
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* REDLANDS MPD - UPDATE *
* REVISED RATIONAL METHOD HYDROLOGY - TO NODE 20151 *
* BY TMULI SEPT 2013 *

FILE NAME: LR0201.DAT
TIME/DATE OF STUDY: 15:28 09/24/2013

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 24.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL

SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF-	CROWN TO	STREET-CROSSFALL:		CURB HEIGHT	GUTTER-GEOMETRIES:			MANNING FACTOR
	WIDTH	CROSSFALL	IN-	OUT-/PARK-		WIDTH	LIP	HIKE	
====	====	====	====	====	====	====	====	====	====
	(FT)	(FT)	SIDE /	SIDE/ WAY	(FT)	(FT)	(FT)	(n)	
1	18.0	12.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
2	20.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
3	22.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
4	15.0	10.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180	
5	18.0	10.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180	
6	15.0	10.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
7	16.0	10.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180	
8	16.0	10.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
9	17.0	10.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
10	30.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
11	24.0	15.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180	
12	24.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
13	32.0	20.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
14	39.0	20.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
15	36.0	20.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180	
16	12.5	5.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180	

17	20.0	10.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180
18	26.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
19	52.0	20.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.20 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
 2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
- *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:

WATERSHED LAG = 0.80 * Tc
S-GRAPH TYPE PERCENTAGE(DECIMAL)
VALLEY(DEVELOPED) 1.000
FOOTHILL 0.000
MOUNTAIN 0.000
VALLEY(UNDEVELOPED)/DESERT 0.000
DESERT(UNDEVELOPED) 0.000

PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
SIERRA MADRE DEPTH-AREA FACTORS USED.

ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD

FLOW PROCESS FROM NODE 20100.00 TO NODE 20101.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

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INITIAL SUBAREA FLOW-LENGTH(FEET) = 219.52
ELEVATION DATA: UPSTREAM(FEET) = 2400.00 DOWNSTREAM(FEET) = 2385.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.474
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.755
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"OPEN BRUSH"	B	1.33	0.61	1.000	66	10.43
RESIDENTIAL						
"2 DWELLINGS/ACRE"	B	2.55	0.75	0.700	56	6.47

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.69
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.805
SUBAREA RUNOFF(CFS) = 14.81
TOTAL AREA(ACRES) = 3.92 PEAK FLOW RATE(CFS) = 14.81

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 9.00

FLOW PROCESS FROM NODE 20101.00 TO NODE 20102.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>(STREET TABLE SECTION # 5 USED)<<<<

UPSTREAM ELEVATION(FEET) = 2385.00 DOWNSTREAM ELEVATION(FEET) = 2340.00
STREET LENGTH(FEET) = 138.73 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 22.82

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.32
HALFSTREET FLOOD WIDTH(FEET) = 9.84
AVERAGE FLOW VELOCITY(FEET/SEC.) = 10.51
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 3.39
STREET FLOW TRAVEL TIME(MIN.) = 0.22 Tc(MIN.) = 6.69
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.660

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	A	0.45	0.86	1.000	46
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.90	0.61	1.000	66
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	3.01	0.75	0.700	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.73
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.793
SUBAREA AREA(ACRES) = 4.36 SUBAREA RUNOFF(CFS) = 16.02
EFFECTIVE AREA(ACRES) = 8.28 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.71 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 8.3 PEAK FLOW RATE(CFS) = 30.50

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 8.79

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.35 HALFSTREET FLOOD WIDTH(FEET) = 11.09
FLOW VELOCITY(FEET/SEC.) = 11.32 DEPTH*VELOCITY(FT*FT/SEC.) = 3.94
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20102.00 = 358.25 FEET.

FLOW PROCESS FROM NODE 20102.00 TO NODE 20103.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>(STREET TABLE SECTION # 5 USED)<<<<

UPSTREAM ELEVATION(FEET) = 2340.00 DOWNSTREAM ELEVATION(FEET) = 2320.00
STREET LENGTH(FEET) = 287.27 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00

INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 42.06

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.47
HALFSTREET FLOOD WIDTH(FEET) = 17.26
AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.79
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 3.20
STREET FLOW TRAVEL TIME(MIN.) = 0.70 Tc(MIN.) = 7.40
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.389

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	A	1.17	0.86	1.000	46
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.63	0.61	1.000	66
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	3.01	0.75	0.700	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.71
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.867
SUBAREA AREA(ACRES) = 6.81 SUBAREA RUNOFF(CFS) = 23.12
EFFECTIVE AREA(ACRES) = 15.09 AREA-AVERAGED Fm(INCH/HR) = 0.59
AREA-AVERAGED Fp(INCH/HR) = 0.71 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 15.1 PEAK FLOW RATE(CFS) = 51.59

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 8.63

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.50 HALFSTREET FLOOD WIDTH(FEET) = 18.00
FLOW VELOCITY(FEET/SEC.) = 7.23 DEPTH*VELOCITY(FT*FT/SEC.) = 3.60
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20103.00 = 645.52 FEET.

FLOW PROCESS FROM NODE 20103.00 TO NODE 20104.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>(STREET TABLE SECTION # 5 USED)<<<<

UPSTREAM ELEVATION(FEET) = 2320.00 DOWNSTREAM ELEVATION(FEET) = 2310.00
STREET LENGTH(FEET) = 249.70 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00

INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 97.01
 STREET FLOWING FULL
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.64
 HALFSTREET FLOOD WIDTH(FEET) = 24.79
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.45
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 4.74
 STREET FLOW TRAVEL TIME(MIN.) = 0.56 Tc(MIN.) = 7.96
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.201
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	A	1.82	0.86	1.000	46
NATURAL FAIR COVER "OPEN BRUSH"	B	19.46	0.61	1.000	66
RESIDENTIAL "2 DWELLINGS/ACRE"	B	6.79	0.75	0.700	56
RESIDENTIAL "2 DWELLINGS/ACRE"	A	0.01	0.98	0.700	32

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.66
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.927
 SUBAREA AREA(ACRES) = 28.08 SUBAREA RUNOFF(CFS) = 90.80
 EFFECTIVE AREA(ACRES) = 43.17 AREA-AVERAGED Fm(INCH/HR) = 0.60
 AREA-AVERAGED Fp(INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.89
 TOTAL AREA(ACRES) = 43.2 PEAK FLOW RATE(CFS) = 139.84

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.80

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.71 HALFSTREET FLOOD WIDTH(FEET) = 28.51
 FLOW VELOCITY(FEET/SEC.) = 8.23 DEPTH*VELOCITY(FT*FT/SEC.) = 5.85
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 249.7 FT WITH ELEVATION-DROP = 10.0 FT, IS 93.9 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20104.00
 LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20104.00 = 895.22 FEET.

 FLOW PROCESS FROM NODE 20104.00 TO NODE 20105.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<

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UPSTREAM ELEVATION(FEET) = 2310.00 DOWNSTREAM ELEVATION(FEET) = 2270.00
 STREET LENGTH(FEET) = 747.57 CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 220.14
 STREET FLOWING FULL
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.78
 HALFSTREET FLOOD WIDTH(FEET) = 32.17
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 10.27
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 8.05
 STREET FLOW TRAVEL TIME(MIN.) = 1.21 Tc(MIN.) = 9.17
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.858
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	A	5.68	0.86	1.000	46
RESIDENTIAL "2 DWELLINGS/ACRE"	A	3.92	0.98	0.700	32
RESIDENTIAL "2 DWELLINGS/ACRE"	B	6.10	0.75	0.700	56
NATURAL FAIR COVER "OPEN BRUSH"	B	39.60	0.61	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.946
 SUBAREA AREA(ACRES) = 55.30 SUBAREA RUNOFF(CFS) = 160.46
 EFFECTIVE AREA(ACRES) = 98.47 AREA-AVERAGED Fm(INCH/HR) = 0.62
 AREA-AVERAGED Fp(INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.92
 TOTAL AREA(ACRES) = 98.5 PEAK FLOW RATE(CFS) = 286.98

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.72

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.86 HALFSTREET FLOOD WIDTH(FEET) = 35.77
 FLOW VELOCITY(FEET/SEC.) = 10.90 DEPTH*VELOCITY(FT*FT/SEC.) = 9.32
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 747.6 FT WITH ELEVATION-DROP = 40.0 FT, IS 139.7 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20105.00
 LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20105.00 = 1642.79 FEET.

 FLOW PROCESS FROM NODE 20105.00 TO NODE 20106.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 2270.00 DOWNSTREAM(FEET) = 2230.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1238.14 CHANNEL SLOPE = 0.0323
 CHANNEL BASE(FEET) = 5.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.035 MAXIMUM DEPTH(FEET) = 3.30
 CHANNEL FLOW THRU SUBAREA(CFS) = 286.98
 FLOW VELOCITY(FEET/SEC.) = 10.51 FLOW DEPTH(FEET) = 2.65
 TRAVEL TIME(MIN.) = 1.96 Tc(MIN.) = 11.13
 LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20106.00 = 2880.93 FEET.

 FLOW PROCESS FROM NODE 20106.00 TO NODE 20106.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 =====

MAINLINE Tc(MIN.) = 11.13
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.434
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	A	2.42	0.86	1.000	46
RESIDENTIAL "2 DWELLINGS/ACRE"	A	7.44	0.98	0.700	32
RESIDENTIAL "2 DWELLINGS/ACRE"	B	21.25	0.75	0.700	56
NATURAL FAIR COVER "OPEN BRUSH"	B	127.72	0.61	1.000	66

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.946
 SUBAREA AREA(ACRES) = 158.83 SUBAREA RUNOFF(CFS) = 403.88
 EFFECTIVE AREA(ACRES) = 257.30 AREA-AVERAGED Fm(INCH/HR) = 0.61
 AREA-AVERAGED Fp(INCH/HR) = 0.65 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 257.3 PEAK FLOW RATE(CFS) = 653.29

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.52

 FLOW PROCESS FROM NODE 20108.00 TO NODE 20107.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
 =====
 ELEVATION DATA: UPSTREAM(FEET) = 2230.00 DOWNSTREAM(FEET) = 2170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1330.76 CHANNEL SLOPE = 0.0451
 CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.035 MAXIMUM DEPTH(FEET) = 10.00
 CHANNEL FLOW THRU SUBAREA(CFS) = 653.29
 FLOW VELOCITY(FEET/SEC.) = 11.75 FLOW DEPTH(FEET) = 1.67
 TRAVEL TIME(MIN.) = 1.89 Tc(MIN.) = 13.02
 LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20107.00 = 4211.69 FEET.

 FLOW PROCESS FROM NODE 20107.00 TO NODE 20107.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 =====
 MAINLINE Tc(MIN.) = 13.02
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.126
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	A	2.55	0.86	1.000	46
RESIDENTIAL "2 DWELLINGS/ACRE"	A	12.67	0.98	0.700	32
RESIDENTIAL "2 DWELLINGS/ACRE"	B	10.30	0.75	0.700	56
NATURAL FAIR COVER "OPEN BRUSH"	B	66.90	0.61	1.000	66

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.925

SUBAREA AREA(ACRES) = 92.42 SUBAREA RUNOFF(CFS) = 208.45
 EFFECTIVE AREA(ACRES) = 349.72 AREA-AVERAGED Fm(INCH/HR) = 0.61
 AREA-AVERAGED Fp(INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.93
 TOTAL AREA(ACRES) = 349.7 PEAK FLOW RATE(CFS) = 790.41

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

 FLOW PROCESS FROM NODE 20107.00 TO NODE 20108.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
 =====
 ELEVATION DATA: UPSTREAM(FEET) = 2170.00 DOWNSTREAM(FEET) = 2095.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1995.70 CHANNEL SLOPE = 0.0376
 CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.035 MAXIMUM DEPTH(FEET) = 10.00
 CHANNEL FLOW THRU SUBAREA(CFS) = 790.41
 FLOW VELOCITY(FEET/SEC.) = 11.81 FLOW DEPTH(FEET) = 1.97
 TRAVEL TIME(MIN.) = 2.82 Tc(MIN.) = 15.84
 LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20108.00 = 6207.39 FEET.

 FLOW PROCESS FROM NODE 20108.00 TO NODE 20108.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 =====
 MAINLINE Tc(MIN.) = 15.84
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.780
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	A	3.92	0.86	1.000	46
RESIDENTIAL "2 DWELLINGS/ACRE"	A	0.86	0.98	0.700	32
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	16.85	0.98	0.600	32
MOBILE HOME PARK RESIDENTIAL	B	25.39	0.75	0.250	56
"3-4 DWELLINGS/ACRE"	B	10.75	0.75	0.600	56
NATURAL FAIR COVER "OPEN BRUSH"	B	87.64	0.61	1.000	66

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.791
 SUBAREA AREA(ACRES) = 145.41 SUBAREA RUNOFF(CFS) = 294.30
 EFFECTIVE AREA(ACRES) = 495.13 AREA-AVERAGED Fm(INCH/HR) = 0.59
 AREA-AVERAGED Fp(INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.89
 TOTAL AREA(ACRES) = 495.1 PEAK FLOW RATE(CFS) = 975.67

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

 FLOW PROCESS FROM NODE 20108.00 TO NODE 20109.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2095.00 DOWNSTREAM(FEET) = 2020.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2023.91 CHANNEL SLOPE = 0.0371
CHANNEL BASE(FEET) = 40.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.035 MAXIMUM DEPTH(FEET) = 10.00
CHANNEL FLOW THRU SUBAREA(CFS) = 975.67
FLOW VELOCITY(FEET/SEC.) = 11.71 FLOW DEPTH(FEET) = 1.90
TRAVEL TIME(MIN.) = 2.88 Tc(MIN.) = 18.72
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20109.00 = 8231.30 FEET.

FLOW PROCESS FROM NODE 20109.00 TO NODE 20109.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 18.72
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.514
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" A 2.81 0.86 1.000 46
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 27.06 0.98 0.600 32
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 26.94 0.75 0.600 56
RESIDENTIAL
"2 DWELLINGS/ACRE" B 35.77 0.75 0.700 56
NATURAL FAIR COVER
"OPEN BRUSH" B 102.40 0.61 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.69
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834
SUBAREA AREA(ACRES) = 194.98 SUBAREA RUNOFF(CFS) = 340.50
EFFECTIVE AREA(ACRES) = 690.11 AREA-AVERAGED Fm(INCH/HR) = 0.59
AREA-AVERAGED Fp(INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.88
TOTAL AREA(ACRES) = 690.1 PEAK FLOW RATE(CFS) = 1197.96

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20109.00 TO NODE 20109.00 IS CODE = 71

>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<
>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<

UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.25;6H= 3.25;24H= 7.56
S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT= 0.0%
MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
Tc(HR) = 0.31; LAG(HR) = 0.25; Fm(INCH/HR) = 0.59; Ybar = 0.51
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 1.00; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 690.1
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20109.00 = 8231.30 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3,n=.0333; Lca/L=0.4,n=.0299; Lca/L=0.5,n=.0274;Lca/L=0.6,n=.0256
TIME OF PEAK FLOW(HR) = 16.33 RUNOFF VOLUME(AF) = 224.38
UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) = 1236.59
TOTAL PEAK FLOW RATE(CFS) = 1236.59 (SOURCE FLOW INCLUDED)
RATIONAL METHOD PEAK FLOW RATE(CFS) = 1197.96
(UPSTREAM NODE PEAK FLOW RATE(CFS) = 1197.96)
PEAK FLOW RATE(CFS) USED = 1236.59

FLOW PROCESS FROM NODE 20109.00 TO NODE 20110.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2020.00 DOWNSTREAM(FEET) = 1960.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1927.24 CHANNEL SLOPE = 0.0311
CHANNEL BASE(FEET) = 10.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.035 MAXIMUM DEPTH(FEET) = 5.00
CHANNEL FLOW THRU SUBAREA(CFS) = 1236.59
FLOW VELOCITY(FEET/SEC.) = 14.88 FLOW DEPTH(FEET) = 4.41
TRAVEL TIME(MIN.) = 2.16 Tc(MIN.) = 20.88
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20110.00 = 10158.54 FEET.

FLOW PROCESS FROM NODE 20110.00 TO NODE 20110.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 20.88
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.355
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" A 5.83 0.86 1.000 46
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 33.80 0.98 0.600 32
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 25.19 0.75 0.600 56
RESIDENTIAL
"2 DWELLINGS/ACRE" B 9.84 0.75 0.700 56
NATURAL FAIR COVER
"OPEN BRUSH" B 45.99 0.61 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.74
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.780
SUBAREA AREA(ACRES) = 120.65

UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.25;6H= 3.25;24H= 7.55
S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT= 0.0%
MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
Tc(HR) = 0.35; LAG(HR) = 0.28; Fm(INCH/HR) = 0.58; Ybar = 0.51
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 810.8
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20110.00 = 10158.54 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L=0.3,n=.0313; Lca/L=0.4,n=.0280; Lca/L=0.5,n=.0258;Lca/L=0.6,n=.0240

TIME OF PEAK FLOW(HR) = 16.33 RUNOFF VOLUME(AF) = 262.28
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) = 1349.99
TOTAL AREA(ACRES) = 810.8 PEAK FLOW RATE(CFS) = 1349.99

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20110.00 TO NODE 20111.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) =	1960.00	DOWNSTREAM(FEET) =	1920.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	928.33	CHANNEL SLOPE =	0.0431
CHANNEL BASE(FEET) =	10.00	"Z" FACTOR =	2.000
MANNING'S FACTOR =	0.035	MAXIMUM DEPTH(FEET) =	5.00
CHANNEL FLOW THRU SUBAREA(CFS) =	1349.99		
FLOW VELOCITY(FEET/SEC.) =	17.14	FLOW DEPTH(FEET) =	4.25
TRAVEL TIME(MIN.) =	0.90	Tc(MIN.) =	21.78
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20111.00 =	11086.87	FEET.	

FLOW PROCESS FROM NODE 20111.00 TO NODE 20111.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====

MAINLINE Tc(MIN.) = 21.78
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.296
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	A	28.59	0.86	1.000	46
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	31.08	0.98	0.600	32
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	31.56	0.75	0.600	56
NATURAL FAIR COVER "OPEN BRUSH"	B	41.72	0.61	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	5.26	0.75	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.76
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.815
SUBAREA AREA(ACRES) = 138.21
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.24;6H= 3.22;24H= 7.55
S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT= 0.0%
MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
Tc(HR) = 0.36; LAG(HR) = 0.29; Fm(INCH/HR) = 0.59; Ybar = 0.52
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 949.0
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20111.00 = 11086.87 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L=0.3,n=.0305; Lca/L=0.4,n=.0274; Lca/L=0.5,n=.0251;Lca/L=0.6,n=.0235
TIME OF PEAK FLOW(HR) = 16.33 RUNOFF VOLUME(AF) = 301.99

UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) = 1499.62
TOTAL AREA(ACRES) = 949.0 PEAK FLOW RATE(CFS) = 1499.62

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.16; 6HR = 3.06; 24HR = 7.50

FLOW PROCESS FROM NODE 20111.00 TO NODE 20112.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) =	1920.00	DOWNSTREAM(FEET) =	1870.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	1664.97	CHANNEL SLOPE =	0.0300
CHANNEL BASE(FEET) =	10.00	"Z" FACTOR =	2.000
MANNING'S FACTOR =	0.035	MAXIMUM DEPTH(FEET) =	5.00
CHANNEL FLOW THRU SUBAREA(CFS) =	1499.62		
FLOW VELOCITY(FEET/SEC.) =	15.44	FLOW DEPTH(FEET) =	4.90
TRAVEL TIME(MIN.) =	1.80	Tc(MIN.) =	23.58
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20112.00 =	12751.84	FEET.	

FLOW PROCESS FROM NODE 20112.00 TO NODE 20112.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====

MAINLINE Tc(MIN.) = 23.58
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.189
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	8.51	0.98	0.600	32
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	0.54	0.75	0.600	56
RESIDENTIAL ".4 DWELLING/ACRE"	A	3.29	0.98	0.900	32
RESIDENTIAL ".4 DWELLING/ACRE"	B	75.85	0.75	0.900	56
NATURAL FAIR COVER "OPEN BRUSH"	B	7.12	0.61	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.76
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.879
SUBAREA AREA(ACRES) = 95.31
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.22;6H= 3.18;24H= 7.54
S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT= 0.0%
MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
Tc(HR) = 0.39; LAG(HR) = 0.31; Fm(INCH/HR) = 0.60; Ybar = 0.53
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 1044.3
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20112.00 = 12751.84 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L=0.3,n=.0295; Lca/L=0.4,n=.0264; Lca/L=0.5,n=.0243;Lca/L=0.6,n=.0227
TIME OF PEAK FLOW(HR) = 16.42 RUNOFF VOLUME(AF) = 327.56
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) = 1525.78

TOTAL AREA (ACRES) = 1044.3 PEAK FLOW RATE (CFS) = 1525.78

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20112.00 TO NODE 20150.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 1870.00 DOWNSTREAM (FEET) = 1850.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 907.32 CHANNEL SLOPE = 0.0220
CHANNEL BASE (FEET) = 10.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.035 MAXIMUM DEPTH (FEET) = 10.00
CHANNEL FLOW THRU SUBAREA (CFS) = 1525.78
FLOW VELOCITY (FEET/SEC.) = 13.86 FLOW DEPTH (FEET) = 5.33
TRAVEL TIME (MIN.) = 1.09 Tc (MIN.) = 24.67
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20150.00 = 13659.16 FEET.

FLOW PROCESS FROM NODE 20150.00 TO NODE 20150.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 24.67
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.131
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 4.19 0.75 0.600 56
RESIDENTIAL
".4 DWELLING/ACRE" B 3.83 0.75 0.900 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743
SUBAREA AREA (ACRES) = 8.02
UNIT-HYDROGRAPH DATA:
RAINFALL (INCH): 5M = 0.46; 30M = 0.95; 1H = 1.25; 3H = 2.22; 6H = 3.18; 24H = 7.54
S-GRAPH: VALLEY (DEV.) = 100.0%; VALLEY (UNDEV.) / DESERT = 0.0%
MOUNTAIN = 0.0%; FOOTHILL = 0.0%; DESERT (UNDEV.) = 0.0%
Tc (HR) = 0.41; LAG (HR) = 0.33; Fm (INCH/HR) = 0.60; Ybar = 0.53
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
3HR = 0.99; 6HR = 1.00; 24HR = 1.00
UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 1052.3
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20150.00 = 13659.16 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L = 0.3, n = .0291; Lca/L = 0.4, n = .0261; Lca/L = 0.5, n = .0240; Lca/L = 0.6, n = .0224
TIME OF PEAK FLOW (HR) = 16.42 RUNOFF VOLUME (AF) = 330.18
UNIT-HYDROGRAPH PEAK FLOW RATE (CFS) = 1524.49
TOTAL AREA (ACRES) = 1052.3 PEAK FLOW RATE (CFS) = 1525.78
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20150.00 TO NODE 20150.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<

FLOW PROCESS FROM NODE 20120.00 TO NODE 20121.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 591.56
ELEVATION DATA: UPSTREAM (FEET) = 3148.00 DOWNSTREAM (FEET) = 2920.00

Tc = K * [(LENGTH** 3.00) / (ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 10.975
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 3.464
SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"OPEN BRUSH" B 5.75 0.61 1.000 66 10.98
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.61
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF (CFS) = 14.75
TOTAL AREA (ACRES) = 5.75 PEAK FLOW RATE (CFS) = 14.75

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20121.00 TO NODE 20122.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 2920.00 DOWNSTREAM (FEET) = 2860.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 401.18 CHANNEL SLOPE = 0.1496
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 2.500
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 1.00
CHANNEL FLOW THRU SUBAREA (CFS) = 14.75
FLOW VELOCITY (FEET/SEC.) = 7.20 FLOW DEPTH (FEET) = 0.91
TRAVEL TIME (MIN.) = 0.93 Tc (MIN.) = 11.90
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20122.00 = 992.74 FEET.

FLOW PROCESS FROM NODE 20122.00 TO NODE 20122.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 11.90
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 3.299
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 6.02 0.61 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.61

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 6.02 SUBAREA RUNOFF (CFS) = 14.55
EFFECTIVE AREA (ACRES) = 11.77 AREA-AVERAGED Fm (INCH/HR) = 0.61
AREA-AVERAGED Fp (INCH/HR) = 0.61 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 11.8 PEAK FLOW RATE (CFS) = 28.44

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20122.00 TO NODE 20123.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 2860.00 DOWNSTREAM (FEET) = 2800.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 404.41 CHANNEL SLOPE = 0.1484
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 2.500
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 2.00
CHANNEL FLOW THRU SUBAREA (CFS) = 28.44
FLOW VELOCITY (FEET/SEC.) = 8.42 FLOW DEPTH (FEET) = 1.16
TRAVEL TIME (MIN.) = 0.80 Tc (MIN.) = 12.70
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20123.00 = 1397.15 FEET.

FLOW PROCESS FROM NODE 20123.00 TO NODE 20123.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 12.70
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 3.173
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 5.11 0.61 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.61
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 5.11 SUBAREA RUNOFF (CFS) = 11.77
EFFECTIVE AREA (ACRES) = 16.88 AREA-AVERAGED Fm (INCH/HR) = 0.61
AREA-AVERAGED Fp (INCH/HR) = 0.61 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 16.9 PEAK FLOW RATE (CFS) = 38.87

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20123.00 TO NODE 20124.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 2800.00 DOWNSTREAM (FEET) = 2720.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 734.74 CHANNEL SLOPE = 0.1089
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 2.500
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 2.00
CHANNEL FLOW THRU SUBAREA (CFS) = 38.87
FLOW VELOCITY (FEET/SEC.) = 8.12 FLOW DEPTH (FEET) = 1.38

TRAVEL TIME (MIN.) = 1.51 Tc (MIN.) = 14.21
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20124.00 = 2131.89 FEET.

FLOW PROCESS FROM NODE 20124.00 TO NODE 20124.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 14.21
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.966
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 33.25 0.61 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.61
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 33.25 SUBAREA RUNOFF (CFS) = 70.39
EFFECTIVE AREA (ACRES) = 50.13 AREA-AVERAGED Fm (INCH/HR) = 0.61
AREA-AVERAGED Fp (INCH/HR) = 0.61 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 50.1 PEAK FLOW RATE (CFS) = 106.12

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20124.00 TO NODE 20125.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 2720.00 DOWNSTREAM (FEET) = 2620.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 932.28 CHANNEL SLOPE = 0.1073
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 2.500
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 3.00
CHANNEL FLOW THRU SUBAREA (CFS) = 106.12
FLOW VELOCITY (FEET/SEC.) = 10.36 FLOW DEPTH (FEET) = 2.02
TRAVEL TIME (MIN.) = 1.50 Tc (MIN.) = 15.71
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20125.00 = 3064.17 FEET.

FLOW PROCESS FROM NODE 20125.00 TO NODE 20125.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 15.71
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.793
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 36.51 0.61 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.61
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 36.51 SUBAREA RUNOFF (CFS) = 71.59
EFFECTIVE AREA (ACRES) = 86.64 AREA-AVERAGED Fm (INCH/HR) = 0.61
AREA-AVERAGED Fp (INCH/HR) = 0.61 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 86.6 PEAK FLOW RATE (CFS) = 169.90

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20125.00 TO NODE 20126.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2620.00 DOWNSTREAM(FEET) = 2600.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1333.93 CHANNEL SLOPE = 0.0150
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 2.500
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 4.00
CHANNEL FLOW THRU SUBAREA(CFS) = 169.90
FLOW VELOCITY(FEET/SEC.) = 5.58 FLOW DEPTH(FEET) = 3.49
TRAVEL TIME(MIN.) = 3.98 Tc(MIN.) = 19.70
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20126.00 = 4398.10 FEET.

