
Flow Area	18.1	ft²
Wetted Perimeter	39.35	ft
Top Width	38.00	ft
Actual Depth	0.77	ft
Critical Elevation	0.92	ft
Critical Slope	0.0041	ft/ft
Velocity	5.91	ft/s
Velocity Head	0.54	ft
Specific Energy	1.31	ft
Froude Number	1.51	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+19	0+19	0.015

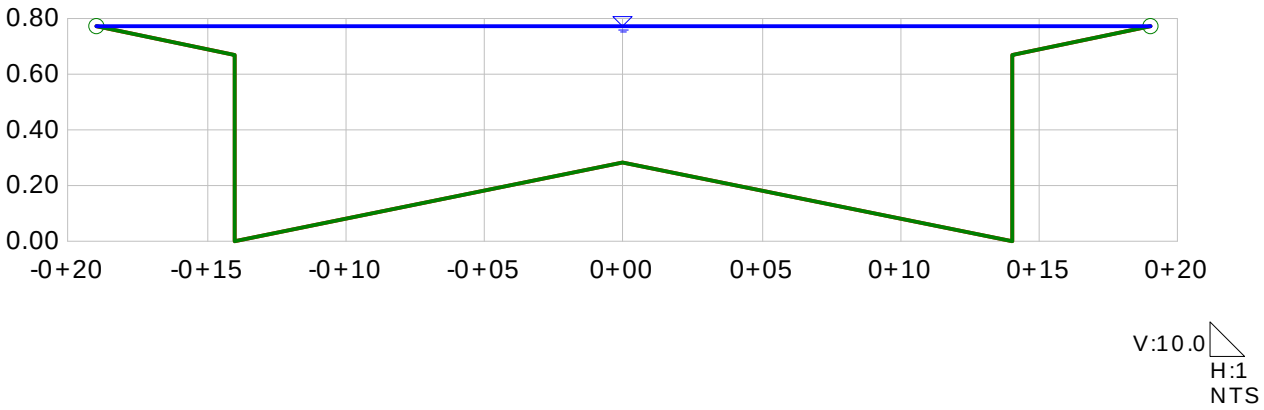
Natural Channel Points

Station (ft)	Elevation (ft)
-0+19	0.77
-0+14	0.67
-0+14	0.00
0+00	0.28
0+14	0.00
0+14	0.67
0+19	0.77

SECTION N-N (WABASH AVE INTERIM FULL STREET CAPACITY @ TOP OF SLOPE)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION N-N (WABASH AVE INTERIM FULL STREE
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0100	ft/ft
Water Surface Elev	0.77	ft
Elevation Range	.00 to 0.77	
Discharge	107.24	cfs



SECTION N-N (WABASH AVE INTERIM FULL STREET CAPACITY @ TC-TC)
Worksheet for Irregular Channel

Project Description	
Worksheet	SECTION N-N (WABASH AVE INTERIM FULL ST
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Input Data		
Slope	.0100	ft/ft
Water Surface Elev	0.67	ft

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coeffic	0.015	
Elevation Range	.00 to 0.77	
Discharge	93.31	cfs
Flow Area	14.8	ft²
Wetted Perimeter	29.35	ft
Top Width	28.00	ft
Actual Depth	0.67	ft
Critical Elevation	0.86	ft
Critical Slope	0.0042	ft/ft
Velocity	6.29	ft/s
Velocity Head	0.61	ft
Specific Energy	1.28	ft
Froude Number	1.52	
Flow Type	Supercritical	

Roughness Segments

Start Station	End Station	Mannings Coefficient
-0+19	0+19	0.015

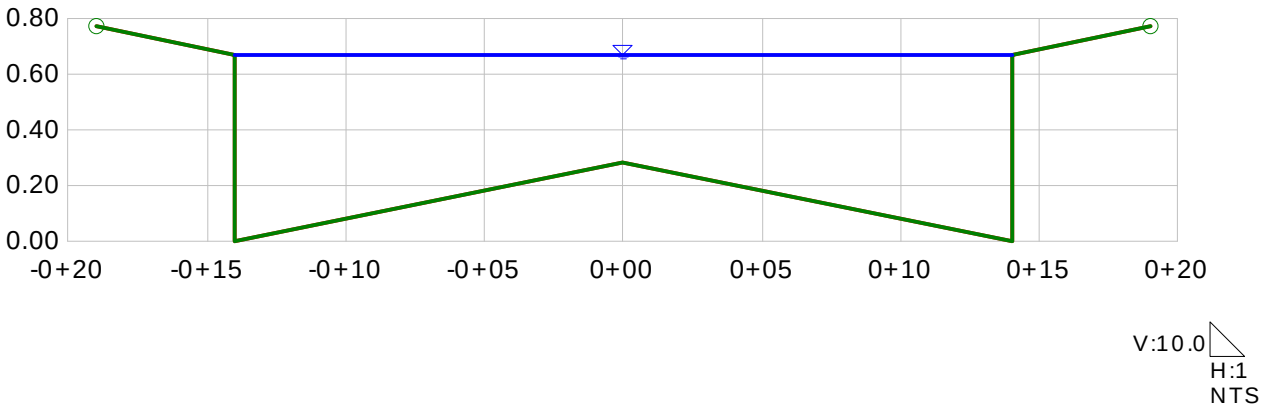
Natural Channel Points

Station (ft)	Elevation (ft)
-0+19	0.77
-0+14	0.67
-0+14	0.00
0+00	0.28
0+14	0.00
0+14	0.67
0+19	0.77

SECTION N-N (WABASH AVE INTERIM FULL STREET CAPACITY @ TC-TC)
Cross Section for Irregular Channel

Project Description	
Worksheet	SECTION N-N (WABASH AVE INTERIM FULL ST
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Discharge

Section Data		
Mannings Coefficie	0.015	
Slope	0.0100	ft/ft
Water Surface Elev	0.67	ft
Elevation Range	.00 to 0.77	
Discharge	93.31	cfs



APPENDIX G: MICROSOFT EXCEL – BASIN CAPACITY CALCULATIONS

Terracina Basin "A" Volume Storage Data							
Elevation	Basin Height (FT)	Depth Between Elevations (FT)	Area (SF)	Area (AC)	Volume (AF)	Volume Total (AF)	Notes
1799.7	0.000		3222	0.07	0.000	0.000	Bottom of Basin
		2.57					
1802.27	2.570		6,328	0.15	0.277	0.277	Top of WQ Volume/Top of Riser
		0.73					
1803.00	3.300		7,287	0.17	0.114	0.391	
		1.00					
1804.00	4.300		8,657	0.20	0.183	0.573	
		1.00					
1805.00	5.300		10,090	0.23	0.215	0.788	
		0.50					
1805.50	5.800		10,831	0.25	0.120	0.908	Top of Basin

Terracina Basin "B.1" Volume Storage Data							
Elevation	Basin Height (FT)	Depth Between Elevations (FT)	Area (SF)	Area (AC)	Volume (AF)	Volume Total (AF)	Notes
1804	0.000		5513.09	0.13	0.000	0.000	Bottom of Basin
		2.87					
1806.87	2.870		9,091	0.21	0.476	0.476	Top of WQ Volume/Top of Riser
		1.13					
1808.00	4.000		10,627	0.24	0.255	0.732	
		1.00					
1809.00	5.000		12,047	0.28	0.260	0.992	
		1.00					
1810.00	6.000		13,523	0.31	0.293	1.285	Top of Basin

Terracina Basin "B.2" Volume Storage Data							
Elevation	Basin Height (FT)	Depth Between Elevations (FT)	Area (SF)	Area (AC)	Volume (AF)	Volume Total (AF)	Notes
1760	0.000		4389	0.10	0.000	0.000	Bottom of Basin
		3.05					
1763.05	3.050		7,172	0.16	0.401	0.401	Top of WQ Volume/Top of Riser
		0.95					
1764.00	4.000		8,146	0.19	0.167	0.568	
		1.00					
1765.00	5.000		9,227	0.21	0.199	0.767	
		1.00					
1766.00	6.000		10,364	0.24	0.225	0.992	Top of Basin

Terracina Basin "C" Volume Storage Data							
Elevation	Basin Height (FT)	Depth Between Elevations (FT)	Area (SF)	Area (AC)	Volume (AF)	Volume Total (AF)	Notes
1824.6	0.000		5843	0.13	0.000	0.000	Bottom of Basin
		3.01					
1827.61	3.010		9,766	0.22	0.534	0.534	Top of WQ Volume/Top of Riser
		0.89					
1828.50	3.900			0.00	0.067	0.600	Top of Basin