FLOW PROCESS FROM NODE 20126.00 TO NODE 20126.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 19.70
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.439
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 60.59 0.61 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.61
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 60.59 SUBAREA RUNOFF(CFS) = 99.51
EFFECTIVE AREA(ACRES) = 147.23 AREA-AVERAGED Fm(INCH/HR) = 0.61
AREA-AVERAGED Fp(INCH/HR) = 0.61 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 147.2 PEAK FLOW RATE(CFS) = 241.79

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20126.00 TO NODE 20127.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2600.00 DOWNSTREAM(FEET) = 2420.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1404.24 CHANNEL SLOPE = 0.1282
CHANNEL BASE(FEET) = 20.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 10.00
CHANNEL FLOW THRU SUBAREA(CFS) = 241.79
FLOW VELOCITY(FEET/SEC.) = 11.03 FLOW DEPTH(FEET) = 1.00
TRAVEL TIME(MIN.) = 2.12 Tc(MIN.) = 21.82
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20127.00 = 5802.34 FEET.

FLOW PROCESS FROM NODE 20127.00 TO NODE 20127.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 21.82
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.294
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 45.37 0.61 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.61
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 45.37 SUBAREA RUNOFF(CFS) = 68.58
EFFECTIVE AREA(ACRES) = 192.60 AREA-AVERAGED Fm(INCH/HR) = 0.61
AREA-AVERAGED Fp(INCH/HR) = 0.61 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 192.6 PEAK FLOW RATE(CFS) = 291.14

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.18; 6HR = 3.11; 24HR = 7.50

FLOW PROCESS FROM NODE 20127.00 TO NODE 20128.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2420.00 DOWNSTREAM(FEET) = 2240.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1246.58 CHANNEL SLOPE = 0.1444
CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 10.00
CHANNEL FLOW THRU SUBAREA(CFS) = 291.14
FLOW VELOCITY(FEET/SEC.) = 10.78 FLOW DEPTH(FEET) = 0.85
TRAVEL TIME(MIN.) = 1.93 Tc(MIN.) = 23.74
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20128.00 = 7048.92 FEET.

FLOW PROCESS FROM NODE 20128.00 TO NODE 20128.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 23.74
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.180
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 27.94 0.61 1.000 66
RESIDENTIAL
"2 DWELLINGS/ACRE" B 8.51 0.75 0.700 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.64
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.930
SUBAREA AREA(ACRES) = 36.45 SUBAREA RUNOFF(CFS) = 52.07
EFFECTIVE AREA(ACRES) = 229.05 AREA-AVERAGED Fm(INCH/HR) = 0.61
AREA-AVERAGED Fp(INCH/HR) = 0.62 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 229.0 PEAK FLOW RATE(CFS) = 323.52

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

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FLOW PROCESS FROM NODE 20128.00 TO NODE 20129.00 IS CODE = 54
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
-----
ELEVATION DATA: UPSTREAM(FEET) = 2240.00 DOWNSTREAM(FEET) = 2120.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1393.78 CHANNEL SLOPE = 0.0861
CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 10.00
CHANNEL FLOW THRU SUBAREA(CFS) = 323.52
FLOW VELOCITY(FEET/SEC.) = 9.54 FLOW DEPTH(FEET) = 1.06
TRAVEL TIME(MIN.) = 2.43 Tc(MIN.) = 26.18
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20129.00 = 8442.70 FEET.

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FLOW PROCESS FROM NODE 20129.00 TO NODE 20129.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
-----
MAINLINE Tc(MIN.) = 26.18
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.056
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE           GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH"        B        18.57   0.61   1.000   66
RESIDENTIAL
"2 DWELLINGS/ACRE" B        10.38   0.75   0.700   56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.65
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.892
SUBAREA AREA(ACRES) = 28.95 SUBAREA RUNOFF(CFS) = 38.42
EFFECTIVE AREA(ACRES) = 258.00 AREA-AVERAGED Fm(INCH/HR) = 0.61
AREA-AVERAGED Fp(INCH/HR) = 0.62 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 258.0 PEAK FLOW RATE(CFS) = 336.38

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

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FLOW PROCESS FROM NODE 10129.00 TO NODE 20130.00 IS CODE = 54
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
-----
ELEVATION DATA: UPSTREAM(FEET) = 2120.00 DOWNSTREAM(FEET) = 1995.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2018.40 CHANNEL SLOPE = 0.0619
CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 10.00
CHANNEL FLOW THRU SUBAREA(CFS) = 336.38
FLOW VELOCITY(FEET/SEC.) = 8.71 FLOW DEPTH(FEET) = 1.19
TRAVEL TIME(MIN.) = 3.86 Tc(MIN.) = 30.04
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20130.00 = 10461.10 FEET.

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FLOW PROCESS FROM NODE 20130.00 TO NODE 20130.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
-----
MAINLINE Tc(MIN.) = 30.04
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.893
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE           GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
".4 DWELLING/ACRE" B        28.04   0.75   0.900   56
NATURAL FAIR COVER
"OPEN BRUSH"        B        51.49   0.61   1.000   66
RESIDENTIAL
"2 DWELLINGS/ACRE" B        30.71   0.75   0.700   56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.68
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.891
SUBAREA AREA(ACRES) = 110.24 SUBAREA RUNOFF(CFS) = 127.90
EFFECTIVE AREA(ACRES) = 368.24 AREA-AVERAGED Fm(INCH/HR) = 0.61
AREA-AVERAGED Fp(INCH/HR) = 0.64 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 368.2 PEAK FLOW RATE(CFS) = 426.43

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SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.07; 6HR = 2.84; 24HR = 7.50

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FLOW PROCESS FROM NODE 20130.00 TO NODE 20148.00 IS CODE = 54
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
-----
ELEVATION DATA: UPSTREAM(FEET) = 1995.00 DOWNSTREAM(FEET) = 1925.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1246.14 CHANNEL SLOPE = 0.0562
CHANNEL BASE(FEET) = 30.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 10.00
CHANNEL FLOW THRU SUBAREA(CFS) = 426.43
FLOW VELOCITY(FEET/SEC.) = 9.23 FLOW DEPTH(FEET) = 1.41
TRAVEL TIME(MIN.) = 2.25 Tc(MIN.) = 32.29
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20148.00 = 11707.24 FEET.

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FLOW PROCESS FROM NODE 20148.00 TO NODE 20148.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
-----
MAINLINE Tc(MIN.) = 32.29
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.813
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE           GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
".4 DWELLING/ACRE" B        19.93   0.75   0.900   56
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B        0.65   0.75   0.600   56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.891
SUBAREA AREA(ACRES) = 20.58 SUBAREA RUNOFF(CFS) = 21.24
EFFECTIVE AREA(ACRES) = 388.82 AREA-AVERAGED Fm(INCH/HR) = 0.61
AREA-AVERAGED Fp(INCH/HR) = 0.64 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 388.8 PEAK FLOW RATE(CFS) = 426.43

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NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20148.00 TO NODE 20148.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

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TOTAL NUMBER OF STREAMS =	2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:	
TIME OF CONCENTRATION(MIN.) =	32.29
RAINFALL INTENSITY(INCH/HR) =	1.81
AREA-AVERAGED Fm(INCH/HR) =	0.61
AREA-AVERAGED Fp(INCH/HR) =	0.64
AREA-AVERAGED Ap =	0.95
EFFECTIVE STREAM AREA(ACRES) =	388.82
TOTAL STREAM AREA(ACRES) =	388.82
PEAK FLOW RATE(CFS) AT CONFLUENCE =	426.43

FLOW PROCESS FROM NODE 20140.00 TO NODE 20141.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

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INITIAL SUBAREA FLOW-LENGTH(FEET) =	823.61
ELEVATION DATA: UPSTREAM(FEET) =	3000.00
DOWNSTREAM(FEET) =	2690.00

Tc = K*[(LENGTH** 3.00) / (ELEVATION CHANGE)]**0.20						
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =	12.588					
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	3.190					
SUBAREA Tc AND LOSS RATE DATA(AMC II):						
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS	Tc
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN	(MIN.)
NATURAL FAIR COVER						
"OPEN BRUSH"	B	8.14	0.61	1.000	66	12.59
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =	0.61					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	1.000					
SUBAREA RUNOFF(CFS) =	18.87					
TOTAL AREA(ACRES) =	8.14					
PEAK FLOW RATE(CFS) =	18.87					

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.53; 6HR = 2.22; 24HR = 4.71

FLOW PROCESS FROM NODE 20141.00 TO NODE 20142.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

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ELEVATION DATA: UPSTREAM(FEET) =	2690.00
DOWNSTREAM(FEET) =	2560.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	610.78
CHANNEL SLOPE =	0.2128
CHANNEL BASE(FEET) =	0.00
"Z" FACTOR =	2.500
MANNING'S FACTOR =	0.045
MAXIMUM DEPTH(FEET) =	2.00
CHANNEL FLOW THRU SUBAREA(CFS) =	18.87
FLOW VELOCITY(FEET/SEC.) =	8.66
FLOW DEPTH(FEET) =	0.93

TRAVEL TIME(MIN.) = 1.18 Tc(MIN.) = 13.76
LONGEST FLOWPATH FROM NODE 20140.00 TO NODE 20142.00 = 1434.39 FEET.

FLOW PROCESS FROM NODE 20142.00 TO NODE 20142.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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MAINLINE Tc(MIN.) =	13.76				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	3.024				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	15.44	0.61	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =	0.61				
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	1.000				
SUBAREA AREA(ACRES) =	15.44				
SUBAREA RUNOFF(CFS) =	33.49				
EFFECTIVE AREA(ACRES) =	23.58				
AREA-AVERAGED Fm(INCH/HR) =	0.61				
AREA-AVERAGED Fp(INCH/HR) =	0.61				
AREA-AVERAGED Ap =	1.00				
TOTAL AREA(ACRES) =	23.6				
PEAK FLOW RATE(CFS) =	51.14				

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20142.00 TO NODE 20143.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	2560.00
DOWNSTREAM(FEET) =	2420.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	771.13
CHANNEL SLOPE =	0.1816
CHANNEL BASE(FEET) =	0.00
"Z" FACTOR =	2.500
MANNING'S FACTOR =	0.045
MAXIMUM DEPTH(FEET) =	2.00
CHANNEL FLOW THRU SUBAREA(CFS) =	51.14
FLOW VELOCITY(FEET/SEC.) =	10.54
FLOW DEPTH(FEET) =	1.39
TRAVEL TIME(MIN.) =	1.22
Tc(MIN.) =	14.98
LONGEST FLOWPATH FROM NODE 20140.00 TO NODE 20143.00 =	2205.52 FEET.

FLOW PROCESS FROM NODE 20143.00 TO NODE 20143.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) =	14.98				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	2.874				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	22.70	0.61	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =	0.61				
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	1.000				
SUBAREA AREA(ACRES) =	22.70				
SUBAREA RUNOFF(CFS) =	46.16				
EFFECTIVE AREA(ACRES) =	46.28				
AREA-AVERAGED Fm(INCH/HR) =	0.61				
AREA-AVERAGED Fp(INCH/HR) =	0.61				
AREA-AVERAGED Ap =	1.00				
TOTAL AREA(ACRES) =	46.3				
PEAK FLOW RATE(CFS) =	94.12				

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20143.00 TO NODE 20144.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	2420.00	DOWNSTREAM(FEET) =	2240.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	1310.58	CHANNEL SLOPE =	0.1373
CHANNEL BASE(FEET) =	0.00	"Z" FACTOR =	2.500
MANNING'S FACTOR =	0.045	MAXIMUM DEPTH(FEET) =	2.00
CHANNEL FLOW THRU SUBAREA(CFS) =	94.12		
FLOW VELOCITY(FEET/SEC.) =	11.01	FLOW DEPTH(FEET) =	1.85
TRAVEL TIME(MIN.) =	1.98	Tc(MIN.) =	16.97
LONGEST FLOWPATH FROM NODE 20140.00 TO NODE 20144.00 =	3516.10	FEET.	

FLOW PROCESS FROM NODE 20144.00 TO NODE 20144.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) =	16.97				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	2.667				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	61.27	0.61	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	11.25	0.75	0.900	56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =	0.63				
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	0.984				
SUBAREA AREA(ACRES) =	72.52	SUBAREA RUNOFF(CFS) =	133.40		
EFFECTIVE AREA(ACRES) =	118.80	AREA-AVERAGED Fm(INCH/HR) =	0.62		
AREA-AVERAGED Fp(INCH/HR) =	0.63	AREA-AVERAGED Ap =	0.99		
TOTAL AREA(ACRES) =	118.8	PEAK FLOW RATE(CFS) =	218.91		

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

FLOW PROCESS FROM NODE 20144.00 TO NODE 20145.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	2240.00	DOWNSTREAM(FEET) =	2150.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	1185.29	CHANNEL SLOPE =	0.0759
CHANNEL BASE(FEET) =	5.00	"Z" FACTOR =	2.000
MANNING'S FACTOR =	0.045	MAXIMUM DEPTH(FEET) =	2.50
CHANNEL FLOW THRU SUBAREA(CFS) =	218.91		
FLOW VELOCITY(FEET/SEC.) =	11.15	FLOW DEPTH(FEET) =	2.12
TRAVEL TIME(MIN.) =	1.77	Tc(MIN.) =	18.74
LONGEST FLOWPATH FROM NODE 20140.00 TO NODE 20145.00 =	4701.39	FEET.	

FLOW PROCESS FROM NODE 20145.00 TO NODE 20145.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) =	18.74				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	2.513				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	27.90	0.61	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	18.45	0.75	0.900	56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =	0.66				
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	0.960				
SUBAREA AREA(ACRES) =	46.35	SUBAREA RUNOFF(CFS) =	78.22		
EFFECTIVE AREA(ACRES) =	165.15	AREA-AVERAGED Fm(INCH/HR) =	0.62		
AREA-AVERAGED Fp(INCH/HR) =	0.64	AREA-AVERAGED Ap =	0.98		
TOTAL AREA(ACRES) =	165.1	PEAK FLOW RATE(CFS) =	280.63		

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.15; 6HR = 3.04; 24HR = 7.50

FLOW PROCESS FROM NODE 20145.00 TO NODE 20146.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	2150.00	DOWNSTREAM(FEET) =	2065.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	1106.66	CHANNEL SLOPE =	0.0768
CHANNEL BASE(FEET) =	5.00	"Z" FACTOR =	2.000
MANNING'S FACTOR =	0.045	MAXIMUM DEPTH(FEET) =	3.00
CHANNEL FLOW THRU SUBAREA(CFS) =	280.63		
FLOW VELOCITY(FEET/SEC.) =	11.94	FLOW DEPTH(FEET) =	2.40
TRAVEL TIME(MIN.) =	1.54	Tc(MIN.) =	20.28
LONGEST FLOWPATH FROM NODE 20140.00 TO NODE 20146.00 =	5808.05	FEET.	

FLOW PROCESS FROM NODE 20146.00 TO NODE 20146.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) =	20.28				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	2.396				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	5.66	0.61	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	28.22	0.75	0.900	56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =	0.72				
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	0.917				
SUBAREA AREA(ACRES) =	33.88	SUBAREA RUNOFF(CFS) =	52.84		
EFFECTIVE AREA(ACRES) =	199.03	AREA-AVERAGED Fm(INCH/HR) =	0.63		
AREA-AVERAGED Fp(INCH/HR) =	0.65	AREA-AVERAGED Ap =	0.97		

TOTAL AREA (ACRES) = 199.0 PEAK FLOW RATE (CFS) = 316.14

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20146.00 TO NODE 20147.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 2065.00 DOWNSTREAM (FEET) = 1980.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 1084.55 CHANNEL SLOPE = 0.0784
CHANNEL BASE (FEET) = 5.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 3.00
CHANNEL FLOW THRU SUBAREA (CFS) = 316.14
FLOW VELOCITY (FEET/SEC.) = 12.43 FLOW DEPTH (FEET) = 2.53
TRAVEL TIME (MIN.) = 1.45 Tc (MIN.) = 21.74
LONGEST FLOWPATH FROM NODE 20140.00 TO NODE 20147.00 = 6892.60 FEET.

FLOW PROCESS FROM NODE 20147.00 TO NODE 20147.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 21.74
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.299
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
".4 DWELLING/ACRE" B 15.70 0.75 0.900 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.900
SUBAREA AREA (ACRES) = 15.70 SUBAREA RUNOFF (CFS) = 22.97
EFFECTIVE AREA (ACRES) = 214.73 AREA-AVERAGED Fm (INCH/HR) = 0.63
AREA-AVERAGED Fp (INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 214.7 PEAK FLOW RATE (CFS) = 321.65

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20147.00 TO NODE 20148.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 1980.00 DOWNSTREAM (FEET) = 1925.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 934.91 CHANNEL SLOPE = 0.0588
CHANNEL BASE (FEET) = 5.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 3.00
CHANNEL FLOW THRU SUBAREA (CFS) = 321.65
FLOW VELOCITY (FEET/SEC.) = 11.24 FLOW DEPTH (FEET) = 2.73
TRAVEL TIME (MIN.) = 1.39 Tc (MIN.) = 23.12
LONGEST FLOWPATH FROM NODE 20140.00 TO NODE 20148.00 = 7827.51 FEET.

FLOW PROCESS FROM NODE 20148.00 TO NODE 20148.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 23.12
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.215
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
".4 DWELLING/ACRE" B 14.97 0.75 0.900 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.900
SUBAREA AREA (ACRES) = 14.97 SUBAREA RUNOFF (CFS) = 20.77
EFFECTIVE AREA (ACRES) = 229.70 AREA-AVERAGED Fm (INCH/HR) = 0.64
AREA-AVERAGED Fp (INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.96
TOTAL AREA (ACRES) = 229.7 PEAK FLOW RATE (CFS) = 326.24

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20148.00 TO NODE 20148.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION (MIN.) = 23.12
RAINFALL INTENSITY (INCH/HR) = 2.21
AREA-AVERAGED Fm (INCH/HR) = 0.64
AREA-AVERAGED Fp (INCH/HR) = 0.66
AREA-AVERAGED Ap = 0.96
EFFECTIVE STREAM AREA (ACRES) = 229.70
TOTAL STREAM AREA (ACRES) = 229.70
PEAK FLOW RATE (CFS) AT CONFLUENCE = 326.24

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	426.43	32.29	1.813	0.64 (0.61)	0.95	388.8	20120.00
2	326.24	23.12	2.215	0.66 (0.64)	0.96	229.7	20140.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	733.66	23.12	2.215	0.65 (0.62)	0.95	508.1	20140.00
2	669.52	32.29	1.813	0.65 (0.62)	0.95	618.5	20120.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE (CFS) = 733.66 Tc (MIN.) = 23.12
EFFECTIVE AREA (ACRES) = 508.11 AREA-AVERAGED Fm (INCH/HR) = 0.62
AREA-AVERAGED Fp (INCH/HR) = 0.65 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 618.5

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20148.00 = 11707.24 FEET.

FLOW PROCESS FROM NODE 20148.00 TO NODE 20149.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1925.00 DOWNSTREAM(FEET) = 1900.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 764.60 CHANNEL SLOPE = 0.0327
CHANNEL BASE(FEET) = 10.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 5.00
CHANNEL FLOW THRU SUBAREA(CFS) = 733.66
FLOW VELOCITY(FEET/SEC.) = 10.95 FLOW DEPTH(FEET) = 3.80
TRAVEL TIME(MIN.) = 1.16 Tc(MIN.) = 24.29
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20149.00 = 12471.84 FEET.

FLOW PROCESS FROM NODE 20149.00 TO NODE 20149.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 24.29
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.151
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
".4 DWELLING/ACRE" B 20.34 0.75 0.900 56
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 0.62 0.75 0.600 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.891
SUBAREA AREA(ACRES) = 20.96 SUBAREA RUNOFF(CFS) = 28.00
EFFECTIVE AREA(ACRES) = 529.07 AREA-AVERAGED Fm(INCH/HR) = 0.62
AREA-AVERAGED Fp(INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 639.5 PEAK FLOW RATE(CFS) = 733.66
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20149.00 TO NODE 20150.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1900.00 DOWNSTREAM(FEET) = 1850.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1212.57 CHANNEL SLOPE = 0.0412
CHANNEL BASE(FEET) = 10.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 5.00
CHANNEL FLOW THRU SUBAREA(CFS) = 733.66
FLOW VELOCITY(FEET/SEC.) = 11.90 FLOW DEPTH(FEET) = 3.59
TRAVEL TIME(MIN.) = 1.70 Tc(MIN.) = 25.99
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20150.00 = 13684.41 FEET.

FLOW PROCESS FROM NODE 20150.00 TO NODE 20150.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 25.99
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.065
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
".4 DWELLING/ACRE" B 8.58 0.75 0.900 56
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 0.10 0.75 0.600 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.897
SUBAREA AREA(ACRES) = 8.68 SUBAREA RUNOFF(CFS) = 10.89
EFFECTIVE AREA(ACRES) = 537.75 AREA-AVERAGED Fm(INCH/HR) = 0.62
AREA-AVERAGED Fp(INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 648.2 PEAK FLOW RATE(CFS) = 733.66
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20150.00 TO NODE 20150.00 IS CODE = 71

>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<

UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.24;3H= 2.14;6H= 3.00;24H= 7.46
S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT= 0.0%
MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.62; Ybar = 0.54
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 1.00; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 648.2
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20150.00 = 13684.41 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L=0.3,n=.0489; Lca/L=0.4,n=.0438; Lca/L=0.5,n=.0402;Lca/L=0.6,n=.0375
TIME OF PEAK FLOW(HR) = 16.50 RUNOFF VOLUME(AF) = 197.89
UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) = 747.48
TOTAL PEAK FLOW RATE(CFS) = 747.48 (SOURCE FLOW INCLUDED)
RATIONAL METHOD PEAK FLOW RATE(CFS) = 733.66
(UPSTREAM NODE PEAK FLOW RATE(CFS) = 733.66)
PEAK FLOW RATE(CFS) USED = 747.48

FLOW PROCESS FROM NODE 20150.00 TO NODE 20150.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **
PEAK FLOW RATE(CFS) = 747.48 Tc(MIN.) = 35.23
AREA-AVERAGED Fm(INCH/HR) = 0.62 Ybar = 0.54

TOTAL AREA (ACRES) = 648.2
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20150.00 = 13684.41 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

PEAK FLOW RATE (CFS) = 1525.78 Tc (MIN.) = 24.67
AREA-AVERAGED Fm (INCH/HR) = 0.60 Ybar = 0.53
TOTAL AREA (ACRES) = 1052.3
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 20150.00 = 13659.16 FEET.

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

UNIT-HYDROGRAPH DATA:

RAINFALL (INCH): 5M= 0.46; 30M= 0.95; 1H= 1.25; 3H= 2.19; 6H= 3.11; 24H= 7.51
S-GRAPH: VALLEY (DEV.)=100.0%; VALLEY (UNDEV.)/DESERT= 0.0%
MOUNTAIN= 0.0%; FOOTHILL= 0.0%; DESERT (UNDEV.)= 0.0%

Tc (HR) = 0.59; LAG (HR) = 0.47; Fm (INCH/HR) = 0.61; Ybar = 0.53

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;

3HR = 0.99; 6HR = 0.99; 24HR = 1.00

UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 1700.5

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20150.00 = 13684.41 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3, n=.0489; Lca/L=0.4, n=.0438; Lca/L=0.5, n=.0402; Lca/L=0.6, n=.0375

TIME OF PEAK FLOW (HR) = 16.50 RUNOFF VOLUME (AF) = 524.96

PEAK FLOW RATE (CFS) = 1868.80

FLOW PROCESS FROM NODE 20150.00 TO NODE 20150.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<

FLOW PROCESS FROM NODE 20150.00 TO NODE 20151.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 1850.00 DOWNSTREAM (FEET) = 1785.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 1753.77 CHANNEL SLOPE = 0.0371

CHANNEL BASE (FEET) = 10.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.035 MAXIMUM DEPTH (FEET) = 10.00

CHANNEL FLOW THRU SUBAREA (CFS) = 1868.80

FLOW VELOCITY (FEET/SEC.) = 17.69 FLOW DEPTH (FEET) = 5.19

TRAVEL TIME (MIN.) = 1.65 Tc (MIN.) = 36.88

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20151.00 = 15438.18 FEET.

FLOW PROCESS FROM NODE 20151.00 TO NODE 20151.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 36.88

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.674

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL ".4 DWELLING/ACRE"	B	24.58	0.75	0.900	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.75

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.900

SUBAREA AREA (ACRES) = 24.58

UNIT-HYDROGRAPH DATA:

RAINFALL (INCH): 5M= 0.46; 30M= 0.95; 1H= 1.25; 3H= 2.18; 6H= 3.11; 24H= 7.51

S-GRAPH: VALLEY (DEV.)=100.0%; VALLEY (UNDEV.)/DESERT= 0.0%

MOUNTAIN= 0.0%; FOOTHILL= 0.0%; DESERT (UNDEV.)= 0.0%

Tc (HR) = 0.61; LAG (HR) = 0.49; Fm (INCH/HR) = 0.61; Ybar = 0.53

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;

3HR = 0.99; 6HR = 0.99; 24HR = 1.00

UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 1725.0

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20151.00 = 15438.18 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3, n=.0460; Lca/L=0.4, n=.0413; Lca/L=0.5, n=.0379; Lca/L=0.6, n=.0354

TIME OF PEAK FLOW (HR) = 16.58 RUNOFF VOLUME (AF) = 531.22

UNIT-HYDROGRAPH PEAK FLOW RATE (CFS) = 1822.13

TOTAL AREA (ACRES) = 1725.0 PEAK FLOW RATE (CFS) = 1868.80

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.33

FLOW PROCESS FROM NODE 20151.00 TO NODE 20151.00 IS CODE = 152

>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<

PEAK FLOWRATE TABLE FILE NAME: 20151.DNA

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 1725.0 TC (MIN.) = 36.88

AREA-AVERAGED Fm (INCH/HR) = 0.61 Ybar = 0.53

PEAK FLOW RATE (CFS) = 1868.80

END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* REDLANDS MPD - UPDATE *
* REVISED RATIONAL METHOD HYDROLOGY - TO NODE 20274 *
* BY TMULI SEPT 2013 *

FILE NAME: LR0202.DAT
TIME/DATE OF STUDY: 15:31 09/24/2013

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 24.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL

SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- CROWN TO		STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES:			MANNING FACTOR (n)
	WIDTH (FT)	CROSSFALL (FT)			WIDTH (FT)	LIP (FT)	HIKE (FT)	
1	18.0	12.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
2	20.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
3	22.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
4	15.0	10.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180
5	18.0	10.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180
6	15.0	10.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
7	16.0	10.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180
8	16.0	10.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
9	17.0	10.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
10	30.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
11	24.0	15.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180
12	24.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
13	32.0	20.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
14	39.0	20.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
15	36.0	20.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
16	12.5	5.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180

17	20.0	10.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180
18	26.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
19	52.0	20.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.20 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
 2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
- *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:

WATERSHED LAG = 0.80 * Tc
USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
SIERRA MADRE DEPTH-AREA FACTORS USED.
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD

FLOW PROCESS FROM NODE 20200.00 TO NODE 20201.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 508.83
ELEVATION DATA: UPSTREAM(FEET) = 1945.00 DOWNSTREAM(FEET) = 1935.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.936
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.471
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)	
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	4.64	0.98	0.600	32	10.94

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.600
SUBAREA RUNOFF(CFS) = 12.05
TOTAL AREA(ACRES) = 4.64 PEAK FLOW RATE(CFS) = 12.05

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.12; 6HR = 2.96; 24HR = 7.50

FLOW PROCESS FROM NODE 20201.00 TO NODE 20202.00 IS CODE = 92

>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<

=====

UPSTREAM NODE ELEVATION(FEET) = 1935.00
DOWNSTREAM NODE ELEVATION(FEET) = 1930.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 620.72
"V" GUTTER WIDTH(FEET) = 3.00 GUTTER HIKE(FEET) = 0.250
PAVEMENT LIP(FEET) = 0.100 MANNING'S N = .0150
PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700

MAXIMUM DEPTH (FEET) = 1.00
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.961
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	6.32	0.98	0.600	32

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.600
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 18.81
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.12
 AVERAGE FLOW DEPTH (FEET) = 0.63 FLOOD WIDTH (FEET) = 35.63
 "V" GUTTER FLOW TRAVEL TIME (MIN.) = 3.32 Tc (MIN.) = 14.25
 SUBAREA AREA (ACRES) = 6.32 SUBAREA RUNOFF (CFS) = 13.51
 EFFECTIVE AREA (ACRES) = 10.96 AREA-AVERAGED Fm (INCH/HR) = 0.59
 AREA-AVERAGED Fp (INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.60
 TOTAL AREA (ACRES) = 11.0 PEAK FLOW RATE (CFS) = 23.44

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.76; 24HR = 7.50

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH (FEET) = 0.66 FLOOD WIDTH (FEET) = 39.52
 FLOW VELOCITY (FEET/SEC.) = 3.22 DEPTH*VELOCITY (FT*FT/SEC) = 2.13
 LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20202.00 = 1129.55 FEET.

 FLOW PROCESS FROM NODE 20202.00 TO NODE 20203.00 IS CODE = 62

>>>> COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA <<<<<
 >>>> (STREET TABLE SECTION # 13 USED) <<<<<

=====
 UPSTREAM ELEVATION (FEET) = 1930.00 DOWNSTREAM ELEVATION (FEET) = 1910.00
 STREET LENGTH (FEET) = 369.50 CURB HEIGHT (INCHES) = 8.0
 STREET HALFWIDTH (FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 20.00
 INSIDE STREET CROSSFALL (DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 34.88
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH (FEET) = 0.49
 HALFSTREET FLOOD WIDTH (FEET) = 16.57
 AVERAGE FLOW VELOCITY (FEET/SEC.) = 5.94
 PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 2.91
 STREET FLOW TRAVEL TIME (MIN.) = 1.04 Tc (MIN.) = 15.29
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.839

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	11.02	0.98	0.600	32

MOBILE HOME PARK A 0.23 0.98 0.250 32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.593
 SUBAREA AREA (ACRES) = 11.25 SUBAREA RUNOFF (CFS) = 22.89
 EFFECTIVE AREA (ACRES) = 22.21 AREA-AVERAGED Fm (INCH/HR) = 0.58
 AREA-AVERAGED Fp (INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.60
 TOTAL AREA (ACRES) = 22.2 PEAK FLOW RATE (CFS) = 45.12

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH (FEET) = 0.53 HALFSTREET FLOOD WIDTH (FEET) = 18.37
 FLOW VELOCITY (FEET/SEC.) = 6.33 DEPTH*VELOCITY (FT*FT/SEC.) = 3.33
 LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20203.00 = 1499.05 FEET.

 FLOW PROCESS FROM NODE 20203.00 TO NODE 20204.00 IS CODE = 62

>>>> COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA <<<<<
 >>>> (STREET TABLE SECTION # 13 USED) <<<<<

=====
 UPSTREAM ELEVATION (FEET) = 1910.00 DOWNSTREAM ELEVATION (FEET) = 1895.00
 STREET LENGTH (FEET) = 418.06 CURB HEIGHT (INCHES) = 8.0
 STREET HALFWIDTH (FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 20.00
 INSIDE STREET CROSSFALL (DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 58.61
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH (FEET) = 0.60
 HALFSTREET FLOOD WIDTH (FEET) = 22.12
 AVERAGE FLOW VELOCITY (FEET/SEC.) = 5.77
 PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 3.46
 STREET FLOW TRAVEL TIME (MIN.) = 1.21 Tc (MIN.) = 16.50

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.712
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	6.00	0.98	0.600	32
MOBILE HOME PARK	A	6.97	0.98	0.250	32

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.63 HALFSTREET FLOOD WIDTH(FEET) = 23.68
FLOW VELOCITY(FEET/SEC.) = 6.00 DEPTH*VELOCITY(FT*FT/SEC.) = 3.79
LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20204.00 = 1917.11 FEET.

FLOW PROCESS FROM NODE 20204.00 TO NODE 20205.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 13 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1895.00 DOWNSTREAM ELEVATION(FEET) = 1875.00
STREET LENGTH(FEET) = 555.00 CURB HEIGHT(INCHES) = 8.0
STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 86.00
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.67
HALFSTREET FLOOD WIDTH(FEET) = 26.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.32
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 4.25
STREET FLOW TRAVEL TIME(MIN.) = 1.46 Tc(MIN.) = 17.96
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.577
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	8.31	0.98	0.600	32
MOBILE HOME PARK	A	8.55	0.98	0.250	32

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.97
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.423
SUBAREA AREA(ACRES) = 16.86 SUBAREA RUNOFF(CFS) = 32.86
EFFECTIVE AREA(ACRES) = 52.04 AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.97 AREA-AVERAGED Ap = 0.49
TOTAL AREA(ACRES) = 52.0 PEAK FLOW RATE(CFS) = 98.16

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.70 HALFSTREET FLOOD WIDTH(FEET) = 28.66
FLOW VELOCITY(FEET/SEC.) = 6.52 DEPTH*VELOCITY(FT*FT/SEC.) = 4.56
LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20205.00 = 2472.11 FEET.

FLOW PROCESS FROM NODE 20205.00 TO NODE 20206.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>(STREET TABLE SECTION # 13 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1875.00 DOWNSTREAM ELEVATION(FEET) = 1855.00
STREET LENGTH(FEET) = 568.00 CURB HEIGHT(INCHES) = 8.0
STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 104.12
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.71
HALFSTREET FLOOD WIDTH(FEET) = 30.06
AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.56
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 4.68
STREET FLOW TRAVEL TIME(MIN.) = 1.44 Tc(MIN.) = 19.41
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.461

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MOBILE HOME PARK	A	4.58	0.98	0.250	32
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	1.65	0.98	0.600	32

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.343
SUBAREA AREA(ACRES) = 6.23 SUBAREA RUNOFF(CFS) = 11.92
EFFECTIVE AREA(ACRES) = 58.27 AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.97 AREA-AVERAGED Ap = 0.48
TOTAL AREA(ACRES) = 58.3 PEAK FLOW RATE(CFS) = 104.61

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.71 HALFSTREET FLOOD WIDTH(FEET) = 30.22
FLOW VELOCITY(FEET/SEC.) = 6.55 DEPTH*VELOCITY(FT*FT/SEC.) = 4.68
LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20206.00 = 3040.11 FEET.

FLOW PROCESS FROM NODE 20206.00 TO NODE 20214.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 13 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1855.00 DOWNSTREAM ELEVATION(FEET) = 1840.00
STREET LENGTH(FEET) = 411.00 CURB HEIGHT(INCHES) = 8.0
STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 106.73
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.71
HALFSTREET FLOOD WIDTH(FEET) = 30.22
AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.68
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 4.77
STREET FLOW TRAVEL TIME(MIN.) = 1.03 Tc(MIN.) = 20.43
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.386
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
MOBILE HOME PARK A 1.68 0.98 0.250 32
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 0.62 0.98 0.600 32
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.344
SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 4.24
EFFECTIVE AREA(ACRES) = 60.57 AREA-AVERAGED Fm(INCH/HR) = 0.46
AREA-AVERAGED Fp(INCH/HR) = 0.97 AREA-AVERAGED Ap = 0.47
TOTAL AREA(ACRES) = 60.6 PEAK FLOW RATE(CFS) = 104.93

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.71 HALFSTREET FLOOD WIDTH(FEET) = 29.91
FLOW VELOCITY(FEET/SEC.) = 6.65 DEPTH*VELOCITY(FT*FT/SEC.) = 4.73
LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20214.00 = 3451.11 FEET.

FLOW PROCESS FROM NODE 20214.00 TO NODE 20214.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 20.43
RAINFALL INTENSITY(INCH/HR) = 2.39
AREA-AVERAGED Fm(INCH/HR) = 0.46
AREA-AVERAGED Fp(INCH/HR) = 0.97
AREA-AVERAGED Ap = 0.47
EFFECTIVE STREAM AREA(ACRES) = 60.57
TOTAL STREAM AREA(ACRES) = 60.57
PEAK FLOW RATE(CFS) AT CONFLUENCE = 104.93

FLOW PROCESS FROM NODE 20210.00 TO NODE 20211.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 940.61
ELEVATION DATA: UPSTREAM(FEET) = 1875.00 DOWNSTREAM(FEET) = 1850.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 13.163
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.106
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 7.95 0.98 0.600 32 13.16
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.600
SUBAREA RUNOFF(CFS) = 18.04
TOTAL AREA(ACRES) = 7.95 PEAK FLOW RATE(CFS) = 18.04

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.29

FLOW PROCESS FROM NODE 20211.00 TO NODE 20212.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<
=====

UPSTREAM ELEVATION(FEET) = 1850.00 DOWNSTREAM ELEVATION(FEET) = 1846.00
STREET LENGTH(FEET) = 247.17 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23.83
STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.49
HALFSTREET FLOOD WIDTH(FEET) = 18.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.43
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.69
STREET FLOW TRAVEL TIME(MIN.) = 1.20 Tc(MIN.) = 14.37
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.947
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 4.82 0.98 0.600 32
MOBILE HOME PARK A 0.55 0.98 0.250 32
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.564
SUBAREA AREA(ACRES) = 5.37 SUBAREA RUNOFF(CFS) = 11.59
EFFECTIVE AREA(ACRES) = 13.32 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.59
TOTAL AREA(ACRES) = 13.3 PEAK FLOW RATE(CFS) = 28.49

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.30

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.51 HALFSTREET FLOOD WIDTH(FEET) = 18.68
FLOW VELOCITY(FEET/SEC.) = 3.69 DEPTH*VELOCITY(FT*FT/SEC.) = 1.90
LONGEST FLOWPATH FROM NODE 20210.00 TO NODE 20212.00 = 1187.78 FEET.

FLOW PROCESS FROM NODE 20212.00 TO NODE 20213.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1846.00 DOWNSTREAM ELEVATION(FEET) = 1843.00
STREET LENGTH(FEET) = 253.21 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 34.57
STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.56
HALFSTREET FLOOD WIDTH(FEET) = 21.19
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.56
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 2.01
STREET FLOW TRAVEL TIME(MIN.) = 1.19 Tc(MIN.) = 15.55

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.810

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	2.35	0.98	0.600	32
MOBILE HOME PARK	A	3.23	0.98	0.250	32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.98					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.397					
SUBAREA AREA(ACRES) = 5.58 SUBAREA RUNOFF(CFS) = 12.17					
EFFECTIVE AREA(ACRES) = 18.90 AREA-AVERAGED Fm(INCH/HR) = 0.52					
AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.53					
TOTAL AREA(ACRES) = 18.9 PEAK FLOW RATE(CFS) = 39.01					

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.33

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.58 HALFSTREET FLOOD WIDTH(FEET) = 22.16
FLOW VELOCITY(FEET/SEC.) = 3.70 DEPTH*VELOCITY(FT*FT/SEC.) = 2.16
LONGEST FLOWPATH FROM NODE 20210.00 TO NODE 20213.00 = 1440.99 FEET.

FLOW PROCESS FROM NODE 20213.00 TO NODE 20214.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1843.00 DOWNSTREAM ELEVATION(FEET) = 1840.00
STREET LENGTH(FEET) = 294.25 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41.41
STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.61
HALFSTREET FLOOD WIDTH(FEET) = 23.26
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.58
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 2.17
STREET FLOW TRAVEL TIME(MIN.) = 1.37 Tc(MIN.) = 16.92
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.672

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	0.63	0.98	0.600	32
MOBILE HOME PARK	A	1.65	0.98	0.250	32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.97					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.347					
SUBAREA AREA(ACRES) = 2.28 SUBAREA RUNOFF(CFS) = 4.79					
EFFECTIVE AREA(ACRES) = 21.18 AREA-AVERAGED Fm(INCH/HR) = 0.50					
AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.51					
TOTAL AREA(ACRES) = 21.2 PEAK FLOW RATE(CFS) = 41.44					

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.99

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.61 HALFSTREET FLOOD WIDTH(FEET) = 23.26
FLOW VELOCITY(FEET/SEC.) = 3.59 DEPTH*VELOCITY(FT*FT/SEC.) = 2.17
LONGEST FLOWPATH FROM NODE 20210.00 TO NODE 20214.00 = 1735.24 FEET.

FLOW PROCESS FROM NODE 20214.00 TO NODE 20214.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 16.92
RAINFALL INTENSITY(INCH/HR) = 2.67

AREA-AVERAGED Fm(INCH/HR) = 0.50
 AREA-AVERAGED Fp(INCH/HR) = 0.98
 AREA-AVERAGED Ap = 0.51
 EFFECTIVE STREAM AREA(ACRES) = 21.18
 TOTAL STREAM AREA(ACRES) = 21.18
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 41.44

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	104.93	20.43	2.386	0.97(0.46)	0.47	60.6	20200.00
2	41.44	16.92	2.672	0.98(0.50)	0.51	21.2	20210.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	141.24	16.92	2.672	0.97(0.47)	0.48	71.3	20210.00
2	140.92	20.43	2.386	0.97(0.47)	0.48	81.8	20200.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 141.24 Tc(MIN.) = 16.92
 EFFECTIVE AREA(ACRES) = 71.34 AREA-AVERAGED Fm(INCH/HR) = 0.47
 AREA-AVERAGED Fp(INCH/HR) = 0.97 AREA-AVERAGED Ap = 0.48
 TOTAL AREA(ACRES) = 81.8
 LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20214.00 = 3451.11 FEET.

 FLOW PROCESS FROM NODE 20214.00 TO NODE 20215.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<<
 >>>>(STREET TABLE SECTION # 13 USED)<<<<<<
 =====

UPSTREAM ELEVATION(FEET) = 1840.00 DOWNSTREAM ELEVATION(FEET) = 1793.00
 STREET LENGTH(FEET) = 1205.58 CURB HEIGHT(INCHES) = 8.0
 STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 176.89
 STREET FLOWING FULL
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.82
 HALFSTREET FLOOD WIDTH(FEET) = 39.52
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.62
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 6.23
 STREET FLOW TRAVEL TIME(MIN.) = 2.64 Tc(MIN.) = 19.56
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.449
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	18.86	0.98	0.600	32
MOBILE HOME PARK	A	19.95	0.98	0.250	32
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.98					
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.420					
SUBAREA AREA(ACRES) = 38.81		SUBAREA RUNOFF(CFS) = 71.25			
EFFECTIVE AREA(ACRES) = 110.15		AREA-AVERAGED Fm(INCH/HR) = 0.45			
AREA-AVERAGED Fp(INCH/HR) = 0.97		AREA-AVERAGED Ap = 0.46			
TOTAL AREA(ACRES) = 120.6		PEAK FLOW RATE(CFS) = 198.21			

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.84 HALFSTREET FLOOD WIDTH(FEET) = 40.68
 FLOW VELOCITY(FEET/SEC.) = 7.91 DEPTH*VELOCITY(FT*FT/SEC.) = 6.65
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 1205.6 FT WITH ELEVATION-DROP = 47.0 FT, IS 106.6 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20215.00
 LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20215.00 = 4656.69 FEET.

 FLOW PROCESS FROM NODE 20215.00 TO NODE 20216.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<<
 >>>>(STREET TABLE SECTION # 13 USED)<<<<<<
 =====

UPSTREAM ELEVATION(FEET) = 1793.00 DOWNSTREAM ELEVATION(FEET) = 1740.00
 STREET LENGTH(FEET) = 1725.28 CURB HEIGHT(INCHES) = 8.0
 STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 237.31
 STREET FLOWING FULL
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.91
 HALFSTREET FLOOD WIDTH(FEET) = 44.04
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.72
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 7.00
 STREET FLOW TRAVEL TIME(MIN.) = 3.73 Tc(MIN.) = 23.28
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.206
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	24.17	0.98	0.600	32
SCHOOL	A	9.62	0.98	0.600	32
MOBILE HOME PARK	A	14.92	0.98	0.250	32

COMMERCIAL A 0.89 0.98 0.100 32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE" B 0.13 0.75 0.600 56
 COMMERCIAL B 0.31 0.75 0.100 56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.484
 SUBAREA AREA(ACRES) = 50.04 SUBAREA RUNOFF(CFS) = 78.13
 EFFECTIVE AREA(ACRES) = 160.19 AREA-AVERAGED Fm(INCH/HR) = 0.46
 AREA-AVERAGED Fp(INCH/HR) = 0.97 AREA-AVERAGED Ap = 0.47
 TOTAL AREA(ACRES) = 170.6 PEAK FLOW RATE(CFS) = 252.22

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.92 HALFSTREET FLOOD WIDTH(FEET) = 44.77
 FLOW VELOCITY(FEET/SEC.) = 7.87 DEPTH*VELOCITY(FT*FT/SEC.) = 7.26
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 1725.3 FT WITH ELEVATION-DROP = 53.0 FT, IS 126.5 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20216.00
 LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20216.00 = 6381.97 FEET.

 FLOW PROCESS FROM NODE 20216.00 TO NODE 20232.00 IS CODE = 62

 >>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 13 USED)<<<<<

 UPSTREAM ELEVATION(FEET) = 1740.00 DOWNSTREAM ELEVATION(FEET) = 1739.00
 STREET LENGTH(FEET) = 1052.00 CURB HEIGHT(INCHES) = 8.0
 STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 260.11

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 1.61
 HALFSTREET FLOOD WIDTH(FEET) = 79.07
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.22
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 3.57
 STREET FLOW TRAVEL TIME(MIN.) = 7.89 Tc(MIN.) = 31.17
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.852

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MOBILE HOME PARK	A	0.63	0.98	0.250	32
COMMERCIAL	B	1.46	0.75	0.100	56
MOBILE HOME PARK	B	4.91	0.75	0.250	56
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	4.10	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.76
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.360
 SUBAREA AREA(ACRES) = 11.10 SUBAREA RUNOFF(CFS) = 15.78
 EFFECTIVE AREA(ACRES) = 171.29 AREA-AVERAGED Fm(INCH/HR) = 0.44
 AREA-AVERAGED Fp(INCH/HR) = 0.96 AREA-AVERAGED Ap = 0.46
 TOTAL AREA(ACRES) = 181.7 PEAK FLOW RATE(CFS) = 252.22
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.59 HALFSTREET FLOOD WIDTH(FEET) = 78.22
 FLOW VELOCITY(FEET/SEC.) = 2.21 DEPTH*VELOCITY(FT*FT/SEC.) = 3.51
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 1052.0 FT WITH ELEVATION-DROP = 1.0 FT, IS 21.6 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20232.00
 LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20232.00 = 7433.97 FEET.

 FLOW PROCESS FROM NODE 20232.00 TO NODE 20232.00 IS CODE = 1

 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 31.17
 RAINFALL INTENSITY(INCH/HR) = 1.85
 AREA-AVERAGED Fm(INCH/HR) = 0.44
 AREA-AVERAGED Fp(INCH/HR) = 0.96
 AREA-AVERAGED Ap = 0.46
 EFFECTIVE STREAM AREA(ACRES) = 171.29
 TOTAL STREAM AREA(ACRES) = 181.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 252.22

 FLOW PROCESS FROM NODE 20220.00 TO NODE 20221.00 IS CODE = 21

 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

 INITIAL SUBAREA FLOW-LENGTH(FEET) = 598.74
 ELEVATION DATA: UPSTREAM(FEET) = 1935.00 DOWNSTREAM(FEET) = 1925.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.057
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.274
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	5.11	0.98	0.600	32	12.06
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.98						
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.600						
SUBAREA RUNOFF(CFS) = 12.37						
TOTAL AREA(ACRES) = 5.11 PEAK FLOW RATE(CFS) = 12.37						

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20221.00 TO NODE 20222.00 IS CODE = 92

>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<

=====

UPSTREAM NODE ELEVATION (FEET) = 1925.00
DOWNSTREAM NODE ELEVATION (FEET) = 1915.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 551.44
"V" GUTTER WIDTH (FEET) = 3.00 GUTTER HIKE (FEET) = 0.250
PAVEMENT LIP (FEET) = 0.100 MANNING'S N = .0150
PAVEMENT CROSSFALL (DECIMAL NOTATION) = 0.01700
MAXIMUM DEPTH (FEET) = 1.00
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.978

SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 5.86 0.98 0.600 32

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.98
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.600

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 18.67
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.46

AVERAGE FLOW DEPTH (FEET) = 0.57 FLOOD WIDTH (FEET) = 28.91
"V" GUTTER FLOW TRAVEL TIME (MIN.) = 2.06 Tc (MIN.) = 14.12

SUBAREA AREA (ACRES) = 5.86 SUBAREA RUNOFF (CFS) = 12.62
EFFECTIVE AREA (ACRES) = 10.97 AREA-AVERAGED Fm (INCH/HR) = 0.59

AREA-AVERAGED Fp (INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.60
TOTAL AREA (ACRES) = 11.0 PEAK FLOW RATE (CFS) = 23.63

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA "V" GUTTER HYDRAULICS:
DEPTH (FEET) = 0.60 FLOOD WIDTH (FEET) = 32.65
FLOW VELOCITY (FEET/SEC.) = 4.57 DEPTH*VELOCITY (FT*FT/SEC) = 2.75
LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20222.00 = 1150.18 FEET.

FLOW PROCESS FROM NODE 20222.00 TO NODE 20223.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>(STREET TABLE SECTION # 5 USED)<<<<

UPSTREAM ELEVATION (FEET) = 1915.00 DOWNSTREAM ELEVATION (FEET) = 1905.00
STREET LENGTH (FEET) = 354.00 CURB HEIGHT (INCHES) = 6.0
STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
INSIDE STREET CROSSFALL (DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 34.90

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH (FEET) = 0.51
HALFSTREET FLOOD WIDTH (FEET) = 18.26
AVERAGE FLOW VELOCITY (FEET/SEC.) = 4.72
PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 2.38

STREET FLOW TRAVEL TIME (MIN.) = 1.25 Tc (MIN.) = 15.37

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.830

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 11.15 0.98 0.600 32

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.98

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.600

SUBAREA AREA (ACRES) = 11.15 SUBAREA RUNOFF (CFS) = 22.53

EFFECTIVE AREA (ACRES) = 22.12 AREA-AVERAGED Fm (INCH/HR) = 0.59

AREA-AVERAGED Fp (INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.60

TOTAL AREA (ACRES) = 22.1 PEAK FLOW RATE (CFS) = 44.69

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH (FEET) = 0.54 HALFSTREET FLOOD WIDTH (FEET) = 19.84
FLOW VELOCITY (FEET/SEC.) = 5.19 DEPTH*VELOCITY (FT*FT/SEC.) = 2.79
LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20223.00 = 1504.18 FEET.

FLOW PROCESS FROM NODE 20223.00 TO NODE 20224.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>(STREET TABLE SECTION # 5 USED)<<<<

UPSTREAM ELEVATION (FEET) = 1905.00 DOWNSTREAM ELEVATION (FEET) = 1895.00
STREET LENGTH (FEET) = 253.00 CURB HEIGHT (INCHES) = 6.0
STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00

INSIDE STREET CROSSFALL (DECIMAL) = 0.020

OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 52.32

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH (FEET) = 0.54
HALFSTREET FLOOD WIDTH (FEET) = 19.78
AVERAGE FLOW VELOCITY (FEET/SEC.) = 6.11
PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 3.27

STREET FLOW TRAVEL TIME (MIN.) = 0.69 Tc (MIN.) = 16.06

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.756

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MOBILE HOME PARK	A	2.51	0.98	0.250	32
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	4.90	0.98	0.600	32

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.481
 SUBAREA AREA(ACRES) = 7.41 SUBAREA RUNOFF(CFS) = 15.25
 EFFECTIVE AREA(ACRES) = 29.53 AREA-AVERAGED Fm(INCH/HR) = 0.56
 AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.57
 TOTAL AREA(ACRES) = 29.5 PEAK FLOW RATE(CFS) = 58.48

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.55 HALFSTREET FLOOD WIDTH(FEET) = 20.58
 FLOW VELOCITY(FEET/SEC.) = 6.36 DEPTH*VELOCITY(FT*FT/SEC.) = 3.51
 LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20224.00 = 1757.18 FEET.

 FLOW PROCESS FROM NODE 20224.00 TO NODE 20225.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<

=====
 UPSTREAM ELEVATION(FEET) = 1895.00 DOWNSTREAM ELEVATION(FEET) = 1885.00
 STREET LENGTH(FEET) = 323.50 CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 68.27
 STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.60
 HALFSTREET FLOOD WIDTH(FEET) = 22.77
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.15
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 3.66
 STREET FLOW TRAVEL TIME(MIN.) = 0.88 Tc(MIN.) = 16.94
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.670

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MOBILE HOME PARK	A	3.70	0.98	0.250	32
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	6.13	0.98	0.600	32

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.468
 SUBAREA AREA(ACRES) = 9.83 SUBAREA RUNOFF(CFS) = 19.58
 EFFECTIVE AREA(ACRES) = 39.36 AREA-AVERAGED Fm(INCH/HR) = 0.53

AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.54
 TOTAL AREA(ACRES) = 39.4 PEAK FLOW RATE(CFS) = 75.76

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.61 HALFSTREET FLOOD WIDTH(FEET) = 23.69
 FLOW VELOCITY(FEET/SEC.) = 6.34 DEPTH*VELOCITY(FT*FT/SEC.) = 3.89
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 323.5 FT WITH ELEVATION-DROP = 10.0 FT, IS 36.8 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20225.00
 LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20225.00 = 2080.68 FEET.