Terracina Debris Basin "D" Volume Storage Data								
Elevation	Basin Height (FT)	Depth Between Elevations (FT)	Area (SF)	Area (AC)	Volume (AF)	Volume Total (AF)	Volume Total (CY)	Notes
1907.00	0.000		18.64	0.00	0.000	0.000	0.000	Bottom of Basin
		1.00						
1908.00	1.000		350.72	0.01	0.003	0.003	6	
		1.00						
1909.00	2.000		910.76	0.02	0.014	0.017	28	
		1.00						
1910.00	3.000		1620.42	0.04	0.029	0.046	74	
		1.00						
1911.00	4.000		2521.39	0.06	0.047	0.093	150	
		5.00						
1912.00	5.000		3628.30	0.08	0.149	0.243	392	
		1.00						
1913.00	6.000		4876.51	0.11	0.097	0.340	549	
		1.00						
1914.00	7.000		6269.29	0.14	0.128	0.468	754	
		1.00						
1915.00	8.000		7772.82	0.18	0.161	0.628	1014	Top of Basin

Terracina Debris Basin "E" Volume Storage Data								
Elevation	Basin Height (FT)	Depth Between Elevations (FT)	Area (SF)	Area (AC)	Volume (AF)	Volume Total (AF)	Volume Total (CY)	Notes
1920	0.000		2573.45	0.06	0.000	0.000	0	Bottom of Basin
		4.00						
1921.00	1.000		3196.69	0.07	0.000	0.000	0	
		1.00						
1922.00	2.000		3876.48	0.09	0.081	0.081	131	
		1.00						
1923.00	3.000		4612.81	0.11	0.097	0.178	288	
		1.00						
1924.00	4.000		5405.70	0.12	0.358	0.537	866	
		1.00						
1925.00	5.000		6255.13	0.14	0.134	0.671	1082	
		0.70						
1925.70	5.700		6883.38	0.16	0.106	0.776	1252	Top of Basin

APPENDIX H: DEBRIS PRODUCTION CALCULATIONS

APPENDIX H.1: 100-YEAR SEDIMENT YIELD AT CP 203 FOR DRAINAGE AREA B.1/B.3 BASED ON 4-YEAR BURN RECOVERY FACTOR

APPENDIX "H.1": 100-YEAR DEBRIS YIELD AT CP 203 FOR DRAINAGE AREA B.1/B.3 BASED ON 4-YEAR BURN RECOVERY FACTOR

100-YEAR DEBRIS YIELD AT CP 203 FOR DRAINAGE AREA B.1/B.3 USING EQN 1 AND BASED ON 4-YEAR BURN RECOVERY FACTOR AND A/T OF 1.0												
Debris Yield (Dy)	**Dy Value**	**P (INCHES)**	**P X 100 (INCHES)**	**U/S ELEV**	**D/S ELEV**	**LENGTH (FT)**	**LENGTH (MI)**	**SLOPE**	**D.A. (Ac)**	**D.A. (SM)**	**F.F. (4-year Burn Recovery)**	**A/T**
Log Dy	3.8119	1.3	127.0	2,140.0	1,907.3	2,915.00	0.55	421.49	34.62	0.05	4.5	1.0
Dy (CY)	6,485											
Adj. Dy (CY)	351											
Dy plus FS (CY)	**421**											
Dy plus FS (AF)	**0.3**											

APPENDIX H.2: 100-YEAR SEDIMENT YIELD AT CP 207 FOR DRAINAGE AREA B.4/B.5 BASED ON 4-YEAR BURN RECOVERY FACTOR

APPENDIX "H.2": 100-YEAR DEBRIS YIELD AT CP 207 FOR DRAINAGE AREA B.4/B.5 BASED ON 4-YEAR BURN RECOVERY FACTOR

100-YEAR DEBRIS YIELD AT CP 207 FOR DRAINAGE AREA B.4/B.5 USING EQN 1 AND BASED ON 4-YEAR BURN RECOVERY FACTOR AND A/T OF 1.0												
Debris Yield (Dy)	**Dy Value**	**P (INCHES)**	**P X 100 (INCHES)**	**U/S ELEV**	**D/S ELEV**	**LENGTH (FT)**	**LENGTH (MI)**	**SLOPE**	**D.A. (Ac)**	**D.A. (SM)**	**F.F. (4-year Burn Recovery)**	**A/T**
Log Dy	3.7640	1.3	127.0	2,050.0	1,924.1	1,645.00	0.31	404.10	21.68	0.03	4.5	1.0
Dy (CY)	5,807											
Adj. Dy (CY)	197											
Dy plus FS (CY)	**236**											
Dy plus FS (AF)	**0.1**											