 FLOW PROCESS FROM NODE 20225.00 TO NODE 20226.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<

=====
 UPSTREAM ELEVATION(FEET) = 1885.00 DOWNSTREAM ELEVATION(FEET) = 1875.00
 STREET LENGTH(FEET) = 288.50 CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 84.85
 STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.62
 HALFSTREET FLOOD WIDTH(FEET) = 24.24
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.80
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 4.25
 STREET FLOW TRAVEL TIME(MIN.) = 0.71 Tc(MIN.) = 17.64
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.605

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MOBILE HOME PARK	A	6.40	0.98	0.250	32
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	2.52	0.98	0.600	32

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.349
 SUBAREA AREA(ACRES) = 8.92 SUBAREA RUNOFF(CFS) = 18.18
 EFFECTIVE AREA(ACRES) = 48.28 AREA-AVERAGED Fm(INCH/HR) = 0.50
 AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.51
 TOTAL AREA(ACRES) = 48.3 PEAK FLOW RATE(CFS) = 91.65

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.64 HALFSTREET FLOOD WIDTH(FEET) = 24.91
 FLOW VELOCITY(FEET/SEC.) = 6.97 DEPTH*VELOCITY(FT*FT/SEC.) = 4.45
 LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20226.00 = 2369.18 FEET.

 FLOW PROCESS FROM NODE 20226.00 TO NODE 20227.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<
 =====

UPSTREAM ELEVATION(FEET) = 1875.00 DOWNSTREAM ELEVATION(FEET) = 1863.00
 STREET LENGTH(FEET) = 404.50 CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALfstREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 104.21
 STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.68
 HALFSTREET FLOOD WIDTH(FEET) = 26.98
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.81
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 4.63
 STREET FLOW TRAVEL TIME(MIN.) = 0.99 Tc(MIN.) = 18.63
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.521

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MOBILE HOME PARK	A	9.70	0.98	0.250	32
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	3.00	0.98	0.600	32

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.333
 SUBAREA AREA(ACRES) = 12.70 SUBAREA RUNOFF(CFS) = 25.11
 EFFECTIVE AREA(ACRES) = 60.98 AREA-AVERAGED Fm(INCH/HR) = 0.46
 AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.47
 TOTAL AREA(ACRES) = 61.0 PEAK FLOW RATE(CFS) = 113.12

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.70 HALFSTREET FLOOD WIDTH(FEET) = 27.84
 FLOW VELOCITY(FEET/SEC.) = 6.97 DEPTH*VELOCITY(FT*FT/SEC.) = 4.86
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 404.5 FT WITH ELEVATION-DROP = 12.0 FT, IS 46.1 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20227.00
 LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20227.00 = 2773.68 FEET.

FLOW PROCESS FROM NODE 20227.00 TO NODE 20228.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<
 =====

UPSTREAM ELEVATION(FEET) = 1863.00 DOWNSTREAM ELEVATION(FEET) = 1848.00
 STREET LENGTH(FEET) = 374.50 CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALfstREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 122.87
 STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.68
 HALFSTREET FLOOD WIDTH(FEET) = 27.17
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.93
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 5.42
 STREET FLOW TRAVEL TIME(MIN.) = 0.79 Tc(MIN.) = 19.42
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.459

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MOBILE HOME PARK	A	4.46	0.98	0.250	32
PUBLIC PARK	A	4.98	0.98	0.850	32
RESIDENTIAL "3-4 DWELLINGS/ACRE"	A	1.96	0.98	0.600	32

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.572
 SUBAREA AREA(ACRES) = 11.40 SUBAREA RUNOFF(CFS) = 19.51
 EFFECTIVE AREA(ACRES) = 72.38 AREA-AVERAGED Fm(INCH/HR) = 0.48
 AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.49
 TOTAL AREA(ACRES) = 72.4 PEAK FLOW RATE(CFS) = 129.23

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.69 HALFSTREET FLOOD WIDTH(FEET) = 27.66
 FLOW VELOCITY(FEET/SEC.) = 8.06 DEPTH*VELOCITY(FT*FT/SEC.) = 5.59
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 374.5 FT WITH ELEVATION-DROP = 15.0 FT, IS 41.5 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20228.00
 LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20228.00 = 3148.18 FEET.

FLOW PROCESS FROM NODE 20228.00 TO NODE 20229.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<
 =====

UPSTREAM ELEVATION(FEET) = 1848.00 DOWNSTREAM ELEVATION(FEET) = 1826.00
STREET LENGTH(FEET) = 510.53 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 142.27
STREET FLOWING FULL
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.71
HALFSTREET FLOOD WIDTH(FEET) = 28.33
AVERAGE FLOW VELOCITY(FEET/SEC.) = 8.48
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 5.99
STREET FLOW TRAVEL TIME(MIN.) = 1.00 Tc(MIN.) = 20.42
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.386
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
MOBILE HOME PARK A 5.30 0.98 0.250 32
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 4.30 0.98 0.600 32
PUBLIC PARK A 6.33 0.98 0.850 32
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.97
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.583
SUBAREA AREA(ACRES) = 15.93 SUBAREA RUNOFF(CFS) = 26.06
EFFECTIVE AREA(ACRES) = 88.31 AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.50
TOTAL AREA(ACRES) = 88.3 PEAK FLOW RATE(CFS) = 150.53

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.16

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.72 HALFSTREET FLOOD WIDTH(FEET) = 28.94
FLOW VELOCITY(FEET/SEC.) = 8.61 DEPTH*VELOCITY(FT*FT/SEC.) = 6.19
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
AND L = 510.5 FT WITH ELEVATION-DROP = 22.0 FT, IS 53.6 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20229.00
LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20229.00 = 3658.71 FEET.

FLOW PROCESS FROM NODE 20229.00 TO NODE 20230.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<<

UPSTREAM ELEVATION(FEET) = 1826.00 DOWNSTREAM ELEVATION(FEET) = 1800.00
STREET LENGTH(FEET) = 713.66 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00

INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 168.36
STREET FLOWING FULL
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.77
HALFSTREET FLOOD WIDTH(FEET) = 31.26
AVERAGE FLOW VELOCITY(FEET/SEC.) = 8.31
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 6.35
STREET FLOW TRAVEL TIME(MIN.) = 1.43 Tc(MIN.) = 21.86
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.291
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
MOBILE HOME PARK A 11.14 0.98 0.250 32
PUBLIC PARK A 6.85 0.98 0.850 32
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 3.99 0.98 0.600 32
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.98
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.501
SUBAREA AREA(ACRES) = 21.98 SUBAREA RUNOFF(CFS) = 35.67
EFFECTIVE AREA(ACRES) = 110.29 AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.98 AREA-AVERAGED Ap = 0.50
TOTAL AREA(ACRES) = 110.3 PEAK FLOW RATE(CFS) = 178.64

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.16

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.78 HALFSTREET FLOOD WIDTH(FEET) = 31.99
FLOW VELOCITY(FEET/SEC.) = 8.43 DEPTH*VELOCITY(FT*FT/SEC.) = 6.57
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
AND L = 713.7 FT WITH ELEVATION-DROP = 26.0 FT, IS 67.4 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20230.00
LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20230.00 = 4372.37 FEET.

FLOW PROCESS FROM NODE 20230.00 TO NODE 20231.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<<

UPSTREAM ELEVATION(FEET) = 1800.00 DOWNSTREAM ELEVATION(FEET) = 1769.00
STREET LENGTH(FEET) = 900.35 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 202.74
STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.82
HALFSTREET FLOOD WIDTH(FEET) = 34.00
AVERAGE FLOW VELOCITY(FEET/SEC.) = 8.50
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 6.97
STREET FLOW TRAVEL TIME(MIN.) = 1.77 Tc(MIN.) = 23.62
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.187

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MOBILE HOME PARK	A	14.01	0.98	0.250	32
MOBILE HOME PARK	B	8.21	0.75	0.250	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	2.69	0.98	0.600	32
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	3.23	0.75	0.600	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.88
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.324
SUBAREA AREA(ACRES) = 28.14 SUBAREA RUNOFF(CFS) = 48.21
EFFECTIVE AREA(ACRES) = 138.43 AREA-AVERAGED Fm(INCH/HR) = 0.45
AREA-AVERAGED Fp(INCH/HR) = 0.96 AREA-AVERAGED Ap = 0.47
TOTAL AREA(ACRES) = 138.4 PEAK FLOW RATE(CFS) = 216.49

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.84 HALFSTREET FLOOD WIDTH(FEET) = 34.92
FLOW VELOCITY(FEET/SEC.) = 8.62 DEPTH*VELOCITY(FT*FT/SEC.) = 7.23

*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,

AND L = 900.3 FT WITH ELEVATION-DROP = 31.0 FT, IS 85.5 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20231.00
LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20231.00 = 5272.72 FEET.

FLOW PROCESS FROM NODE 20231.00 TO NODE 20232.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>(STREET TABLE SECTION # 5 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1769.00 DOWNSTREAM ELEVATION(FEET) = 1739.00
STREET LENGTH(FEET) = 905.39 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00

INSIDE STREET CROSSFALL(DECIMAL) = 0.020

OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180

Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 229.79

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.86
HALFSTREET FLOOD WIDTH(FEET) = 36.02
AVERAGE FLOW VELOCITY(FEET/SEC.) = 8.61
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 7.41
STREET FLOW TRAVEL TIME(MIN.) = 1.75 Tc(MIN.) = 25.37
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.095

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MOBILE HOME PARK	A	0.17	0.98	0.250	32
MOBILE HOME PARK	B	5.75	0.75	0.250	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	11.10	0.75	0.600	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.478
SUBAREA AREA(ACRES) = 17.02 SUBAREA RUNOFF(CFS) = 26.60
EFFECTIVE AREA(ACRES) = 155.45 AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.94 AREA-AVERAGED Ap = 0.47
TOTAL AREA(ACRES) = 155.4 PEAK FLOW RATE(CFS) = 231.64

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.86 HALFSTREET FLOOD WIDTH(FEET) = 36.08
FLOW VELOCITY(FEET/SEC.) = 8.65 DEPTH*VELOCITY(FT*FT/SEC.) = 7.46

*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,

AND L = 905.4 FT WITH ELEVATION-DROP = 30.0 FT, IS 50.2 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20232.00
LONGEST FLOWPATH FROM NODE 20220.00 TO NODE 20232.00 = 6178.11 FEET.

FLOW PROCESS FROM NODE 20232.00 TO NODE 20232.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 25.37

RAINFALL INTENSITY(INCH/HR) = 2.09

AREA-AVERAGED Fm(INCH/HR) = 0.44

AREA-AVERAGED Fp(INCH/HR) = 0.94

AREA-AVERAGED Ap = 0.47

EFFECTIVE STREAM AREA(ACRES) = 155.45

TOTAL STREAM AREA(ACRES) = 155.45

PEAK FLOW RATE(CFS) AT CONFLUENCE = 231.64

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	252.22	31.17	1.852	0.96(0.44)	0.46	171.3	20210.00
1	240.67	34.86	1.731	0.96(0.45)	0.46	181.7	20200.00
2	231.64	25.37	2.095	0.94(0.44)	0.47	155.4	20220.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	472.47	25.37	2.095	0.95(0.44)	0.47	294.9	20220.00
2	449.84	31.17	1.852	0.95(0.44)	0.46	326.7	20210.00
3	421.47	34.86	1.731	0.95(0.44)	0.47	337.2	20200.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 472.47 Tc(MIN.) = 25.37
EFFECTIVE AREA(ACRES) = 294.90 AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.95 AREA-AVERAGED Ap = 0.47
TOTAL AREA(ACRES) = 337.2
LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20232.00 = 7433.97 FEET.

FLOW PROCESS FROM NODE 20232.00 TO NODE 20249.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 13 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1739.00 DOWNSTREAM ELEVATION(FEET) = 1735.00
STREET LENGTH(FEET) = 1274.82 CURB HEIGHT(INCHES) = 8.0
STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 484.25
STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 1.62
HALFSTREET FLOOD WIDTH(FEET) = 79.81
AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.06
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 6.58
STREET FLOW TRAVEL TIME(MIN.) = 5.24 Tc(MIN.) = 30.61
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.872
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	0.11	0.98	0.600	32
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	18.30	0.75	0.600	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.600
SUBAREA AREA(ACRES) = 18.41 SUBAREA RUNOFF(CFS) = 23.57
EFFECTIVE AREA(ACRES) = 313.31 AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.93 AREA-AVERAGED Ap = 0.47
TOTAL AREA(ACRES) = 355.6 PEAK FLOW RATE(CFS) = 472.47

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.61 HALFSTREET FLOOD WIDTH(FEET) = 79.07
FLOW VELOCITY(FEET/SEC.) = 4.04 DEPTH*VELOCITY(FT*FT/SEC.) = 6.49
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
AND L = 1274.8 FT WITH ELEVATION-DROP = 4.0 FT, IS 29.6 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20249.00
LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20249.00 = 8708.79 FEET.

FLOW PROCESS FROM NODE 20249.00 TO NODE 20249.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 30.61
RAINFALL INTENSITY(INCH/HR) = 1.87
AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.93
AREA-AVERAGED Ap = 0.47
EFFECTIVE STREAM AREA(ACRES) = 313.31
TOTAL STREAM AREA(ACRES) = 355.56
PEAK FLOW RATE(CFS) AT CONFLUENCE = 472.47

FLOW PROCESS FROM NODE 20240.00 TO NODE 20241.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 916.98
ELEVATION DATA: UPSTREAM(FEET) = 1880.00 DOWNSTREAM(FEET) = 1855.00

Tc = K * [(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.964
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.134
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL						
"3-4 DWELLINGS/ACRE"	A	4.79	0.98	0.600	32	12.96
RESIDENTIAL						
"3-4 DWELLINGS/ACRE"	B	3.77	0.75	0.600	56	12.96

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.88
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.600
SUBAREA RUNOFF(CFS) = 20.10
TOTAL AREA(ACRES) = 8.56 PEAK FLOW RATE(CFS) = 20.10

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20241.00 TO NODE 20242.00 IS CODE = 92

>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<

UPSTREAM NODE ELEVATION(FEET) = 1855.00
DOWNSTREAM NODE ELEVATION(FEET) = 1848.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 207.39
"V" GUTTER WIDTH(FEET) = 3.00 GUTTER HIKE(FEET) = 0.250
PAVEMENT LIP(FEET) = 0.100 MANNING'S N = .0150
PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
MAXIMUM DEPTH(FEET) = 1.00
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 3.055

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	1.59	0.98	0.600	32
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	2.06	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.85
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.600
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 24.29
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.06
AVERAGE FLOW DEPTH(FEET) = 0.56 FLOOD WIDTH(FEET) = 28.17
"V" GUTTER FLOW TRAVEL TIME(MIN.) = 0.57 Tc(MIN.) = 13.53
SUBAREA AREA(ACRES) = 3.65 SUBAREA RUNOFF(CFS) = 8.36
EFFECTIVE AREA(ACRES) = 12.21 AREA-AVERAGED Fm(INCH/HR) = 0.52
AREA-AVERAGED Fp(INCH/HR) = 0.87 AREA-AVERAGED Ap = 0.60
TOTAL AREA(ACRES) = 12.2 PEAK FLOW RATE(CFS) = 27.85

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA "V" GUTTER HYDRAULICS:

DEPTH(FEET) = 0.58 FLOOD WIDTH(FEET) = 30.41
FLOW VELOCITY(FEET/SEC.) = 6.10 DEPTH*VELOCITY(FT*FT/SEC) = 3.56
LONGEST FLOWPATH FROM NODE 20240.00 TO NODE 20242.00 = 1124.37 FEET.

FLOW PROCESS FROM NODE 20242.00 TO NODE 20243.00 IS CODE = 92

>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<

UPSTREAM NODE ELEVATION(FEET) = 1848.00
DOWNSTREAM NODE ELEVATION(FEET) = 1840.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 276.91
"V" GUTTER WIDTH(FEET) = 3.00 GUTTER HIKE(FEET) = 0.250
PAVEMENT LIP(FEET) = 0.100 MANNING'S N = .0150
PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
MAXIMUM DEPTH(FEET) = 1.00
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.953

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	2.48	0.98	0.600	32
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	3.59	0.75	0.600	56
RESIDENTIAL					

" .4 DWELLING/ACRE" B 0.59 0.75 0.900 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.83
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.627
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 35.14
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.91
AVERAGE FLOW DEPTH(FEET) = 0.62 FLOOD WIDTH(FEET) = 35.34
"V" GUTTER FLOW TRAVEL TIME(MIN.) = 0.78 Tc(MIN.) = 14.31
SUBAREA AREA(ACRES) = 6.66 SUBAREA RUNOFF(CFS) = 14.59
EFFECTIVE AREA(ACRES) = 18.87 AREA-AVERAGED Fm(INCH/HR) = 0.52
AREA-AVERAGED Fp(INCH/HR) = 0.85 AREA-AVERAGED Ap = 0.61
TOTAL AREA(ACRES) = 18.9 PEAK FLOW RATE(CFS) = 41.33

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA "V" GUTTER HYDRAULICS:

DEPTH(FEET) = 0.65 FLOOD WIDTH(FEET) = 38.17
FLOW VELOCITY(FEET/SEC.) = 6.05 DEPTH*VELOCITY(FT*FT/SEC) = 3.93
LONGEST FLOWPATH FROM NODE 20240.00 TO NODE 20243.00 = 1401.28 FEET.

FLOW PROCESS FROM NODE 20243.00 TO NODE 20244.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>(STREET TABLE SECTION # 18 USED)<<<<

UPSTREAM ELEVATION(FEET) = 1840.00 DOWNSTREAM ELEVATION(FEET) = 1830.00
STREET LENGTH(FEET) = 293.50 CURB HEIGHT(INCHES) = 8.0
STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 15.00

INSIDE STREET CROSSFALL(DECIMAL) = 0.020

OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180

Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 50.29

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.58

HALFSTREET FLOOD WIDTH(FEET) = 21.05

AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.44

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 3.15

STREET FLOW TRAVEL TIME(MIN.) = 0.90 Tc(MIN.) = 15.21

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.848

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	3.29	0.98	0.600	32
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	4.18	0.75	0.600	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.12	0.75	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.83
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.639

SUBAREA AREA (ACRES) = 8.59 SUBAREA RUNOFF (CFS) = 17.92
EFFECTIVE AREA (ACRES) = 27.46 AREA-AVERAGED Fm (INCH/HR) = 0.52
AREA-AVERAGED Fp (INCH/HR) = 0.85 AREA-AVERAGED Ap = 0.62
TOTAL AREA (ACRES) = 27.5 PEAK FLOW RATE (CFS) = 57.45

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH (FEET) = 0.60 HALFSTREET FLOOD WIDTH (FEET) = 22.16
FLOW VELOCITY (FEET/SEC.) = 5.63 DEPTH*VELOCITY (FT*FT/SEC.) = 3.39
LONGEST FLOWPATH FROM NODE 20240.00 TO NODE 20244.00 = 1694.78 FEET.

FLOW PROCESS FROM NODE 20244.00 TO NODE 20245.00 IS CODE = 62

>>>> COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA <<<<<<
>>>> (STREET TABLE SECTION # 18 USED) <<<<<<

UPSTREAM ELEVATION (FEET) = 1830.00 DOWNSTREAM ELEVATION (FEET) = 1815.00
STREET LENGTH (FEET) = 273.00 CURB HEIGHT (INCHES) = 8.0
STREET HALFWIDTH (FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 15.00
INSIDE STREET CROSSFALL (DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 65.28
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH (FEET) = 0.58
HALFSTREET FLOOD WIDTH (FEET) = 21.22
AVERAGE FLOW VELOCITY (FEET/SEC.) = 6.95
PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 4.05
STREET FLOW TRAVEL TIME (MIN.) = 0.65 Tc (MIN.) = 15.87
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.776
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 2.55 0.98 0.600 32
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 4.04 0.75 0.600 56
RESIDENTIAL
".4 DWELLING/ACRE" B 1.15 0.75 0.900 56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.82
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.645
SUBAREA AREA (ACRES) = 7.74 SUBAREA RUNOFF (CFS) = 15.67
EFFECTIVE AREA (ACRES) = 35.20 AREA-AVERAGED Fm (INCH/HR) = 0.52
AREA-AVERAGED Fp (INCH/HR) = 0.84 AREA-AVERAGED Ap = 0.62
TOTAL AREA (ACRES) = 35.2 PEAK FLOW RATE (CFS) = 71.36

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH (FEET) = 0.60 HALFSTREET FLOOD WIDTH (FEET) = 21.99
FLOW VELOCITY (FEET/SEC.) = 7.10 DEPTH*VELOCITY (FT*FT/SEC.) = 4.25
LONGEST FLOWPATH FROM NODE 20240.00 TO NODE 20245.00 = 1967.78 FEET.

FLOW PROCESS FROM NODE 20245.00 TO NODE 20246.00 IS CODE = 62

>>>> COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA <<<<<<
>>>> (STREET TABLE SECTION # 18 USED) <<<<<<

UPSTREAM ELEVATION (FEET) = 1815.00 DOWNSTREAM ELEVATION (FEET) = 1805.00
STREET LENGTH (FEET) = 359.00 CURB HEIGHT (INCHES) = 8.0
STREET HALFWIDTH (FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 15.00
INSIDE STREET CROSSFALL (DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 81.22
STREET FLOWING FULL
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH (FEET) = 0.68
HALFSTREET FLOOD WIDTH (FEET) = 26.91
AVERAGE FLOW VELOCITY (FEET/SEC.) = 5.69
PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 3.90
STREET FLOW TRAVEL TIME (MIN.) = 1.05 Tc (MIN.) = 16.92
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.672

SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 3.90 0.98 0.600 32
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 5.36 0.75 0.600 56
RESIDENTIAL
".4 DWELLING/ACRE" B 0.93 0.75 0.900 56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.83
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.627
SUBAREA AREA (ACRES) = 10.19 SUBAREA RUNOFF (CFS) = 19.72
EFFECTIVE AREA (ACRES) = 45.39 AREA-AVERAGED Fm (INCH/HR) = 0.52
AREA-AVERAGED Fp (INCH/HR) = 0.84 AREA-AVERAGED Ap = 0.63
TOTAL AREA (ACRES) = 45.4 PEAK FLOW RATE (CFS) = 87.76

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.81

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH (FEET) = 0.70 HALFSTREET FLOOD WIDTH (FEET) = 27.52
FLOW VELOCITY (FEET/SEC.) = 5.88 DEPTH*VELOCITY (FT*FT/SEC.) = 4.10
LONGEST FLOWPATH FROM NODE 20240.00 TO NODE 20246.00 = 2326.78 FEET.

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FLOW PROCESS FROM NODE 20246.00 TO NODE 20247.00 IS CODE = 62
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>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 18 USED)<<<<<
=====
UPSTREAM ELEVATION(FEET) = 1805.00 DOWNSTREAM ELEVATION(FEET) = 1795.00
STREET LENGTH(FEET) = 324.04 CURB HEIGHT(INCHES) = 8.0
STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 15.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 95.67
***STREET FLOWING FULL***
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.70
HALFSTREET FLOOD WIDTH(FEET) = 27.83
AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.27
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 4.41
STREET FLOW TRAVEL TIME(MIN.) = 0.86 Tc(MIN.) = 17.78
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.593
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 3.02 0.98 0.600 32
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 4.88 0.75 0.600 56
RESIDENTIAL
".4 DWELLING/ACRE" B 0.55 0.75 0.900 56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.83
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.620
SUBAREA AREA(ACRES) = 8.45 SUBAREA RUNOFF(CFS) = 15.83
EFFECTIVE AREA(ACRES) = 53.84 AREA-AVERAGED Fm(INCH/HR) = 0.52
AREA-AVERAGED Fp(INCH/HR) = 0.84 AREA-AVERAGED Ap = 0.62
TOTAL AREA(ACRES) = 53.8 PEAK FLOW RATE(CFS) = 100.38

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.71 HALFSTREET FLOOD WIDTH(FEET) = 28.26
FLOW VELOCITY(FEET/SEC.) = 6.38 DEPTH*VELOCITY(FT*FT/SEC.) = 4.54
LONGEST FLOWPATH FROM NODE 20240.00 TO NODE 20247.00 = 2650.82 FEET.

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FLOW PROCESS FROM NODE 20247.00 TO NODE 20248.00 IS CODE = 62
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>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 18 USED)<<<<<
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UPSTREAM ELEVATION(FEET) = 1795.00 DOWNSTREAM ELEVATION(FEET) = 1782.00
STREET LENGTH(FEET) = 263.00 CURB HEIGHT(INCHES) = 8.0
STREET HALFWIDTH(FEET) = 26.00

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DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 15.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

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SPECIFIED NUMBER OF HALFSSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

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**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 107.22
***STREET FLOWING FULL***
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.68
HALFSTREET FLOOD WIDTH(FEET) = 26.85
AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.55
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 5.16
STREET FLOW TRAVEL TIME(MIN.) = 0.58 Tc(MIN.) = 18.36
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.544
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE" A 1.94 0.98 0.600 32
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 5.00 0.75 0.600 56
RESIDENTIAL
".4 DWELLING/ACRE" B 0.49 0.75 0.900 56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.81
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.620
SUBAREA AREA(ACRES) = 7.43 SUBAREA RUNOFF(CFS) = 13.67
EFFECTIVE AREA(ACRES) = 61.27 AREA-AVERAGED Fm(INCH/HR) = 0.52
AREA-AVERAGED Fp(INCH/HR) = 0.83 AREA-AVERAGED Ap = 0.62
TOTAL AREA(ACRES) = 61.3 PEAK FLOW RATE(CFS) = 111.66

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SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

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END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.69 HALFSTREET FLOOD WIDTH(FEET) = 27.16
FLOW VELOCITY(FEET/SEC.) = 7.69 DEPTH*VELOCITY(FT*FT/SEC.) = 5.30
LONGEST FLOWPATH FROM NODE 20240.00 TO NODE 20248.00 = 2913.82 FEET.

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FLOW PROCESS FROM NODE 20248.00 TO NODE 20249.00 IS CODE = 62
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>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 18 USED)<<<<<
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UPSTREAM ELEVATION(FEET) = 1782.00 DOWNSTREAM ELEVATION(FEET) = 1735.00
STREET LENGTH(FEET) = 1589.51 CURB HEIGHT(INCHES) = 8.0
STREET HALFWIDTH(FEET) = 26.00

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DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 15.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020

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OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180

Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 129.76

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.77

HALFSTREET FLOOD WIDTH(FEET) = 30.94

AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.86

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 5.25

STREET FLOW TRAVEL TIME(MIN.) = 3.86 Tc(MIN.) = 22.22

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.268

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	A	0.28	0.98	0.600	32
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	21.09	0.75	0.600	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.85	0.75	0.900	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.75

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.611

SUBAREA AREA(ACRES) = 22.22 SUBAREA RUNOFF(CFS) = 36.18

EFFECTIVE AREA(ACRES) = 83.49 AREA-AVERAGED Fm(INCH/HR) = 0.50

AREA-AVERAGED Fp(INCH/HR) = 0.81 AREA-AVERAGED Ap = 0.62

TOTAL AREA(ACRES) = 83.5 PEAK FLOW RATE(CFS) = 132.65

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.77 HALFSTREET FLOOD WIDTH(FEET) = 31.19

FLOW VELOCITY(FEET/SEC.) = 6.90 DEPTH*VELOCITY(FT*FT/SEC.) = 5.31

LONGEST FLOWPATH FROM NODE 20240.00 TO NODE 20249.00 = 4503.33 FEET.

FLOW PROCESS FROM NODE 20249.00 TO NODE 20249.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 22.22

RAINFALL INTENSITY(INCH/HR) = 2.27

AREA-AVERAGED Fm(INCH/HR) = 0.50

AREA-AVERAGED Fp(INCH/HR) = 0.81

AREA-AVERAGED Ap = 0.62

EFFECTIVE STREAM AREA(ACRES) = 83.49

TOTAL STREAM AREA(ACRES) = 83.49

PEAK FLOW RATE(CFS) AT CONFLUENCE = 132.65

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	472.47	30.61	1.872	0.93(0.44)	0.47	313.3	20220.00
1	449.84	36.47	1.685	0.94(0.44)	0.47	345.2	20210.00
1	421.47	40.24	1.588	0.94(0.44)	0.47	355.6	20200.00
2	132.65	22.22	2.268	0.81(0.50)	0.62	83.5	20240.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	570.79	22.22	2.268	0.89(0.46)	0.51	311.0	20240.00
2	575.33	30.61	1.872	0.90(0.45)	0.50	396.8	20220.00
3	538.68	36.47	1.685	0.91(0.45)	0.50	428.6	20210.00
4	503.03	40.24	1.588	0.91(0.45)	0.50	439.1	20200.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 575.33 Tc(MIN.) = 30.61

EFFECTIVE AREA(ACRES) = 396.80 AREA-AVERAGED Fm(INCH/HR) = 0.45

AREA-AVERAGED Fp(INCH/HR) = 0.90 AREA-AVERAGED Ap = 0.50

TOTAL AREA(ACRES) = 439.1

LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20249.00 = 8708.79 FEET.

FLOW PROCESS FROM NODE 20249.00 TO NODE 20250.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>(STREET TABLE SECTION # 13 USED)<<<<<

UPSTREAM ELEVATION(FEET) = 1735.00 DOWNSTREAM ELEVATION(FEET) = 1733.00

STREET LENGTH(FEET) = 391.69 CURB HEIGHT(INCHES) = 8.0

STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.00

INSIDE STREET CROSSFALL(DECIMAL) = 0.020

OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180

Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 575.90

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 1.58

HALFSTREET FLOOD WIDTH(FEET) = 77.85

AVERAGE FLOW VELOCITY(FEET/SEC.) = 5.09

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 8.06

STREET FLOW TRAVEL TIME(MIN.) = 1.28 Tc(MIN.) = 31.89

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.826

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.58	0.75	0.600	56

RESIDENTIAL
".4 DWELLING/ACRE" B 0.42 0.75 0.900 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.726
SUBAREA AREA (ACRES) = 1.00 SUBAREA RUNOFF(CFS) = 1.15
EFFECTIVE AREA(ACRES) = 397.80 AREA-AVERAGED Fm(INCH/HR) = 0.46
AREA-AVERAGED Fp(INCH/HR) = 0.90 AREA-AVERAGED Ap = 0.50
TOTAL AREA (ACRES) = 440.1 PEAK FLOW RATE(CFS) = 575.33
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.58 HALFSTREET FLOOD WIDTH(FEET) = 77.79
FLOW VELOCITY(FEET/SEC.) = 5.09 DEPTH*VELOCITY(FT*FT/SEC.) = 8.06
LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20250.00 = 9100.48 FEET.

FLOW PROCESS FROM NODE 20250.00 TO NODE 20250.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<<
=====

FLOW PROCESS FROM NODE 20151.00 TO NODE 20151.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<<
=====

PEAK FLOWRATE TABLE FILE NAME: 20151.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:
PEAK FLOW RATE(CFS) = 1868.80 Tc(MIN.) = 36.88
AREA-AVERAGED Fm(INCH/HR) = 0.61 Ybar = 0.53
TOTAL AREA (ACRES) = 1725.0
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20151.00 = 15438.18 FEET.

FLOW PROCESS FROM NODE 20151.00 TO NODE 20151.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<<
=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
PEAK FLOW RATE(CFS) = 1868.80 Tc(MIN.) = 36.88
AREA-AVERAGED Fm(INCH/HR) = 0.61 Ybar = 0.53
TOTAL AREA (ACRES) = 1725.0
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20151.00 = 15438.18 FEET.

FLOW PROCESS FROM NODE 20151.00 TO NODE 20151.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 2 <<<<<<
=====

FLOW PROCESS FROM NODE 20151.00 TO NODE 20250.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<
=====

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 1785.00 DOWNSTREAM(FEET) = 1733.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1656.68 CHANNEL SLOPE = 0.0314
CHANNEL BASE(FEET) = 10.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.035 MAXIMUM DEPTH(FEET) = 10.00
CHANNEL FLOW THRU SUBAREA(CFS) = 1868.80
FLOW VELOCITY(FEET/SEC.) = 16.64 FLOW DEPTH(FEET) = 5.40
TRAVEL TIME(MIN.) = 1.66 Tc(MIN.) = 38.54
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20250.00 = 17094.86 FEET.

FLOW PROCESS FROM NODE 20250.00 TO NODE 20250.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<
=====

MAINLINE Tc(MIN.) = 38.54
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.630
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	1.58	0.75	0.600	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	54.48	0.75	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.892
SUBAREA AREA (ACRES) = 56.06

UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.18;6H= 3.09;24H= 7.48
S-GRAPH: VALLEY(DEV.)= 23.5%;VALLEY(UNDEV.)/DESERT= 76.5%
MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
Tc(HR) = 0.64; LAG(HR) = 0.51; Fm(INCH/HR) = 0.61; Ybar = 0.54
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
3HR = 0.99; 6HR = 0.99; 24HR= 1.00
UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 1781.1
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20250.00 = 17094.86 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L=0.3,n=.0440; Lca/L=0.4,n=.0394; Lca/L=0.5,n=.0362;Lca/L=0.6,n=.0338
TIME OF PEAK FLOW(HR) = 16.50 RUNOFF VOLUME(AF) = 543.57
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) = 1643.88
TOTAL AREA(ACRES) = 1781.1 PEAK FLOW RATE(CFS) = 1868.80
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.71

FLOW PROCESS FROM NODE 20250.00 TO NODE 20250.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<<
=====

** MAIN STREAM CONFLUENCE DATA **
PEAK FLOW RATE(CFS) = 1868.80 Tc(MIN.) = 38.54
AREA-AVERAGED Fm(INCH/HR) = 0.61 Ybar = 0.54
TOTAL AREA(ACRES) = 1781.1

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20250.00 = 17094.86 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	570.79	23.51	2.193	0.89(0.46)	0.51	312.0	20240.00
2	575.33	31.89	1.826	0.90(0.46)	0.50	397.8	20220.00
3	538.68	37.77	1.650	0.91(0.45)	0.50	429.6	20210.00
4	503.03	41.57	1.558	0.91(0.45)	0.50	440.1	20200.00

LONGEST FLOWPATH FROM NODE 20200.00 TO NODE 20250.00 = 9100.48 FEET.

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

UNIT-HYDROGRAPH DATA:

RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.14;6H= 3.02;24H= 7.36

S-GRAPH: VALLEY (DEV.)= 38.4%;VALLEY (UNDEV.)/DESERT= 61.6%

MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT (UNDEV.)= 0.0%

Tc (HR) = 0.64; LAG (HR) = 0.51; Fm (INCH/HR) = 0.58; Ybar = 0.52

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;

3HR = 0.99; 6HR = 0.99; 24HR= 1.00

UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 2221.2

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20250.00 = 17094.86 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3,n=.0440; Lca/L=0.4,n=.0394; Lca/L=0.5,n=.0362;Lca/L=0.6,n=.0338

TIME OF PEAK FLOW (HR) = 16.50 RUNOFF VOLUME (AF) = 683.26

PEAK FLOW RATE (CFS) = 2050.54

FLOW PROCESS FROM NODE 20250.00 TO NODE 20250.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

FLOW PROCESS FROM NODE 20250.00 TO NODE 20274.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 1733.00 DOWNSTREAM (FEET) = 1670.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 2379.03 CHANNEL SLOPE = 0.0265

CHANNEL BASE (FEET) = 10.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.035 MAXIMUM DEPTH (FEET) = 10.00

CHANNEL FLOW THRU SUBAREA (CFS) = 2050.54

FLOW VELOCITY (FEET/SEC.) = 16.00 FLOW DEPTH (FEET) = 5.89

TRAVEL TIME (MIN.) = 2.48 Tc (MIN.) = 41.02

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20274.00 = 19473.89 FEET.

FLOW PROCESS FROM NODE 20274.00 TO NODE 20274.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 41.02

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.570

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN

RESIDENTIAL

"3-4 DWELLINGS/ACRE" B 3.23 0.75 0.600 56

RESIDENTIAL

"3-4 DWELLINGS/ACRE" A 0.07 0.98 0.600 32

RESIDENTIAL

".4 DWELLING/ACRE" B 9.49 0.75 0.900 56

SCHOOL B 24.91 0.75 0.600 56

SCHOOL A 0.90 0.98 0.600 32

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.75

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.674

SUBAREA AREA (ACRES) = 38.60

UNIT-HYDROGRAPH DATA:

RAINFALL (INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.14;6H= 3.01;24H= 7.35

S-GRAPH: VALLEY (DEV.)= 39.0%;VALLEY (UNDEV.)/DESERT= 61.0%

MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT (UNDEV.)= 0.0%

Tc (HR) = 0.68; LAG (HR) = 0.55; Fm (INCH/HR) = 0.58; Ybar = 0.52

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;

3HR = 0.98; 6HR = 0.99; 24HR= 1.00

UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 2259.8

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20274.00 = 19473.89 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3,n=.0417; Lca/L=0.4,n=.0374; Lca/L=0.5,n=.0343;Lca/L=0.6,n=.0320

TIME OF PEAK FLOW (HR) = 16.58 RUNOFF VOLUME (AF) = 694.27

UNIT-HYDROGRAPH PEAK FLOW RATE (CFS) = 2005.21

TOTAL AREA (ACRES) = 2259.8 PEAK FLOW RATE (CFS) = 2050.54

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

FLOW PROCESS FROM NODE 20274.00 TO NODE 20274.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

PEAK FLOW RATE (CFS) = 2050.54 Tc (MIN.) = 41.02

AREA-AVERAGED Fm (INCH/HR) = 0.58 Ybar = 0.52

TOTAL AREA (ACRES) = 2259.8

FLOW PROCESS FROM NODE 20260.00 TO NODE 20261.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 680.83

ELEVATION DATA: UPSTREAM (FEET) = 2600.00 DOWNSTREAM (FEET) = 2360.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20

SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 7.333

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 4.412

SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						

"OPEN BRUSH" B 4.43 0.61 1.000 66 11.82
 RESIDENTIAL
 "2 DWELLINGS/ACRE" B 2.14 0.75 0.700 56 7.33
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.65
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.902
 SUBAREA RUNOFF(CFS) = 22.63
 TOTAL AREA (ACRES) = 6.57 PEAK FLOW RATE (CFS) = 22.63

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

 FLOW PROCESS FROM NODE 20261.00 TO NODE 20262.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2360.00 DOWNSTREAM(FEET) = 2280.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 583.76 CHANNEL SLOPE = 0.1370
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
 MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 1.00
 CHANNEL FLOW THRU SUBAREA(CFS) = 22.63
 FLOW VELOCITY(FEET/SEC.) = 3.78 FLOW DEPTH(FEET) = 0.35
 TRAVEL TIME(MIN.) = 2.58 Tc(MIN.) = 9.91
 LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20262.00 = 1264.59 FEET.

 FLOW PROCESS FROM NODE 20262.00 TO NODE 20262.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 9.91
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.683
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	4.44	0.75	0.700	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	15.90	0.61	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.935
 SUBAREA AREA(ACRES) = 20.34 SUBAREA RUNOFF(CFS) = 56.54
 EFFECTIVE AREA(ACRES) = 26.91 AREA-AVERAGED Fm(INCH/HR) = 0.59
 AREA-AVERAGED Fp(INCH/HR) = 0.64 AREA-AVERAGED Ap = 0.93
 TOTAL AREA(ACRES) = 26.9 PEAK FLOW RATE(CFS) = 74.86

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

 FLOW PROCESS FROM NODE 20262.00 TO NODE 20263.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2280.00 DOWNSTREAM(FEET) = 2170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 994.37 CHANNEL SLOPE = 0.1106

CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
 MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 2.00
 CHANNEL FLOW THRU SUBAREA(CFS) = 74.86
 FLOW VELOCITY(FEET/SEC.) = 4.75 FLOW DEPTH(FEET) = 0.56
 TRAVEL TIME(MIN.) = 3.49 Tc(MIN.) = 13.40
 LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20263.00 = 2258.96 FEET.

 FLOW PROCESS FROM NODE 20263.00 TO NODE 20263.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 13.40
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.073
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	8.82	0.75	0.700	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	15.90	0.61	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.700
 SUBAREA AREA(ACRES) = 8.82 SUBAREA RUNOFF(CFS) = 20.23
 EFFECTIVE AREA(ACRES) = 35.73 AREA-AVERAGED Fm(INCH/HR) = 0.58
 AREA-AVERAGED Fp(INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.87
 TOTAL AREA(ACRES) = 35.7 PEAK FLOW RATE(CFS) = 80.32

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

 FLOW PROCESS FROM NODE 20263.00 TO NODE 20264.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2170.00 DOWNSTREAM(FEET) = 2110.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 784.49 CHANNEL SLOPE = 0.0765
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
 MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 2.00
 CHANNEL FLOW THRU SUBAREA(CFS) = 80.32
 FLOW VELOCITY(FEET/SEC.) = 4.17 FLOW DEPTH(FEET) = 0.62
 TRAVEL TIME(MIN.) = 3.14 Tc(MIN.) = 16.54
 LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20264.00 = 3043.45 FEET.

 FLOW PROCESS FROM NODE 20264.00 TO NODE 20264.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 16.54
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.708
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	17.48	0.75	0.700	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	7.48	0.61	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.70
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.790
SUBAREA AREA(ACRES) = 24.96 SUBAREA RUNOFF(CFS) = 48.47
EFFECTIVE AREA(ACRES) = 60.69 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 60.7 PEAK FLOW RATE(CFS) = 117.07

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20264.00 TO NODE 20265.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	2110.00	DOWNSTREAM(FEET) =	2080.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	660.96	CHANNEL SLOPE =	0.0454
CHANNEL BASE(FEET) =	0.00	"Z" FACTOR =	50.000
MANNING'S FACTOR =	0.045	MAXIMUM DEPTH(FEET) =	3.00
CHANNEL FLOW THRU SUBAREA(CFS) =	117.07		
FLOW VELOCITY(FEET/SEC.) =	3.76	FLOW DEPTH(FEET) =	0.79
TRAVEL TIME(MIN.) =	2.93	Tc(MIN.) =	19.46
LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20265.00 =	3704.41		FEET.

FLOW PROCESS FROM NODE 20265.00 TO NODE 20265.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) =	19.46				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	2.456				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	6.85	0.75	0.700	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.71	0.75	0.900	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	59.45	0.61	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =	0.63				
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	0.968				
SUBAREA AREA(ACRES) =	67.01	SUBAREA RUNOFF(CFS) =	111.62		
EFFECTIVE AREA(ACRES) =	127.70	AREA-AVERAGED Fm(INCH/HR) =	0.59		
AREA-AVERAGED Fp(INCH/HR) =	0.65	AREA-AVERAGED Ap =	0.91		
TOTAL AREA(ACRES) =	127.7	PEAK FLOW RATE(CFS) =	214.91		

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20265.00 TO NODE 20266.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	2080.00	DOWNSTREAM(FEET) =	2010.00
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CHANNEL LENGTH THRU SUBAREA(FEET) = 947.22 CHANNEL SLOPE = 0.0739
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 3.00
CHANNEL FLOW THRU SUBAREA(CFS) = 214.91
FLOW VELOCITY(FEET/SEC.) = 5.27 FLOW DEPTH(FEET) = 0.90
TRAVEL TIME(MIN.) = 3.00 Tc(MIN.) = 22.46
LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20266.00 = 4651.63 FEET.

FLOW PROCESS FROM NODE 20266.00 TO NODE 20266.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) =	22.46				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	2.254				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	10.89	0.75	0.700	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	11.99	0.75	0.900	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	4.30	0.61	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =	0.72				
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	0.836				
SUBAREA AREA(ACRES) =	27.18	SUBAREA RUNOFF(CFS) =	40.36		
EFFECTIVE AREA(ACRES) =	154.88	AREA-AVERAGED Fm(INCH/HR) =	0.59		
AREA-AVERAGED Fp(INCH/HR) =	0.66	AREA-AVERAGED Ap =	0.89		
TOTAL AREA(ACRES) =	154.9	PEAK FLOW RATE(CFS) =	232.04		

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20266.00 TO NODE 20267.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	2010.00	DOWNSTREAM(FEET) =	1960.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	906.98	CHANNEL SLOPE =	0.0551
CHANNEL BASE(FEET) =	0.00	"Z" FACTOR =	50.000
MANNING'S FACTOR =	0.045	MAXIMUM DEPTH(FEET) =	3.00
CHANNEL FLOW THRU SUBAREA(CFS) =	232.04		
FLOW VELOCITY(FEET/SEC.) =	4.82	FLOW DEPTH(FEET) =	0.98
TRAVEL TIME(MIN.) =	3.14	Tc(MIN.) =	25.60
LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20267.00 =	5558.61		FEET.

FLOW PROCESS FROM NODE 20267.00 TO NODE 20267.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) =	25.60				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	2.084				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS

LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	53.81	0.75	0.700	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	46.51	0.75	0.900	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	68.77	0.61	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.69
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.877
 SUBAREA AREA (ACRES) = 169.09 SUBAREA RUNOFF (CFS) = 225.60
 EFFECTIVE AREA (ACRES) = 323.97 AREA-AVERAGED Fm (INCH/HR) = 0.60
 AREA-AVERAGED Fp (INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.89
 TOTAL AREA (ACRES) = 324.0 PEAK FLOW RATE (CFS) = 433.93

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

 FLOW PROCESS FROM NODE 20267.00 TO NODE 20268.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 1960.00 DOWNSTREAM (FEET) = 1890.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1268.00 CHANNEL SLOPE = 0.0552
 CHANNEL BASE (FEET) = 10.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 5.00
 CHANNEL FLOW THRU SUBAREA (CFS) = 433.93
 FLOW VELOCITY (FEET/SEC.) = 11.43 FLOW DEPTH (FEET) = 2.52
 TRAVEL TIME (MIN.) = 1.85 Tc (MIN.) = 27.45
 LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20268.00 = 6826.61 FEET.

 FLOW PROCESS FROM NODE 20268.00 TO NODE 20268.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 27.45
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.999
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	30.11	0.75	0.900	56
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	0.46	0.75	0.700	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.897
 SUBAREA AREA (ACRES) = 30.57 SUBAREA RUNOFF (CFS) = 36.53
 EFFECTIVE AREA (ACRES) = 354.54 AREA-AVERAGED Fm (INCH/HR) = 0.60
 AREA-AVERAGED Fp (INCH/HR) = 0.68 AREA-AVERAGED Ap = 0.89
 TOTAL AREA (ACRES) = 354.5 PEAK FLOW RATE (CFS) = 445.57

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

 FLOW PROCESS FROM NODE 20268.00 TO NODE 20269.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 1890.00 DOWNSTREAM (FEET) = 1870.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 379.58 CHANNEL SLOPE = 0.0527
 CHANNEL BASE (FEET) = 10.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 5.00
 CHANNEL FLOW THRU SUBAREA (CFS) = 445.57
 FLOW VELOCITY (FEET/SEC.) = 11.33 FLOW DEPTH (FEET) = 2.59
 TRAVEL TIME (MIN.) = 0.56 Tc (MIN.) = 28.00
 LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20269.00 = 7206.19 FEET.

 FLOW PROCESS FROM NODE 20269.00 TO NODE 20269.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 28.00
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.975
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	17.99	0.75	0.900	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.04	0.75	0.600	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	18.04	0.61	1.000	66
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	16.31	0.75	0.700	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.70
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.872
 SUBAREA AREA (ACRES) = 52.38 SUBAREA RUNOFF (CFS) = 64.51
 EFFECTIVE AREA (ACRES) = 406.92 AREA-AVERAGED Fm (INCH/HR) = 0.60
 AREA-AVERAGED Fp (INCH/HR) = 0.68 AREA-AVERAGED Ap = 0.88
 TOTAL AREA (ACRES) = 406.9 PEAK FLOW RATE (CFS) = 502.42

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

 FLOW PROCESS FROM NODE 20269.00 TO NODE 20270.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 1870.00 DOWNSTREAM (FEET) = 1770.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2346.89 CHANNEL SLOPE = 0.0426
 CHANNEL BASE (FEET) = 10.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 5.00
 CHANNEL FLOW THRU SUBAREA (CFS) = 502.42
 FLOW VELOCITY (FEET/SEC.) = 10.84 FLOW DEPTH (FEET) = 2.92
 TRAVEL TIME (MIN.) = 3.61 Tc (MIN.) = 31.61
 LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20270.00 = 9553.08 FEET.

 FLOW PROCESS FROM NODE 20270.00 TO NODE 20270.00 IS CODE = 81

=====
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====

MAINLINE Tc(MIN.) = 31.61
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.836
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 5.45 0.75 0.600 56
RESIDENTIAL
".4 DWELLING/ACRE" B 71.00 0.75 0.900 56
NATURAL FAIR COVER
"OPEN BRUSH" B 5.28 0.61 1.000 66
RESIDENTIAL
"2 DWELLINGS/ACRE" B 40.34 0.75 0.700 56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.74
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.825
SUBAREA AREA(ACRES) = 122.07 SUBAREA RUNOFF(CFS) = 134.56
EFFECTIVE AREA(ACRES) = 528.99 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.69 AREA-AVERAGED Ap = 0.87
TOTAL AREA(ACRES) = 529.0 PEAK FLOW RATE(CFS) = 586.25

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.17

FLOW PROCESS FROM NODE 20270.00 TO NODE 20271.00 IS CODE = 62

=====
>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>(STREET TABLE SECTION # 13 USED)<<<<
=====

UPSTREAM ELEVATION(FEET) = 1770.00 DOWNSTREAM ELEVATION(FEET) = 1755.00
STREET LENGTH(FEET) = 692.85 CURB HEIGHT(INCHES) = 8.0
STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 20.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 667.58

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 1.30
HALFSTREET FLOOD WIDTH(FEET) = 63.88
AVERAGE FLOW VELOCITY(FEET/SEC.) = 9.07
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 11.84

STREET FLOW TRAVEL TIME(MIN.) = 1.27 Tc(MIN.) = 32.89

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.793

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL

" .4 DWELLING/ACRE" B 100.00 0.75 0.900 56
RESIDENTIAL
".4 DWELLING/ACRE" B 27.18 0.75 0.900 56
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 11.00 0.75 0.600 56
RESIDENTIAL
"2 DWELLINGS/ACRE" B 18.36 0.75 0.700 56
NATURAL FAIR COVER
"OPEN BRUSH" B 0.17 0.61 1.000 66
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.856
SUBAREA AREA(ACRES) = 156.71 SUBAREA RUNOFF(CFS) = 162.65
EFFECTIVE AREA(ACRES) = 685.70 AREA-AVERAGED Fm(INCH/HR) = 0.61
AREA-AVERAGED Fp(INCH/HR) = 0.71 AREA-AVERAGED Ap = 0.87
TOTAL AREA(ACRES) = 685.7 PEAK FLOW RATE(CFS) = 728.45

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.40; 6HR = 1.91; 24HR = 4.34

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.34 HALFSTREET FLOOD WIDTH(FEET) = 65.77
FLOW VELOCITY(FEET/SEC.) = 9.28 DEPTH*VELOCITY(FT*FT/SEC.) = 12.46
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
AND L = 692.8 FT WITH ELEVATION-DROP = 15.0 FT, IS 369.7 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20271.00
LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20271.00 = 10245.93 FEET.