APPENDIX I: STORMWATER QUALITY ANALYSIS - DESIGN CAPTURE VALUES FOR UNDERGROUND STORMWATER CHAMBERS

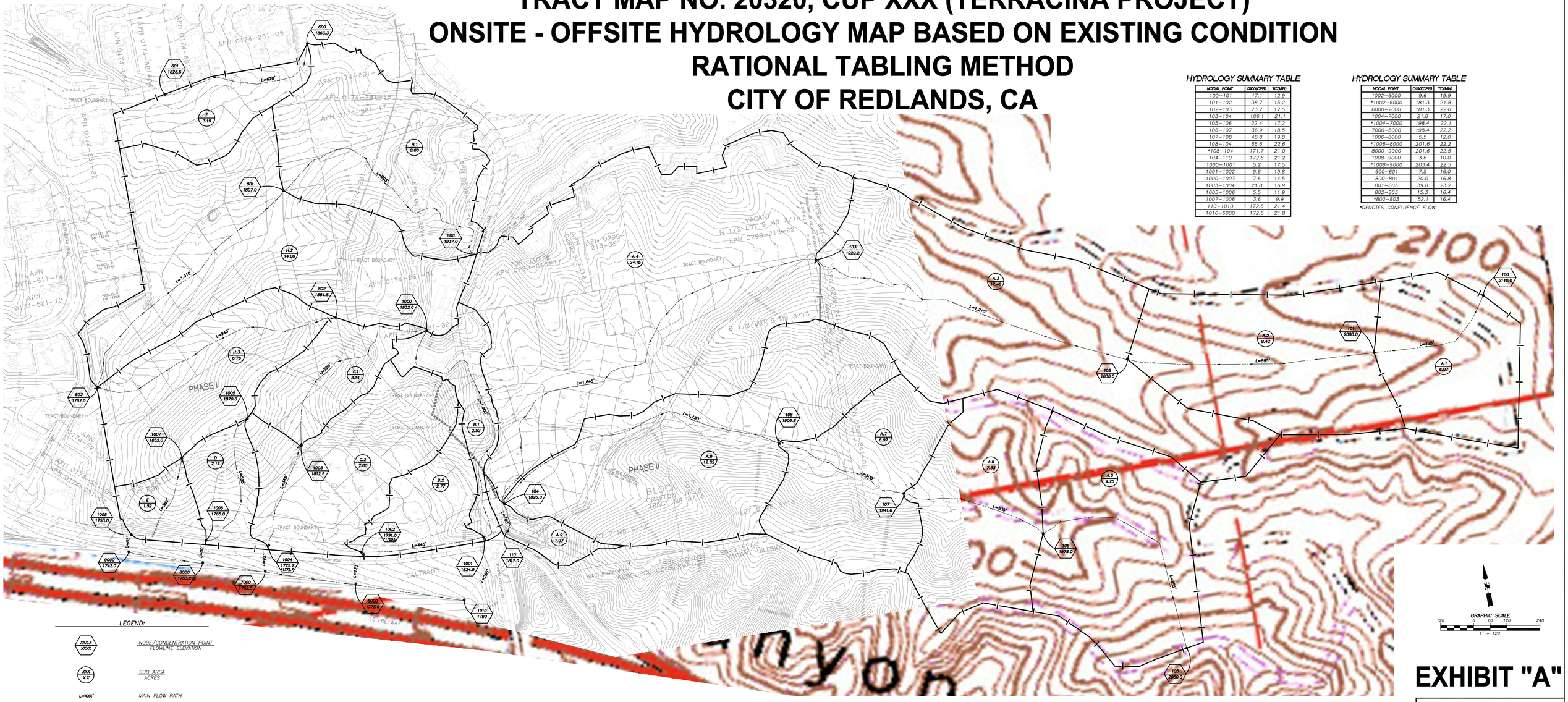
Appendix I: DCV Calculations

Area ID	Project Area (Acres)	Project Area (Square Feet)	Street Areas (Square Feet)	Lots and Misc. Areas (Square Feet)	Street Impervious Percentage	Lots and Misc. Areas Impervious Percentage	Total Impervious Percentage	Runoff Coefficient (Rc)	1-hr Rainfall Value for 2-year Event (inches)	Mean 6-hour Rainfall Value (inches)	C1			Drawdown Rate		Design Capture Volume (CF)	Design Capture Volume*1.2 (CF)	Note
											Valley	Mountain	Desert	24-hour	48-hour			
D	4.42	192,535	70,180	122,355	90.0%	30.0%	51.9%	0.35	0.495	0.73	1.4807	1.909	1.2371	1.582	1.963	8,111	9,733	Area tributary to Underground Chamber DA-D
E	1.20	52,272	23,868	28,404	90.0%	20.0%	52.0%	0.35	0.495	0.73	1.4807	1.909	1.2371	1.582	1.963	2,206	2,647	Area tributary to Underground Chamber DA-E
F	3.38	147,233	27,279	119,954	90.0%	20.0%	33.0%	0.24	0.495	0.73	1.4807	1.909	1.2371	1.582	1.963	4,257	5,108	Area tributary to Underground Chamber DA-F
G	1.36	59,242	21,108	38,133	90.0%	20.0%	44.9%	0.31	0.495	0.73	1.4807	1.909	1.2371	1.582	1.963	2,189	2,627	Area tributary to Underground Chamber DA-G

EXHIBITS

EXHIBIT A: HYDROLOGY MAP BASED ON EXISTING CONDITION (RATIONAL TABLING METHOD)

TRACT MAP NO. 20320, CUP XXX (TERRACINA PROJECT)
ONSITE - OFFSITE HYDROLOGY MAP BASED ON EXISTING CONDITION
RATIONAL TABLING METHOD
CITY OF REDLANDS, CA



HYDROLOGY SUMMARY TABLE

NODAL POINT	Q100(CFS)	TC(MIN)
100–101	17.1	12.9
101–102	35.7	15.2
102–103	73.7	17.5
103–104	106.1	21.1
105–106	22.4	17.2
106–107	36.9	18.5
107–108	48.8	19.8
108–104	66.6	22.6
*108–104	171.7	21.0
104–110	172.6	21.2
1000–1001	5.2	17.5
1001–1002	9.6	19.6
1000–1003	7.6	14.5
1003–1004	21.8	16.9
1005–1006	5.5	11.9
1007–1008	3.6	9.9
110–1010	172.6	21.4
1010–6000	172.6	21.8

HYDROLOGY SUMMARY TABLE

NODAL POINT	Q100(CFS)	TC(MIN)
1002–6000	9.6	19.9
*1002–6000	181.3	21.8
6000–7000	181.3	22.0
1004–7000	21.8	17.0
*1004–7000	198.4	22.1
7000–8000	198.4	22.2
1006–8000	5.5	12.0
*1006–8000	201.6	22.2
8000–9000	201.6	22.5
1008–9000	3.6	10.0
*1008–9000	203.4	22.5
600–601	7.5	16.0
800–801	20.0	16.8
801–803	39.8	23.2
802–803	15.3	16.4
*802–803	52.1	16.4

*DENOTES CONFLUENCE FLOW

LEGEND:

- XXX.X / XXXX — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- XXX / X.X — SUB AREA / ACRES
- L=XXX' — MAIN FLOW PATH
- *XXXX.X — INVERT ELEVATION
- FLOW PATH
- WATERSHED BOUNDARY

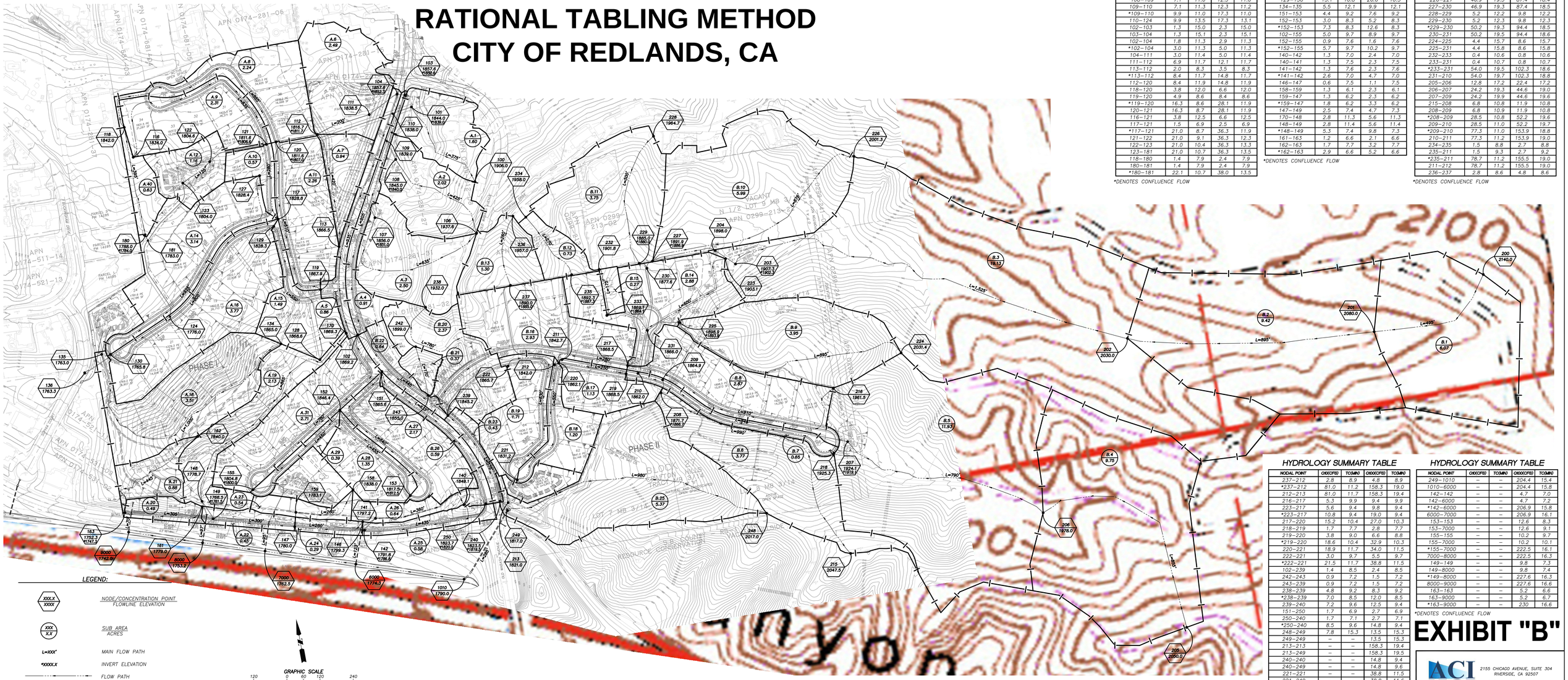
GRAPHIC SCALE
120 0 60 120 240
1" = 120'

EXHIBIT "A"

ACI AGUILAR CONSULTING INC.
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RIVERSIDE, CA 92507
PH. (951) 300-1431 FAX (951) 300-1435

EXHIBIT B: HYDROLOGY MAP BASED ON PROPOSED CONDITION (RATIONAL TABLING METHOD)

TRACT MAP NO. 20320, CUP XXX (TERRACINA PROJECT)
ONSITE - OFFSITE HYDROLOGY MAP BASED ON PROPOSED CONDITION
RATIONAL TABLING METHOD
CITY OF REDLANDS, CA



HYDROLOGY SUMMARY TABLE

NODAL POINT	Q10(CFS)	TC(MIN)	Q100(CFS)	TC(MIN)
100–101	2.9	10.8	5.0	10.8
101–110	2.9	11.1	5.0	11.0
106–107	3.7	14.1	6.5	14.1
107–109	3.7	14.6	6.5	14.5
106–108	3.6	10.6	6.3	10.8
108–109	3.6	11.0	6.3	11.0
*108–109	7.1	11.0	12.3	11.0
109–110	7.1	11.3	12.3	11.2
*109–110	9.9	11.0	17.3	11.0
110–124	9.9	13.5	17.3	13.1
102–103	1.3	15.0	2.3	15.0
103–104	1.3	15.1	2.3	15.1
102–104	1.8	11.3	2.9	11.3
*102–104	3.0	11.3	5.0	11.3
104–111	3.0	11.4	5.0	11.4
111–112	6.9	11.7	12.1	11.7
113–112	2.0	8.3	3.5	8.3
*113–112	8.4	11.7	14.8	11.7
112–120	8.4	11.9	14.8	11.9
118–120	3.8	12.0	6.6	12.0
119–120	4.9	8.6	8.4	8.6
*119–120	16.3	8.6	28.1	11.9
120–121	16.3	8.7	28.1	11.9
116–121	3.8	12.5	6.6	12.5
117–121	1.5	6.9	2.5	6.9
*117–121	21.0	8.7	36.3	11.9
121–122	21.0	9.1	36.3	12.3
122–123	21.0	10.4	36.3	13.3
123–181	21.0	10.7	36.3	13.5
118–180	1.4	7.9	2.4	7.9
180–181	1.4	7.9	2.4	7.9
*180–181	22.1	10.7	38.0	13.5

*DENOTES CONFLUENCE FLOW

HYDROLOGY SUMMARY TABLE

NODAL POINT	Q10(CFS)	TC(MIN)	Q100(CFS)	TC(MIN)
181–124	22.1	11.1	38.0	13.9
*181–124	31.7	11.1	54.6	13.1
124–136	31.7	11.6	54.6	13.6
127–130	5.6	10.8	9.8	10.8
128–129	3.3	8.7	5.5	8.7
129–130	9.5	10.8	16.8	10.5
*129–130	15.1	10.8	26.6	10.5
134–135	5.5	12.1	9.9	12.1
151–153	4.4	9.2	7.6	9.2
152–153	3.0	8.3	5.2	8.3
*152–153	7.3	8.3	12.6	8.3
102–155	5.0	9.7	8.9	9.7
152–155	0.9	7.6	1.6	7.6
*152–155	5.7	9.7	10.2	9.7
140–142	1.3	7.0	2.4	7.0
140–141	1.3	7.5	2.3	7.5
141–142	1.3	7.6	2.3	7.6
*141–142	2.6	7.0	4.7	7.0
146–147	0.6	7.5	1.1	7.5
158–159	1.3	6.1	2.3	6.1
159–147	1.3	6.2	2.3	6.2
*159–147	1.8	6.2	3.3	6.2
147–149	2.5	7.4	4.7	7.3
170–148	2.8	11.3	5.6	11.3
148–149	2.8	11.4	5.6	11.4
*148–149	5.3	7.4	9.8	7.3
161–163	1.2	6.6	2.1	6.6
162–163	1.7	7.7	3.2	7.7
*162–163	2.9	6.6	5.2	6.6

*DENOTES CONFLUENCE FLOW

HYDROLOGY SUMMARY TABLE

NODAL POINT	Q10(CFS)	TC(MIN)	Q100(CFS)	TC(MIN)
200–201	9.8	12.9	17.1	12.9
201–202	21.7	15.5	38.7	15.2
202–203	40.8	18.9	75.4	18.1
203–204	40.8	19.0	75.4	18.2
204–227	40.8	19.3	75.4	18.5
226–227	7.2	16.1	13.4	16.1
*226–227	46.9	19.3	87.4	18.4
227–230	46.9	19.3	87.4	18.5
228–229	5.2	12.2	9.8	12.2
229–230	5.2	12.3	9.8	12.3
*229–230	50.2	19.3	94.4	18.5
230–231	50.2	19.5	94.4	18.6
224–225	4.4	15.7	8.6	15.7
225–231	4.4	15.8	8.6	15.8
232–233	0.4	10.6	0.8	10.6
233–231	0.4	10.7	0.8	10.7
*233–231	54.0	19.5	102.3	18.6
231–210	54.0	19.7	102.3	18.8
205–206	12.8	17.2	22.4	17.2
206–207	24.2	19.3	44.6	19.0
207–209	24.2	19.9	44.6	19.6
215–208	6.8	10.8	11.9	10.8
208–209	6.8	10.9	11.9	10.8
*208–209	28.5	10.8	52.2	19.6
209–210	28.5	11.0	52.2	19.7
*209–210	77.3	11.0	153.9	18.8
210–211	77.3	11.2	153.9	19.0
234–235	1.5	8.8	2.7	8.8
235–211	1.5	9.3	2.7	9.2
*235–211	78.7	11.2	155.5	19.0
211–212	78.7	11.2	155.5	19.0
236–237	2.8	8.6	4.8	8.6

*DENOTES CONFLUENCE FLOW

HYDROLOGY SUMMARY TABLE

NODAL POINT	Q10(CFS)	TC(MIN)	Q100(CFS)	TC(MIN)
237–212	2.8	8.9	4.8	8.9
*237–212	81.0	11.2	158.3	19.0
212–213	81.0	11.7	158.3	19.4
216–217	5.3	9.9	9.4	9.9
223–217	5.6	9.4	9.8	9.4
*223–217	10.8	9.4	19.0	9.4
217–220	15.2	10.4	27.0	10.3
218–219	1.7	7.7	2.8	7.7
219–220	3.8	9.0	6.6	8.8
*219–220	18.6	10.4	32.9	10.3
220–221	18.9	11.7	34.0	11.5
222–221	3.0	9.7	5.5	9.7
*222–221	21.5	11.7	38.8	11.5
102–239	1.4	8.5	2.4	8.5
242–243	0.9	7.2	1.5	7.2
243–239	0.9	7.2	1.5	7.2
238–239	4.8	9.2	8.3	9.2
*238–239	7.0	8.5	12.0	8.5
239–240	7.2	9.6	12.5	9.4
151–250	1.7	6.9	2.7	6.9
250–240	1.7	7.1	2.7	7.1
*250–240	8.5	9.6	14.8	9.4
248–249	7.8	15.3	13.5	15.3
249–249	–	–	13.5	15.3
213–213	–	–	158.3	19.4
213–249	–	–	158.3	19.5
240–240	–	–	14.8	9.4
240–249	–	–	14.8	9.6
221–221	–	–	38.8	11.5
221–249	–	–	38.8	11.6
*221–249	–	–	204.4	15.3

*DENOTES CONFLUENCE FLOW

HYDROLOGY SUMMARY TABLE

NODAL POINT	Q10(CFS)	TC(MIN)	Q100(CFS)	TC(MIN)
249–1010	–	–	204.4	15.4
1010–6000	–	–	204.4	15.8
142–142	–	–	4.7	7.0
142–6000	–	–	4.7	7.2
*142–6000	–	–	206.9	15.8
6000–7000	–	–	206.9	16.1
153–153	–	–	12.6	8.3
153–7000	–	–	12.6	9.1
155–155	–	–	10.2	9.7
155–7000	–	–	10.2	10.1
*155–7000	–	–	222.5	16.1
7000–8000	–	–	222.5	16.3
149–149	–	–	9.8	7.3
149–8000	–	–	9.8	7.4
*149–8000	–	–	227.6	16.3
8000–9000	–	–	227.6	16.6
163–163	–	–	5.2	6.6
163–9000	–	–	5.2	6.7
*163–9000	–	–	230	16.6