FLOW PROCESS FROM NODE 20270.00 TO NODE 20271.00 IS CODE = 71

=====
>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<
>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<
=====

UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.40;30M= 0.82;1H= 1.09;3H= 1.77;6H= 2.41;24H= 6.18
S-GRAPH: VALLEY(DEV.) = 28.6%;VALLEY(UNDEV.)/DESERT= 71.4%
MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.) = 0.0%
Tc(HR) = 0.55; LAG(HR) = 0.44; Fm(INCH/HR) = 0.61; Ybar = 0.60
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 1.00; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 685.7
LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20271.00 = 10245.93 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L=0.3,n=.0553; Lca/L=0.4,n=.0496; Lca/L=0.5,n=.0456;Lca/L=0.6,n=.0425
TIME OF PEAK FLOW(HR) = 16.42 RUNOFF VOLUME(AF) = 154.43
UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) = 606.38
TOTAL PEAK FLOW RATE(CFS) = 606.38 (SOURCE FLOW INCLUDED)
RATIONAL METHOD PEAK FLOW RATE(CFS) = 728.45
(UPSTREAM NODE PEAK FLOW RATE(CFS) = 728.45)
PEAK FLOW RATE(CFS) USED = 728.45

FLOW PROCESS FROM NODE 20271.00 TO NODE 20272.00 IS CODE = 62

=====
>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>(STREET TABLE SECTION # 13 USED)<<<<
=====

UPSTREAM ELEVATION (FEET) = 1755.00 DOWNSTREAM ELEVATION (FEET) = 1730.00
STREET LENGTH (FEET) = 1359.40 CURB HEIGHT (INCHES) = 8.0
STREET HALFWIDTH (FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 20.00
INSIDE STREET CROSSFALL (DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 774.87
STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH (FEET) = 1.41
HALFSTREET FLOOD WIDTH (FEET) = 69.06
AVERAGE FLOW VELOCITY (FEET/SEC.) = 8.87
PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 12.49
STREET FLOW TRAVEL TIME (MIN.) = 2.55 Tc (MIN.) = 35.44
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.714

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL ".4 DWELLING/ACRE"	B	92.29	0.75	0.900	56
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	5.58	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.75

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.883

UNIT-HYDROGRAPH DATA:

RAINFALL (INCH): 5M= 0.41; 30M= 0.84; 1H= 1.11; 3H= 1.80; 6H= 2.45; 24H= 6.28

S-GRAPH: VALLEY (DEV.) = 25.8%; VALLEY (UNDEV.) / DESERT = 74.2%

MOUNTAIN = 0.0%; FOOTHILL = 0.0%; DESERT (UNDEV.) = 0.0%

Tc (HR) = 0.59; LAG (HR) = 0.47; Fm (INCH/HR) = 0.62; Ybar = 0.60

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;

3HR = 0.99; 6HR = 1.00; 24HR = 1.00

UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 783.6

LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20272.00 = 11605.33 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3, n=.0533; Lca/L=0.4, n=.0478; Lca/L=0.5, n=.0439; Lca/L=0.6, n=.0409

TIME OF PEAK FLOW (HR) = 16.50 RUNOFF VOLUME (AF) = 178.37

UNIT-HYDROGRAPH PEAK FLOW RATE (CFS) = 667.31

TOTAL AREA (ACRES) = 783.6 PEAK FLOW RATE (CFS) = 728.45

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.91

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH (FEET) = 1.38 HALFSTREET FLOOD WIDTH (FEET) = 67.66

FLOW VELOCITY (FEET/SEC.) = 8.72 DEPTH*VELOCITY (FT*FT/SEC.) = 12.04

*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,

AND L = 1359.4 FT WITH ELEVATION-DROP = 25.0 FT, IS 181.4 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20272.00

FLOW PROCESS FROM NODE 20272.00 TO NODE 20273.00 IS CODE = 62

>>>> COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA <<<<<<
>>>> (STREET TABLE SECTION # 5 USED) <<<<<<
=====

UPSTREAM ELEVATION (FEET) = 1730.00 DOWNSTREAM ELEVATION (FEET) = 1695.00
STREET LENGTH (FEET) = 1247.53 CURB HEIGHT (INCHES) = 6.0
STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
INSIDE STREET CROSSFALL (DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 753.41

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH (FEET) = 1.33
HALFSTREET FLOOD WIDTH (FEET) = 59.58
AVERAGE FLOW VELOCITY (FEET/SEC.) = 10.50
PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 13.99
STREET FLOW TRAVEL TIME (MIN.) = 1.98 Tc (MIN.) = 37.42
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.659

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	2.91	0.75	0.600	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	52.68	0.75	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.75

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.884

UNIT-HYDROGRAPH DATA:

RAINFALL (INCH): 5M= 0.41; 30M= 0.85; 1H= 1.12; 3H= 1.82; 6H= 2.47; 24H= 6.29

S-GRAPH: VALLEY (DEV.) = 24.4%; VALLEY (UNDEV.) / DESERT = 75.6%

MOUNTAIN = 0.0%; FOOTHILL = 0.0%; DESERT (UNDEV.) = 0.0%

Tc (HR) = 0.62; LAG (HR) = 0.50; Fm (INCH/HR) = 0.62; Ybar = 0.60

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;

3HR = 0.99; 6HR = 1.00; 24HR = 1.00

UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 839.2

LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20273.00 = 12852.86 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3, n=.0514; Lca/L=0.4, n=.0461; Lca/L=0.5, n=.0424; Lca/L=0.6, n=.0395

TIME OF PEAK FLOW (HR) = 16.50 RUNOFF VOLUME (AF) = 190.65

UNIT-HYDROGRAPH PEAK FLOW RATE (CFS) = 694.76

TOTAL AREA (ACRES) = 839.2 PEAK FLOW RATE (CFS) = 728.45

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH (FEET) = 1.32 HALFSTREET FLOOD WIDTH (FEET) = 58.78
FLOW VELOCITY (FEET/SEC.) = 10.43 DEPTH*VELOCITY (FT*FT/SEC.) = 13.72
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
AND L = 1247.5 FT WITH ELEVATION-DROP = 35.0 FT, IS 113.1 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20273.00

FLOW PROCESS FROM NODE 20273.00 TO NODE 20274.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

=====

UPSTREAM ELEVATION (FEET) = 1695.00 DOWNSTREAM ELEVATION (FEET) = 1670.00
STREET LENGTH (FEET) = 797.55 CURB HEIGHT (INCHES) = 6.0
STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
INSIDE STREET CROSSFALL (DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 729.84
STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH (FEET) = 1.29
HALFSTREET FLOOD WIDTH (FEET) = 57.56
AVERAGE FLOW VELOCITY (FEET/SEC.) = 10.89
PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 14.07
STREET FLOW TRAVEL TIME (MIN.) = 1.22 Tc (MIN.) = 38.64
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.628

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	2.08	0.75	0.900	56
SCHOOL	B	0.94	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807

UNIT-HYDROGRAPH DATA:

RAINFALL (INCH): 5M= 0.41; 30M= 0.85; 1H= 1.12; 3H= 1.82; 6H= 2.47; 24H= 6.29
S-GRAPH: VALLEY (DEV.) = 24.4%; VALLEY (UNDEV.) / DESERT = 75.6%

MOUNTAIN = 0.0%; FOOTHILL = 0.0%; DESERT (UNDEV.) = 0.0%
Tc (HR) = 0.64; LAG (HR) = 0.52; Fm (INCH/HR) = 0.62; Ybar = 0.60

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;

3HR = 0.99; 6HR = 1.00; 24HR = 1.00

UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 842.2

LONGEST FLOWPATH FROM NODE 20260.00 TO NODE 20274.00 = 13650.41 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3, n=.0504; Lca/L=0.4, n=.0452; Lca/L=0.5, n=.0415; Lca/L=0.6, n=.0387

TIME OF PEAK FLOW (HR) = 16.50 RUNOFF VOLUME (AF) = 191.40

UNIT-HYDROGRAPH PEAK FLOW RATE (CFS) = 681.73

TOTAL AREA (ACRES) = 842.2 PEAK FLOW RATE (CFS) = 728.45

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH (FEET) = 1.29 HALFSTREET FLOOD WIDTH (FEET) = 57.50

FLOW VELOCITY (FEET/SEC.) = 10.89 DEPTH*VELOCITY (FT*FT/SEC.) = 14.05

FLOW PROCESS FROM NODE 20274.00 TO NODE 20274.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

PEAK FLOW RATE (CFS) = 728.45 Tc (MIN.) = 38.64

AREA-AVERAGED Fm (INCH/HR) = 0.62 Ybar = 0.60

TOTAL AREA (ACRES) = 842.2

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	AREA (ACRES)	HEADWATER NODE
1	2050.54	41.02	2259.75	20120.00
2	728.45	38.64	842.18	20260.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

UNIT-HYDROGRAPH DATA:

RAINFALL (INCH): 5M= 0.45; 30M= 0.92; 1H= 1.21; 3H= 2.06; 6H= 2.87; 24H= 7.06

S-GRAPH: VALLEY (DEV.) = 35.0%; VALLEY (UNDEV.) / DESERT = 65.0%

MOUNTAIN = 0.0%; FOOTHILL = 0.0%; DESERT (UNDEV.) = 0.0%

Tc (HR) = 0.68; LAG (HR) = 0.55; Fm (INCH/HR) = 0.59; Ybar = 0.54

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.86; 30M = 0.86; 1HR = 0.86;

3HR = 0.98; 6HR = 0.99; 24HR = 0.99

UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 3101.9

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20274.00 = 19473.89 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3, n=.0417; Lca/L=0.4, n=.0374; Lca/L=0.5, n=.0343; Lca/L=0.6, n=.0320

TIME OF PEAK FLOW (HR) = 16.58 RUNOFF VOLUME (AF) = 876.23

PEAK FLOW RATE (CFS) = 2478.03

FLOW PROCESS FROM NODE 20274.00 TO NODE 20274.00 IS CODE = 152

>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: 20274.DNA

=====

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 3101.9 TC (MIN.) = 41.02

AREA-AVERAGED Fm (INCH/HR) = 0.59 Ybar = 0.54

PEAK FLOW RATE (CFS) = 2478.03

=====

END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
(c) Copyright 1983-2013 Advanced Engineering Software (aes)
Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

***** DESCRIPTION OF STUDY *****
* REDLANDS MPD - UPDATE *
* REVISED RATIONAL METHOD HYDROLOGY - TO NODE 20353 *
* BY TMULI SEPT 2013 *

FILE NAME: LR0203.DAT
TIME/DATE OF STUDY: 15:32 09/24/2013

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 24.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL

SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2340

ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF-	CROWN TO	STREET-CROSSFALL:		CURB HEIGHT (FT)	GUTTER-GEOMETRIES:			MANNING FACTOR (n)
	WIDTH (FT)	CROSSFALL (FT)	IN- / SIDE	OUT- / SIDE/ WAY		WIDTH (FT)	LIP (FT)	HIKE (FT)	
1	18.0	12.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
2	20.0	15.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
3	22.0	15.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
4	15.0	10.0	0.020/0.020	0.020	0.50	1.50	0.0312	0.125	0.0180
5	18.0	10.0	0.020/0.020	0.020	0.50	1.50	0.0312	0.125	0.0180
6	15.0	10.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
7	16.0	10.0	0.020/0.020	0.020	0.50	1.50	0.0312	0.125	0.0180
8	16.0	10.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
9	17.0	10.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
10	30.0	15.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
11	24.0	15.0	0.020/0.020	0.020	0.50	1.50	0.0312	0.125	0.0180
12	24.0	15.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
13	32.0	20.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
14	39.0	20.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
15	36.0	20.0	0.020/0.020	0.020	0.67	2.00	0.0312	0.167	0.0180
16	12.5	5.0	0.020/0.020	0.020	0.50	1.50	0.0312	0.125	0.0180

17	20.0	10.0	0.020/0.020/0.020	0.50	1.50	0.0312	0.125	0.0180
18	26.0	15.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180
19	52.0	20.0	0.020/0.020/0.020	0.67	2.00	0.0312	0.167	0.0180

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.20 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
 2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
- *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:

WATERSHED LAG = 0.80 * Tc
USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF 1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
SIERRA MADRE DEPTH-AREA FACTORS USED.
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD

FLOW PROCESS FROM NODE 20300.00 TO NODE 20301.00 IS CODE = 21

=====
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 658.37
ELEVATION DATA: UPSTREAM(FEET) = 2600.00 DOWNSTREAM(FEET) = 2400.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 8.287
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.047
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"OPEN BRUSH"	B	6.22	0.61	1.000	66	12.01
RESIDENTIAL						
".4 DWELLING/ACRE"	B	0.99	0.75	0.900	56	8.29

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.63
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.986
SUBAREA RUNOFF(CFS) = 22.23
TOTAL AREA(ACRES) = 7.21 PEAK FLOW RATE(CFS) = 22.23

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20301.00 TO NODE 20302.00 IS CODE = 54

=====
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====
ELEVATION DATA: UPSTREAM(FEET) = 2400.00 DOWNSTREAM(FEET) = 2380.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 422.45 CHANNEL SLOPE = 0.0473
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000

MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 2.00
CHANNEL FLOW THRU SUBAREA (CFS) = 22.23
FLOW VELOCITY (FEET/SEC.) = 2.56 FLOW DEPTH (FEET) = 0.42
TRAVEL TIME (MIN.) = 2.75 Tc (MIN.) = 11.04
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20302.00 = 1080.82 FEET.

FLOW PROCESS FROM NODE 20302.00 TO NODE 20302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 11.04
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 3.408
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
".4 DWELLING/ACRE" B 0.12 0.75 0.900 56
NATURAL FAIR COVER
"OPEN BRUSH" B 4.14 0.61 1.000 66
SCHOOL B 3.66 0.75 0.600 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.66
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.814
SUBAREA AREA (ACRES) = 7.92 SUBAREA RUNOFF (CFS) = 20.45
EFFECTIVE AREA (ACRES) = 15.13 AREA-AVERAGED Fm (INCH/HR) = 0.58
AREA-AVERAGED Fp (INCH/HR) = 0.65 AREA-AVERAGED Ap = 0.90
TOTAL AREA (ACRES) = 15.1 PEAK FLOW RATE (CFS) = 38.53

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20302.00 TO NODE 20303.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 2380.00 DOWNSTREAM (FEET) = 2320.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 870.68 CHANNEL SLOPE = 0.0689
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 2.00
CHANNEL FLOW THRU SUBAREA (CFS) = 38.53
FLOW VELOCITY (FEET/SEC.) = 3.38 FLOW DEPTH (FEET) = 0.48
TRAVEL TIME (MIN.) = 4.30 Tc (MIN.) = 15.34
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20303.00 = 1951.50 FEET.

FLOW PROCESS FROM NODE 20303.00 TO NODE 20303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 15.34
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.797
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 4.15 0.61 1.000 66

RESIDENTIAL
".4 DWELLING/ACRE" B 0.80 0.75 0.900 56
SCHOOL B 20.38 0.75 0.600 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.72
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.675
SUBAREA AREA (ACRES) = 25.33 SUBAREA RUNOFF (CFS) = 52.76
EFFECTIVE AREA (ACRES) = 40.46 AREA-AVERAGED Fm (INCH/HR) = 0.52
AREA-AVERAGED Fp (INCH/HR) = 0.68 AREA-AVERAGED Ap = 0.76
TOTAL AREA (ACRES) = 40.5 PEAK FLOW RATE (CFS) = 82.98

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20303.00 TO NODE 20304.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 2320.00 DOWNSTREAM (FEET) = 2280.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 981.07 CHANNEL SLOPE = 0.0408
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 2.00
CHANNEL FLOW THRU SUBAREA (CFS) = 82.98
FLOW VELOCITY (FEET/SEC.) = 3.32 FLOW DEPTH (FEET) = 0.71
TRAVEL TIME (MIN.) = 4.92 Tc (MIN.) = 20.26
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20304.00 = 2932.57 FEET.

FLOW PROCESS FROM NODE 20304.00 TO NODE 20304.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 20.26
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.367
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 18.37 0.61 1.000 66
SCHOOL B 15.66 0.75 0.600 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.66
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.816
SUBAREA AREA (ACRES) = 34.03 SUBAREA RUNOFF (CFS) = 56.03
EFFECTIVE AREA (ACRES) = 74.49 AREA-AVERAGED Fm (INCH/HR) = 0.53
AREA-AVERAGED Fp (INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.78
TOTAL AREA (ACRES) = 74.5 PEAK FLOW RATE (CFS) = 123.34

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20304.00 TO NODE 20305.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 2280.00 DOWNSTREAM (FEET) = 2220.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 823.37 CHANNEL SLOPE = 0.0729
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 2.00
CHANNEL FLOW THRU SUBAREA (CFS) = 123.34
FLOW VELOCITY (FEET/SEC.) = 4.56 FLOW DEPTH (FEET) = 0.74
TRAVEL TIME (MIN.) = 3.01 Tc (MIN.) = 23.27
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20305.00 = 3755.94 FEET.

FLOW PROCESS FROM NODE 20305.00 TO NODE 20305.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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MAINLINE Tc (MIN.) = 23.27
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.179
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	9.94	0.61	1.000	66
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	0.01	0.75	0.700	56
SCHOOL	B	7.91	0.75	0.600	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.66
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.823
SUBAREA AREA (ACRES) = 17.86 SUBAREA RUNOFF (CFS) = 26.33
EFFECTIVE AREA (ACRES) = 92.35 AREA-AVERAGED Fm (INCH/HR) = 0.53
AREA-AVERAGED Fp (INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.79
TOTAL AREA (ACRES) = 92.3 PEAK FLOW RATE (CFS) = 137.02

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20305.00 TO NODE 20306.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 2220.00 DOWNSTREAM (FEET) = 2190.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 801.97 CHANNEL SLOPE = 0.0374
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 3.00
CHANNEL FLOW THRU SUBAREA (CFS) = 137.02
FLOW VELOCITY (FEET/SEC.) = 3.66 FLOW DEPTH (FEET) = 0.86
TRAVEL TIME (MIN.) = 3.65 Tc (MIN.) = 26.91
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20306.00 = 4557.91 FEET.

FLOW PROCESS FROM NODE 20306.00 TO NODE 20306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc (MIN.) = 26.91
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.996
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.26	0.61	1.000	66

RESIDENTIAL

"2 DWELLINGS/ACRE"	B	1.66	0.75	0.700	56
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NATURAL FAIR COVER

"OPEN BRUSH"	B	13.33	0.61	1.000	66
SCHOOL	B	2.17	0.75	0.600	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.63
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.920
SUBAREA AREA (ACRES) = 17.16 SUBAREA RUNOFF (CFS) = 21.81
EFFECTIVE AREA (ACRES) = 109.51 AREA-AVERAGED Fm (INCH/HR) = 0.54
AREA-AVERAGED Fp (INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.81
TOTAL AREA (ACRES) = 109.5 PEAK FLOW RATE (CFS) = 143.67

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20306.00 TO NODE 20307.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 2190.00 DOWNSTREAM (FEET) = 2185.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 181.13 CHANNEL SLOPE = 0.0276
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH (FEET) = 3.00
CHANNEL FLOW THRU SUBAREA (CFS) = 143.67
FLOW VELOCITY (FEET/SEC.) = 3.30 FLOW DEPTH (FEET) = 0.93
TRAVEL TIME (MIN.) = 0.92 Tc (MIN.) = 27.83
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20307.00 = 4739.04 FEET.

FLOW PROCESS FROM NODE 20307.00 TO NODE 20307.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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MAINLINE Tc (MIN.) = 27.83
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.957
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	1.33	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.26	0.75	0.600	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.26	0.61	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.65
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.896
SUBAREA AREA (ACRES) = 4.85 SUBAREA RUNOFF (CFS) = 6.01
EFFECTIVE AREA (ACRES) = 114.36 AREA-AVERAGED Fm (INCH/HR) = 0.54
AREA-AVERAGED Fp (INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.82
TOTAL AREA (ACRES) = 114.4 PEAK FLOW RATE (CFS) = 145.77

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20307.00 TO NODE 20308.00 IS CODE = 54

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 2185.00 DOWNSTREAM(FEET) = 2175.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 269.83 CHANNEL SLOPE = 0.0371
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 4.00
CHANNEL FLOW THRU SUBAREA(CFS) = 145.77
FLOW VELOCITY(FEET/SEC.) = 3.70 FLOW DEPTH(FEET) = 0.89
TRAVEL TIME(MIN.) = 1.22 Tc(MIN.) = 29.05
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20308.00 = 5008.87 FEET.

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FLOW PROCESS FROM NODE 20308.00 TO NODE 20308.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
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MAINLINE Tc(MIN.) = 29.05
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.907
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp      Ap      SCS
LAND USE           GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"2 DWELLINGS/ACRE"   B       2.10     0.75    0.700   56
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B       0.65     0.75    0.600   56
NATURAL FAIR COVER
"OPEN BRUSH"        B       1.26     0.61    1.000   66
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.69
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.778
SUBAREA AREA(ACRES) = 4.01 SUBAREA RUNOFF(CFS) = 4.93
EFFECTIVE AREA(ACRES) = 118.37 AREA-AVERAGED Fm(INCH/HR) = 0.54
AREA-AVERAGED Fp(INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.81
TOTAL AREA(ACRES) = 118.4 PEAK FLOW RATE(CFS) = 145.77
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

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FLOW PROCESS FROM NODE 20308.00 TO NODE 20309.00 IS CODE = 62
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>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<
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UPSTREAM ELEVATION(FEET) = 2175.00 DOWNSTREAM ELEVATION(FEET) = 2150.00
STREET LENGTH(FEET) = 430.92 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

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DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

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SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

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**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 149.09
***STREET FLOWING FULL***
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.68
HALFSTREET FLOOD WIDTH(FEET) = 27.23
AVERAGE FLOW VELOCITY(FEET/SEC.) = 9.58
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 6.56
STREET FLOW TRAVEL TIME(MIN.) = 0.75 Tc(MIN.) = 29.80
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.878
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp      Ap      SCS
LAND USE           GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH"        B       1.71     0.61    1.000   66
RESIDENTIAL
"2 DWELLINGS/ACRE"   B       2.80     0.75    0.700   56
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B       1.00     0.75    0.600   56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.69
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.775
SUBAREA AREA(ACRES) = 5.51 SUBAREA RUNOFF(CFS) = 6.65
EFFECTIVE AREA(ACRES) = 123.88 AREA-AVERAGED Fm(INCH/HR) = 0.54
AREA-AVERAGED Fp(INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.81
TOTAL AREA(ACRES) = 123.9 PEAK FLOW RATE(CFS) = 149.16

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SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

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END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.68 HALFSTREET FLOOD WIDTH(FEET) = 27.23
FLOW VELOCITY(FEET/SEC.) = 9.59 DEPTH*VELOCITY(FT*FT/SEC.) = 6.56
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20309.00 = 5439.79 FEET.

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FLOW PROCESS FROM NODE 20309.00 TO NODE 20310.00 IS CODE = 62
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>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<
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UPSTREAM ELEVATION(FEET) = 2150.00 DOWNSTREAM ELEVATION(FEET) = 2140.00
STREET LENGTH(FEET) = 330.10 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

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DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

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SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

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**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 152.34
***STREET FLOWING FULL***
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.76
HALFSTREET FLOOD WIDTH(FEET) = 31.13

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AVERAGE FLOW VELOCITY (FEET/SEC.) = 7.57
 PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 5.77
 STREET FLOW TRAVEL TIME (MIN.) = 0.73 Tc (MIN.) = 30.52
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.851
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	3.69	0.75	0.700	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.85	0.61	1.000	66
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.79	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.72
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.733
 SUBAREA AREA (ACRES) = 5.33 SUBAREA RUNOFF (CFS) = 6.35
 EFFECTIVE AREA (ACRES) = 129.21 AREA-AVERAGED Fm (INCH/HR) = 0.54
 AREA-AVERAGED Fp (INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.81
 TOTAL AREA (ACRES) = 129.2 PEAK FLOW RATE (CFS) = 152.51

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH (FEET) = 0.76 HALFSTREET FLOOD WIDTH (FEET) = 31.20
 FLOW VELOCITY (FEET/SEC.) = 7.55 DEPTH*VELOCITY (FT*FT/SEC.) = 5.77
 LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20310.00 = 5769.89 FEET.

 FLOW PROCESS FROM NODE 20310.00 TO NODE 20311.00 IS CODE = 62

>>>> COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA <<<<<<
 >>>> (STREET TABLE SECTION # 5 USED) <<<<<<
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UPSTREAM ELEVATION (FEET) = 2140.00 DOWNSTREAM ELEVATION (FEET) = 2100.00
 STREET LENGTH (FEET) = 329.50 CURB HEIGHT (INCHES) = 6.0
 STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
 INSIDE STREET CROSSFALL (DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 155.51
 STREET FLOWING FULL
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH (FEET) = 0.62
 HALFSTREET FLOOD WIDTH (FEET) = 24.05
 AVERAGE FLOW VELOCITY (FEET/SEC.) = 12.64
 PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 7.85
 STREET FLOW TRAVEL TIME (MIN.) = 0.43 Tc (MIN.) = 30.96
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.835
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	4.27	0.75	0.700	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	5.25	0.61	1.000	66
RESIDENTIAL					

LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	2.87	0.75	0.700	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.50	0.61	1.000	66
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.78	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.70
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.772
 SUBAREA AREA (ACRES) = 5.15 SUBAREA RUNOFF (CFS) = 6.01
 EFFECTIVE AREA (ACRES) = 134.36 AREA-AVERAGED Fm (INCH/HR) = 0.54
 AREA-AVERAGED Fp (INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.81
 TOTAL AREA (ACRES) = 134.4 PEAK FLOW RATE (CFS) = 156.70

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH (FEET) = 0.62 HALFSTREET FLOOD WIDTH (FEET) = 24.12
 FLOW VELOCITY (FEET/SEC.) = 12.67 DEPTH*VELOCITY (FT*FT/SEC.) = 7.89
 LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20311.00 = 6099.39 FEET.

 FLOW PROCESS FROM NODE 20311.00 TO NODE 20312.00 IS CODE = 62

>>>> COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA <<<<<<
 >>>> (STREET TABLE SECTION # 5 USED) <<<<<<
 =====

UPSTREAM ELEVATION (FEET) = 2100.00 DOWNSTREAM ELEVATION (FEET) = 2060.00
 STREET LENGTH (FEET) = 476.59 CURB HEIGHT (INCHES) = 6.0
 STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
 INSIDE STREET CROSSFALL (DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 162.69
 STREET FLOWING FULL
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH (FEET) = 0.67
 HALFSTREET FLOOD WIDTH (FEET) = 26.25
 AVERAGE FLOW VELOCITY (FEET/SEC.) = 11.21
 PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 7.45
 STREET FLOW TRAVEL TIME (MIN.) = 0.71 Tc (MIN.) = 31.67
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.811
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	4.27	0.75	0.700	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	5.25	0.61	1.000	66
RESIDENTIAL					

"3-4 DWELLINGS/ACRE" B 1.13 0.75 0.600 56
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.67
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.837
 SUBAREA AREA(ACRES) = 10.65 SUBAREA RUNOFF(CFS) = 11.99
 EFFECTIVE AREA(ACRES) = 145.01 AREA-AVERAGED Fm(INCH/HR) = 0.54
 AREA-AVERAGED Fp(INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.81
 TOTAL AREA(ACRES) = 145.0 PEAK FLOW RATE(CFS) = 165.69

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.67 HALFSTREET FLOOD WIDTH(FEET) = 26.43
 FLOW VELOCITY(FEET/SEC.) = 11.26 DEPTH*VELOCITY(FT*FT/SEC.) = 7.53
 LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20312.00 = 6575.98 FEET.

 FLOW PROCESS FROM NODE 20312.00 TO NODE 20313.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<
 =====

UPSTREAM ELEVATION(FEET) = 2060.00 DOWNSTREAM ELEVATION(FEET) = 2040.00
 STREET LENGTH(FEET) = 500.29 CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 171.52
 STREET FLOWING FULL
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.76
 HALFSTREET FLOOD WIDTH(FEET) = 30.89
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 8.66
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 6.56
 STREET FLOW TRAVEL TIME(MIN.) = 0.96 Tc(MIN.) = 32.63
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.778
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	6.45	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	1.19	0.75	0.600	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.82	0.61	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.70
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.770
 SUBAREA AREA(ACRES) = 10.46 SUBAREA RUNOFF(CFS) = 11.66
 EFFECTIVE AREA(ACRES) = 155.47 AREA-AVERAGED Fm(INCH/HR) = 0.54
 AREA-AVERAGED Fp(INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.81

TOTAL AREA(ACRES) = 155.5 PEAK FLOW RATE(CFS) = 173.14

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.76 HALFSTREET FLOOD WIDTH(FEET) = 31.01
 FLOW VELOCITY(FEET/SEC.) = 8.67 DEPTH*VELOCITY(FT*FT/SEC.) = 6.59
 LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20313.00 = 7076.27 FEET.

 FLOW PROCESS FROM NODE 20313.00 TO NODE 20314.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<
 =====

UPSTREAM ELEVATION(FEET) = 2040.00 DOWNSTREAM ELEVATION(FEET) = 2020.00
 STREET LENGTH(FEET) = 462.82 CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 178.90
 STREET FLOWING FULL
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.76
 HALFSTREET FLOOD WIDTH(FEET) = 30.95
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 8.99
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 6.83
 STREET FLOW TRAVEL TIME(MIN.) = 0.86 Tc(MIN.) = 33.49
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.751

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.76	0.61	1.000	66
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	5.77	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	1.10	0.75	0.600	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.69
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.796
 SUBAREA AREA(ACRES) = 10.63 SUBAREA RUNOFF(CFS) = 11.51
 EFFECTIVE AREA(ACRES) = 166.10 AREA-AVERAGED Fm(INCH/HR) = 0.54
 AREA-AVERAGED Fp(INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.81
 TOTAL AREA(ACRES) = 166.1 PEAK FLOW RATE(CFS) = 180.81

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.32

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH (FEET) = 0.76 HALFSTREET FLOOD WIDTH (FEET) = 31.07
FLOW VELOCITY (FEET/SEC.) = 9.02 DEPTH*VELOCITY (FT*FT/SEC.) = 6.87
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20314.00 = 7539.09 FEET.