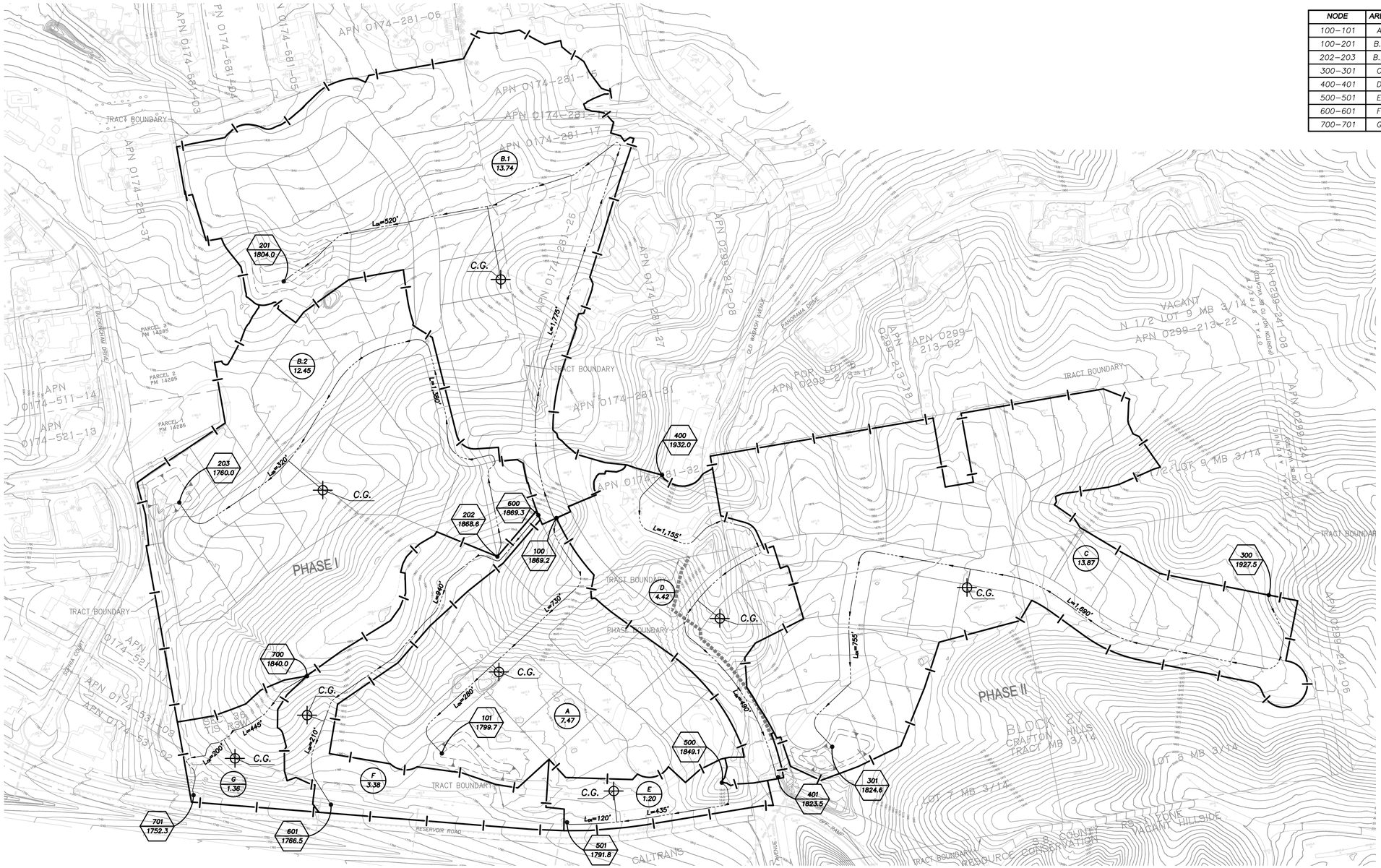
*DENOTES CONFLUENCE FLOW

EXHIBIT "B"

ACI
AGUILAR CONSULTING INC.
2155 CHICAGO AVENUE, SUITE 304
RIVERSIDE, CA 92507
PH. (951) 300-1431 FAX (951) 300-1435

EXHIBIT C: HYDROLOGY MAP BASED ON EXISTING CONDITION (UNIT HYDROGRAPH METHOD)

TRACT MAP NO. 20320, CUP XXX (TERRACINA PROJECT)
ONSITE HYDROLOGY MAP BASED ON EXISTING CONDITION
UNIT HYDROGRAPH METHOD
CITY OF REDLANDS, CA



HYDROLOGY SUMMARY TABLE

NODE	AREA	AREA SIZE (AC)	Q2(CFS)	V2-24HR(AC-FT)	Q100(CFS)	V100-24HR(AC-FT)
100–101	A	7.47	6.5	0.09	31.4	2.37
100–201	B.1	13.74	13.6	0.31	58.6	5.12
202–203	B.2	12.45	11.9	0.22	51.6	4.45
300–301	C	13.87	13.0	0.16	55.6	4.09
400–401	D	4.42	4.2	0.06	18.4	1.48
500–501	E	1.20	1.2	0.01	5.6	0.25
600–601	F	3.38	2.7	0.04	13.6	0.70
700–701	G	1.36	1.5	0.02	5.7	0.28

LEGEND:

- XXX.X / XXXX — *NODE/CONCENTRATION POINT / FLOWLINE ELEVATION*
- XXX / X.X — *SUB AREA / ACRES*
- L=XXX' — *MAIN FLOW PATH*
- L_{CG}=XXX' — *FLOW DISTANCE MEASURED UPSTREAM TO POINT OF CENTROID*
- C.G. — *MAIN CENTROID*
- *FLOW PATH*
- *WATERSHED BOUNDARY*

GRAPHIC SCALE
120 0 60 120 240
1" = 120'

EXHIBIT "C"

ACI AGUILAR CONSULTING INC.
2155 CHICAGO AVENUE, SUITE 304
RIVERSIDE, CA 92507
PH. (951) 300-1431 FAX (951) 300-1435

EXHIBIT D: HYDROLOGY MAP BASED ON PROPOSED CONDITION (UNIT HYDROGRAPH METHOD)

TRACT MAP NO. 20320, CUP XXX (TERRACINA PROJECT)
ONSITE HYDROLOGY MAP BASED ON PROPOSED CONDITION
UNIT HYDROGRAPH METHOD
CITY OF REDLANDS, CA



HYDROLOGY SUMMARY TABLE

NODE	AREA	AREA SIZE (AC)	Q2(CFS)	V2-24HR(AC-FT)	Q100(CFS)	V100-24HR(AC-FT)
100-101	A	7.47	11.9	0.67	41.6	2.53
100-201	B.1	13.74	15.1	0.96	58.1	5.23
202-203	B.2	12.45	17.3	0.92	63.3	4.54
300-301	C	13.87	15.5	1.24	56.7	4.79
400-401	D	4.42	7.7	0.71	22.5	1.83
500-501	E	1.20	2.5	0.26	7.4	0.48
600-601	F	3.38	6.8	0.55	19.7	1.39
700-701	G	1.36	3.2	0.29	7.8	0.55

LEGEND:

- XXX.X / XXXX — NODE/CONCENTRATION POINT / FLOWLINE ELEVATION
- XXX / X.X — SUB AREA / ACRES
- L=XXX' — MAIN FLOW PATH
- L_{DS}=XXX' — FLOW DISTANCE MEASURED UPSTREAM TO POINT OF CENTROID
- C.G. — MAIN CENTROID
- FLOW PATH
- WATERSHED BOUNDARY

GRAPHIC SCALE
120 0 60 120 240
1" = 120'

EXHIBIT "D"

ACI AGUILAR CONSULTING INC.
2155 CHICAGO AVENUE, SUITE 304
RIVERSIDE, CA 92507
PH. (951) 300-1431 FAX (951) 300-1435

EXHIBIT E: PRELIMINARY DRAINAGE PLAN

TRACT MAP NO. 20320, CUP XXX (TERRACINA PROJECT)
PRELIMINARY DRAINAGE PLAN
CITY OF REDLANDS, CA

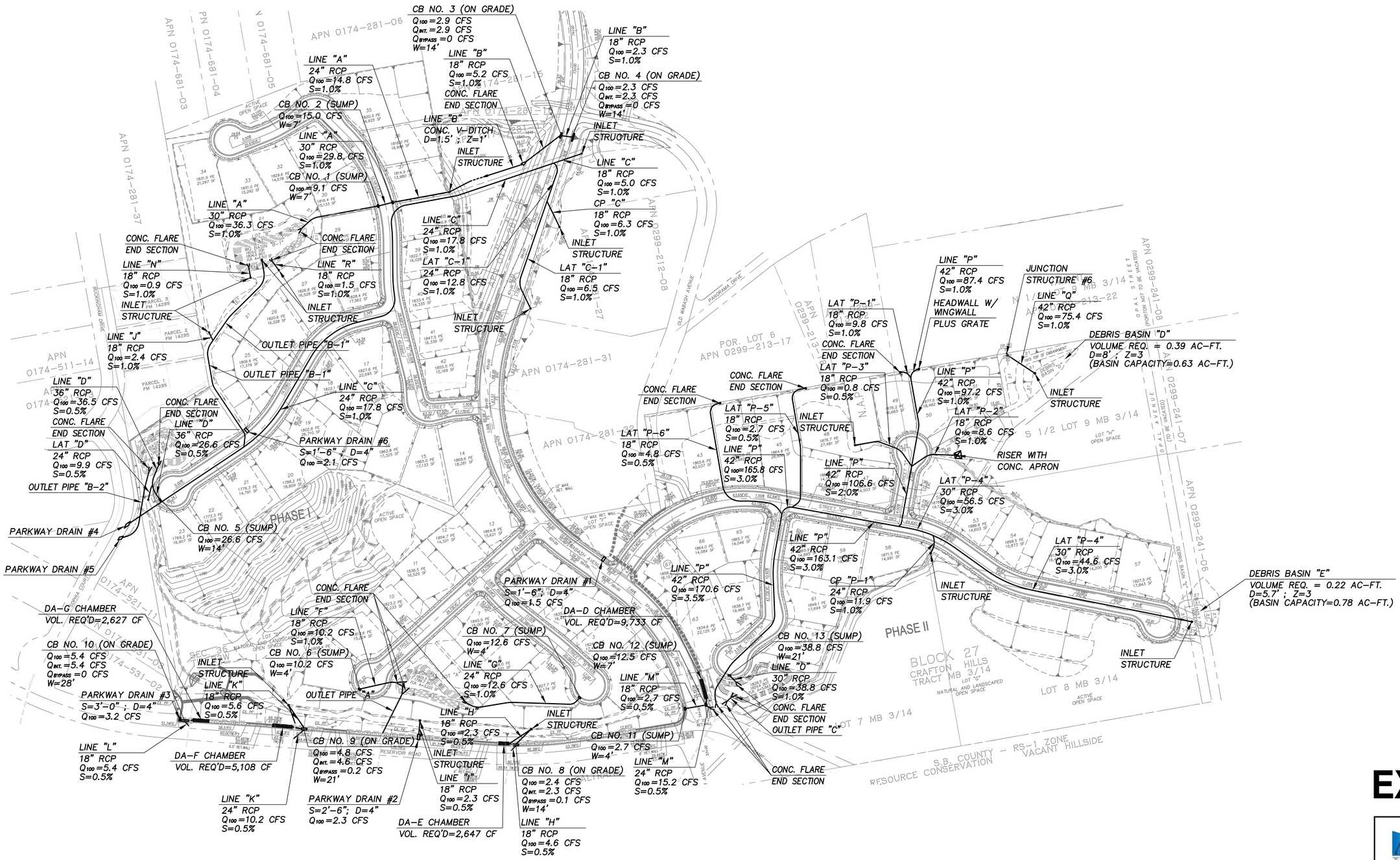
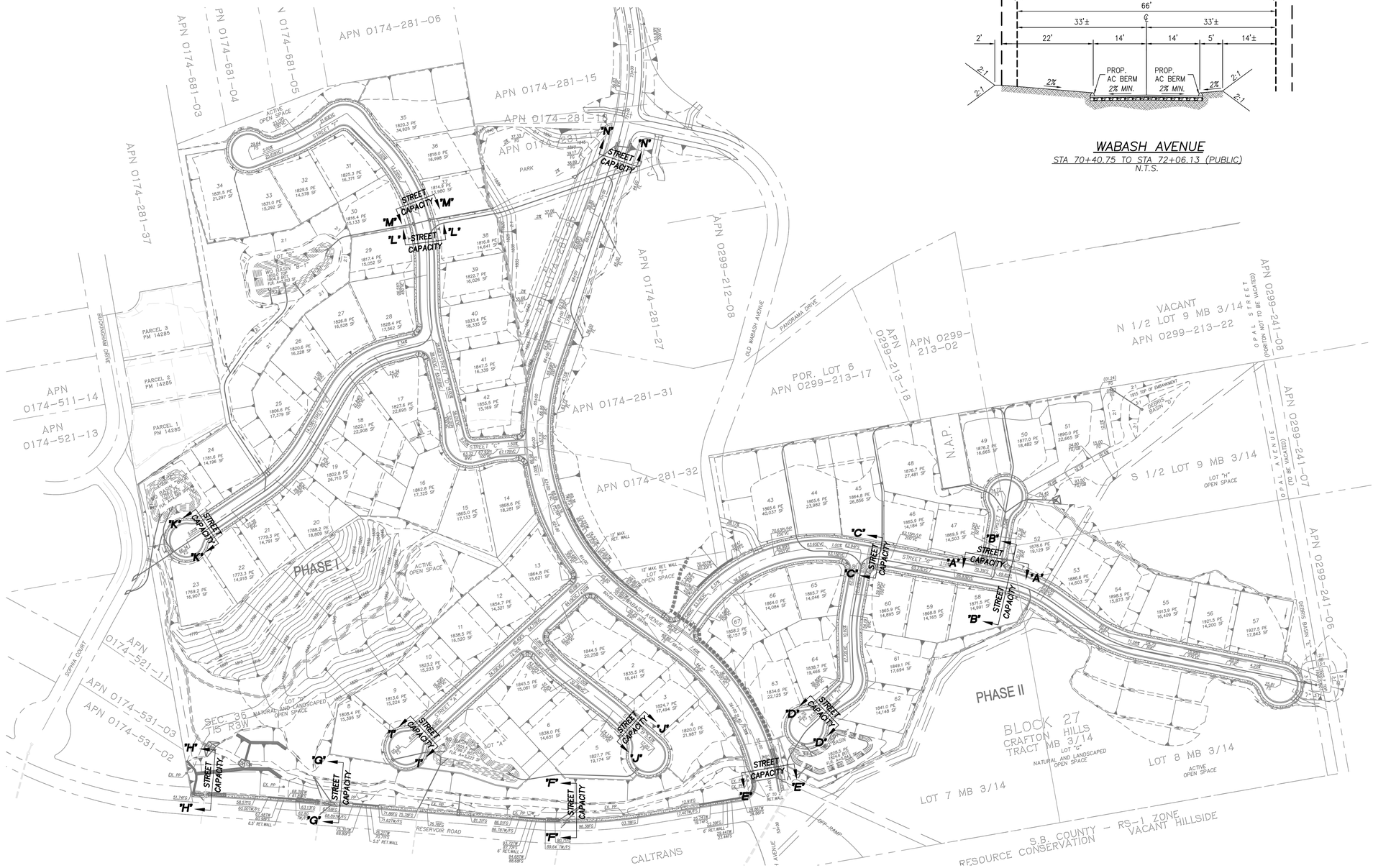


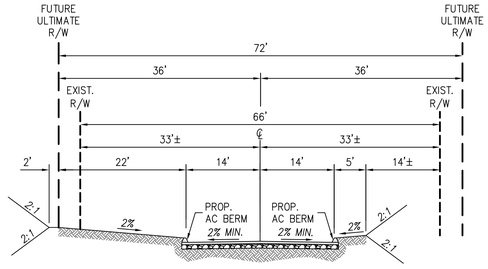
EXHIBIT "E"

ACI AGUILAR CONSULTING INC.
2155 CHICAGO AVENUE, SUITE 304
RIVERSIDE, CA 92507
PH. (951) 300-1431 FAX (951) 300-1435

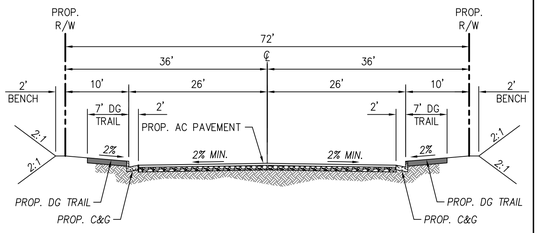
EXHIBIT F: CROSS SECTIONS LOCATION FOR STREET FLOW CAPACITY CALCULATIONS

TRACT MAP NO. 20320, CUP XXX (TERRACINA PROJECT)
CROSS SECTIONS LOCATION FOR
STREET FLOW CAPACITY CALCULATIONS
CITY OF REDLANDS, CA

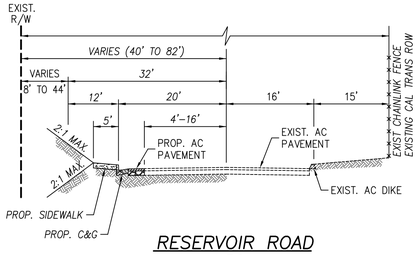




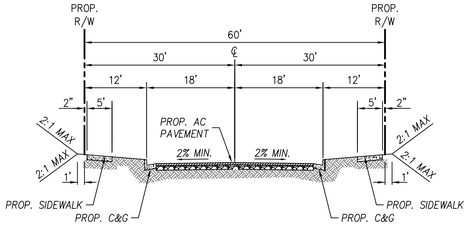
WABASH AVENUE
STA 70+40.75 TO STA 72+06.13 (PUBLIC)
N.T.S.



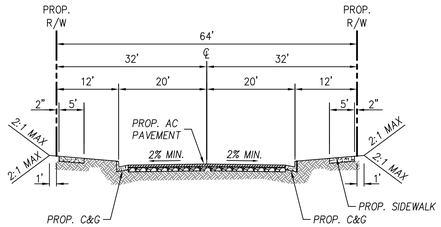
WABASH AVENUE
FROM RESERVOIR ROAD TO STA 66+80.75 (PUBLIC)
N.T.S.