FLOW PROCESS FROM NODE 20314.00 TO NODE 20315.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

UPSTREAM ELEVATION (FEET) = 2020.00 DOWNSTREAM ELEVATION (FEET) = 1980.00
STREET LENGTH (FEET) = 511.41 CURB HEIGHT (INCHES) = 6.0
STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
INSIDE STREET CROSSFALL (DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 185.76
STREET FLOWING FULL
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH (FEET) = 0.70
HALFSTREET FLOOD WIDTH (FEET) = 27.96
AVERAGE FLOW VELOCITY (FEET/SEC.) = 11.35
PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 7.94
STREET FLOW TRAVEL TIME (MIN.) = 0.75 Tc (MIN.) = 34.24
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.728
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	6.85	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	1.24	0.75	0.600	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.05	0.61	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.73
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.721
SUBAREA AREA (ACRES) = 9.14 SUBAREA RUNOFF (CFS) = 9.90
EFFECTIVE AREA (ACRES) = 175.24 AREA-AVERAGED Fm (INCH/HR) = 0.54
AREA-AVERAGED Fp (INCH/HR) = 0.67 AREA-AVERAGED Ap = 0.80
TOTAL AREA (ACRES) = 175.2 PEAK FLOW RATE (CFS) = 187.25

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.01

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH (FEET) = 0.70 HALFSTREET FLOOD WIDTH (FEET) = 28.08
FLOW VELOCITY (FEET/SEC.) = 11.34 DEPTH*VELOCITY (FT*FT/SEC.) = 7.96
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20315.00 = 8050.50 FEET.

FLOW PROCESS FROM NODE 20315.00 TO NODE 20316.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

UPSTREAM ELEVATION (FEET) = 1980.00 DOWNSTREAM ELEVATION (FEET) = 1950.00
STREET LENGTH (FEET) = 522.61 CURB HEIGHT (INCHES) = 6.0
STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
INSIDE STREET CROSSFALL (DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 191.21
STREET FLOWING FULL
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH (FEET) = 0.74
HALFSTREET FLOOD WIDTH (FEET) = 30.04
AVERAGE FLOW VELOCITY (FEET/SEC.) = 10.18
PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 7.54
STREET FLOW TRAVEL TIME (MIN.) = 0.86 Tc (MIN.) = 35.09
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.702
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	6.12	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	1.25	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683
SUBAREA AREA (ACRES) = 7.37 SUBAREA RUNOFF (CFS) = 7.90
EFFECTIVE AREA (ACRES) = 182.61 AREA-AVERAGED Fm (INCH/HR) = 0.54
AREA-AVERAGED Fp (INCH/HR) = 0.68 AREA-AVERAGED Ap = 0.80
TOTAL AREA (ACRES) = 182.6 PEAK FLOW RATE (CFS) = 191.15

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.62

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH (FEET) = 0.74 HALFSTREET FLOOD WIDTH (FEET) = 30.04
FLOW VELOCITY (FEET/SEC.) = 10.18 DEPTH*VELOCITY (FT*FT/SEC.) = 7.54
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20316.00 = 8573.11 FEET.

FLOW PROCESS FROM NODE 20316.00 TO NODE 20317.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

UPSTREAM ELEVATION (FEET) = 1950.00 DOWNSTREAM ELEVATION (FEET) = 1890.00
STREET LENGTH (FEET) = 743.58 CURB HEIGHT (INCHES) = 6.0
STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 194.13
STREET FLOWING FULL
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.71
HALFSTREET FLOOD WIDTH(FEET) = 28.27
AVERAGE FLOW VELOCITY(FEET/SEC.) = 11.62
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 8.19
STREET FLOW TRAVEL TIME(MIN.) = 1.07 Tc(MIN.) = 36.16
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.672
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"2 DWELLINGS/ACRE" B 4.10 0.75 0.700 56
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 1.55 0.75 0.600 56
RESIDENTIAL
".4 DWELLING/ACRE" B 0.01 0.75 0.900 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.673
SUBAREA AREA(ACRES) = 5.66 SUBAREA RUNOFF(CFS) = 5.95
EFFECTIVE AREA(ACRES) = 188.27 AREA-AVERAGED Fm(INCH/HR) = 0.54
AREA-AVERAGED Fp(INCH/HR) = 0.68 AREA-AVERAGED Ap = 0.79
TOTAL AREA(ACRES) = 188.3 PEAK FLOW RATE(CFS) = 192.12

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.70 HALFSTREET FLOOD WIDTH(FEET) = 28.20
FLOW VELOCITY(FEET/SEC.) = 11.54 DEPTH*VELOCITY(FT*FT/SEC.) = 8.13
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20317.00 = 9316.69 FEET.

FLOW PROCESS FROM NODE 20317.00 TO NODE 20318.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<
=====

UPSTREAM ELEVATION(FEET) = 1890.00 DOWNSTREAM ELEVATION(FEET) = 1860.00
STREET LENGTH(FEET) = 640.63 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 198.21
STREET FLOWING FULL
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.77
HALFSTREET FLOOD WIDTH(FEET) = 31.74
AVERAGE FLOW VELOCITY(FEET/SEC.) = 9.49
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 7.35
STREET FLOW TRAVEL TIME(MIN.) = 1.13 Tc(MIN.) = 37.29
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.642
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 1.10 0.75 0.600 56
RESIDENTIAL
".4 DWELLING/ACRE" B 0.01 0.75 0.900 56
RESIDENTIAL
"2 DWELLINGS/ACRE" B 10.92 0.75 0.700 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.691
SUBAREA AREA(ACRES) = 12.03 SUBAREA RUNOFF(CFS) = 12.18
EFFECTIVE AREA(ACRES) = 200.30 AREA-AVERAGED Fm(INCH/HR) = 0.54
AREA-AVERAGED Fp(INCH/HR) = 0.68 AREA-AVERAGED Ap = 0.79
TOTAL AREA(ACRES) = 200.3 PEAK FLOW RATE(CFS) = 199.14

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.78 HALFSTREET FLOOD WIDTH(FEET) = 31.81
FLOW VELOCITY(FEET/SEC.) = 9.50 DEPTH*VELOCITY(FT*FT/SEC.) = 7.37
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20318.00 = 9957.32 FEET.

FLOW PROCESS FROM NODE 20318.00 TO NODE 20319.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 18 USED)<<<<<
=====

UPSTREAM ELEVATION(FEET) = 1860.00 DOWNSTREAM ELEVATION(FEET) = 1835.00
STREET LENGTH(FEET) = 624.00 CURB HEIGHT(INCHES) = 8.0
STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 15.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 275.14
STREET FLOWING FULL
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.91
 HALFSTREET FLOOD WIDTH(FEET) = 38.14
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 9.53
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 8.67
 STREET FLOW TRAVEL TIME(MIN.) = 1.09 Tc(MIN.) = 38.38
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.613
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	1.46	0.75	0.600	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	9.05	0.75	0.900	56
RESIDENTIAL "2 DWELLINGS/ACRE"	B	100.00	0.75	0.700	56
RESIDENTIAL "2 DWELLINGS/ACRE"	B	28.82	0.75	0.700	56
NATURAL FAIR COVER "OPEN BRUSH"	B	18.27	0.61	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.73
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.745
 SUBAREA AREA(ACRES) = 157.60 SUBAREA RUNOFF(CFS) = 151.98
 EFFECTIVE AREA(ACRES) = 357.90 AREA-AVERAGED Fm(INCH/HR) = 0.54
 AREA-AVERAGED Fp(INCH/HR) = 0.70 AREA-AVERAGED Ap = 0.77
 TOTAL AREA(ACRES) = 357.9 PEAK FLOW RATE(CFS) = 346.04

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.68

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.98 HALFSTREET FLOOD WIDTH(FEET) = 41.44
 FLOW VELOCITY(FEET/SEC.) = 10.14 DEPTH*VELOCITY(FT*FT/SEC.) = 9.89
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 624.0 FT WITH ELEVATION-DROP = 25.0 FT, IS 427.3 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20319.00
 LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20319.00 = 10581.32 FEET.

 FLOW PROCESS FROM NODE 20319.00 TO NODE 20330.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 18 USED)<<<<<
 =====
 UPSTREAM ELEVATION(FEET) = 1835.00 DOWNSTREAM ELEVATION(FEET) = 1813.00
 STREET LENGTH(FEET) = 597.75 CURB HEIGHT(INCHES) = 8.0
 STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 15.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 347.61
 STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.99
 HALFSTREET FLOOD WIDTH(FEET) = 42.17
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 9.83
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 9.74
 STREET FLOW TRAVEL TIME(MIN.) = 1.01 Tc(MIN.) = 39.39
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.588
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	0.71	0.75	0.600	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.91	0.75	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.841
 SUBAREA AREA(ACRES) = 3.62 SUBAREA RUNOFF(CFS) = 3.13
 EFFECTIVE AREA(ACRES) = 361.52 AREA-AVERAGED Fm(INCH/HR) = 0.54
 AREA-AVERAGED Fp(INCH/HR) = 0.70 AREA-AVERAGED Ap = 0.77
 TOTAL AREA(ACRES) = 361.5 PEAK FLOW RATE(CFS) = 346.04
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.99 HALFSTREET FLOOD WIDTH(FEET) = 42.11
 FLOW VELOCITY(FEET/SEC.) = 9.82 DEPTH*VELOCITY(FT*FT/SEC.) = 9.71
 LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20330.00 = 11179.07 FEET.

 FLOW PROCESS FROM NODE 20330.00 TO NODE 20330.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 =====
 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 39.39
 RAINFALL INTENSITY(INCH/HR) = 1.59
 AREA-AVERAGED Fm(INCH/HR) = 0.54
 AREA-AVERAGED Fp(INCH/HR) = 0.70
 AREA-AVERAGED Ap = 0.77
 EFFECTIVE STREAM AREA(ACRES) = 361.52
 TOTAL STREAM AREA(ACRES) = 361.52
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 346.04

 FLOW PROCESS FROM NODE 20320.00 TO NODE 20321.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 =====
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 1020.45
 ELEVATION DATA: UPSTREAM(FEET) = 2240.00 DOWNSTREAM(FEET) = 2180.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 19.882
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.394

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "OPEN BRUSH"	B	9.71	0.61	1.000	66	19.88

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.61
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 15.56
TOTAL AREA(ACRES) = 9.71 PEAK FLOW RATE(CFS) = 15.56

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

FLOW PROCESS FROM NODE 20321.00 TO NODE 20322.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2180.00 DOWNSTREAM(FEET) = 2160.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 548.49 CHANNEL SLOPE = 0.0365
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 1.00
CHANNEL FLOW THRU SUBAREA(CFS) = 15.56
FLOW VELOCITY(FEET/SEC.) = 2.11 FLOW DEPTH(FEET) = 0.38
TRAVEL TIME(MIN.) = 4.34 Tc(MIN.) = 24.22
LONGEST FLOWPATH FROM NODE 20320.00 TO NODE 20322.00 = 1568.94 FEET.

FLOW PROCESS FROM NODE 20322.00 TO NODE 20322.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 24.22
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.127

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	15.34	0.61	1.000	66
RESIDENTIAL "2 DWELLINGS/ACRE"	B	0.02	0.75	0.700	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.61
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 15.36 SUBAREA RUNOFF(CFS) = 20.91
EFFECTIVE AREA(ACRES) = 25.07 AREA-AVERAGED Fm(INCH/HR) = 0.61
AREA-AVERAGED Fp(INCH/HR) = 0.61 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 25.1 PEAK FLOW RATE(CFS) = 34.13

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.45; 30M = 0.92; 1HR = 1.21; 3HR = 2.00; 6HR = 2.75; 24HR = 7.29

FLOW PROCESS FROM NODE 20322.00 TO NODE 20323.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2160.00 DOWNSTREAM(FEET) = 2150.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 479.58 CHANNEL SLOPE = 0.0209
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 2.00
CHANNEL FLOW THRU SUBAREA(CFS) = 34.13
FLOW VELOCITY(FEET/SEC.) = 2.06 FLOW DEPTH(FEET) = 0.58
TRAVEL TIME(MIN.) = 3.87 Tc(MIN.) = 28.09
LONGEST FLOWPATH FROM NODE 20320.00 TO NODE 20323.00 = 2048.52 FEET.

FLOW PROCESS FROM NODE 20323.00 TO NODE 20323.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 28.09
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.946

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "2 DWELLINGS/ACRE"	B	11.74	0.75	0.700	56
NATURAL FAIR COVER "OPEN BRUSH"	B	8.32	0.61	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.68
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.824
SUBAREA AREA(ACRES) = 20.06 SUBAREA RUNOFF(CFS) = 24.99
EFFECTIVE AREA(ACRES) = 45.13 AREA-AVERAGED Fm(INCH/HR) = 0.59
AREA-AVERAGED Fp(INCH/HR) = 0.64 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 45.1 PEAK FLOW RATE(CFS) = 55.04

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.45; 30M = 0.92; 1HR = 1.21; 3HR = 2.00; 6HR = 2.75; 24HR = 6.70

FLOW PROCESS FROM NODE 20323.00 TO NODE 20324.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2150.00 DOWNSTREAM(FEET) = 2100.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 676.85 CHANNEL SLOPE = 0.0739
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 2.00
CHANNEL FLOW THRU SUBAREA(CFS) = 55.04
FLOW VELOCITY(FEET/SEC.) = 3.79 FLOW DEPTH(FEET) = 0.54
TRAVEL TIME(MIN.) = 2.98 Tc(MIN.) = 31.07
LONGEST FLOWPATH FROM NODE 20320.00 TO NODE 20324.00 = 2725.37 FEET.

FLOW PROCESS FROM NODE 20324.00 TO NODE 20324.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 31.07
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.832

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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RESIDENTIAL
"2 DWELLINGS/ACRE" B 14.74 0.75 0.700 56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.700
SUBAREA AREA(ACRES) = 14.74 SUBAREA RUNOFF(CFS) = 17.35
EFFECTIVE AREA(ACRES) = 59.87 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.87
TOTAL AREA(ACRES) = 59.9 PEAK FLOW RATE(CFS) = 67.76

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.93; 1HR = 1.23; 3HR = 2.02; 6HR = 2.75; 24HR = 6.50

FLOW PROCESS FROM NODE 20324.00 TO NODE 20325.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	2100.00	DOWNSTREAM(FEET) =	2080.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	631.62	CHANNEL SLOPE =	0.0317
CHANNEL BASE(FEET) =	0.00	"Z" FACTOR =	50.000
MANNING'S FACTOR =	0.045	MAXIMUM DEPTH(FEET) =	2.00
CHANNEL FLOW THRU SUBAREA(CFS) =	67.76		
FLOW VELOCITY(FEET/SEC.) =	2.90	FLOW DEPTH(FEET) =	0.68
TRAVEL TIME(MIN.) =	3.63	Tc(MIN.) =	34.70
LONGEST FLOWPATH FROM NODE 20320.00 TO NODE 20325.00 =	3356.99	FEET.	

FLOW PROCESS FROM NODE 20325.00 TO NODE 20325.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) =	34.70				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	1.714				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	10.91	0.75	0.700	56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) =	0.75				
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap =	0.700				
SUBAREA AREA(ACRES) =	10.91	SUBAREA RUNOFF(CFS) =	11.69		
EFFECTIVE AREA(ACRES) =	70.78	AREA-AVERAGED Fm(INCH/HR) =	0.57		
AREA-AVERAGED Fp(INCH/HR) =	0.67	AREA-AVERAGED Ap =	0.84		
TOTAL AREA(ACRES) =	70.8	PEAK FLOW RATE(CFS) =	73.11		

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

FLOW PROCESS FROM NODE 20325.00 TO NODE 20326.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	2080.00	DOWNSTREAM(FEET) =	2050.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	686.64	CHANNEL SLOPE =	0.0437
CHANNEL BASE(FEET) =	0.00	"Z" FACTOR =	50.000

MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 2.00
CHANNEL FLOW THRU SUBAREA(CFS) = 73.11
FLOW VELOCITY(FEET/SEC.) = 3.29 FLOW DEPTH(FEET) = 0.67
TRAVEL TIME(MIN.) = 3.48 Tc(MIN.) = 38.18
LONGEST FLOWPATH FROM NODE 20320.00 TO NODE 20326.00 = 4043.63 FEET.

FLOW PROCESS FROM NODE 20326.00 TO NODE 20326.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) =	38.18				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	1.618				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	48.19	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.06	0.75	0.600	56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) =	0.75				
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap =	0.700				
SUBAREA AREA(ACRES) =	48.25	SUBAREA RUNOFF(CFS) =	47.55		
EFFECTIVE AREA(ACRES) =	119.03	AREA-AVERAGED Fm(INCH/HR) =	0.55		
AREA-AVERAGED Fp(INCH/HR) =	0.70	AREA-AVERAGED Ap =	0.78		
TOTAL AREA(ACRES) =	119.0	PEAK FLOW RATE(CFS) =	114.58		

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.44; 30M = 0.91; 1HR = 1.20; 3HR = 2.00; 6HR = 2.75; 24HR = 6.50

FLOW PROCESS FROM NODE 20326.00 TO NODE 20327.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	2050.00	DOWNSTREAM(FEET) =	1990.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	1389.79	CHANNEL SLOPE =	0.0432
CHANNEL BASE(FEET) =	0.00	"Z" FACTOR =	50.000
MANNING'S FACTOR =	0.045	MAXIMUM DEPTH(FEET) =	3.00
CHANNEL FLOW THRU SUBAREA(CFS) =	114.58		
FLOW VELOCITY(FEET/SEC.) =	3.68	FLOW DEPTH(FEET) =	0.79
TRAVEL TIME(MIN.) =	6.29	Tc(MIN.) =	44.47
LONGEST FLOWPATH FROM NODE 20320.00 TO NODE 20327.00 =	5433.42	FEET.	

FLOW PROCESS FROM NODE 20327.00 TO NODE 20327.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) =	44.47				
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =	1.477				
SUBAREA LOSS RATE DATA(AMC II):					
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	16.19	0.75	0.700	56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) =	0.75				

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.700
SUBAREA AREA (ACRES) = 16.19 SUBAREA RUNOFF (CFS) = 13.89
EFFECTIVE AREA (ACRES) = 135.22 AREA-AVERAGED Fm (INCH/HR) = 0.55
AREA-AVERAGED Fp (INCH/HR) = 0.71 AREA-AVERAGED Ap = 0.77
TOTAL AREA (ACRES) = 135.2 PEAK FLOW RATE (CFS) = 114.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

FLOW PROCESS FROM NODE 20327.00 TO NODE 20328.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) =	1990.00	DOWNSTREAM (FEET) =	1920.00
CHANNEL LENGTH THRU SUBAREA (FEET) =	1079.99	CHANNEL SLOPE =	0.0648
CHANNEL BASE (FEET) =	0.00	"Z" FACTOR =	50.000
MANNING'S FACTOR =	0.045	MAXIMUM DEPTH (FEET) =	3.00
CHANNEL FLOW THRU SUBAREA (CFS) =	114.58		
FLOW VELOCITY (FEET/SEC.) =	4.31	FLOW DEPTH (FEET) =	0.73
TRAVEL TIME (MIN.) =	4.18	Tc (MIN.) =	48.65
LONGEST FLOWPATH FROM NODE 20320.00 TO NODE 20328.00 =	6513.41 FEET.		

FLOW PROCESS FROM NODE 20328.00 TO NODE 20328.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) =	48.65				
* 100 YEAR RAINFALL INTENSITY (INCH/HR) =	1.399				
SUBAREA LOSS RATE DATA (AMC II):					
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	25.33	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.27	0.75	0.600	56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) =	0.75				
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	0.699				
SUBAREA AREA (ACRES) =	25.60	SUBAREA RUNOFF (CFS) =	20.20		
EFFECTIVE AREA (ACRES) =	160.82	AREA-AVERAGED Fm (INCH/HR) =	0.54		
AREA-AVERAGED Fp (INCH/HR) =	0.71	AREA-AVERAGED Ap =	0.76		
TOTAL AREA (ACRES) =	160.8	PEAK FLOW RATE (CFS) =	124.08		

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

FLOW PROCESS FROM NODE 20328.00 TO NODE 20329.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

=====

UPSTREAM ELEVATION (FEET) =	1920.00	DOWNSTREAM ELEVATION (FEET) =	1870.00
STREET LENGTH (FEET) =	1075.25	CURB HEIGHT (INCHES) =	6.0
STREET HALFWIDTH (FEET) =	18.00		

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
INSIDE STREET CROSSFALL (DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALfstREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 129.32

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH (FEET) = 0.68
HALFSTREET FLOOD WIDTH (FEET) = 26.92
AVERAGE FLOW VELOCITY (FEET/SEC.) = 8.49
PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 5.76
STREET FLOW TRAVEL TIME (MIN.) = 2.11 Tc (MIN.) = 50.76
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.364

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	13.84	0.75	0.700	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.75

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.700

SUBAREA AREA (ACRES) =	13.84	SUBAREA RUNOFF (CFS) =	10.47
EFFECTIVE AREA (ACRES) =	174.66	AREA-AVERAGED Fm (INCH/HR) =	0.54
AREA-AVERAGED Fp (INCH/HR) =	0.71	AREA-AVERAGED Ap =	0.76
TOTAL AREA (ACRES) =	174.7	PEAK FLOW RATE (CFS) =	129.46

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH (FEET) = 0.68 HALFSTREET FLOOD WIDTH (FEET) = 26.92
FLOW VELOCITY (FEET/SEC.) = 8.50 DEPTH*VELOCITY (FT*FT/SEC.) = 5.77
LONGEST FLOWPATH FROM NODE 20320.00 TO NODE 20329.00 = 7588.66 FEET.

FLOW PROCESS FROM NODE 20329.00 TO NODE 20330.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

=====

UPSTREAM ELEVATION (FEET) =	1870.00	DOWNSTREAM ELEVATION (FEET) =	1813.00
STREET LENGTH (FEET) =	927.52	CURB HEIGHT (INCHES) =	6.0
STREET HALFWIDTH (FEET) =	18.00		

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
INSIDE STREET CROSSFALL (DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALfstREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 135.55

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.66

HALFSTREET FLOOD WIDTH(FEET) = 25.95

AVERAGE FLOW VELOCITY(FEET/SEC.) = 9.55

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 6.29

STREET FLOW TRAVEL TIME(MIN.) = 1.62 Tc(MIN.) = 52.38

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.339

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.48	0.75	0.600	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	5.88	0.75	0.900	56
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	11.27	0.75	0.700	56

RESIDENTIAL

"3-4 DWELLINGS/ACRE" B 0.48 0.75 0.600 56

RESIDENTIAL

".4 DWELLING/ACRE" B 5.88 0.75 0.900 56

RESIDENTIAL

"2 DWELLINGS/ACRE" B 11.27 0.75 0.700 56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.75

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.764

SUBAREA AREA(ACRES) = 17.63 SUBAREA RUNOFF(CFS) = 12.18

EFFECTIVE AREA(ACRES) = 192.29 AREA-AVERAGED Fm(INCH/HR) = 0.54

AREA-AVERAGED Fp(INCH/HR) = 0.72 AREA-AVERAGED Ap = 0.76

TOTAL AREA(ACRES) = 192.3 PEAK FLOW RATE(CFS) = 137.63

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.66 HALFSTREET FLOOD WIDTH(FEET) = 26.13

FLOW VELOCITY(FEET/SEC.) = 9.57 DEPTH*VELOCITY(FT*FT/SEC.) = 6.34

LONGEST FLOWPATH FROM NODE 20320.00 TO NODE 20330.00 = 8516.18 FEET.

FLOW PROCESS FROM NODE 20330.00 TO NODE 20330.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====
TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 52.38

RAINFALL INTENSITY(INCH/HR) = 1.34

AREA-AVERAGED Fm(INCH/HR) = 0.54

AREA-AVERAGED Fp(INCH/HR) = 0.72

AREA-AVERAGED Ap = 0.76

EFFECTIVE STREAM AREA(ACRES) = 192.29

TOTAL STREAM AREA(ACRES) = 192.29

PEAK FLOW RATE(CFS) AT CONFLUENCE = 137.63

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	346.04	39.39	1.588	0.70(0.54)	0.77	361.5	20300.00
2	137.63	52.38	1.339	0.72(0.54)	0.76	192.3	20320.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	482.04	39.39	1.588	0.71(0.54)	0.77	506.1	20300.00
2	401.28	52.38	1.339	0.71(0.54)	0.77	553.8	20320.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 482.04 Tc(MIN.) = 39.39

EFFECTIVE AREA(ACRES) = 506.13 AREA-AVERAGED Fm(INCH/HR) = 0.54

AREA-AVERAGED Fp(INCH/HR) = 0.71 AREA-AVERAGED Ap = 0.77

TOTAL AREA(ACRES) = 553.8

LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20330.00 = 11179.07 FEET.

FLOW PROCESS FROM NODE 20330.00 TO NODE 20349.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>(STREET TABLE SECTION # 18 USED)<<<<<

=====
UPSTREAM ELEVATION(FEET) = 1813.00 DOWNSTREAM ELEVATION(FEET) = 1785.00

STREET LENGTH(FEET) = 1334.61 CURB HEIGHT(INCHES) = 8.0

STREET HALFWIDTH(FEET) = 26.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 15.00

INSIDE STREET CROSSFALL(DECIMAL) = 0.020

OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2

STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180

Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 488.27

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 1.21

HALFSTREET FLOOD WIDTH(FEET) = 53.22

AVERAGE FLOW VELOCITY(FEET/SEC.) = 8.65

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 10.48

STREET FLOW TRAVEL TIME(MIN.) = 2.57 Tc(MIN.) = 41.96

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.529

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	1.05	0.75	0.600	56
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	12.65	0.75	0.700	56

RESIDENTIAL

"3-4 DWELLINGS/ACRE" B 1.05 0.75 0.600 56

RESIDENTIAL

"2 DWELLINGS/ACRE" B 12.65 0.75 0.700 56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.75

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.692

SUBAREA AREA(ACRES) = 13.70 SUBAREA RUNOFF(CFS) = 12.47

EFFECTIVE AREA(ACRES) = 519.83 AREA-AVERAGED Fm(INCH/HR) = 0.54

AREA-AVERAGED Fp(INCH/HR) = 0.71 AREA-AVERAGED Ap = 0.76

TOTAL AREA(ACRES) = 567.5 PEAK FLOW RATE(CFS) = 482.04

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 1.21 HALFSTREET FLOOD WIDTH(FEET) = 52.97
FLOW VELOCITY(FEET/SEC.) = 8.62 DEPTH*VELOCITY(FT*FT/SEC.) = 10.40
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20349.00 = 12513.68 FEET.

FLOW PROCESS FROM NODE 20349.00 TO NODE 20349.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 41.96
RAINFALL INTENSITY(INCH/HR) = 1.53
AREA-AVERAGED Fm(INCH/HR) = 0.54
AREA-AVERAGED Fp(INCH/HR) = 0.71
AREA-AVERAGED Ap = 0.76
EFFECTIVE STREAM AREA(ACRES) = 519.83
TOTAL STREAM AREA(ACRES) = 567.51
PEAK FLOW RATE(CFS) AT CONFLUENCE = 482.04

FLOW PROCESS FROM NODE 20340.00 TO NODE 20341.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 998.88
ELEVATION DATA: UPSTREAM(FEET) = 2120.00 DOWNSTREAM(FEET) = 2080.00

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.422
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.175
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"GRASS"	B	6.76	0.57	1.000	69	21.29
RESIDENTIAL						
"3-4 DWELLINGS/ACRE"	B	1.12	0.75	0.600	56	12.42

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.58
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.943
SUBAREA RUNOFF(CFS) = 18.62
TOTAL AREA(ACRES) = 7.88 PEAK FLOW RATE(CFS) = 18.62

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.88; 1HR = 1.16; 3HR = 1.97; 6HR = 2.75; 24HR = 6.50

FLOW PROCESS FROM NODE 20341.00 TO NODE 20342.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2080.00 DOWNSTREAM(FEET) = 2055.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 397.26 CHANNEL SLOPE = 0.0629

CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 2.00
CHANNEL FLOW THRU SUBAREA(CFS) = 18.62
FLOW VELOCITY(FEET/SEC.) = 2.71 FLOW DEPTH(FEET) = 0.37
TRAVEL TIME(MIN.) = 2.45 Tc(MIN.) = 14.87
LONGEST FLOWPATH FROM NODE 20340.00 TO NODE 20342.00 = 1396.14 FEET.

FLOW PROCESS FROM NODE 20342.00 TO NODE 20342.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 14.87
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.850
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	4.25	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.25	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.694
SUBAREA AREA(ACRES) = 4.50 SUBAREA RUNOFF(CFS) = 9.44
EFFECTIVE AREA(ACRES) = 12.38 AREA-AVERAGED Fm(INCH/HR) = 0.54
AREA-AVERAGED Fp(INCH/HR) = 0.63 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 12.4 PEAK FLOW RATE(CFS) = 25.75

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.43; 30M = 0.88; 1HR = 1.16; 3HR = 1.97; 6HR = 2.75; 24HR = 6.50

FLOW PROCESS FROM NODE 20342.00 TO NODE 20343.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2055.00 DOWNSTREAM(FEET) = 2035.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 438.38 CHANNEL SLOPE = 0.0456
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 2.00
CHANNEL FLOW THRU SUBAREA(CFS) = 25.75
FLOW VELOCITY(FEET/SEC.) = 2.60 FLOW DEPTH(FEET) = 0.45
TRAVEL TIME(MIN.) = 2.81 Tc(MIN.) = 17.68
LONGEST FLOWPATH FROM NODE 20340.00 TO NODE 20343.00 = 1834.52 FEET.

FLOW PROCESS FROM NODE 20343.00 TO NODE 20343.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 17.68
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.568
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	5.37	0.75	0.700	56

RESIDENTIAL
 "3-4 DWELLINGS/ACRE" B 0.37 0.75 0.600 56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.694
 SUBAREA AREA (ACRES) = 5.74 SUBAREA RUNOFF(CFS) = 10.59
 EFFECTIVE AREA(ACRES) = 18.12 AREA-AVERAGED Fm(INCH/HR) = 0.53
 AREA-AVERAGED Fp(INCH/HR) = 0.66 AREA-AVERAGED Ap = 0.80
 TOTAL AREA (ACRES) = 18.1 PEAK FLOW RATE(CFS) = 33.21

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.44; 30M = 0.89; 1HR = 1.18; 3HR = 1.98; 6HR = 2.75; 24HR = 6.50

 FLOW PROCESS FROM NODE 20343.00 TO NODE 20344.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2035.00 DOWNSTREAM(FEET) = 2015.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 496.72 CHANNEL SLOPE = 0.0403
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
 MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 2.00
 CHANNEL FLOW THRU SUBAREA(CFS) = 33.21
 FLOW VELOCITY(FEET/SEC.) = 2.65 FLOW DEPTH(FEET) = 0.50
 TRAVEL TIME(MIN.) = 3.12 Tc(MIN.) = 20.81
 LONGEST FLOWPATH FROM NODE 20340.00 TO NODE 20344.00 = 2331.24 FEET.

 FLOW PROCESS FROM NODE 20344.00 TO NODE 20344.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 20.81
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.330
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	2.06	0.75	0.700	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	2.77	0.75	0.900	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.07	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.812
 SUBAREA AREA(ACRES) = 4.90 SUBAREA RUNOFF(CFS) = 7.60
 EFFECTIVE AREA(ACRES) = 23.02 AREA-AVERAGED Fm(INCH/HR) = 0.55
 AREA-AVERAGED Fp(INCH/HR) = 0.68 AREA-AVERAGED Ap = 0.80
 TOTAL AREA(ACRES) = 23.0 PEAK FLOW RATE(CFS) = 36.91

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.45; 30M = 0.92; 1HR = 1.21; 3HR = 2.00; 6HR = 2.75; 24HR = 6.50

 FLOW PROCESS FROM NODE 20344.00 TO NODE 20345.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2015.00 DOWNSTREAM(FEET) = 1980.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 575.06 CHANNEL SLOPE = 0.0609
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
 MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 2.00
 CHANNEL FLOW THRU SUBAREA(CFS) = 36.91
 FLOW VELOCITY(FEET/SEC.) = 3.16 FLOW DEPTH(FEET) = 0.48
 TRAVEL TIME(MIN.) = 3.04 Tc(MIN.) = 23.84
 LONGEST FLOWPATH FROM NODE 20340.00 TO NODE 20345.00 = 2906.30 FEET.

 FLOW PROCESS FROM NODE 20345.00 TO NODE 20345.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 23.84
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.147
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	12.00	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.27	0.75	0.600	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	3.29	0.75	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.741
 SUBAREA AREA(ACRES) = 15.56 SUBAREA RUNOFF(CFS) = 22.31
 EFFECTIVE AREA(ACRES) = 38.58 AREA-AVERAGED Fm(INCH/HR) = 0.55
 AREA-AVERAGED Fp(INCH/HR) = 0.71 AREA-AVERAGED Ap = 0.78
 TOTAL AREA(ACRES) = 38.6 PEAK FLOW RATE(CFS) = 55.43

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 FLOW PROCESS FROM NODE 20345.00 TO NODE 20346.00 IS CODE = 54

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 1980.00 DOWNSTREAM(FEET) = 1940.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 558.59 CHANNEL SLOPE = 0.0716
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 50.000
 MANNING'S FACTOR = 0.045 MAXIMUM DEPTH(FEET) = 2.00
 CHANNEL FLOW THRU SUBAREA(CFS) = 55.43
 FLOW VELOCITY(FEET/SEC.) = 3.71 FLOW DEPTH(FEET) = 0.55
 TRAVEL TIME(MIN.) = 2.51 Tc(MIN.) = 26.35
 LONGEST FLOWPATH FROM NODE 20340.00 TO NODE 20346.00 = 3464.89 FEET.

 FLOW PROCESS FROM NODE 20346.00 TO NODE 20346.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 26.35
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.022

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	3.53	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.62	0.75	0.600	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	3.41	0.75	0.900	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.782
SUBAREA AREA(ACRES) = 7.56 SUBAREA RUNOFF(CFS) = 9.78
EFFECTIVE AREA(ACRES) = 46.14 AREA-AVERAGED Fm(INCH/HR) = 0.56
AREA-AVERAGED Fp(INCH/HR) = 0.71 AREA-AVERAGED Ap = 0.78
TOTAL AREA(ACRES) = 46.1 PEAK FLOW RATE(CFS) = 60.86

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

FLOW PROCESS FROM NODE 20346.00 TO NODE 20347.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

=====

UPSTREAM ELEVATION(FEET) = 1940.00 DOWNSTREAM ELEVATION(FEET) = 1890.00
STREET LENGTH(FEET) = 993.62 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 67.37

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.56
HALFSTREET FLOOD WIDTH(FEET) = 20.76
AVERAGE FLOW VELOCITY(FEET/SEC.) = 7.20
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 4.00

STREET FLOW TRAVEL TIME(MIN.) = 2.30 Tc(MIN.) = 28.65

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.923

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	2.71	0.75	0.600	56
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	6.04	0.75	0.700	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.62	0.75	0.900	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.705

SUBAREA AREA(ACRES) = 10.37	SUBAREA RUNOFF(CFS) = 13.02
EFFECTIVE AREA(ACRES) = 56.51	AREA-AVERAGED Fm(INCH/HR) = 0.55
AREA-AVERAGED Fp(INCH/HR) = 0.72	AREA-AVERAGED Ap = 0.77
TOTAL AREA(ACRES) = 56.5	PEAK FLOW RATE(CFS) = 69.78

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.56 HALFSTREET FLOOD WIDTH(FEET) = 21.00
FLOW VELOCITY(FEET/SEC.) = 7.30 DEPTH*VELOCITY(FT*FT/SEC.) = 4.09
LONGEST FLOWPATH FROM NODE 20340.00 TO NODE 20347.00 = 4458.51 FEET.

FLOW PROCESS FROM NODE 20347.00 TO NODE 20348.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

=====

UPSTREAM ELEVATION(FEET) = 1890.00 DOWNSTREAM ELEVATION(FEET) = 1860.00
STREET LENGTH(FEET) = 874.50 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 77.76

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.61
HALFSTREET FLOOD WIDTH(FEET) = 23.51
AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.60
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 4.03
STREET FLOW TRAVEL TIME(MIN.) = 2.21 Tc(MIN.) = 30.86

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.839

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.78	0.75	0.600	56
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	12.66	0.75	0.700	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.694
SUBAREA AREA(ACRES) = 13.44 SUBAREA RUNOFF(CFS) = 15.96
EFFECTIVE AREA(ACRES) = 69.95 AREA-AVERAGED Fm(INCH/HR) = 0.54
AREA-AVERAGED Fp(INCH/HR) = 0.72 AREA-AVERAGED Ap = 0.75
TOTAL AREA(ACRES) = 69.9 PEAK FLOW RATE(CFS) = 81.48

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.62 HALFSTREET FLOOD WIDTH(FEET) = 23.87
 FLOW VELOCITY(FEET/SEC.) = 6.72 DEPTH*VELOCITY(FT*FT/SEC.) = 4.15
 LONGEST FLOWPATH FROM NODE 20340.00 TO NODE 20348.00 = 5333.01 FEET.

 FLOW PROCESS FROM NODE 20348.00 TO NODE 20349.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<
 =====

UPSTREAM ELEVATION(FEET) = 1860.00 DOWNSTREAM ELEVATION(FEET) = 1785.00
 STREET LENGTH(FEET) = 1082.38 CURB HEIGHT(INCHES) = 6.0
 STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALfstREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 100.39
 STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.59
 HALFSTREET FLOOD WIDTH(FEET) = 22.65
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 9.13
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 5.42
 STREET FLOW TRAVEL TIME(MIN.) = 1.98 Tc(MIN.) = 32.83
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.772

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"2 DWELLINGS/ACRE"	B	33.09	0.75	0.700	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.55	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.698
 SUBAREA AREA(ACRES) = 33.64 SUBAREA RUNOFF(CFS) = 37.83
 EFFECTIVE AREA(ACRES) = 103.59 AREA-AVERAGED Fm(INCH/HR) = 0.54
 AREA-AVERAGED Fp(INCH/HR) = 0.73 AREA-AVERAGED Ap = 0.73
 TOTAL AREA(ACRES) = 103.6 PEAK FLOW RATE(CFS) = 115.07

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.62 HALFSTREET FLOOD WIDTH(FEET) = 23.81
 FLOW VELOCITY(FEET/SEC.) = 9.53 DEPTH*VELOCITY(FT*FT/SEC.) = 5.87
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 1082.4 FT WITH ELEVATION-DROP = 75.0 FT, IS 84.9 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20349.00
 LONGEST FLOWPATH FROM NODE 20340.00 TO NODE 20349.00 = 6415.39 FEET.

 FLOW PROCESS FROM NODE 20349.00 TO NODE 20349.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
 =====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 32.83
 RAINFALL INTENSITY(INCH/HR) = 1.77
 AREA-AVERAGED Fm(INCH/HR) = 0.54
 AREA-AVERAGED Fp(INCH/HR) = 0.73
 AREA-AVERAGED Ap = 0.73
 EFFECTIVE STREAM AREA(ACRES) = 103.59
 TOTAL STREAM AREA(ACRES) = 103.59
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 115.07

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	482.04	41.96	1.529	0.71(0.54)	0.76	519.8	20300.00
1	401.28	55.06	1.299	0.71(0.54)	0.76	567.5	20320.00
2	115.07	32.83	1.772	0.73(0.54)	0.73	103.6	20340.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	584.75	32.83	1.772	0.71(0.54)	0.76	510.4	20340.00
2	574.51	41.96	1.529	0.71(0.54)	0.76	623.4	20300.00
3	472.29	55.06	1.299	0.71(0.54)	0.76	671.1	20320.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 584.75 Tc(MIN.) = 32.83
 EFFECTIVE AREA(ACRES) = 510.35 AREA-AVERAGED Fm(INCH/HR) = 0.54
 AREA-AVERAGED Fp(INCH/HR) = 0.71 AREA-AVERAGED Ap = 0.76
 TOTAL AREA(ACRES) = 671.1
 LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20349.00 = 12513.68 FEET.

 FLOW PROCESS FROM NODE 20349.00 TO NODE 20349.00 IS CODE = 71

>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
 >>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
 =====

UNIT-HYDROGRAPH DATA:

RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.83
 S-GRAPH: VALLEY(DEV.)= 75.1%;VALLEY(UNDEV.)/DESERT= 24.9%
 MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
 Tc(HR) = 0.70; LAG(HR) = 0.56; Fm(INCH/HR) = 0.54; Ybar = 0.50
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
 3HR = 1.00; 6HR = 1.00; 24HR= 1.00
 UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 671.1
 LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20349.00 = 12513.68 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3,n=.0580; Lca/L=0.4,n=.0520; Lca/L=0.5,n=.0478;Lca/L=0.6,n=.0446
 TIME OF PEAK FLOW(HR) = 16.58 RUNOFF VOLUME(AF) = 200.99
 UNIT-HYDROGRAPH METHOD PEAK FLOW RATE (CFS) = 686.96
 TOTAL PEAK FLOW RATE (CFS) = 686.96 (SOURCE FLOW INCLUDED)
 RATIONAL METHOD PEAK FLOW RATE (CFS) = 584.75
 (UPSTREAM NODE PEAK FLOW RATE (CFS) = 584.75)
 PEAK FLOW RATE (CFS) USED = 686.96

 FLOW PROCESS FROM NODE 20349.00 TO NODE 20350.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<

=====

UPSTREAM ELEVATION (FEET) = 1785.00 DOWNSTREAM ELEVATION (FEET) = 1715.00
 STREET LENGTH (FEET) = 1290.16 CURB HEIGHT (INCHES) = 6.0
 STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
 INSIDE STREET CROSSFALL (DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALfstREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 715.76
 STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH (FEET) = 1.16
 HALFSTREET FLOOD WIDTH (FEET) = 51.22
 AVERAGE FLOW VELOCITY (FEET/SEC.) = 13.46
 PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 15.67
 STREET FLOW TRAVEL TIME (MIN.) = 1.60 Tc (MIN.) = 43.56
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.495

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	4.52	0.75	0.600	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	72.05	0.75	0.900	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.75

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.882

UNIT-HYDROGRAPH DATA:

RAINFALL (INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.80

S-GRAPH: VALLEY (DEV.)= 68.0%;VALLEY (UNDEV.)/DESERT= 32.0%

MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT (UNDEV.)= 0.0%

Tc (HR) = 0.73; LAG (HR) = 0.58; Fm (INCH/HR) = 0.55; Ybar = 0.52

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;

3HR = 0.99; 6HR = 1.00; 24HR= 1.00

UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 747.7

LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20350.00 = 13803.84 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3,n=.0557; Lca/L=0.4,n=.0499; Lca/L=0.5,n=.0459;Lca/L=0.6,n=.0428

TIME OF PEAK FLOW (HR) = 16.58 RUNOFF VOLUME (AF) = 217.79

UNIT-HYDROGRAPH PEAK FLOW RATE (CFS) = 718.83
 TOTAL AREA (ACRES) = 747.7 PEAK FLOW RATE (CFS) = 718.83

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH (FEET) = 1.17 HALFSTREET FLOOD WIDTH (FEET) = 51.28
 FLOW VELOCITY (FEET/SEC.) = 13.48 DEPTH*VELOCITY (FT*FT/SEC.) = 15.71

*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 1290.2 FT WITH ELEVATION-DROP = 70.0 FT, IS 167.9 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20350.00

 FLOW PROCESS FROM NODE 20350.00 TO NODE 20351.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 5 USED)<<<<<

=====

UPSTREAM ELEVATION (FEET) = 1715.00 DOWNSTREAM ELEVATION (FEET) = 1680.00
 STREET LENGTH (FEET) = 1342.03 CURB HEIGHT (INCHES) = 6.0
 STREET HALFWIDTH (FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK (FEET) = 10.00
 INSIDE STREET CROSSFALL (DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL (DECIMAL) = 0.020

SPECIFIED NUMBER OF HALfstREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL (DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section (curb-to-curb) = 0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 747.49
 STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH (FEET) = 1.34
 HALFSTREET FLOOD WIDTH (FEET) = 60.25
 AVERAGE FLOW VELOCITY (FEET/SEC.) = 10.19
 PRODUCT OF DEPTH&VELOCITY (FT*FT/SEC.) = 13.71
 STREET FLOW TRAVEL TIME (MIN.) = 2.19 Tc (MIN.) = 45.75
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.452

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	7.14	0.75	0.600	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	72.56	0.75	0.900	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.75

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.873

UNIT-HYDROGRAPH DATA:

RAINFALL (INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.77

S-GRAPH: VALLEY (DEV.)= 62.4%;VALLEY (UNDEV.)/DESERT= 37.6%

MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT (UNDEV.)= 0.0%

Tc (HR) = 0.76; LAG (HR) = 0.61; Fm (INCH/HR) = 0.56; Ybar = 0.53

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;

3HR = 0.99; 6HR = 1.00; 24HR= 1.00

UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 827.4
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20351.00 = 15145.87 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L=0.3,n=.0540; Lca/L=0.4,n=.0484; Lca/L=0.5,n=.0445;Lca/L=0.6,n=.0415
TIME OF PEAK FLOW(HR) = 16.67 RUNOFF VOLUME(AF) = 235.54
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) = 757.04
TOTAL AREA(ACRES) = 827.4 PEAK FLOW RATE(CFS) = 757.04

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.35 HALFSTREET FLOOD WIDTH(FEET) = 60.55
FLOW VELOCITY(FEET/SEC.) = 10.22 DEPTH*VELOCITY(FT*FT/SEC.) = 13.81

*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
AND L = 1342.0 FT WITH ELEVATION-DROP = 35.0 FT, IS 154.6 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20351.00

FLOW PROCESS FROM NODE 20351.00 TO NODE 20352.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 5 USED)<<<<<

=====

UPSTREAM ELEVATION(FEET) = 1680.00 DOWNSTREAM ELEVATION(FEET) = 1655.00
STREET LENGTH(FEET) = 1091.03 CURB HEIGHT(INCHES) = 6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 10.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 762.63

STREET FLOWING FULL

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 1.39
HALFSTREET FLOOD WIDTH(FEET) = 62.32
AVERAGE FLOW VELOCITY(FEET/SEC.) = 9.73
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 13.48

STREET FLOW TRAVEL TIME(MIN.) = 1.87 Tc(MIN.) = 47.62

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.417

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL ".4 DWELLING/ACRE"	B	15.77	0.75	0.900	56
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	0.71	0.75	0.600	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.887

UNIT-HYDROGRAPH DATA:

RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.77

S-GRAPH: VALLEY(DEV.)= 61.2%;VALLEY(UNDEV.)/DESERT= 38.8%

MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
Tc(HR) = 0.79; LAG(HR) = 0.63; Fm(INCH/HR) = 0.56; Ybar = 0.53
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 843.8
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20352.00 = 16236.90 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L=0.3,n=.0529; Lca/L=0.4,n=.0474; Lca/L=0.5,n=.0435;Lca/L=0.6,n=.0406
TIME OF PEAK FLOW(HR) = 16.67 RUNOFF VOLUME(AF) = 239.13
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) = 756.39
TOTAL AREA(ACRES) = 843.8 PEAK FLOW RATE(CFS) = 757.04
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.38 HALFSTREET FLOOD WIDTH(FEET) = 62.14
FLOW VELOCITY(FEET/SEC.) = 9.71 DEPTH*VELOCITY(FT*FT/SEC.) = 13.43

*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
AND L = 1091.0 FT WITH ELEVATION-DROP = 25.0 FT, IS 33.3 CFS,
WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 20352.00

FLOW PROCESS FROM NODE 20352.00 TO NODE 20352.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

=====

FLOW PROCESS FROM NODE 20274.00 TO NODE 20274.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: 20274.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2478.03 Tc(MIN.) = 41.02

AREA-AVERAGED Fm(INCH/HR) = 0.59 Ybar = 0.54

TOTAL AREA(ACRES) = 3101.9

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20274.00 = 19473.89 FEET.

FLOW PROCESS FROM NODE 20274.00 TO NODE 20274.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2478.03 Tc(MIN.) = 41.02

AREA-AVERAGED Fm(INCH/HR) = 0.59 Ybar = 0.54

TOTAL AREA(ACRES) = 3101.9

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20274.00 = 19473.89 FEET.

FLOW PROCESS FROM NODE 20274.00 TO NODE 20274.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 2 <<<<<

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*****
FLOW PROCESS FROM NODE 20274.00 TO NODE 20352.00 IS CODE = 54
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
-----
ELEVATION DATA: UPSTREAM(FEET) = 1670.00 DOWNSTREAM(FEET) = 1655.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 623.43 CHANNEL SLOPE = 0.0241
CHANNEL BASE(FEET) = 10.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.035 MAXIMUM DEPTH(FEET) = 10.00
CHANNEL FLOW THRU SUBAREA(CFS) = 2478.03
FLOW VELOCITY(FEET/SEC.) = 16.23 FLOW DEPTH(FEET) = 6.59
TRAVEL TIME(MIN.) = 0.64 Tc(MIN.) = 41.66
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20352.00 = 20097.32 FEET.
*****
FLOW PROCESS FROM NODE 20352.00 TO NODE 20352.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
-----
MAINLINE Tc(MIN.) = 41.66
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.536
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
SCHOOL B 10.49 0.75 0.600 56
RESIDENTIAL
"3-4 DWELLINGS/ACRE" B 1.59 0.75 0.600 56
RESIDENTIAL
".4 DWELLING/ACRE" B 21.45 0.75 0.900 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.792
SUBAREA AREA(ACRES) = 33.53
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.21;3H= 2.05;6H= 2.87;24H= 7.06
S-GRAPH: VALLEY(DEV.)= 35.0%;VALLEY(UNDEV.)/DESERT= 65.0%
MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
Tc(HR) = 0.69; LAG(HR) = 0.56; Fm(INCH/HR) = 0.59; Ybar = 0.54
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.86; 30M = 0.86; 1HR = 0.86;
3HR = 0.98; 6HR = 0.99; 24HR= 0.99
UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 3135.5
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20352.00 = 20097.32 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L=0.3,n=.0412; Lca/L=0.4,n=.0369; Lca/L=0.5,n=.0339;Lca/L=0.6,n=.0316
TIME OF PEAK FLOW(HR) = 16.58 RUNOFF VOLUME(AF) = 884.32
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) = 2480.59
TOTAL AREA(ACRES) = 3135.5 PEAK FLOW RATE(CFS) = 2480.59

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
*****
FLOW PROCESS FROM NODE 20352.00 TO NODE 20352.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<

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** MAIN STREAM CONFLUENCE DATA **
PEAK FLOW RATE(CFS) = 2480.59 Tc(MIN.) = 41.66
AREA-AVERAGED Fm(INCH/HR) = 0.59 Ybar = 0.54
TOTAL AREA(ACRES) = 3135.5
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20352.00 = 20097.32 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
PEAK FLOW RATE(CFS) = 757.04 Tc(MIN.) = 47.62
AREA-AVERAGED Fm(INCH/HR) = 0.56 Ybar = 0.53
TOTAL AREA(ACRES) = 843.8
LONGEST FLOWPATH FROM NODE 20300.00 TO NODE 20352.00 = 16236.90 FEET.

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.22;3H= 2.05;6H= 2.84;24H= 6.99
S-GRAPH: VALLEY(DEV.)= 40.6%;VALLEY(UNDEV.)/DESERT= 59.4%
MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
Tc(HR) = 0.69; LAG(HR) = 0.56; Fm(INCH/HR) = 0.58; Ybar = 0.54
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
3HR = 0.97; 6HR = 0.99; 24HR= 0.99
UNIT-INTERVAL(MIN) = 5.00 TOTAL AREA(ACRES) = 3979.3
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20352.00 = 20097.32 FEET.
EQUIVALENT BASIN FACTOR APPROXIMATIONS:
Lca/L=0.3,n=.0412; Lca/L=0.4,n=.0369; Lca/L=0.5,n=.0339;Lca/L=0.6,n=.0316
TIME OF PEAK FLOW(HR) = 16.58 RUNOFF VOLUME(AF) = 1112.54
PEAK FLOW RATE(CFS) = 3054.49
*****
FLOW PROCESS FROM NODE 20352.00 TO NODE 20352.00 IS CODE = 12
-----
>>>>CLEAR MEMORY BANK # 1 <<<<
-----
*****
FLOW PROCESS FROM NODE 20352.00 TO NODE 20353.00 IS CODE = 54
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
-----
ELEVATION DATA: UPSTREAM(FEET) = 1655.00 DOWNSTREAM(FEET) = 1625.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1454.79 CHANNEL SLOPE = 0.0206
CHANNEL BASE(FEET) = 12.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.035 MAXIMUM DEPTH(FEET) = 10.00
CHANNEL FLOW THRU SUBAREA(CFS) = 3054.49
FLOW VELOCITY(FEET/SEC.) = 16.10 FLOW DEPTH(FEET) = 7.19
TRAVEL TIME(MIN.) = 1.51 Tc(MIN.) = 43.16
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20353.00 = 21552.11 FEET.

*****
FLOW PROCESS FROM NODE 20353.00 TO NODE 20353.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
-----
MAINLINE Tc(MIN.) = 43.16
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.504

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SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
SCHOOL	B	20.64	0.75	0.600	56
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	1.09	0.75	0.600	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	25.75	0.75	0.900	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.69	0.61	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.74

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.775

SUBAREA AREA (ACRES) = 50.17

UNIT-HYDROGRAPH DATA:

RAINFALL (INCH): 5M= 0.45; 30M= 0.93; 1H= 1.22; 3H= 2.05; 6H= 2.84; 24H= 6.99

S-GRAPH: VALLEY (DEV.)= 40.6%; VALLEY (UNDEV.)/DESERT= 59.4%

MOUNTAIN= 0.0%; FOOTHILL= 0.0%; DESERT (UNDEV.)= 0.0%

Tc (HR) = 0.72; LAG (HR) = 0.58; Fm (INCH/HR) = 0.58; Ybar = 0.54

USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.

DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;

3HR = 0.97; 6HR = 0.99; 24HR= 0.99

UNIT-INTERVAL (MIN) = 5.00 TOTAL AREA (ACRES) = 4029.5

LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20353.00 = 21552.11 FEET.

EQUIVALENT BASIN FACTOR APPROXIMATIONS:

Lca/L=0.3, n=.0401; Lca/L=0.4, n=.0359; Lca/L=0.5, n=.0330; Lca/L=0.6, n=.0308

TIME OF PEAK FLOW (HR) = 16.58 RUNOFF VOLUME (AF) = 1124.97

UNIT-HYDROGRAPH PEAK FLOW RATE (CFS) = 3007.68

TOTAL AREA (ACRES) = 4029.5 PEAK FLOW RATE (CFS) = 3054.49

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH (INCH):

5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50