RESERVOIR ROAD
N.T.S.



LOCAL STREETS
(STREET A,B,C,D,E,F,H&I)
N.T.S.



LOCAL STREETS
(STREET G)
N.T.S.

GRAPHIC SCALE
120 0 60 120 240
1" = 120'

EXHIBIT "F"

ACI AGUILAR CONSULTING INC.
2155 CHICAGO AVENUE, SUITE 304
RIVERSIDE, CA 92507
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EXHIBIT G: NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES FOR THE PROPOSED PROJECT AREA

NOAA Atlas 14, Volume 6, Version 2
Location name: Redlands, California, USA*
Latitude: 34.0375°, Longitude: -117.1382°
Elevation: 1919.58 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	**0.103** (0.086-0.125)	**0.134** (0.112-0.163)	**0.177** (0.146-0.215)	**0.212** (0.175-0.261)	**0.263** (0.209-0.334)	**0.303** (0.236-0.394)	**0.346** (0.262-0.461)	**0.391** (0.288-0.536)	**0.456** (0.322-0.652)	**0.508** (0.346-0.753)
10-min	**0.148** (0.123-0.179)	**0.192** (0.160-0.234)	**0.253** (0.210-0.308)	**0.304** (0.250-0.374)	**0.377** (0.299-0.479)	**0.435** (0.338-0.565)	**0.496** (0.376-0.660)	**0.561** (0.413-0.769)	**0.653** (0.461-0.934)	**0.728** (0.496-1.08)
15-min	**0.178** (0.149-0.217)	**0.233** (0.193-0.283)	**0.306** (0.254-0.373)	**0.368** (0.303-0.452)	**0.456** (0.362-0.579)	**0.526** (0.409-0.683)	**0.600** (0.455-0.799)	**0.678** (0.500-0.930)	**0.790** (0.558-1.13)	**0.880** (0.600-1.31)
30-min	**0.264** (0.220-0.321)	**0.344** (0.286-0.418)	**0.453** (0.376-0.552)	**0.545** (0.448-0.670)	**0.675** (0.536-0.858)	**0.778** (0.605-1.01)	**0.887** (0.673-1.18)	**1.00** (0.740-1.38)	**1.17** (0.826-1.67)	**1.30** (0.888-1.93)
60-min	**0.380** (0.316-0.461)	**0.495** (0.412-0.601)	**0.651** (0.540-0.794)	**0.783** (0.644-0.962)	**0.970** (0.770-1.23)	**1.12** (0.870-1.45)	**1.27** (0.967-1.70)	**1.44** (1.06-1.98)	**1.68** (1.19-2.40)	**1.87** (1.28-2.78)
2-hr	**0.544** (0.453-0.660)	**0.702** (0.584-0.852)	**0.913** (0.757-1.11)	**1.09** (0.896-1.34)	**1.34** (1.06-1.70)	**1.53** (1.19-1.99)	**1.74** (1.32-2.31)	**1.95** (1.44-2.67)	**2.25** (1.59-3.22)	**2.49** (1.70-3.69)
3-hr	**0.670** (0.557-0.812)	**0.859** (0.714-1.04)	**1.11** (0.923-1.36)	**1.32** (1.09-1.63)	**1.62** (1.28-2.06)	**1.85** (1.44-2.40)	**2.09** (1.58-2.78)	**2.34** (1.72-3.20)	**2.69** (1.90-3.84)	**2.96** (2.02-4.39)
6-hr	**0.942** (0.784-1.14)	**1.20** (1.00-1.46)	**1.55** (1.29-1.89)	**1.84** (1.51-2.26)	**2.23** (1.77-2.84)	**2.54** (1.98-3.30)	**2.86** (2.17-3.81)	**3.19** (2.35-4.37)	**3.64** (2.57-5.21)	**4.00** (2.73-5.93)
12-hr	**1.26** (1.05-1.54)	**1.62** (1.35-1.97)	**2.08** (1.73-2.54)	**2.47** (2.03-3.03)	**2.99** (2.37-3.80)	**3.39** (2.64-4.40)	**3.80** (2.88-5.06)	**4.23** (3.11-5.79)	**4.81** (3.39-6.88)	**5.26** (3.59-7.80)
24-hr	**1.69** (1.50-1.95)	**2.18** (1.93-2.52)	**2.82** (2.49-3.26)	**3.34** (2.93-3.90)	**4.05** (3.43-4.88)	**4.60** (3.81-5.65)	**5.15** (4.17-6.49)	**5.72** (4.51-7.41)	**6.50** (4.92-8.76)	**7.10** (5.19-9.90)
2-day	**2.06** (1.83-2.38)	**2.70** (2.38-3.11)	**3.54** (3.12-4.09)	**4.22** (3.70-4.93)	**5.17** (4.38-6.23)	**5.90** (4.90-7.26)	**6.66** (5.39-8.38)	**7.44** (5.86-9.63)	**8.51** (6.44-11.5)	**9.35** (6.84-13.0)
3-day	**2.21** (1.96-2.55)	**2.93** (2.59-3.38)	**3.90** (3.44-4.51)	**4.70** (4.11-5.48)	**5.81** (4.92-7.00)	**6.68** (5.55-8.22)	**7.59** (6.15-9.56)	**8.54** (6.73-11.1)	**9.86** (7.46-13.3)	**10.9** (7.98-15.2)
4-day	**2.39** (2.11-2.75)	**3.19** (2.82-3.68)	**4.27** (3.77-4.94)	**5.17** (4.53-6.03)	**6.43** (5.45-7.75)	**7.43** (6.17-9.14)	**8.47** (6.86-10.7)	**9.56** (7.54-12.4)	**11.1** (8.40-15.0)	**12.3** (9.01-17.2)
7-day	**2.76** (2.44-3.18)	**3.71** (3.29-4.29)	**5.00** (4.41-5.79)	**6.08** (5.32-7.09)	**7.58** (6.42-9.14)	**8.77** (7.28-10.8)	**10.0** (8.11-12.6)	**11.3** (8.92-14.6)	**13.1** (9.94-17.7)	**14.6** (10.7-20.3)
10-day	**2.98** (2.64-3.44)	**4.04** (3.57-4.66)	**5.46** (4.82-6.32)	**6.65** (5.82-7.76)	**8.31** (7.04-10.0)	**9.63** (7.99-11.8)	**11.0** (8.91-13.8)	**12.4** (9.80-16.1)	**14.4** (10.9-19.5)	**16.0** (11.7-22.4)
20-day	**3.70** (3.28-4.26)	**5.05** (4.47-5.83)	**6.87** (6.06-7.95)	**8.40** (7.35-9.80)	**10.5** (8.93-12.7)	**12.2** (10.2-15.1)	**14.0** (11.3-17.6)	**15.9** (12.5-20.5)	**18.5** (14.0-24.9)	**20.6** (15.1-28.7)
30-day	**4.39** (3.88-5.05)	**6.00** (5.30-6.92)	**8.17** (7.21-9.46)	**10.0** (8.75-11.7)	**12.6** (10.6-15.1)	**14.6** (12.1-18.0)	**16.7** (13.6-21.1)	**19.0** (15.0-24.6)	**22.2** (16.8-29.9)	**24.7** (18.1-34.4)
45-day	**5.26** (4.65-6.06)	**7.16** (6.33-8.26)	**9.74** (8.59-11.3)	**11.9** (10.4-13.9)	**15.0** (12.7-18.0)	**17.4** (14.4-21.4)	**20.0** (16.2-25.1)	**22.7** (17.9-29.3)	**26.5** (20.0-35.7)	**29.5** (21.6-41.1)
60-day	**6.18** (5.47-7.12)	**8.35** (7.39-9.64)	**11.3** (9.98-13.1)	**13.8** (12.1-16.1)	**17.3** (14.7-20.9)	**20.1** (16.7-24.8)	**23.1** (18.7-29.0)	**26.2** (20.6-33.9)	**30.6** (23.1-41.2)	**34.1** (24.9-47.5)

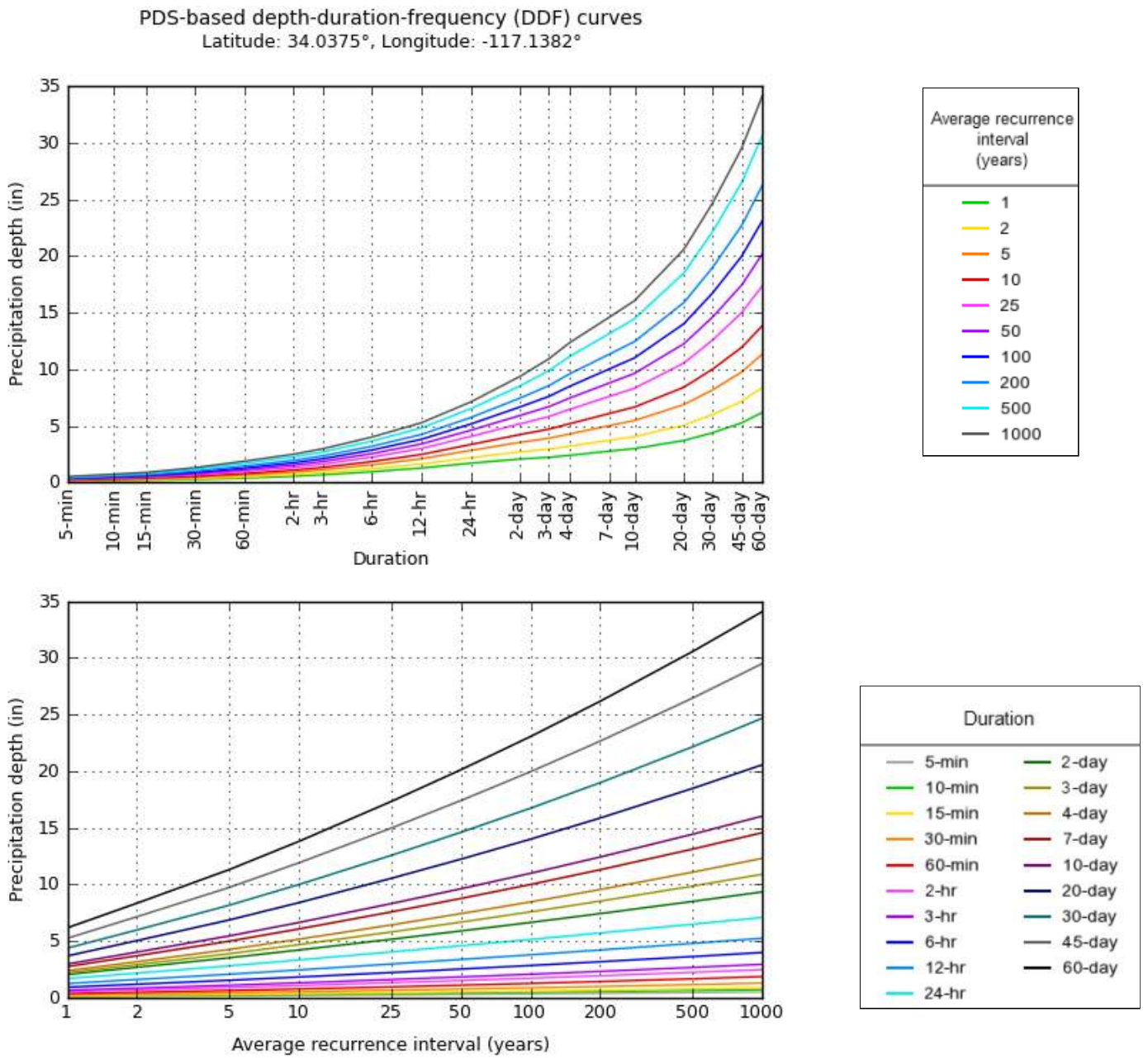
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

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

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Thu Aug 16 16:51:18 2018

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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial

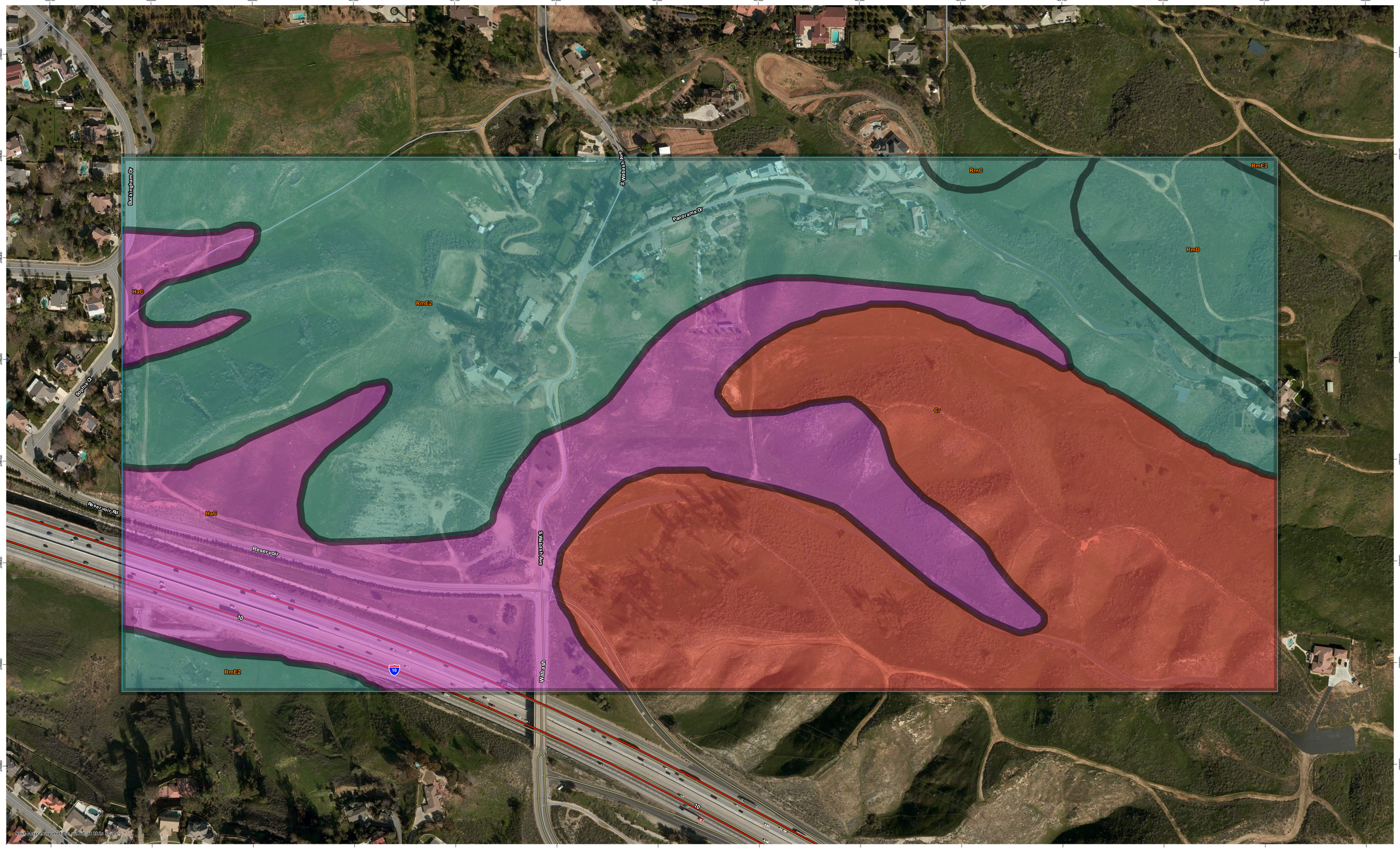


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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

EXHIBIT H: WEB SOIL SURVEY HYDROLOGIC SOILS MAP


HaC
RmE2
RmC
RmE2
RmD
Cr
HaC
RmE2
Buckingham Dr
Sophia Ct
Reservoir Rd
Reservoir
10
S Wabash Ave
Panorama Dr
S Wabash Ave
10
10
Soil Map may not be sharp at this scale.

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County Southwestern Part, California
Survey Area Data: Version 10, Sep 12, 2018

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

Date(s) aerial images were photographed: Jan 5, 2015—Mar 5, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Cr	Cieneba-Rock outcrop complex, 30 to 50 percent slopes, MLRA 20	D	44.5	30.0%
HaC	Hanford coarse sandy loam, 2 to 9 percent slopes	A	37.4	25.1%
RmC	Ramona sandy loam, 2 to 9 percent slopes, MLRA 19	C	0.7	0.4%
RmD	Ramona sandy loam, 9 to 15 percent slopes	C	7.8	5.2%
RmE2	Ramona sandy loam, 15 to 30 percent slopes, eroded	C	58.3	39.2%
Totals for Area of Interest			**148.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher