MERRIAM MOUNTAINS SPECIFIC PLAN

APPENDIX P – PART 3

HYDROLOGY/HYDRAULIC REPORT

GPA 04-06; SP 04-006; R04-013; VTM5381; S04-035, S04-036, S04-037, S04-038; Log No. 04-08-028; SCH No. 2004091166

for the

DRAFT ENVIRONMENTAL IMPACT REPORT

August 2007

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          THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.24
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      1.24

****************************************************************************
  FLOW PROCESS FROM NODE   1334.00 TO NODE   1333.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1307.00  DOWNSTREAM ELEVATION(FEET) = 1303.00
  STREET LENGTH(FEET) =   403.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.10
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.99
  STREET FLOW TRAVEL TIME(MIN.) =   2.61   Tc(MIN.) =   7.58
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.050
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.781
  SUBAREA AREA(ACRES) =     2.82      SUBAREA RUNOFF(CFS) =   15.51
  TOTAL AREA(ACRES) =      2.99        PEAK FLOW RATE(CFS) =      16.45

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.00
  FLOW VELOCITY(FEET/SEC.) =  3.00   DEPTH*VELOCITY(FT*FT/SEC.) =   1.35
  LONGEST FLOWPATH FROM NODE   1335.00 TO NODE   1333.00 =   503.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1333.00 TO NODE   1331.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1297.00  DOWNSTREAM(FEET) =  1287.00
  FLOW LENGTH(FEET) =   500.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.76
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     16.45
  PIPE TRAVEL TIME(MIN.) =   0.85    Tc(MIN.) =   8.44
  LONGEST FLOWPATH FROM NODE   1335.00 TO NODE   1331.00 =  1003.00 FEET.

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  FLOW PROCESS FROM NODE   1332.00 TO NODE   1331.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.581
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7837
  SUBAREA AREA(ACRES) =     1.51   SUBAREA RUNOFF(CFS) =     7.85
  TOTAL AREA(ACRES) =       4.50   TOTAL RUNOFF(CFS) =    23.21
  TC(MIN.) =   8.44

****************************************************************************
  FLOW PROCESS FROM NODE   1331.00 TO NODE   1330.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1287.00  DOWNSTREAM(FEET) =  1125.00
  FLOW LENGTH(FEET) =   420.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  32.51
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      23.21
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   8.65
  LONGEST FLOWPATH FROM NODE   1335.00 TO NODE   1330.00 =  1423.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1331.00 TO NODE   1330.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.475
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .4500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6234
  SUBAREA AREA(ACRES) =     4.16   SUBAREA RUNOFF(CFS) =    12.12
  TOTAL AREA(ACRES) =       8.66   TOTAL RUNOFF(CFS) =    34.96
  TC(MIN.) =   8.65

****************************************************************************
  FLOW PROCESS FROM NODE   1330.00 TO NODE   1310.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1125.00  DOWNSTREAM(FEET) =    840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1170.00   CHANNEL SLOPE =  0.2436
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1779 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      34.96
  FLOW VELOCITY(FEET/SEC) =   7.71 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.53   Tc(MIN.) =  11.18
  LONGEST FLOWPATH FROM NODE   1335.00 TO NODE   1310.00 =  2593.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1330.00 TO NODE   1310.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
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```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.488
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .3300
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4629
SUBAREA AREA(ACRES) =   10.46   SUBAREA RUNOFF(CFS) =   18.94
TOTAL AREA(ACRES) =     19.12   TOTAL RUNOFF(CFS) =   48.57
TC(MIN.) =  11.18

****************************************************************************
  FLOW PROCESS FROM NODE   1310.00 TO NODE   1310.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1329.00 TO NODE   1328.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1300.20
  DOWNSTREAM ELEVATION(FEET) =   1300.00
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.971
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.82
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      1.82

****************************************************************************
  FLOW PROCESS FROM NODE   1328.00 TO NODE   1327.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1300.00  DOWNSTREAM ELEVATION(FEET) = 1295.30
  STREET LENGTH(FEET) =   445.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.70
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   13.03
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.67
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.03
  STREET FLOW TRAVEL TIME(MIN.) =   2.78   Tc(MIN.) =   7.75
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 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.952
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.781
SUBAREA AREA(ACRES) =     2.87      SUBAREA RUNOFF(CFS) =   15.56
TOTAL AREA(ACRES) =       3.12        PEAK FLOW RATE(CFS) =      16.94

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.45   HALFSTREET FLOOD WIDTH(FEET) =  16.00
FLOW VELOCITY(FEET/SEC.) =  3.08   DEPTH*VELOCITY(FT*FT/SEC.) =   1.39
LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1327.00 =   545.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1327.00 TO NODE   1326.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1290.00  DOWNSTREAM(FEET) =  1285.00
FLOW LENGTH(FEET) =   264.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.59
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     16.94
PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =   8.21
LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1326.00 =   809.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1326.10 TO NODE   1326.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.699
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.7768
SUBAREA AREA(ACRES) =     1.82   SUBAREA RUNOFF(CFS) =    9.39
TOTAL AREA(ACRES) =       4.94   TOTAL RUNOFF(CFS) =   25.71
TC(MIN.) =   8.21

****************************************************************************
FLOW PROCESS FROM NODE   1326.00 TO NODE   1325.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1285.00  DOWNSTREAM(FEET) =  1283.00
FLOW LENGTH(FEET) =    75.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  12.19
ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     25.71
PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =   8.31
LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1325.00 =   884.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1325.10 TO NODE   1325.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.645
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```
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7749
  SUBAREA AREA(ACRES) =     1.98   SUBAREA RUNOFF(CFS) =   10.13
  TOTAL AREA(ACRES) =       6.92   TOTAL RUNOFF(CFS) =   35.63
  TC(MIN.) =   8.31

****************************************************************************
  FLOW PROCESS FROM NODE   1325.00 TO NODE   1324.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1283.00  DOWNSTREAM(FEET) =  1280.00
  FLOW LENGTH(FEET) =   387.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.27
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     35.63
  PIPE TRAVEL TIME(MIN.) =   0.78    Tc(MIN.) =   9.09
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1324.00 =  1271.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1324.00 TO NODE   1324.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.272
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7742
  SUBAREA AREA(ACRES) =     1.08   SUBAREA RUNOFF(CFS) =    5.22
  TOTAL AREA(ACRES) =       8.00   TOTAL RUNOFF(CFS) =   38.85
  TC(MIN.) =   9.09

****************************************************************************
  FLOW PROCESS FROM NODE   1324.00 TO NODE   1322.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1280.00  DOWNSTREAM(FEET) =  1275.00
  FLOW LENGTH(FEET) =   235.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.21
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     38.85
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   9.41
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1322.00 =  1506.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1323.00 TO NODE   1322.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.133
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7785
  SUBAREA AREA(ACRES) =     2.95   SUBAREA RUNOFF(CFS) =   14.29
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  TOTAL AREA(ACRES) =     10.95   TOTAL RUNOFF(CFS) =   52.28
  TC(MIN.) =   9.41

****************************************************************************
  FLOW PROCESS FROM NODE   1322.00 TO NODE   1321.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1275.00  DOWNSTREAM(FEET) =  1165.00
  FLOW LENGTH(FEET) =   355.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  35.70
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     52.28
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =   9.58
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1321.00 =  1861.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1321.00 TO NODE   1320.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1165.00  DOWNSTREAM(FEET) =   1045.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   480.00   CHANNEL SLOPE =  0.2500
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1800 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     52.28
  FLOW VELOCITY(FEET/SEC) =   8.87 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.90   Tc(MIN.) =  10.48
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1320.00 =  2341.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1321.00 TO NODE   1320.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.722
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5983
  SUBAREA AREA(ACRES) =    7.09   SUBAREA RUNOFF(CFS) =   12.98
  TOTAL AREA(ACRES) =     18.04   TOTAL RUNOFF(CFS) =   61.76
  TC(MIN.) =  10.48

****************************************************************************
  FLOW PROCESS FROM NODE   1320.00 TO NODE   1310.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1045.00  DOWNSTREAM(FEET) =    840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   618.00   CHANNEL SLOPE =  0.3317
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2021 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     61.76
  FLOW VELOCITY(FEET/SEC) =   9.94 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =  11.51
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1310.00 =  2959.00 FEET.

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```
  FLOW PROCESS FROM NODE   1320.00 TO NODE   1310.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.385
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5099
  SUBAREA AREA(ACRES) =    6.38   SUBAREA RUNOFF(CFS) =    8.93
  TOTAL AREA(ACRES) =     24.42   TOTAL RUNOFF(CFS) =   67.05
  TC(MIN.) =  11.51

****************************************************************************
  FLOW PROCESS FROM NODE   1310.00 TO NODE   1310.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.51
  RAINFALL INTENSITY(INCH/HR) =   5.38
  TOTAL STREAM AREA(ACRES) =    24.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     67.05

****************************************************************************
  FLOW PROCESS FROM NODE   1313.00 TO NODE   1312.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1282.00
  DOWNSTREAM ELEVATION(FEET) =   1240.00
  ELEVATION DIFFERENCE(FEET) =     42.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.601
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.709
  SUBAREA RUNOFF(CFS) =      0.93
  TOTAL AREA(ACRES) =      0.39   TOTAL RUNOFF(CFS) =      0.93

****************************************************************************
  FLOW PROCESS FROM NODE   1312.00 TO NODE   1311.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1075.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   835.00   CHANNEL SLOPE =  0.1976
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1588 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.93
  FLOW VELOCITY(FEET/SEC) =   2.23 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   6.24   Tc(MIN.) =  12.84
  LONGEST FLOWPATH FROM NODE   1313.00 TO NODE   1311.00 =   935.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1312.00 TO NODE   1311.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.020
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2714
  SUBAREA AREA(ACRES) =   10.66   SUBAREA RUNOFF(CFS) =   14.45
  TOTAL AREA(ACRES) =     11.05   TOTAL RUNOFF(CFS) =   15.05
  TC(MIN.) =  12.84

******************************************************************************
  FLOW PROCESS FROM NODE   1311.00 TO NODE   1310.00 IS CODE =  53
------------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1075.00  DOWNSTREAM(FEET) =    840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   725.00   CHANNEL SLOPE =  0.3241
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2007 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     15.05
  FLOW VELOCITY(FEET/SEC) =   6.19 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.95   Tc(MIN.) =  14.79
  LONGEST FLOWPATH FROM NODE   1313.00 TO NODE   1310.00 =  1660.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   1311.00 TO NODE   1310.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.582
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2640
  SUBAREA AREA(ACRES) =    5.84   SUBAREA RUNOFF(CFS) =    6.69
  TOTAL AREA(ACRES) =     16.89   TOTAL RUNOFF(CFS) =   20.43
  TC(MIN.) =  14.79

******************************************************************************
  FLOW PROCESS FROM NODE   1310.00 TO NODE   1310.00 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.) =  14.79
  RAINFALL INTENSITY(INCH/HR) =   4.58
  TOTAL STREAM AREA(ACRES) =    16.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.43

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       67.05    11.51        5.385         24.42
     2       20.43    14.79        4.582         16.89

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
```

```
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        82.95     11.51        5.385
     2        77.48     14.79        4.582

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     82.95   Tc(MIN.) =   11.51
  TOTAL AREA(ACRES) =     41.31
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1310.00 =  2959.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1310.00 TO NODE   1310.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
     1        82.95     11.51        5.385       41.31
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1310.00 =  2959.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
     1        48.57     11.18        5.488       19.12
  LONGEST FLOWPATH FROM NODE   1335.00 TO NODE   1310.00 =  2593.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
     1      129.11      11.18        5.488
     2      130.61      11.51        5.385

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    130.61   Tc(MIN.) =   11.51
  TOTAL AREA(ACRES) =     60.43

****************************************************************************
  FLOW PROCESS FROM NODE   1310.00 TO NODE   1302.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    840.00  DOWNSTREAM(FEET) =    775.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   580.00   CHANNEL SLOPE =  0.1121
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1091 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    130.61
  FLOW VELOCITY(FEET/SEC) =   9.37 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =  12.55
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1302.00 =  3539.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1310.00 TO NODE   1302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.095
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4117
  SUBAREA AREA(ACRES) =    6.24   SUBAREA RUNOFF(CFS) =    8.58
```

```
  TOTAL AREA(ACRES) =      66.67   TOTAL RUNOFF(CFS) =  139.83
  TC(MIN.) =  12.55

****************************************************************************
  FLOW PROCESS FROM NODE   1302.00 TO NODE   1302.00 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.) =  12.55
  RAINFALL INTENSITY(INCH/HR) =   5.09
  TOTAL STREAM AREA(ACRES) =    66.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    139.83

****************************************************************************
  FLOW PROCESS FROM NODE   1307.00 TO NODE   1306.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (4.3 DU/AC OR LESS) RUNOFF COEFFICIENT = .4000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1267.00
  DOWNSTREAM ELEVATION(FEET) =   1240.00
  ELEVATION DIFFERENCE(FEET) =     27.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.849
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.335
  SUBAREA RUNOFF(CFS) =      2.13
  TOTAL AREA(ACRES) =      0.64   TOTAL RUNOFF(CFS) =      2.13

****************************************************************************
  FLOW PROCESS FROM NODE   1306.00 TO NODE   1304.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1045.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   935.00   CHANNEL SLOPE =  0.2086
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1643 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      2.13
  FLOW VELOCITY(FEET/SEC) =   2.92 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   5.33   Tc(MIN.) =  11.18
  LONGEST FLOWPATH FROM NODE   1307.00 TO NODE   1304.00 =  1035.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1306.00 TO NODE   1304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.487
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2725
  SUBAREA AREA(ACRES) =     6.52   SUBAREA RUNOFF(CFS) =     9.30
  TOTAL AREA(ACRES) =       7.16   TOTAL RUNOFF(CFS) =    10.71
  TC(MIN.) =  11.18

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

```
  FLOW PROCESS FROM NODE   1305.00 TO NODE   1304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.487
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2714
  SUBAREA AREA(ACRES) =    6.11   SUBAREA RUNOFF(CFS) =    9.05
  TOTAL AREA(ACRES) =     13.27   TOTAL RUNOFF(CFS) =   19.76
  TC(MIN.) =  11.18

****************************************************************************
  FLOW PROCESS FROM NODE   1304.00 TO NODE   1303.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1045.00  DOWNSTREAM(FEET) =    935.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.1833
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1517 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     19.76
  FLOW VELOCITY(FEET/SEC) =   5.89 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =  12.88
  LONGEST FLOWPATH FROM NODE   1307.00 TO NODE   1303.00 =  1635.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1304.00 TO NODE   1303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.009
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2604
  SUBAREA AREA(ACRES) =   13.86   SUBAREA RUNOFF(CFS) =   17.36
  TOTAL AREA(ACRES) =     27.13   TOTAL RUNOFF(CFS) =   35.39
  TC(MIN.) =  12.88

****************************************************************************
  FLOW PROCESS FROM NODE   1303.00 TO NODE   1302.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    935.00  DOWNSTREAM(FEET) =    775.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1041.00   CHANNEL SLOPE =  0.1537
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1368 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     35.39
  FLOW VELOCITY(FEET/SEC) =   6.79 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.55   Tc(MIN.) =  15.43
  LONGEST FLOWPATH FROM NODE   1307.00 TO NODE   1302.00 =  2676.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1303.00 TO NODE   1302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.457
```

```
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2634
  SUBAREA AREA(ACRES) =   12.12   SUBAREA RUNOFF(CFS) =   14.59
  TOTAL AREA(ACRES) =     39.25   TOTAL RUNOFF(CFS) =   46.08
  TC(MIN.) =  15.43

****************************************************************************
  FLOW PROCESS FROM NODE   1302.00 TO NODE   1302.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.43
  RAINFALL INTENSITY(INCH/HR) =   4.46
  TOTAL STREAM AREA(ACRES) =    39.25
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     46.08

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      139.83    12.55        5.095         66.67
     2       46.08    15.43        4.457         39.25

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      177.28    12.55       5.095
     2      168.41    15.43       4.457

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    177.28   Tc(MIN.) =   12.55
  TOTAL AREA(ACRES) =    105.92
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1302.00 =  3539.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1302.00 TO NODE   1301.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    775.00  DOWNSTREAM(FEET) =    760.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   130.00   CHANNEL SLOPE =  0.1154
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1115 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    177.28
  FLOW VELOCITY(FEET/SEC) =  10.49 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.21   Tc(MIN.) =  12.75
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE   1301.00 =  3669.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1302.00 TO NODE   1301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.041
  *USER SPECIFIED(SUBAREA):
```

```
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3550
  SUBAREA AREA(ACRES) =    2.75   SUBAREA RUNOFF(CFS) =    4.02
  TOTAL AREA(ACRES) =    108.67   TOTAL RUNOFF(CFS) =  194.50
  TC(MIN.) =  12.75

****************************************************************************
  FLOW PROCESS FROM NODE   1301.00 TO NODE     13.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   760.00  DOWNSTREAM(FEET) =   670.00
  FLOW LENGTH(FEET) =   665.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  36.86
  GIVEN PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    194.50
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  13.05
  LONGEST FLOWPATH FROM NODE   1329.00 TO NODE     13.00 =  4334.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    108.67  TC(MIN.) =     13.05
  PEAK FLOW RATE(CFS)   =    194.50
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

RATIONAL METHOD HYDROGRAPH PROGRAM
COPYRIGHT 1992, 2001 RICK ENGINEERING COMPANY

RUN DATE 9/29/2006
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 13 MIN.
6 [illegible] R RAINFALL 3.5 INCHES
B[illegible] AREA 108.67 ACRES
RUNOFF COEFFICIENT 0.355
PEAK DISCHARGE 194.5 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 13	DISCHARGE (CFS) = 0
TIME (MIN) = 26	DISCHARGE (CFS) = 8.2
TIME (MIN) = 39	DISCHARGE (CFS) = 8.4
TIME (MIN) = 52	DISCHARGE (CFS) = 8.9
TIME (MIN) = 65	DISCHARGE (CFS) = 9.2
TIME (MIN) = 78	DISCHARGE (CFS) = 9.7
TIME (MIN) = 91	DISCHARGE (CFS) = 10
TIME (MIN) = 104	DISCHARGE (CFS) = 10.8
TIME (MIN) = 117	DISCHARGE (CFS) = 11.2
TIME (MIN) = 130	DISCHARGE (CFS) = 12.2
TIME (MIN) = 143	DISCHARGE (CFS) = 12.7
TIME (MIN) = 156	DISCHARGE (CFS) = 14.1
TIME (MIN) = 169	DISCHARGE (CFS) = 15
TIME (MIN) = 182	DISCHARGE (CFS) = 17.2
TIME (MIN) = 195	DISCHARGE (CFS) = 18.6
TIME (MIN) = 208	DISCHARGE (CFS) = 22.7
TIME (MIN) = 221	DISCHARGE (CFS) = 25.9
TIME (MIN) = 234	DISCHARGE (CFS) = 38
TIME (MIN) = 247	DISCHARGE (CFS) = 51.2
TIME (MIN) = 260	DISCHARGE (CFS) = 194.5
TIME (MIN) = 273	DISCHARGE (CFS) = 30.5
TIME (MIN) = 286	DISCHARGE (CFS) = 20.4
TIME (MIN) = 299	DISCHARGE (CFS) = 16
TIME (MIN) = 312	DISCHARGE (CFS) = 13.4
TIME (MIN) = 325	DISCHARGE (CFS) = 11.6
TIME (MIN) = 338	DISCHARGE (CFS) = 10.4
TIME (MIN) = 351	DISCHARGE (CFS) = 9.4
TIME (MIN) = 364	DISCHARGE (CFS) = 8.7
TI[illegible] (MIN) = 377	DISCHARGE (CFS) = 0

```
****************************************************************************
                HYDRAULICS ELEMENTS - II  PROGRAM PACKAGE

                STORAGE BASIN HYDROGRAPH ROUTING MODEL
****************************************************************************
        (c) Copyright 1983-2004 Advanced Engineering Software (aes)
            Ver. 10.0  Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                    FUSCOE ENGINEERING - SAN DIEGO, INC.
                      6390 GREENWICH DRIVE, SUITE 170
                        SAN DIEGO, CALIFORNIA 92122
                              (858) 554-1500

 ************************* DESCRIPTION OF STUDY *************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                 *
* SUBBASIN # 13 - EXISTING DETENTION STORAGE ROUTING                     *
* 2469.01A - OCTOBER 2006                                                *
 ************************************************************************

    FILE NAME: MMDET13P.DAT
    TIME/DATE OF STUDY: 12:00 09/29/2006
============================================================================
    ENTERED INFORMATION:
----------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   30
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   13.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
----------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:        0.00*    2:        0.00*    3:        8.20*
    *    4:        8.40*    5:        8.90*    6:        9.20*
    *    7:        9.70*    8:       10.00*    9:       10.80*
    *   10:       11.20*   11:       12.20*   12:       12.70*
    *   13:       14.10*   14:       15.00*   15:       17.20*
    *   16:       18.60*   17:       22.70*   18:       25.90*
    *   19:       38.00*   20:       51.20*   21:      194.50*
    *   22:       30.50*   23:       20.40*   24:       16.00*
    *   25:       13.40*   26:       11.60*   27:       10.40*
    *   28:        9.40*   29:        8.70*   30:        0.00*
============================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
----------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   4
----------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *     0.000      0.000     0.000**     5.000      2.050     57.000*
    *    10.000      6.750    90.000**    15.000     13.480    112.000*
****************************************************************************
----------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
----------------------------------------------------------------------------
----------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
```

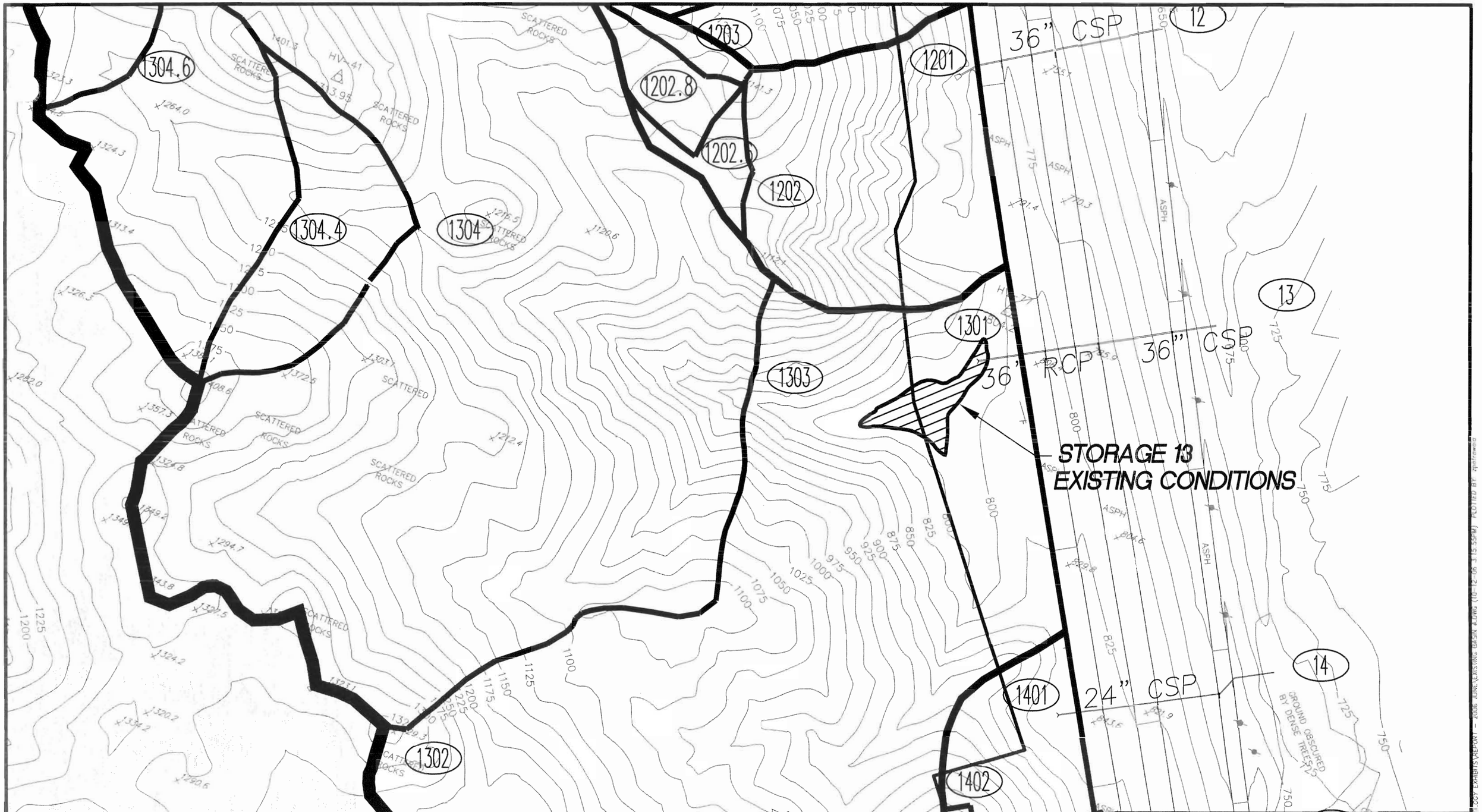
```
        1      0.00000     0.00000
        2      1.53967     2.56033
        3      5.94421     7.55579
        4     12.47724    14.48275
   WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-----------------------------------------------------------------------------
```

```
        *UNIT-HYDROGRAPH STORAGE-BASIN ROUTING*
   NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
         OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
         AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

   GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-----------------------------------------------------------------------------
    TIME   INFLOW  OUTFLOW    STORAGE
   (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     49.     97.    146.    194.
      0.22     0.00     0.00       0.000 O       .       .       .       .
        [BASIN DEPTH(FEET) =    0.00]
      0.43     0.00     0.00       0.000 O       .       .       .       .
        [BASIN DEPTH(FEET) =    0.00]
      0.65     8.20     3.27       0.118 OI      .       .       .       .
        [BASIN DEPTH(FEET) =    0.29]
      0.87     8.40     5.31       0.191 OI      .       .       .       .
        [BASIN DEPTH(FEET) =    0.47]
      1.08     8.90     6.74       0.243 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    0.59]
      1.30     9.20     7.72       0.278 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    0.68]
      1.52     9.70     8.51       0.306 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    0.75]
      1.73    10.00     9.10       0.327 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    0.80]
      1.95    10.80     9.78       0.352 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    0.86]
      2.17    11.20    10.35       0.372 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    0.91]
      2.38    12.20    11.09       0.399 .OI     .       .       .       .
        [BASIN DEPTH(FEET) =    0.97]
      2.60    12.70    11.73       0.422 .OI     .       .       .       .
        [BASIN DEPTH(FEET) =    1.03]
      2.82    14.10    12.67       0.456 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    1.11]
      3.03    15.00    13.60       0.489 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    1.19]
      3.25    17.20    15.04       0.541 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    1.32]
      3.47    18.60    16.46       0.592 . OI    .       .       .       .
        [BASIN DEPTH(FEET) =    1.44]
      3.68    22.70    18.95       0.681 .  O    .       .       .       .
        [BASIN DEPTH(FEET) =    1.66]
      3.90    25.90    21.72       0.781 .  OI   .       .       .       .
        [BASIN DEPTH(FEET) =    1.91]
      4.12    38.00    28.21       1.015 .   O I .       .       .       .
        [BASIN DEPTH(FEET) =    2.47]
      4.33    51.20    37.37       1.344 .     O I       .       .       .
        [BASIN DEPTH(FEET) =    3.28]
      4.55   194.50    69.76       3.868 .       .  O    .       .       I
        [BASIN DEPTH(FEET) =    6.93]
      4.77    30.50    65.12       3.206 .    I  . O     .       .       .
```

```
   [BASIN DEPTH(FEET) =     6.23]
 4.98     20.40     59.83       2.453 .  I     .O       .        .        .
   [BASIN DEPTH(FEET) =     5.43]
 5.20     16.00     49.06       1.764 . I      O        .        .        .
   [BASIN DEPTH(FEET) =     4.30]
 5.42     13.40     34.84       1.253 . I  O   .        .        .        .
   [BASIN DEPTH(FEET) =     3.06]
 5.63     11.60     25.58       0.920 .I  O    .        .        .        .
   [BASIN DEPTH(FEET) =     2.24]
 5.85     10.40     19.53       0.702 .I O     .        .        .        .
   [BASIN DEPTH(FEET) =     1.71]
 6.07      9.40     15.49       0.557 .IO      .        .        .        .
   [BASIN DEPTH(FEET) =     1.36]
 6.28      8.70     12.78       0.460 .IO      .        .        .        .
   [BASIN DEPTH(FEET) =     1.12]
 6.50      0.00      7.69       0.276 IO       .        .        .        .
   [BASIN DEPTH(FEET) =     0.67]
 6.72      0.00      4.62       0.166 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.41]
 6.93      0.00      2.78       0.100 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.24]
 7.15      0.00      1.67       0.060 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.15]
 7.37      0.00      1.01       0.036 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.09]
 7.58      0.00      0.60       0.022 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.05]
 7.80      0.00      0.36       0.013 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.03]
 8.02      0.00      0.22       0.008 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.02]
 8.23      0.00      0.13       0.005 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.01]
 8.45      0.00      0.08       0.003 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.01]
 8.67      0.00      0.05       0.002 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 8.88      0.00      0.03       0.001 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 9.10      0.00      0.02       0.001 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 9.32      0.00      0.01       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 9.53      0.00      0.01       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 9.75      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 9.97      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
10.18      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
10.40      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
10.62      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
10.83      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
11.05      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
11.27      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
11.48      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
```

```
11.70     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
11.92     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
12.13     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
12.35     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
12.57     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
12.78     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
13.00     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
```



SCALE: 1" = 250'

FUSCOE ENGINEERING
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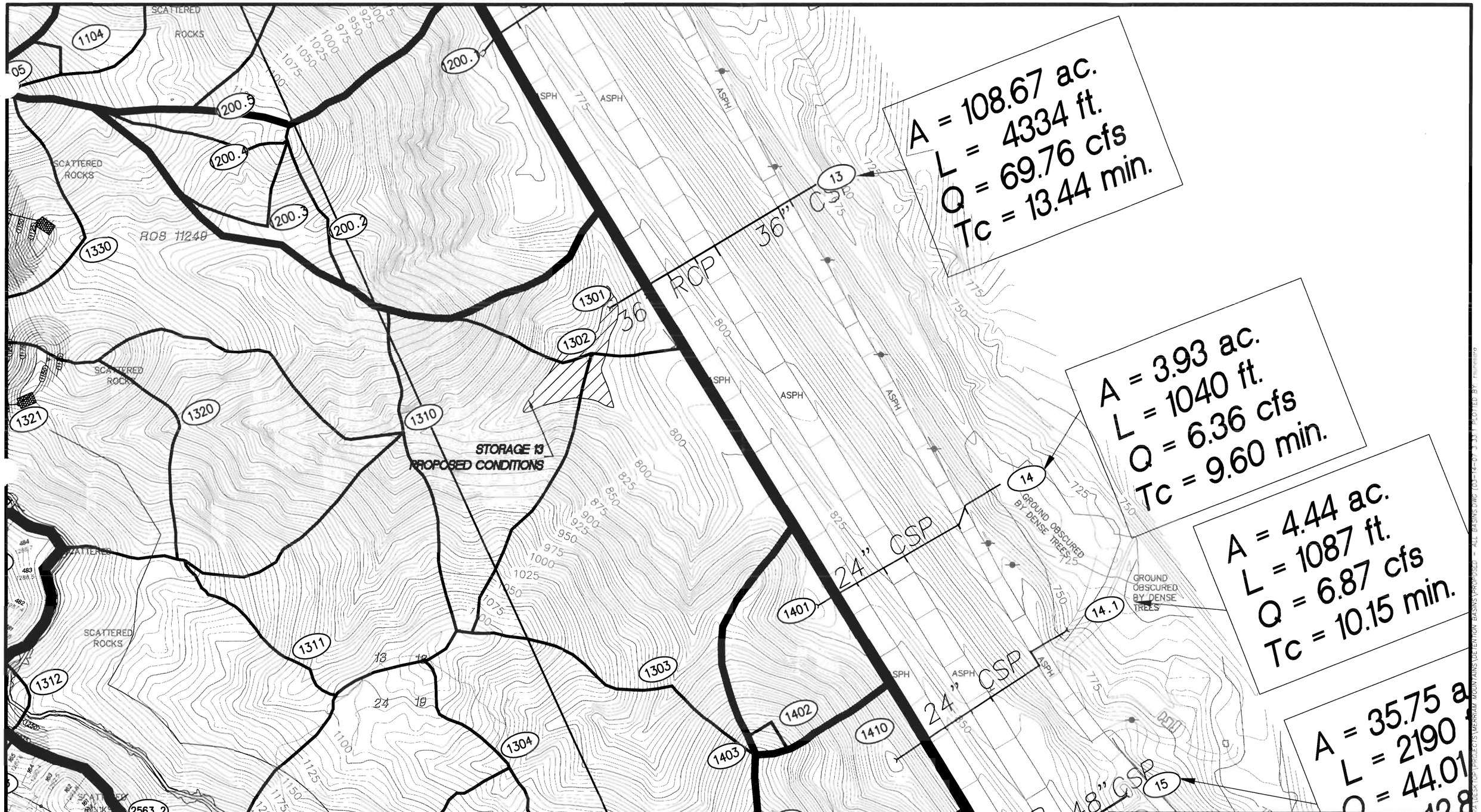
MERRIAM MOUNTAINS

FIGURE B3A - EXISTING DETENTION STORAGE

STORAGE 13 EXISTING CONDITION



SCALE: 1" = 250'

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MERRIAM MOUNTAINS

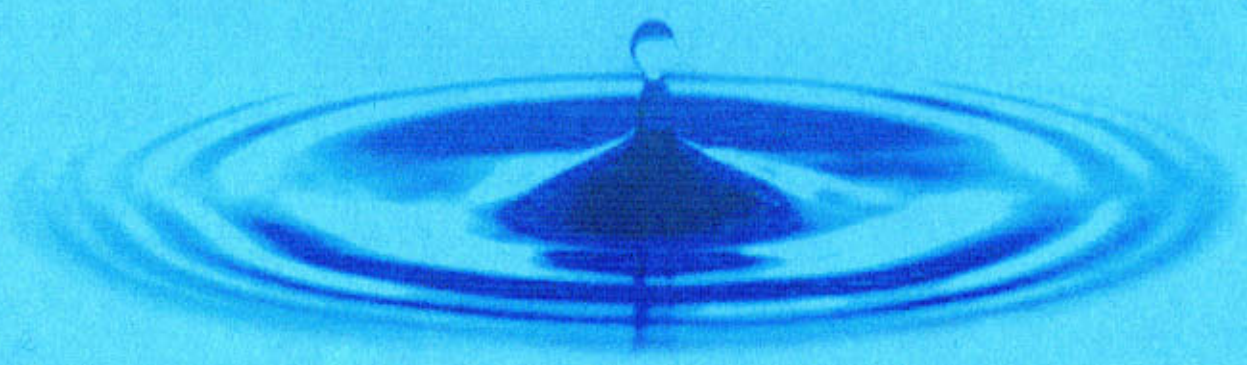
FIGURE B3B - EXISTING DETENTION STORAGE

STORAGE 13
PROPOSED CONDITION

APPENDIX B

Existing Detention Storage Analysis

SUB-BASIN 16



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Job Name:
Merriam Mountains - Existing Hydrology

Date:
October 2006

Job #:
2469.01A

Run Name:
MERR16

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Runoff Coeff.	Area (ac.)	Comments
1603	1602.8	2	1,580.0	1,565.0	75.0	0.35	0.44	
1602.8	1602.6	5	1,565.0	1,325.0	515.0			
1602.8	1602.6	8				0.30	4.58	
1602.6	1602	5	1,325.0	1,210.0	605.0			
1602.6	1602	8				0.27	12.87	
1602	1601	5	1,210.0	950.0	850.0			
1602	1601	8				0.26	11.7	
1601	16	4	950.0	850.0	605.0			Ex. 42" CSP/RCP
							29.59	Total Area

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2004 Advanced Engineering Software (aes)
            Ver. 2.0 Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                   FUSCOE ENGINEERING - SAN DIEGO, INC.
                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                             (858) 554-1500

 ************************* DESCRIPTION OF STUDY *************************
* MERRIAM MOUNTAINS - EXISTING HYDROLOGY                                 *
* SUBBASIN #16 - NO DETENTION ROUTING                                    *
* 2469.01A - OCTOBER 2006                                                *
 ************************************************************************

  FILE NAME: MERR16.DAT
  TIME/DATE OF STUDY: 14:17 09/28/2006
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   1603.00 TO NODE   1602.80 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =   1580.00
  DOWNSTREAM ELEVATION(FEET) =   1565.00
  ELEVATION DIFFERENCE(FEET) =     15.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.427
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.747
SUBAREA RUNOFF(CFS) =      1.35
TOTAL AREA(ACRES) =      0.44   TOTAL RUNOFF(CFS) =      1.35

****************************************************************************
FLOW PROCESS FROM NODE   1602.80 TO NODE   1602.60 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1565.00  DOWNSTREAM(FEET) =   1325.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   515.00   CHANNEL SLOPE =  0.4660
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .2216 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =      1.35
FLOW VELOCITY(FEET/SEC) =   2.91 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.95   Tc(MIN.) =   8.38
LONGEST FLOWPATH FROM NODE   1603.00 TO NODE   1602.60 =   590.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1602.80 TO NODE   1602.60 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.611
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3044
SUBAREA AREA(ACRES) =    4.58   SUBAREA RUNOFF(CFS) =    9.08
TOTAL AREA(ACRES) =      5.02   TOTAL RUNOFF(CFS) =   10.10
TC(MIN.) =   8.38

****************************************************************************
FLOW PROCESS FROM NODE   1602.60 TO NODE   1602.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1325.00  DOWNSTREAM(FEET) =   1210.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   605.00   CHANNEL SLOPE =  0.1901
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1550 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =     10.10
FLOW VELOCITY(FEET/SEC) =   4.76 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =  10.49
LONGEST FLOWPATH FROM NODE   1603.00 TO NODE   1602.00 =  1195.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1602.60 TO NODE   1602.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.717
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2700
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.2796
SUBAREA AREA(ACRES) =   12.87   SUBAREA RUNOFF(CFS) =   19.87
TOTAL AREA(ACRES) =     17.89   TOTAL RUNOFF(CFS) =   28.60
TC(MIN.) =  10.49

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

```
  FLOW PROCESS FROM NODE   1602.00 TO NODE   1601.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1210.00  DOWNSTREAM(FEET) =    950.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   850.00   CHANNEL SLOPE =  0.3059
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1965 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     28.60
  FLOW VELOCITY(FEET/SEC) =   7.58 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.87   Tc(MIN.) =  12.36
  LONGEST FLOWPATH FROM NODE   1603.00 TO NODE   1601.00 =  2045.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1602.00 TO NODE   1601.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.144
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2719
  SUBAREA AREA(ACRES) =   11.70   SUBAREA RUNOFF(CFS) =   15.65
  TOTAL AREA(ACRES) =     29.59   TOTAL RUNOFF(CFS) =   41.38
  TC(MIN.) =  12.36

****************************************************************************
  FLOW PROCESS FROM NODE   1601.00 TO NODE     16.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   950.00  DOWNSTREAM(FEET) =   850.00
  FLOW LENGTH(FEET) =   605.00   MANNING'S N =  0.015
  DEPTH OF FLOW IN  42.0 INCH PIPE IS   9.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.74
  GIVEN PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     41.38
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =  12.79
  LONGEST FLOWPATH FROM NODE   1603.00 TO NODE     16.00 =  2650.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     29.59  TC(MIN.) =     12.79
  PEAK FLOW RATE(CFS)   =     41.38
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

RATIONAL METHOD HYDROGRAPH PROGRAM
COPYRIGHT 1992, 2001 RICK ENGINEERING COMPANY

RUN DATE 9/28/2006
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 13 MIN.
6 ! R RAINFALL 3.5 INCHES
B AREA 29.59 ACRES
RUNOFF COEFFICIENT 0.2719
PEAK DISCHARGE 41.38 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 13	DISCHARGE (CFS) = 0
TIME (MIN) = 26	DISCHARGE (CFS) = 1.7
TIME (MIN) = 39	DISCHARGE (CFS) = 1.8
TIME (MIN) = 52	DISCHARGE (CFS) = 1.9
TIME (MIN) = 65	DISCHARGE (CFS) = 1.9
TIME (MIN) = 78	DISCHARGE (CFS) = 2
TIME (MIN) = 91	DISCHARGE (CFS) = 2.1
TIME (MIN) = 104	DISCHARGE (CFS) = 2.2
TIME (MIN) = 117	DISCHARGE (CFS) = 2.3
TIME (MIN) = 130	DISCHARGE (CFS) = 2.5
TIME (MIN) = 143	DISCHARGE (CFS) = 2.7
TIME (MIN) = 156	DISCHARGE (CFS) = 2.9
TIME (MIN) = 169	DISCHARGE (CFS) = 3.1
TIME (MIN) = 182	DISCHARGE (CFS) = 3.6
TIME (MIN) = 195	DISCHARGE (CFS) = 3.9
TIME (MIN) = 208	DISCHARGE (CFS) = 4.7
TIME (MIN) = 221	DISCHARGE (CFS) = 5.4
TIME (MIN) = 234	DISCHARGE (CFS) = 7.9
TIME (MIN) = 247	DISCHARGE (CFS) = 9.9
TIME (MIN) = 260	DISCHARGE (CFS) = 41.38
TIME (MIN) = 273	DISCHARGE (CFS) = 6.4
TIME (MIN) = 286	DISCHARGE (CFS) = 4.3
TIME (MIN) = 299	DISCHARGE (CFS) = 3.3
TIME (MIN) = 312	DISCHARGE (CFS) = 2.8
TIME (MIN) = 325	DISCHARGE (CFS) = 2.4
TIME (MIN) = 338	DISCHARGE (CFS) = 2.2
TIME (MIN) = 351	DISCHARGE (CFS) = 2
TIM MIN) = 364	DISCHARGE (CFS) = 1.8
TI IN) = 377	DISCHARGE (CFS) = 0

```
****************************************************************************
                 HYDRAULICS ELEMENTS - II  PROGRAM PACKAGE

                  STORAGE BASIN HYDROGRAPH ROUTING MODEL
****************************************************************************
         (c) Copyright 1983-2004 Advanced Engineering Software (aes)
             Ver. 10.0  Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                      Fuscoe Engineering, San Diego
                       6390 Greenwich Dr. Suite 170
                           San Diego, CA 92122
                               858-554-1500

 ************************* DESCRIPTION OF STUDY *************************
* MERRIAM MOUNTAINS - EXISTING HYDROLOGY                                 *
* SUBBASIN #16 - EXISTING DETENTION STORAGE ROUTING                      *
* 2469.01A - MARCH 2007                                                  *
 ************************************************************************

    FILE NAME: MMDET16.DAT
    TIME/DATE OF STUDY: 09:49 03/20/2007
============================================================================
    ENTERED INFORMATION:
----------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   77
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    5.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
----------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:        0.00*    2:        0.00*    3:        0.00*
    *    4:        0.30*    5:        0.90*    6:        1.60*
    *    7:        1.70*    8:        1.80*    9:        1.80*
    *   10:        1.80*   11:        1.90*   12:        1.90*
    *   13:        1.90*   14:        1.90*   15:        1.90*
    *   16:        2.00*   17:        2.00*   18:        2.10*
    *   19:        2.10*   20:        2.10*   21:        2.20*
    *   22:        2.20*   23:        2.20*   24:        2.30*
    *   25:        2.30*   26:        2.40*   27:        2.50*
    *   28:        2.60*   29:        2.70*   30:        2.70*
    *   31:        2.80*   32:        2.90*   33:        3.00*
    *   34:        3.00*   35:        3.10*   36:        3.30*
    *   37:        3.50*   38:        3.70*   39:        3.80*
    *   40:        3.90*   41:        4.20*   42:        4.50*
    *   43:        4.80*   44:        5.10*   45:        5.30*
    *   46:        6.20*   47:        7.10*   48:        8.10*
    *   49:        8.80*   50:        9.60*   51:       17.20*
    *   52:       29.30*   53:       41.40*   54:       27.90*
    *   55:       14.50*   56:        6.10*   57:        5.30*
    *   58:        4.50*   59:        4.00*   60:        3.60*
    *   61:        3.30*   62:        3.10*   63:        2.90*
    *   64:        2.70*   65:        2.60*   66:        2.40*
    *   67:        2.30*   68:        2.20*   69:        2.20*
    *   70:        2.10*   71:        2.00*   72:        1.90*
    *   73:        1.90*   74:        1.70*   75:        1.00*
    *   76:        0.30*   77:        0.00*
============================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
----------------------------------------------------------------------------
```

```
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   5
-----------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *      0.000      0.000      0.000**      2.500      0.018     32.000*
    *      3.500      0.045     52.000**      4.000      0.091     57.000*
    *      5.000      0.123     63.000**
*****************************************************************************
-----------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2     -0.09199     0.12839
          3     -0.13406     0.22406
          4     -0.10508     0.28748
          5     -0.09384     0.34004
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-----------------------------------------------------------------------------



         *UNIT-HYDROGRAPH STORAGE-BASIN ROUTING*
    NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
          OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
          AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-----------------------------------------------------------------------------
     TIME   INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     10.     21.     31.     41.
       0.08     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.17     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.25     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.33     0.30     0.51       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.04]
       0.42     0.90     1.18       0.001 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.09]
       0.50     1.60     1.90       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.15]
       0.58     1.70     1.55       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.12]
       0.67     1.80     1.98       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.15]
       0.75     1.80     1.67       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.13]
       0.83     1.80     1.89       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.15]
       0.92     1.90     1.91       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.15]
       1.00     1.90     1.90       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.15]
       1.08     1.90     1.90       0.001 .O      .       .       .       .
```

```
  [BASIN DEPTH(FEET) =    0.15]
1.17     1.90     1.90       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.15]
1.25     1.90     1.90       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.15]
1.33     2.00     2.07       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.16]
1.42     2.00     1.95       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.15]
1.50     2.10     2.21       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.17]
1.58     2.10     2.02       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.16]
1.67     2.10     2.16       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.17]
1.75     2.20     2.23       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.17]
1.83     2.20     2.18       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.17]
1.92     2.20     2.22       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.17]
2.00     2.30     2.36       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.18]
2.08     2.30     2.26       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.18]
2.17     2.40     2.50       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.20]
2.25     2.50     2.50       0.001 .o      .       .       .       .
  [BASIN DEPTH(FEET) =    0.20]
2.33     2.60     2.67       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.21]
2.42     2.70     2.72       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.21]
2.50     2.70     2.69       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.21]
2.58     2.80     2.88       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.23]
2.67     2.90     2.91       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.23]
2.75     3.00     3.06       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.24]
2.83     3.00     2.96       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.23]
2.92     3.10     3.20       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.25]
3.00     3.30     3.37       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.26]
3.08     3.50     3.59       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.28]
3.17     3.70     3.78       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.30]
3.25     3.80     3.82       0.002 . o     .       .       .       .
  [BASIN DEPTH(FEET) =    0.30]
3.33     3.90     3.96       0.002 .  o    .       .       .       .
  [BASIN DEPTH(FEET) =    0.31]
3.42     4.20     4.37       0.002 .  o    .       .       .       .
  [BASIN DEPTH(FEET) =    0.34]
3.50     4.50     4.59       0.003 .  o    .       .       .       .
  [BASIN DEPTH(FEET) =    0.36]
3.58     4.80     4.95       0.003 .  o    .       .       .       .
  [BASIN DEPTH(FEET) =    0.39]
3.67     5.10     5.21       0.003 .  IO   .       .       .       .
  [BASIN DEPTH(FEET) =    0.41]
```

```
3.75     5.30     5.37       0.003 .   O   .       .       .       .
  [BASIN DEPTH(FEET) =    0.42]
3.83     6.20     6.80       0.004 .   IO  .       .       .       .
  [BASIN DEPTH(FEET) =    0.53]
3.92     7.10     7.32       0.004 .    O  .       .       .       .
  [BASIN DEPTH(FEET) =    0.57]
4.00     8.10     8.66       0.005 .     O .       .       .       .
  [BASIN DEPTH(FEET) =    0.68]
4.08     8.80     8.90       0.005 .     O .       .       .       .
  [BASIN DEPTH(FEET) =    0.70]
4.17     9.60    10.10       0.006 .      O.       .       .       .
  [BASIN DEPTH(FEET) =    0.79]
4.25    17.20    22.29       0.013 .       .    I  .O      .       .
  [BASIN DEPTH(FEET) =    1.74]
4.33    29.30    33.95       0.021 .       .       .     I . O     .
  [BASIN DEPTH(FEET) =    2.60]
4.42    41.40    44.68       0.035 .       .       .       .       I
  [BASIN DEPTH(FEET) =    3.13]
4.50    27.90    18.32       0.010 .       .     O .    I  .       .
  [BASIN DEPTH(FEET) =    1.43]
4.58    14.50    11.77       0.007 .       .O I    .       .       .
  [BASIN DEPTH(FEET) =    0.92]
4.67     6.10     2.04       0.001 .O  I   .       .       .       .
  [BASIN DEPTH(FEET) =    0.16]
4.75     5.30     7.64       0.004 .   IO  .       .       .       .
  [BASIN DEPTH(FEET) =    0.60]
4.83     4.50     2.25       0.001 .O I    .       .       .       .
  [BASIN DEPTH(FEET) =    0.18]
4.92     4.00     5.25       0.003 .  IO   .       .       .       .
  [BASIN DEPTH(FEET) =    0.41]
5.00     3.60     2.42       0.001 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    0.19]
5.08     3.30     3.93       0.002 . IO    .       .       .       .
  [BASIN DEPTH(FEET) =    0.31]
5.17     3.10     2.50       0.001 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    0.20]
5.25     2.90     3.18       0.002 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    0.25]
5.33     2.70     2.35       0.001 .OI     .       .       .       .
  [BASIN DEPTH(FEET) =    0.18]
5.42     2.60     2.78       0.002 . O     .       .       .       .
  [BASIN DEPTH(FEET) =    0.22]
5.50     2.40     2.13       0.001 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    0.17]
5.58     2.30     2.42       0.001 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    0.19]
5.67     2.20     2.04       0.001 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    0.16]
5.75     2.20     2.31       0.001 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    0.18]
5.83     2.10     1.95       0.001 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    0.15]
5.92     2.00     2.04       0.001 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    0.16]
6.00     1.90     1.80       0.001 .O      .       .       .       .
  [BASIN DEPTH(FEET) =    0.14]
```

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Job Name:
Merriam Mountains - Proposed Hydrology

Date:
October 2006

Job #:
2469.01A

Run Name:
MERR16-P

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Runoff Coeff.	Area (ac.)	Comments
1605	1604	2	1,575.0	1,525.0	112.0	0.30	0.36	
1604	1603	5	1,525.0	1,360.0	280.0			
1604	1603	8				0.35	9.86	
1603	1602	5	1,360.0	1,210.0	570.0			
1603	1602	8				0.33	5.83	
1602	1601	5	1,210.0	950.0	867.0			
1602	1601	8				0.26	11.7	
1601	16	4	950.0	850.0	605.0			Ex. 42" CSP Caltrans
								Storm Drain
							27.75	Total Area

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2004 Advanced Engineering Software (aes)
            Ver. 2.0 Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                    FUSCOE ENGINEERING - SAN DIEGO, INC.
                      6390 GREENWICH DRIVE, SUITE 170
                        SAN DIEGO, CALIFORNIA 92122
                              (858) 554-1500

 ************************* DESCRIPTION OF STUDY *************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                 *
* SUBBASIN # 16 - NO DETENTION ROUTING                                   *
* 2469.01A - OCTOBER 2006                                                *
 ************************************************************************

  FILE NAME: MERR16-P.DAT
  TIME/DATE OF STUDY: 13:28 09/29/2006
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   1605.00 TO NODE   1604.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   112.00
  UPSTREAM ELEVATION(FEET) =   1575.00
  DOWNSTREAM ELEVATION(FEET) =   1525.00
  ELEVATION DIFFERENCE(FEET) =     50.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.647
  SUBAREA RUNOFF(CFS) =      0.83
  TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      0.83

****************************************************************************
  FLOW PROCESS FROM NODE   1604.00 TO NODE   1603.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1525.00  DOWNSTREAM(FEET) =   1360.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   280.00   CHANNEL SLOPE =  0.5893
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2295 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.83
  FLOW VELOCITY(FEET/SEC) =   2.68 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.74   Tc(MIN.) =   8.42
  LONGEST FLOWPATH FROM NODE   1605.00 TO NODE   1603.00 =   392.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1604.00 TO NODE   1603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.587
  *USER SPECIFIED(SUBAREA):
  STREETS & ROADS (DITCHES) RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3482
  SUBAREA AREA(ACRES) =    9.86   SUBAREA RUNOFF(CFS) =   22.73
  TOTAL AREA(ACRES) =     10.22   TOTAL RUNOFF(CFS) =   23.44
  TC(MIN.) =   8.42

****************************************************************************
  FLOW PROCESS FROM NODE   1603.00 TO NODE   1602.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1360.00  DOWNSTREAM(FEET) =   1210.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   570.00   CHANNEL SLOPE =  0.2632
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1844 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     23.44
  FLOW VELOCITY(FEET/SEC) =   6.87 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.38   Tc(MIN.) =   9.81
  LONGEST FLOWPATH FROM NODE   1605.00 TO NODE   1602.00 =   962.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1603.00 TO NODE   1602.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.972
  *USER SPECIFIED(SUBAREA):
  STREETS & ROADS (DITCHES) RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3416
  SUBAREA AREA(ACRES) =    5.83   SUBAREA RUNOFF(CFS) =   11.49
```

```
  TOTAL AREA(ACRES) =      16.05   TOTAL RUNOFF(CFS) =   32.74
  TC(MIN.) =   9.81

****************************************************************************
  FLOW PROCESS FROM NODE   1602.00 TO NODE   1601.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1210.00  DOWNSTREAM(FEET) =    950.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   867.00   CHANNEL SLOPE =  0.2999
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1950 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     32.74
  FLOW VELOCITY(FEET/SEC) =   7.90 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.83   Tc(MIN.) =  11.63
  LONGEST FLOWPATH FROM NODE   1605.00 TO NODE   1601.00 =  1829.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1602.00 TO NODE   1601.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.348
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3072
  SUBAREA AREA(ACRES) =   11.70   SUBAREA RUNOFF(CFS) =   16.27
  TOTAL AREA(ACRES) =     27.75   TOTAL RUNOFF(CFS) =   45.60
  TC(MIN.) =  11.63

****************************************************************************
  FLOW PROCESS FROM NODE   1601.00 TO NODE     16.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   950.00  DOWNSTREAM(FEET) =   850.00
  FLOW LENGTH(FEET) =   605.00   MANNING'S N =  0.015
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  10.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  24.42
  GIVEN PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     45.60
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =  12.05
  LONGEST FLOWPATH FROM NODE   1605.00 TO NODE     16.00 =  2434.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     27.75  TC(MIN.) =     12.05
  PEAK FLOW RATE(CFS)   =     45.60
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 9/29/2006
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 12 MIN.
6 H[illegible] RAINFALL 3.5 INCHES
B[illegible] AREA 27.75 ACRES
RUNOFF COEFFICIENT 0.3072
PEAK DISCHARGE 45.6 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 12	DISCHARGE (CFS) = 1.8
TIME (MIN) = 24	DISCHARGE (CFS) = 1.8
TIME (MIN) = 36	DISCHARGE (CFS) = 1.9
TIME (MIN) = 48	DISCHARGE (CFS) = 2
TIME (MIN) = 60	DISCHARGE (CFS) = 2.1
TIME (MIN) = 72	DISCHARGE (CFS) = 2.1
TIME (MIN) = 84	DISCHARGE (CFS) = 2.3
TIME (MIN) = 96	DISCHARGE (CFS) = 2.3
TIME (MIN) = 108	DISCHARGE (CFS) = 2.5
TIME (MIN) = 120	DISCHARGE (CFS) = 2.6
TIME (MIN) = 132	DISCHARGE (CFS) = 2.8
TIME (MIN) = 144	DISCHARGE (CFS) = 3
TIME (MIN) = 156	DISCHARGE (CFS) = 3.3
TIME (MIN) = 168	DISCHARGE (CFS) = 3.5
TIME (MIN) = 180	DISCHARGE (CFS) = 4
TIME (MIN) = 192	DISCHARGE (CFS) = 4.3
TIME (MIN) = 204	DISCHARGE (CFS) = 5.3
TIME (MIN) = 216	DISCHARGE (CFS) = 6
TIME (MIN) = 228	DISCHARGE (CFS) = 8.8
TIME (MIN) = 240	DISCHARGE (CFS) = 11.6
TIME (MIN) = 252	DISCHARGE (CFS) = 45.6
TIME (MIN) = 264	DISCHARGE (CFS) = 7.1
TIME (MIN) = 276	DISCHARGE (CFS) = 4.7
TIME (MIN) = 288	DISCHARGE (CFS) = 3.7
TIME (MIN) = 300	DISCHARGE (CFS) = 3.1
TIME (MIN) = 312	DISCHARGE (CFS) = 2.7
TIME (MIN) = 324	DISCHARGE (CFS) = 2.4
TIME (MIN) = 336	DISCHARGE (CFS) = 2.2
TI[illegible] (MIN) = 348	DISCHARGE (CFS) = 2
TI[illegible] (MIN) = 360	DISCHARGE (CFS) = 1.9
TIME (MIN) = 372	DISCHARGE (CFS) = 0

```
****************************************************************************
                HYDRAULICS ELEMENTS - II  PROGRAM PACKAGE

                STORAGE BASIN HYDROGRAPH ROUTING MODEL
****************************************************************************
        (c) Copyright 1983-2004 Advanced Engineering Software (aes)
            Ver. 10.0  Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                      Fuscoe Engineering, San Diego
                       6390 Greenwich Dr. Suite 170
                           San Diego, CA 92122
                               858-554-1500

 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                  *
* SUBBASIN # 16 - EXISTING DETENTION STORAGE ROUTING                      *
* 2469.01A - MARCH 2007                                                   *
 ***************************************************************************

    FILE NAME: MMDET16P.DAT
    TIME/DATE OF STUDY: 09:51 03/20/2007
===============================================================================
    ENTERED INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   63
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    6.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
-------------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:        0.00*    2:        0.90*    3:        1.80*
    *    4:        1.80*    5:        1.80*    6:        1.85*
    *    7:        1.90*    8:        1.95*    9:        2.00*
    *   10:        2.05*   11:        2.10*   12:        2.10*
    *   13:        2.10*   14:        2.20*   15:        2.30*
    *   16:        2.30*   17:        2.30*   18:        2.40*
    *   19:        2.50*   20:        2.55*   21:        2.60*
    *   22:        2.70*   23:        2.80*   24:        2.90*
    *   25:        3.00*   26:        3.15*   27:        3.30*
    *   28:        3.40*   29:        3.50*   30:        3.75*
    *   31:        4.00*   32:        4.15*   33:        4.30*
    *   34:        4.80*   35:        5.30*   36:        5.65*
    *   37:        6.00*   38:        7.40*   39:        8.80*
    *   40:       10.20*   41:       11.60*   42:       28.60*
    *   43:       45.60*   44:       26.35*   45:        7.10*
    *   46:        5.90*   47:        4.70*   48:        4.20*
    *   49:        3.70*   50:        3.40*   51:        3.10*
    *   52:        2.90*   53:        2.70*   54:        2.55*
    *   55:        2.40*   56:        2.30*   57:        2.20*
    *   58:        2.10*   59:        2.00*   60:        1.95*
    *   61:        1.90*   62:        0.80*   63:        0.00*
===============================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   5
-------------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *     0.000      0.000     0.000**     2.500      0.018     28.000*
```

```
    *      3.500      0.045     39.000**      4.000      0.091     45.000*
    *      5.000      0.123     50.000**
*****************************************************************************
-----------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2     -0.09750     0.13390
          3     -0.11616     0.20616
          4     -0.09475     0.27715
          5     -0.08351     0.32971
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-----------------------------------------------------------------------------

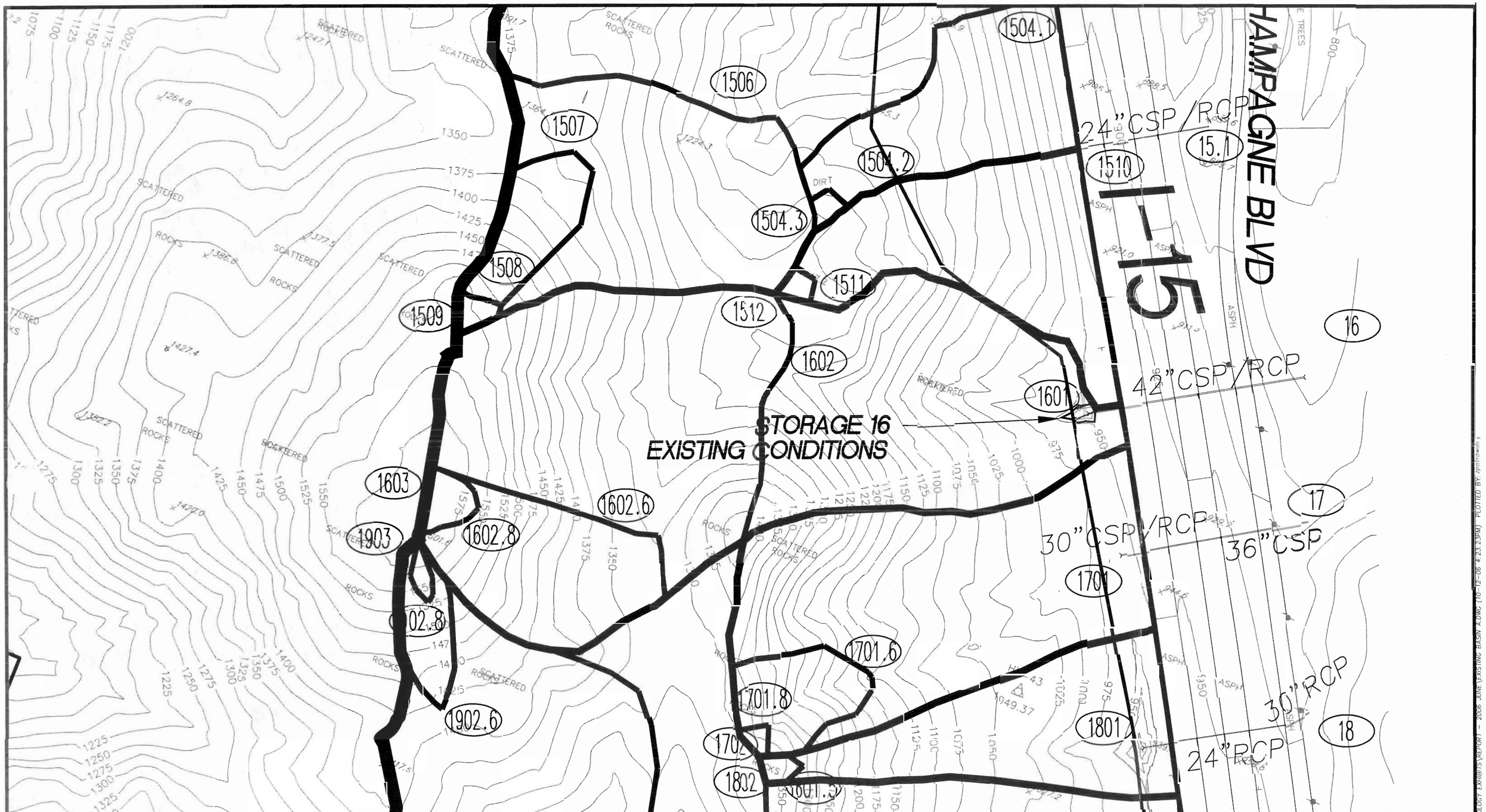


         *UNIT-HYDROGRAPH STORAGE-BASIN ROUTING*
    NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
          OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
          AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-----------------------------------------------------------------------------
     TIME   INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     11.     23.     34.     46.
       0.10     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.20     0.90     1.56       0.001 IO      .       .       .       .
         [BASIN DEPTH(FEET) =    0.14]
       0.30     1.80     1.98       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.18]
       0.40     1.80     1.67       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.15]
       0.50     1.80     1.89       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.17]
       0.60     1.85     1.82       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.16]
       0.70     1.90     1.96       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.17]
       0.80     1.95     1.94       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.17]
       0.90     2.00     2.04       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.18]
       1.00     2.05     2.06       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.18]
       1.10     2.10     2.13       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.19]
       1.20     2.10     2.08       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.19]
       1.30     2.10     2.12       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.19]
       1.40     2.20     2.26       0.001 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.20]
       1.50     2.30     2.33       0.002 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.21]
```

```
  1.60     2.30     2.28       0.001 .O      .       .       .       .
    [BASIN DEPTH(FEET) =    0.20]
  1.70     2.30     2.32       0.002 .O      .       .       .       .
    [BASIN DEPTH(FEET) =    0.21]
  1.80     2.40     2.46       0.002 .O      .       .       .       .
    [BASIN DEPTH(FEET) =    0.22]
  1.90     2.50     2.53       0.002 .O      .       .       .       .
    [BASIN DEPTH(FEET) =    0.23]
  2.00     2.55     2.57       0.002 .O      .       .       .       .
    [BASIN DEPTH(FEET) =    0.23]
  2.10     2.60     2.62       0.002 .O      .       .       .       .
    [BASIN DEPTH(FEET) =    0.23]
  2.20     2.70     2.75       0.002 .O      .       .       .       .
    [BASIN DEPTH(FEET) =    0.25]
  2.30     2.80     2.83       0.002 .O      .       .       .       .
    [BASIN DEPTH(FEET) =    0.25]
  2.40     2.90     2.95       0.002 . O     .       .       .       .
    [BASIN DEPTH(FEET) =    0.26]
  2.50     3.00     3.04       0.002 . O     .       .       .       .
    [BASIN DEPTH(FEET) =    0.27]
  2.60     3.15     3.23       0.002 . O     .       .       .       .
    [BASIN DEPTH(FEET) =    0.29]
  2.70     3.30     3.35       0.002 . O     .       .       .       .
    [BASIN DEPTH(FEET) =    0.30]
  2.80     3.40     3.44       0.002 . O     .       .       .       .
    [BASIN DEPTH(FEET) =    0.31]
  2.90     3.50     3.55       0.002 . O     .       .       .       .
    [BASIN DEPTH(FEET) =    0.32]
  3.00     3.75     3.90       0.003 . O     .       .       .       .
    [BASIN DEPTH(FEET) =    0.35]
  3.10     4.00     4.07       0.003 . O     .       .       .       .
    [BASIN DEPTH(FEET) =    0.36]
  3.20     4.15     4.21       0.003 . O     .       .       .       .
    [BASIN DEPTH(FEET) =    0.38]
  3.30     4.30     4.37       0.003 .  O    .       .       .       .
    [BASIN DEPTH(FEET) =    0.39]
  3.40     4.80     5.11       0.003 .  O    .       .       .       .
    [BASIN DEPTH(FEET) =    0.46]
  3.50     5.30     5.44       0.004 .  O    .       .       .       .
    [BASIN DEPTH(FEET) =    0.49]
  3.60     5.65     5.81       0.004 .  IO   .       .       .       .
    [BASIN DEPTH(FEET) =    0.52]
  3.70     6.00     6.14       0.004 .   O   .       .       .       .
    [BASIN DEPTH(FEET) =    0.55]
  3.80     7.40     8.32       0.005 .    O  .       .       .       .
    [BASIN DEPTH(FEET) =    0.74]
  3.90     8.80     9.15       0.006 .     O .       .       .       .
    [BASIN DEPTH(FEET) =    0.82]
  4.00    10.20    10.96       0.007 .      O.       .       .       .
    [BASIN DEPTH(FEET) =    0.98]
  4.10    11.60    12.06       0.008 .       O       .       .       .
    [BASIN DEPTH(FEET) =    1.08]
  4.20    28.60    37.20       0.041 .       .       .   I   . O     .
    [BASIN DEPTH(FEET) =    3.34]
  4.30    45.60    43.87       0.082 .       .       .       .     O I
    [BASIN DEPTH(FEET) =    3.91]
  4.40    26.35    24.88       0.016 .       .       .OI     .       .
    [BASIN DEPTH(FEET) =    2.22]

*****ERROR; IMPROPER TIME STEP USED - TRY ANOTHER TIME STEP SIZE
```



SCALE: 1" = 250'

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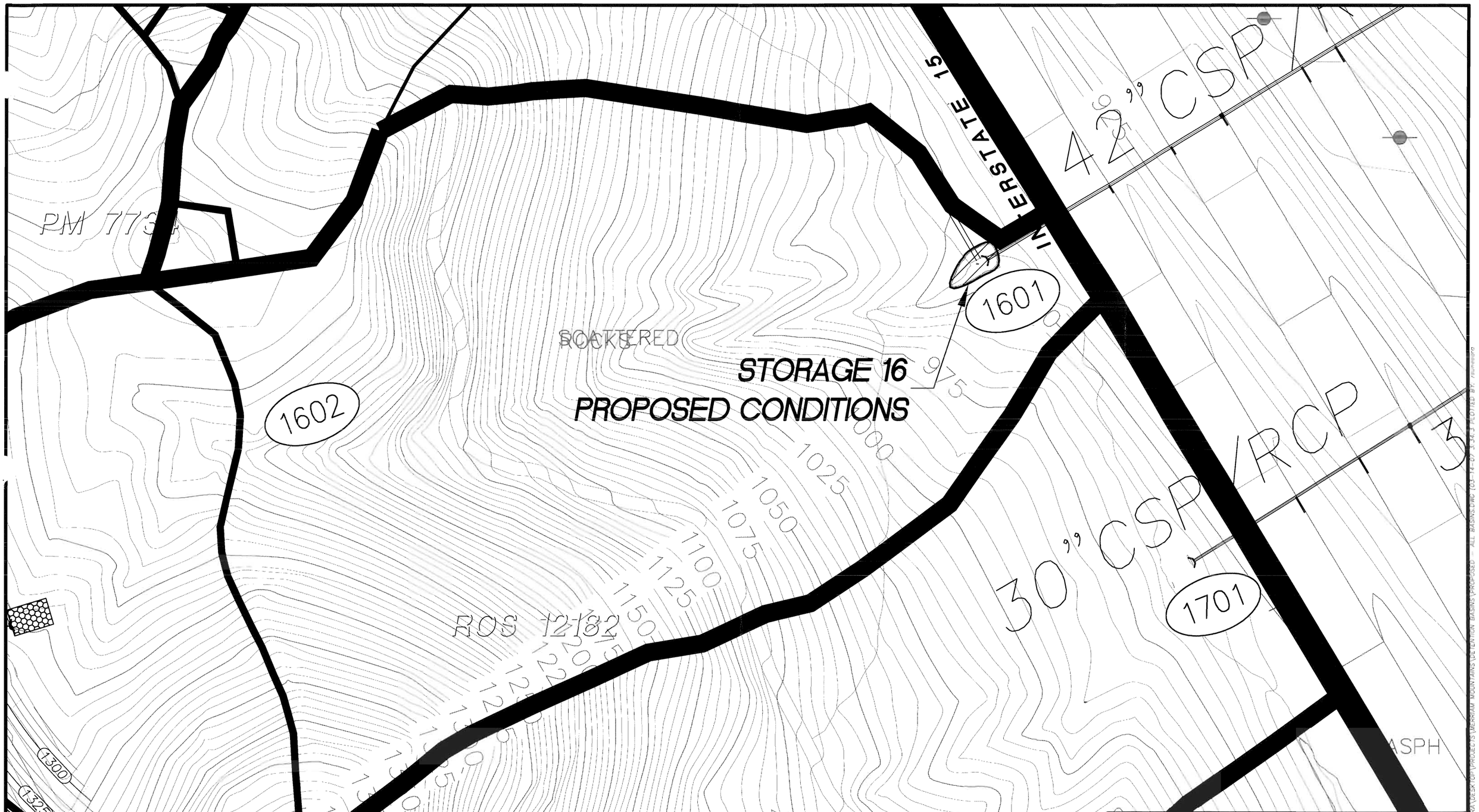
MERRIAM MOUNTAINS

FIGURE B4A - EXISTING DETENTION STORAGE

STORAGE 16
EXISTING CONDITION



SCALE: 1" = 100'

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MERRIAM MOUNTAINS

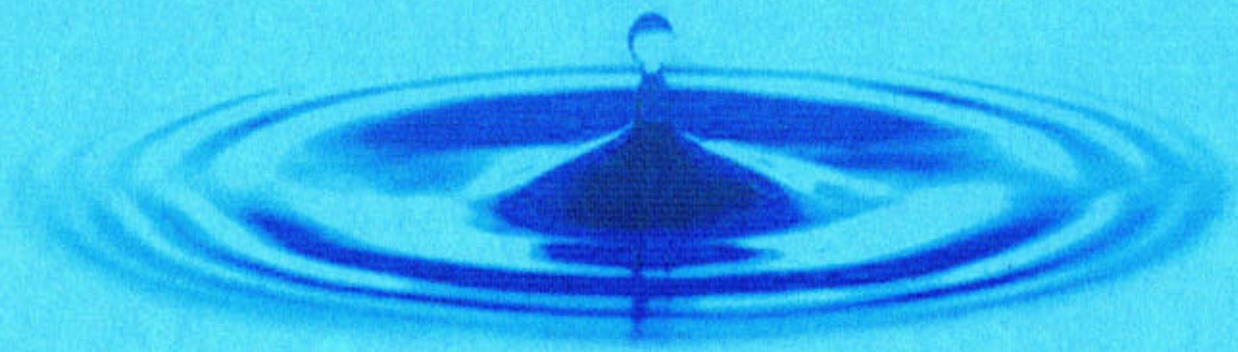
FIGURE B4B - EXISTING DETENTION STORAGE

STORAGE 16
PROPOSED CONDITION

APPENDIX B

Existing Detention Storage Analysis

SUB-BASIN 19



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Job Name:
Merriam Mountains - Existing Hydrology

Date:
October 2006

Job #:
2469.01A

Run Name:
MERR19
Page 1

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Runoff Coeff.	Area (ac.)	Comments
1903	1902.8	2	1,595.0	1,530.0	75.0	0.35	0.14	
1902.8	1902.6	5	1,530.0	1,420.0	300.0			
1902.8	1902.6	8				0.35	1.04	
1902.6	1902.4	5	1,420.0	1,245.0	600.0			
1902.6	1902.4	8				0.35	9.05	
1902.4	1902	5	1,245.0	1,090.0	1,145.0			
1902.4	1902	8				0.315	28.68	
1902	1901	5	1,090.0	950.0	1,950.0			
1902	1901	8				0.267	42.31	
1901	19	4	950.0	930.0	441.0			Ex. 60" RCP Caltrans
								Storm Drain
							81.22	Total Area

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2004 Advanced Engineering Software (aes)
            Ver. 2.0 Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                   FUSCOE ENGINEERING - SAN DIEGO, INC.
                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                             (858) 554-1500

 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - EXISTING HYDROLOGY                                  *
* SUBBASIN #19                                                            *
* 2469.01A - OCTOBER 2006                                                 *
 ***************************************************************************

  FILE NAME: MERR19.DAT
  TIME/DATE OF STUDY: 15:06 09/28/2006
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ====== =====  =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   1903.00 TO NODE   1902.80 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
  UPSTREAM ELEVATION(FEET) =   1595.00
  DOWNSTREAM ELEVATION(FEET) =   1530.00
  ELEVATION DIFFERENCE(FEET) =     65.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.427
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.747
SUBAREA RUNOFF(CFS) =       0.43
TOTAL AREA(ACRES) =       0.14   TOTAL RUNOFF(CFS) =       0.43

****************************************************************************
FLOW PROCESS FROM NODE   1902.80 TO NODE   1902.60 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1530.00  DOWNSTREAM(FEET) =   1420.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.3667
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .2082 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) =       0.43
FLOW VELOCITY(FEET/SEC) =   2.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.96   Tc(MIN.) =   7.38
LONGEST FLOWPATH FROM NODE   1903.00 TO NODE   1902.60 =   375.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1902.80 TO NODE   1902.60 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.171
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) =     1.04   SUBAREA RUNOFF(CFS) =     2.61
TOTAL AREA(ACRES) =       1.18   TOTAL RUNOFF(CFS) =     2.96
TC(MIN.) =   7.38

****************************************************************************
FLOW PROCESS FROM NODE   1902.60 TO NODE   1902.40 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1420.00  DOWNSTREAM(FEET) =   1245.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.2917
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1929 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =       2.96
FLOW VELOCITY(FEET/SEC) =   3.53 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   2.83   Tc(MIN.) =  10.22
LONGEST FLOWPATH FROM NODE   1903.00 TO NODE   1902.40 =   975.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1902.60 TO NODE   1902.40 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.816
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
SUBAREA AREA(ACRES) =     9.05   SUBAREA RUNOFF(CFS) =   18.42
TOTAL AREA(ACRES) =      10.23   TOTAL RUNOFF(CFS) =   20.83
TC(MIN.) =  10.22
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   1902.40 TO NODE   1902.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1245.00  DOWNSTREAM(FEET) =   1090.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1145.00   CHANNEL SLOPE =  0.1354
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1252 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     20.83
  FLOW VELOCITY(FEET/SEC) =   5.45 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.50   Tc(MIN.) =  13.72
  LONGEST FLOWPATH FROM NODE   1903.00 TO NODE   1902.00 =  2120.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1902.40 TO NODE   1902.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.809
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3150
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3242
  SUBAREA AREA(ACRES) =   28.68   SUBAREA RUNOFF(CFS) =   43.45
  TOTAL AREA(ACRES) =     38.91   TOTAL RUNOFF(CFS) =   60.66
  TC(MIN.) =  13.72

****************************************************************************
  FLOW PROCESS FROM NODE   1902.00 TO NODE   1901.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1090.00  DOWNSTREAM(FEET) =    950.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1950.00   CHANNEL SLOPE =  0.0718
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0718 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     60.66
  FLOW VELOCITY(FEET/SEC) =   5.89 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   5.52   Tc(MIN.) =  19.24
  LONGEST FLOWPATH FROM NODE   1903.00 TO NODE   1901.00 =  4070.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1902.00 TO NODE   1901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.867
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2670
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2944
  SUBAREA AREA(ACRES) =   42.31   SUBAREA RUNOFF(CFS) =   43.68
  TOTAL AREA(ACRES) =     81.22   TOTAL RUNOFF(CFS) =   92.46
  TC(MIN.) =  19.24

****************************************************************************
  FLOW PROCESS FROM NODE   1901.00 TO NODE     19.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   950.00  DOWNSTREAM(FEET) =   930.00
  FLOW LENGTH(FEET) =   441.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  17.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.13
  GIVEN PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     92.46
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =  19.60
  LONGEST FLOWPATH FROM NODE   1903.00 TO NODE     19.00 =  4511.00 FEET.
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     81.22  TC(MIN.) =     19.60
  PEAK FLOW RATE(CFS)   =     92.46
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 9/29/2006
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 20 MIN.
6 HOUR RAINFALL 3.5 INCHES
BASIN AREA 81.22 ACRES
RUNOFF COEFFICIENT 0.2944
PEAK DISCHARGE 92.46 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 20	DISCHARGE (CFS) = 5.1
TIME (MIN) = 40	DISCHARGE (CFS) = 5.2
TIME (MIN) = 60	DISCHARGE (CFS) = 5.7
TIME (MIN) = 80	DISCHARGE (CFS) = 6
TIME (MIN) = 100	DISCHARGE (CFS) = 6.6
TIME (MIN) = 120	DISCHARGE (CFS) = 7
TIME (MIN) = 140	DISCHARGE (CFS) = 8.1
TIME (MIN) = 160	DISCHARGE (CFS) = 8.7
TIME (MIN) = 180	DISCHARGE (CFS) = 10.7
TIME (MIN) = 200	DISCHARGE (CFS) = 12.2
TIME (MIN) = 220	DISCHARGE (CFS) = 17.9
TIME (MIN) = 240	DISCHARGE (CFS) = 22.9
TIME (MIN) = 260	DISCHARGE (CFS) = 92.46
TIME (MIN) = 280	DISCHARGE (CFS) = 14.3
TIME (MIN) = 300	DISCHARGE (CFS) = 9.6
TIME (MIN) = 320	DISCHARGE (CFS) = 7.5
TIME (MIN) = 340	DISCHARGE (CFS) = 6.3
TIME (MIN) = 360	DISCHARGE (CFS) = 5.5
TIME (MIN) = 380	DISCHARGE (CFS) = 0

```
****************************************************************************
                HYDRAULICS ELEMENTS - II  PROGRAM PACKAGE

                STORAGE BASIN HYDROGRAPH ROUTING MODEL
****************************************************************************
        (c) Copyright 1983-2004 Advanced Engineering Software (aes)
            Ver. 10.0  Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                   FUSCOE ENGINEERING - SAN DIEGO, INC.
                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                             (858) 554-1500

 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                  *
* SUBBASIN # 19 - EXISTING DETENTION STORAGE ROUTING                      *
* 2469.01A - OCTOBER 2006                                                 *
 ***************************************************************************

    FILE NAME: MMDET19.DAT
    TIME/DATE OF STUDY: 16:55 09/29/2006
===============================================================================
    ENTERED INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   20
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   20.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
-------------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:        0.00*    2:        5.10*    3:        5.20*
    *    4:        5.70*    5:        6.00*    6:        6.60*
    *    7:        7.00*    8:        8.10*    9:        8.70*
    *   10:       10.70*   11:       12.20*   12:       17.90*
    *   13:       22.90*   14:       92.46*   15:       14.30*
    *   16:        9.60*   17:        7.50*   18:        6.30*
    *   19:        5.50*   20:        0.00*
===============================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   4
-------------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *     0.000      0.000     0.000**     5.000      1.750    125.000*
    *    10.000      6.130   240.000**    15.000     13.050    325.000*
*******************************************************************************
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
         1      0.00000     0.00000
         2      0.02824     3.47176
         3      2.82421     9.43579
```

```
        4       8.57342    17.52658
   WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-----------------------------------------------------------------------------


        *UNIT-HYDROGRAPH STORAGE-BASIN ROUTING*
   NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
         OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
         AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

   GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-----------------------------------------------------------------------------
    TIME   INFLOW  OUTFLOW    STORAGE
   (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     23.     46.     69.     92.
      0.33     0.00     0.00       0.000 O       .       .       .       .
        [BASIN DEPTH(FEET) =    0.00]
      0.67     5.10     5.06       0.071 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    0.20]
      1.00     5.20     5.20       0.073 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    0.21]
      1.33     5.70     5.70       0.080 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    0.23]
      1.67     6.00     6.00       0.084 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    0.24]
      2.00     6.60     6.60       0.092 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    0.26]
      2.33     7.00     7.00       0.098 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    0.28]
      2.67     8.10     8.09       0.113 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    0.32]
      3.00     8.70     8.70       0.122 .  O    .       .       .       .
        [BASIN DEPTH(FEET) =    0.35]
      3.33    10.70    10.68       0.150 .  O    .       .       .       .
        [BASIN DEPTH(FEET) =    0.43]
      3.67    12.20    12.19       0.171 .   O   .       .       .       .
        [BASIN DEPTH(FEET) =    0.49]
      4.00    17.90    17.85       0.250 .     O .       .       .       .
        [BASIN DEPTH(FEET) =    0.71]
      4.33    22.90    22.86       0.320 .      O.       .       .       .
        [BASIN DEPTH(FEET) =    0.91]
      4.67    92.46    91.89       1.287 .       .       .       .      OI
        [BASIN DEPTH(FEET) =    3.68]
      5.00    14.30    14.93       0.209 .   IO  .       .       .       .
        [BASIN DEPTH(FEET) =    0.60]
      5.33     9.60     9.64       0.135 .  O    .       .       .       .
        [BASIN DEPTH(FEET) =    0.39]
      5.67     7.50     7.52       0.105 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    0.30]
      6.00     6.30     6.31       0.088 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    0.25]
      6.33     5.50     5.51       0.077 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    0.22]
      6.67     0.00     0.04       0.001 O       .       .       .       .
        [BASIN DEPTH(FEET) =    0.00]
      7.00     0.00     0.00       0.000 O       .       .       .       .
        [BASIN DEPTH(FEET) =    0.00]
      7.33     0.00     0.00       0.000 O       .       .       .       .
        [BASIN DEPTH(FEET) =    0.00]
      7.67     0.00     0.00       0.000 O       .       .       .       .
        [BASIN DEPTH(FEET) =    0.00]
```

```
 8.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 8.33      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 8.67      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 9.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 9.33      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
 9.67      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
10.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
10.33      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
10.67      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
11.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
11.33      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
11.67      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
12.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
12.33      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
12.67      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
13.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
13.33      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
13.67      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
14.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
14.33      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
14.67      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
15.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
15.33      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
15.67      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
16.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
16.33      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
16.67      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
17.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
17.33      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
17.67      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
18.00      0.00      0.00        0.000 o        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
18.33      0.00      0.00        0.000 o        .        .        .        .
```

```
   [BASIN DEPTH(FEET) =    0.00]
18.67     0.00     0.00       0.000 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
19.00     0.00     0.00       0.000 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
19.33     0.00     0.00       0.000 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
19.67     0.00     0.00       0.000 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
20.00     0.00     0.00       0.000 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
```

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Job Name:
Merriam Mountains - Proposed Hydrology

Job #:
2469.01A

Date:
October 2006

Run Name:
MERR19-P
Page 1

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
1961	1960	2	1,364.0	1,362.0	100.0	8	0.81	0.09	
1960	1942	6	1,362.0	1,335.0	850.0	8	0.817	5.64	
1950	1942	8				8	0.82	3.49	
1942	1942	1							1 of 2
1945	1944	2	1,585.0	1,550.0	100.0	21	0.35	0.25	
1944	1943	5	1,550.0	1,400.0	410.0				
1944	1943	8				21	0.35	2.87	
1943	1942	3	1,400.0	1,330.0	130.0				
1942	1942	1							2 of 2
1942	1940	3	1,330.0	1,290.0	693.0				
1942	1940	8				8	0.82	4.02	
1941	1940	8				8	0.815	2.65	
1940	1940	1							1 of 2
1908	1907	2	1,335.0	1,327.0	100.0	8	0.85	0.41	
1907	1940	6	1,327.0	1,295.0	405.0	8	0.85	1.84	
1940	1940	1							2 of 2
1940	1930	3	1,290.0	1,260.0	335.0				
1940	1930	8				8	0.85	1.22	
1931	1930	8				8	0.815	6.02	
1932	1930	8				17	0.549	2.55	
1930	1920	3	1,260.0	1,195.0	660.0				
1930	1920	8				8	0.849	2.48	
1920	1920	1							1 of 2
1927	1926	2	1,397.0	1,395.0	100.0	8	0.82	0.16	
1926	1925	6	1,395.0	1,380.0	380.0	8	0.82	4.27	
1925	1924	6	1,380.0	1,340.0	475.0	8	0.819	2.75	
1924	1923	3	1,335.0	1,240.0	1,101.0				
1924	1923	8				8	0.818	5.02	
1923	1920	3	1,240.0	1,195.0	966.0				
1922	1920	8				8	0.814	7.07	
1921	1920	8				8	0.804	4.18	
1920	1920	1							2 of 2
1920	1910	3	1,195.0	1,140.0	460.0				
1920	1910	8				8	0.842	1.46	
1910	1910	1							1 of 2
1914	1913	2	1,197.0	1,195.0	100.0	8	0.8	0.22	
1913	1911	6	1,195.0	1,180.0	935.0	8	0.814	5.85	
1912	1911	8				8	0.79	4.06	
1911	1910	3	1,175.0	1,140.0	910.0				
1911	1910	8				8	0.802	7.04	

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Job Name:
Merriam Proposed Hydrology

Job #:
2469.01A

Date:
October 2006

Run Name:
MERR19-P
Page 2

Node to Node		Code	Elev 1 (feet)		Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
1910	1910	1							2 of 2
1910	1902	3	1,140.0	1,065.0	175.0				
1902	1901	3	1,065.0	1,025.0	1,020.0				
1902	1901	8				21	0.252	9.77	
1901	1900	5	1,025.0	940.0	475.0				
1901	1900	8				21	0.27	7.11	
1900	19	4	940.0	931.0	459.0				Ex. 60" RCP Caltrans
									Storm Drain
								92.49	Total Area

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2004 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                   FUSCOE ENGINEERING - SAN DIEGO, INC.
                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                             (858) 554-1500

 ************************* DESCRIPTION OF STUDY *************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                 *
* SUBBASIN # 19 - NO DIVERSION FROM SUBBASIN #20                         *
* 2469.01A - OCTOBER 2006                                                *
 ************************************************************************

  FILE NAME: MERR19-P.DAT
  TIME/DATE OF STUDY: 14:49 09/29/2006
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   1961.00 TO NODE   1960.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1364.00
  DOWNSTREAM ELEVATION(FEET) =   1362.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.588
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH =    75.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.67
  TOTAL AREA(ACRES) =      0.09   TOTAL RUNOFF(CFS) =      0.67

****************************************************************************
  FLOW PROCESS FROM NODE   1960.00 TO NODE   1942.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1362.00  DOWNSTREAM ELEVATION(FEET) = 1335.00
  STREET LENGTH(FEET) =   850.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.12
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.94
  STREET FLOW TRAVEL TIME(MIN.) =   7.69   Tc(MIN.) =  11.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.456
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8170
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.817
  SUBAREA AREA(ACRES) =     5.64      SUBAREA RUNOFF(CFS) =   25.14
  TOTAL AREA(ACRES) =       5.73        PEAK FLOW RATE(CFS) =      25.54

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.84
  FLOW VELOCITY(FEET/SEC.) =  2.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.37
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1942.00 =   950.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1950.00 TO NODE   1942.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.456
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8181
  SUBAREA AREA(ACRES) =     3.49   SUBAREA RUNOFF(CFS) =   15.62
  TOTAL AREA(ACRES) =       9.22   TOTAL RUNOFF(CFS) =   41.16
  TC(MIN.) =  11.28

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

```
  FLOW PROCESS FROM NODE   1942.00 TO NODE   1942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.28
  RAINFALL INTENSITY(INCH/HR) =   5.46
  TOTAL STREAM AREA(ACRES) =     9.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.16

****************************************************************************
  FLOW PROCESS FROM NODE   1945.00 TO NODE   1944.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1585.00
  DOWNSTREAM ELEVATION(FEET) =   1550.00
  ELEVATION DIFFERENCE(FEET) =     35.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.972
  SUBAREA RUNOFF(CFS) =      0.70
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.70

****************************************************************************
  FLOW PROCESS FROM NODE   1944.00 TO NODE   1943.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1550.00  DOWNSTREAM(FEET) =   1400.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   410.00   CHANNEL SLOPE =  0.3659
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2080 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.70
  FLOW VELOCITY(FEET/SEC) =   2.55 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.68   Tc(MIN.) =   8.94
  LONGEST FLOWPATH FROM NODE   1945.00 TO NODE   1943.00 =   510.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1944.00 TO NODE   1943.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.338
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =     2.87   SUBAREA RUNOFF(CFS) =     6.37
  TOTAL AREA(ACRES) =       3.12   TOTAL RUNOFF(CFS) =    6.92
  TC(MIN.) =   8.94

****************************************************************************
  FLOW PROCESS FROM NODE   1943.00 TO NODE   1942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1400.00  DOWNSTREAM(FEET) =  1330.00
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.04
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      6.92
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   9.03
  LONGEST FLOWPATH FROM NODE   1945.00 TO NODE   1942.00 =   640.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1942.00 TO NODE   1942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.03
  RAINFALL INTENSITY(INCH/HR) =   6.30
  TOTAL STREAM AREA(ACRES) =     3.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.92

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       41.16    11.28        5.456          9.22
     2        6.92     9.03        6.300          3.12

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       39.85     9.03       6.300
     2       47.15    11.28       5.456

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     47.15   Tc(MIN.) =   11.28
  TOTAL AREA(ACRES) =     12.34
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1942.00 =   950.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1942.00 TO NODE   1940.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1330.00  DOWNSTREAM(FEET) =  1290.00
  FLOW LENGTH(FEET) =   693.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.61
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     47.15
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =  11.90
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1940.00 =  1643.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1942.00 TO NODE   1940.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.271
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7293
  SUBAREA AREA(ACRES) =    4.02   SUBAREA RUNOFF(CFS) =   17.38
  TOTAL AREA(ACRES) =     16.36   TOTAL RUNOFF(CFS) =   62.89
  TC(MIN.) =  11.90

****************************************************************************
  FLOW PROCESS FROM NODE   1941.00 TO NODE   1940.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.271
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7419
  SUBAREA AREA(ACRES) =    2.65   SUBAREA RUNOFF(CFS) =   11.45
  TOTAL AREA(ACRES) =     19.01   TOTAL RUNOFF(CFS) =   74.34
  TC(MIN.) =  11.90

****************************************************************************
  FLOW PROCESS FROM NODE   1940.00 TO NODE   1940.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.90
  RAINFALL INTENSITY(INCH/HR) =   5.27
  TOTAL STREAM AREA(ACRES) =    19.01
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     74.34

****************************************************************************
  FLOW PROCESS FROM NODE   1908.00 TO NODE   1907.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1335.00
  DOWNSTREAM ELEVATION(FEET) =   1327.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.228
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    98.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.21
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      3.21

****************************************************************************
  FLOW PROCESS FROM NODE   1907.00 TO NODE   1940.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1327.00  DOWNSTREAM ELEVATION(FEET) = 1295.00
  STREET LENGTH(FEET) =   405.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.32
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.97
  STREET FLOW TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =   5.11
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.091
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.850
  SUBAREA AREA(ACRES) =     1.84      SUBAREA RUNOFF(CFS) =   14.22
  TOTAL AREA(ACRES) =       2.25        PEAK FLOW RATE(CFS) =      17.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.75
  FLOW VELOCITY(FEET/SEC.) =  2.66   DEPTH*VELOCITY(FT*FT/SEC.) =   1.28
  LONGEST FLOWPATH FROM NODE   1908.00 TO NODE   1940.00 =   505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1940.00 TO NODE   1940.00 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.) =   5.11
  RAINFALL INTENSITY(INCH/HR) =   9.09
  TOTAL STREAM AREA(ACRES) =     2.25
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.39

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       74.34    11.90        5.271         19.01
      2       17.39     5.11        9.091          2.25

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       60.49     5.11       9.091
      2       84.42    11.90       5.271
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     84.42   Tc(MIN.) =   11.90
  TOTAL AREA(ACRES) =     21.26
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1940.00 =  1643.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1940.00 TO NODE   1930.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1290.00  DOWNSTREAM(FEET) =  1260.00
  FLOW LENGTH(FEET) =   335.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.18
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     84.42
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  12.12
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1930.00 =  1978.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1940.00 TO NODE   1930.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.209
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7586
  SUBAREA AREA(ACRES) =    1.22   SUBAREA RUNOFF(CFS) =    5.40
  TOTAL AREA(ACRES) =     22.48   TOTAL RUNOFF(CFS) =   88.83
  TC(MIN.) =  12.12

****************************************************************************
  FLOW PROCESS FROM NODE   1931.00 TO NODE   1930.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.209
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8150
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7705
  SUBAREA AREA(ACRES) =    6.02   SUBAREA RUNOFF(CFS) =   25.56
  TOTAL AREA(ACRES) =     28.50   TOTAL RUNOFF(CFS) =  114.38
  TC(MIN.) =  12.12

****************************************************************************
  FLOW PROCESS FROM NODE   1932.00 TO NODE   1930.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.209
  *USER SPECIFIED(SUBAREA):
  STREETS & ROADS (DITCHES) RUNOFF COEFFICIENT = .5490
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7523
  SUBAREA AREA(ACRES) =    2.55   SUBAREA RUNOFF(CFS) =    7.29
  TOTAL AREA(ACRES) =     31.05   TOTAL RUNOFF(CFS) =  121.67
  TC(MIN.) =  12.12

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

```
  FLOW PROCESS FROM NODE   1930.00 TO NODE   1920.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1260.00  DOWNSTREAM(FEET) =  1195.00
  FLOW LENGTH(FEET) =   660.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.36
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    121.67
  PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =  12.51
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1920.00 =  2638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1930.00 TO NODE   1920.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.104
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8490
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7595
  SUBAREA AREA(ACRES) =    2.48   SUBAREA RUNOFF(CFS) =   10.75
  TOTAL AREA(ACRES) =     33.53   TOTAL RUNOFF(CFS) =  129.97
  TC(MIN.) =  12.51

****************************************************************************
  FLOW PROCESS FROM NODE   1920.00 TO NODE   1920.00 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.) =  12.51
  RAINFALL INTENSITY(INCH/HR) =   5.10
  TOTAL STREAM AREA(ACRES) =    33.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    129.97

****************************************************************************
  FLOW PROCESS FROM NODE   1927.00 TO NODE   1926.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1397.00
  DOWNSTREAM ELEVATION(FEET) =   1395.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.464
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    75.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.21
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      1.21

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

```
  FLOW PROCESS FROM NODE   1926.00 TO NODE   1925.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1395.00  DOWNSTREAM ELEVATION(FEET) = 1380.00
  STREET LENGTH(FEET) =   380.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.93
    ***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.) =    2.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.02
  STREET FLOW TRAVEL TIME(MIN.) =   3.14   Tc(MIN.) =   6.60
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.708
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =    4.27      SUBAREA RUNOFF(CFS) =   26.99
  TOTAL AREA(ACRES) =      4.43        PEAK FLOW RATE(CFS) =      28.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.71
  FLOW VELOCITY(FEET/SEC.) =  2.53   DEPTH*VELOCITY(FT*FT/SEC.) =   1.51
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1925.00 =   480.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1925.00 TO NODE   1924.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1380.00  DOWNSTREAM ELEVATION(FEET) = 1340.00
  STREET LENGTH(FEET) =   475.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.20
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.55
```

```
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.51
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.01
STREET FLOW TRAVEL TIME(MIN.) =   2.25   Tc(MIN.) =   8.86
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.378
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8190
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
SUBAREA AREA(ACRES) =     2.75      SUBAREA RUNOFF(CFS) =   14.36
TOTAL AREA(ACRES) =       7.18        PEAK FLOW RATE(CFS) =      37.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.04
FLOW VELOCITY(FEET/SEC.) =  3.59   DEPTH*VELOCITY(FT*FT/SEC.) =   2.09
LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1924.00 =   955.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1924.00 TO NODE   1923.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1335.00  DOWNSTREAM(FEET) =  1240.00
FLOW LENGTH(FEET) =  1101.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  20.61
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      37.53
PIPE TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =   9.75
LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1923.00 =  2056.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1924.00 TO NODE   1923.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.995
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8140
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.8173
SUBAREA AREA(ACRES) =     5.02   SUBAREA RUNOFF(CFS) =   24.50
TOTAL AREA(ACRES) =      12.20   TOTAL RUNOFF(CFS) =   59.78
TC(MIN.) =   9.75

****************************************************************************
FLOW PROCESS FROM NODE   1923.00 TO NODE   1920.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1240.00  DOWNSTREAM(FEET) =  1195.00
FLOW LENGTH(FEET) =   966.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  18.14
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      59.78
PIPE TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  10.63
LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1920.00 =  3022.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1922.00 TO NODE   1920.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.668
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8140
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8161
  SUBAREA AREA(ACRES) =    7.07   SUBAREA RUNOFF(CFS) =   32.62
  TOTAL AREA(ACRES) =     19.27   TOTAL RUNOFF(CFS) =   89.13
  TC(MIN.) =  10.63

******************************************************************************
  FLOW PROCESS FROM NODE   1921.00 TO NODE   1920.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.668
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8040
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8139
  SUBAREA AREA(ACRES) =    4.18   SUBAREA RUNOFF(CFS) =   19.05
  TOTAL AREA(ACRES) =     23.45   TOTAL RUNOFF(CFS) =  108.18
  TC(MIN.) =  10.63

******************************************************************************
  FLOW PROCESS FROM NODE   1920.00 TO NODE   1920.00 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.) =  10.63
  RAINFALL INTENSITY(INCH/HR) =   5.67
  TOTAL STREAM AREA(ACRES) =    23.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    108.18

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      129.97    12.51        5.104         33.53
     2      108.18    10.63        5.668         23.45

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      225.22    10.63       5.668
     2      227.39    12.51       5.104

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    227.39   Tc(MIN.) =   12.51
  TOTAL AREA(ACRES) =     56.98
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1920.00 =  3022.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   1920.00 TO NODE   1910.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1195.00  DOWNSTREAM(FEET) =  1140.00
  FLOW LENGTH(FEET) =   460.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  36.58
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    227.39
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =  12.72
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1910.00 =  3482.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1920.00 TO NODE   1910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.050
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8420
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7834
  SUBAREA AREA(ACRES) =    1.46   SUBAREA RUNOFF(CFS) =    6.21
  TOTAL AREA(ACRES) =     58.44   TOTAL RUNOFF(CFS) =  231.18
  TC(MIN.) =  12.72

****************************************************************************
  FLOW PROCESS FROM NODE   1910.00 TO NODE   1910.00 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.) =  12.72
  RAINFALL INTENSITY(INCH/HR) =   5.05
  TOTAL STREAM AREA(ACRES) =    58.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    231.18

****************************************************************************
  FLOW PROCESS FROM NODE   1914.00 TO NODE   1913.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1197.00
  DOWNSTREAM ELEVATION(FEET) =   1195.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.712
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    75.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.62
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      1.62

****************************************************************************
  FLOW PROCESS FROM NODE   1913.00 TO NODE   1911.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
```

```
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1195.00  DOWNSTREAM ELEVATION(FEET) = 1180.00
  STREET LENGTH(FEET) =   935.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.78
    ***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.) =    1.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.82
  STREET FLOW TRAVEL TIME(MIN.) =  10.57   Tc(MIN.) =  14.29
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.685
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8140
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.813
  SUBAREA AREA(ACRES) =     5.85      SUBAREA RUNOFF(CFS) =   22.31
  TOTAL AREA(ACRES) =       6.07        PEAK FLOW RATE(CFS) =      23.14

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.85
  FLOW VELOCITY(FEET/SEC.) =  1.77   DEPTH*VELOCITY(FT*FT/SEC.) =   1.13
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  935.0 FT WITH ELEVATION-DROP =  15.0 FT, IS   43.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   1911.00
  LONGEST FLOWPATH FROM NODE   1914.00 TO NODE   1911.00 =  1035.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1912.00 TO NODE   1911.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.685
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8041
  SUBAREA AREA(ACRES) =     4.06   SUBAREA RUNOFF(CFS) =   15.03
  TOTAL AREA(ACRES) =      10.13   TOTAL RUNOFF(CFS) =   38.16
  TC(MIN.) =  14.29

****************************************************************************
  FLOW PROCESS FROM NODE   1911.00 TO NODE   1910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1175.00  DOWNSTREAM(FEET) =  1140.00
  FLOW LENGTH(FEET) =   910.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.17
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =     38.16
  PIPE TRAVEL TIME(MIN.) =   1.00    Tc(MIN.) =  15.28
  LONGEST FLOWPATH FROM NODE   1914.00 TO NODE   1910.00 =  1945.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1911.00 TO NODE   1910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.485
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8020
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8032
  SUBAREA AREA(ACRES) =    7.04   SUBAREA RUNOFF(CFS) =   25.32
  TOTAL AREA(ACRES) =     17.17   TOTAL RUNOFF(CFS) =   61.86
  TC(MIN.) =  15.28

****************************************************************************
  FLOW PROCESS FROM NODE   1910.00 TO NODE   1910.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.28
  RAINFALL INTENSITY(INCH/HR) =   4.49
  TOTAL STREAM AREA(ACRES) =    17.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     61.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      231.18    12.72        5.050         58.44
     2       61.86    15.28        4.485         17.17

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      282.65    12.72       5.050
     2      267.20    15.28       4.485

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    282.65   Tc(MIN.) =   12.72
  TOTAL AREA(ACRES) =     75.61
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1910.00 =  3482.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1910.00 TO NODE   1902.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1140.00  DOWNSTREAM(FEET) =  1065.00
  FLOW LENGTH(FEET) =   175.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  62.19
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    282.65
```

```
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  12.77
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1902.00 =  3657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1902.00 TO NODE   1901.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1065.00  DOWNSTREAM(FEET) =  1025.00
  FLOW LENGTH(FEET) =  1020.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.27
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    282.65
  PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =  13.44
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1901.00 =  4677.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1902.00 TO NODE   1901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.873
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2520
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7266
  SUBAREA AREA(ACRES) =    9.77   SUBAREA RUNOFF(CFS) =   12.00
  TOTAL AREA(ACRES) =     85.38   TOTAL RUNOFF(CFS) =  302.32
  TC(MIN.) =  13.44

****************************************************************************
  FLOW PROCESS FROM NODE   1901.00 TO NODE   1900.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1025.00  DOWNSTREAM(FEET) =    940.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   475.00   CHANNEL SLOPE =  0.1789
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1495 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    302.32
  FLOW VELOCITY(FEET/SEC) =  14.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.55   Tc(MIN.) =  13.99
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1900.00 =  5152.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1901.00 TO NODE   1900.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.750
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .5000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7092
  SUBAREA AREA(ACRES) =    7.11   SUBAREA RUNOFF(CFS) =   16.89
  TOTAL AREA(ACRES) =     92.49   TOTAL RUNOFF(CFS) =  311.55
  TC(MIN.) =  13.99

****************************************************************************
  FLOW PROCESS FROM NODE   1900.00 TO NODE     19.00 IS CODE =  41
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   940.00  DOWNSTREAM(FEET) =   931.00
  FLOW LENGTH(FEET) =   459.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  44.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.94
  GIVEN PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    311.55
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =  14.37
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE     19.00 =  5611.00 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     92.49  TC(MIN.) =     14.37
  PEAK FLOW RATE(CFS)    =    311.55
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

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Job Name:
Merriam Mountains - Proposed Hydrology

Job #:
2469.01A

Date:
October 2006

Run Name:
MM19PDIV
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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
1961	1960	2	1,364.0	1,362.0	100.0	8	0.81	0.09	
1960	1942	6	1,362.0	1,335.0	850.0	8	0.817	5.64	
1950	1942	8				8	0.82	3.49	
1942	1942	1							1 of 2
1945	1944	2	1,585.0	1,550.0	100.0	21	0.35	0.25	
1944	1943	5	1,550.0	1,400.0	410.0				
1944	1943	8				21	0.35	2.87	
1943	1942	3	1,400.0	1,330.0	130.0				
1942	1942	1							2 of 2
1942	1940	3	1,330.0	1,290.0	693.0				
1942	1940	8				8	0.82	4.02	
1941	1940	8				8	0.815	2.65	
1940	1940	1							1 of 2
1908	1907	2	1,335.0	1,327.0	100.0	8	0.85	0.41	
1907	1940	6	1,327.0	1,295.0	405.0	8	0.85	1.84	
1940	1940	1							2 of 2
1940	1930	3	1,290.0	1,260.0	335.0				
1940	1930	8				8	0.85	1.22	
1931	1930	8				8	0.815	6.02	
1932	1930	8				17	0.549	2.55	
1930	1920	3	1,260.0	1,195.0	660.0				
1930	1920	8				8	0.849	2.48	
1920	1920	1							1 of 2
1927	1926	2	1,397.0	1,395.0	100.0	8	0.82	0.16	
1926	1925	6	1,395.0	1,380.0	380.0	8	0.82	4.27	
1925	1924	6	1,380.0	1,340.0	475.0	8	0.819	2.75	
1924	1923	3	1,335.0	1,240.0	1,101.0				
1924	1923	8				8	0.818	5.02	
1923	1920	3	1,240.0	1,195.0	966.0				
1922	1920	8				8	0.814	7.07	
1921	1920	8				8	0.804	4.18	
1920	1920	1							2 of 2
1920	1910	3	1,195.0	1,140.0	460.0				
1920	1910	8				8	0.842	1.46	
1910	1910	1							1 of 2
1914	1913	2	1,197.0	1,195.0	100.0	8	0.8	0.22	
1913	1911	6	1,195.0	1,180.0	935.0	8	0.814	5.85	
1912	1911	8				8	0.79	4.06	
1911	1910	3	1,175.0	1,140.0	910.0				
1911	1910	8				8	0.802	7.04	

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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
1961	1960	2	1,364.0	1,362.0	100.0	8	0.81	0.09	
1960	1942	6	1,362.0	1,335.0	850.0	8	0.817	5.64	
1950	1942	8				8	0.82	3.49	
1942	1942	1							1 of 2
1945	1944	2	1,585.0	1,550.0	100.0	21	0.35	0.25	
1944	1943	5	1,550.0	1,400.0	410.0				
1944	1943	8				21	0.35	2.87	
1943	1942	3	1,400.0	1,330.0	130.0				
1942	1942	1							2 of 2
1942	1940	3	1,330.0	1,290.0	693.0				
1942	1940	8				8	0.82	4.02	
1941	1940	8				8	0.815	2.65	
1940	1940	1							1 of 2
1908	1907	2	1,335.0	1,327.0	100.0	8	0.85	0.41	
1907	1940	6	1,327.0	1,295.0	405.0	8	0.85	1.84	
1940	1940	1							2 of 2
1940	1930	3	1,290.0	1,260.0	335.0				
1940	1930	8				8	0.85	1.22	
1931	1930	8				8	0.815	6.02	
1932	1930	8				17	0.549	2.55	
1930	1920	3	1,260.0	1,195.0	660.0				
1930	1920	8				8	0.849	2.48	
1920	1920	1							1 of 2
1927	1926	2	1,397.0	1,395.0	100.0	8	0.82	0.16	
1926	1925	6	1,395.0	1,380.0	380.0	8	0.82	4.27	
1925	1924	6	1,380.0	1,340.0	475.0	8	0.819	2.75	
1924	1923	3	1,335.0	1,240.0	1,101.0				
1924	1923	8				8	0.818	5.02	
1923	1920	3	1,240.0	1,195.0	966.0				
1922	1920	8				8	0.814	7.07	
1921	1920	8				8	0.804	4.18	
1920	1920	1							2 of 2
1920	1910	3	1,195.0	1,140.0	460.0				
1920	1910	8				8	0.842	1.46	
1910	1910	1							1 of 2
1914	1913	2	1,197.0	1,195.0	100.0	8	0.8	0.22	
1913	1911	6	1,195.0	1,180.0	935.0	8	0.814	5.85	
1912	1911	8				8	0.79	4.06	
1911	1910	3	1,175.0	1,140.0	910.0				
1911	1910	8				8	0.802	7.04	

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Node to Node		Code	Elev 1 (feet)		Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
1910	1910	1							2 of 2
1910	1902	3	1,140.0	1,065.0	175.0				
1902	1901	3	1,065.0	1,025.0	1,020.0				
1902	1901	8				21	0.252	9.77	
1901	1900	5	1,025.0	940.0	475.0				
1901	1900	8				21	0.27	7.11	
1900	1900	1							1 of 2
1999	1900	7							DIVERTED FLOW INPUT
1900	1900	1							2 of 2
1900	19	4	940.0	931.0	459.0				Ex. 60" RCP Caltrans
									Storm Drain
								122.82	Total Area

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2004 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                       Fuscoe Engineering, San Diego
                        6390 Greenwich Dr. Suite 170
                            San Diego, CA 92122
                                858-554-1500

 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                  *
* SUBBASIN # 19 - WITH DIVERSION FROM SUBBASIN # 20                       *
* 2469.01A - MARCH 2007                                                   *
 ***************************************************************************

  FILE NAME: MM19PDIV.DAT
  TIME/DATE OF STUDY: 10:02 03/22/2007
---------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
---------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   1961.00 TO NODE   1960.00 IS CODE =  21
---------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1364.00
  DOWNSTREAM ELEVATION(FEET) =   1362.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.588
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH =    75.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.67
  TOTAL AREA(ACRES) =      0.09   TOTAL RUNOFF(CFS) =      0.67

****************************************************************************
  FLOW PROCESS FROM NODE   1960.00 TO NODE   1942.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1362.00  DOWNSTREAM ELEVATION(FEET) = 1335.00
  STREET LENGTH(FEET) =   850.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.12
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.62
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.84
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.94
  STREET FLOW TRAVEL TIME(MIN.) =   7.69   Tc(MIN.) =  11.28
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.456
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8170
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.817
  SUBAREA AREA(ACRES) =    5.64      SUBAREA RUNOFF(CFS) =   25.14
  TOTAL AREA(ACRES) =      5.73        PEAK FLOW RATE(CFS) =      25.54

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.84
  FLOW VELOCITY(FEET/SEC.) =  2.29   DEPTH*VELOCITY(FT*FT/SEC.) =   1.37
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1942.00 =   950.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1950.00 TO NODE   1942.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.456
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8181
  SUBAREA AREA(ACRES) =    3.49   SUBAREA RUNOFF(CFS) =   15.62
  TOTAL AREA(ACRES) =      9.22   TOTAL RUNOFF(CFS) =   41.16
  TC(MIN.) =  11.28

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

```
  FLOW PROCESS FROM NODE   1942.00 TO NODE   1942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.28
  RAINFALL INTENSITY(INCH/HR) =   5.46
  TOTAL STREAM AREA(ACRES) =     9.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.16

****************************************************************************
  FLOW PROCESS FROM NODE   1945.00 TO NODE   1944.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1585.00
  DOWNSTREAM ELEVATION(FEET) =   1550.00
  ELEVATION DIFFERENCE(FEET) =     35.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.972
  SUBAREA RUNOFF(CFS) =      0.70
  TOTAL AREA(ACRES) =      0.25   TOTAL RUNOFF(CFS) =      0.70

****************************************************************************
  FLOW PROCESS FROM NODE   1944.00 TO NODE   1943.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1550.00  DOWNSTREAM(FEET) =   1400.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   410.00   CHANNEL SLOPE =  0.3659
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2080 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.70
  FLOW VELOCITY(FEET/SEC) =   2.55 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.68   Tc(MIN.) =   8.94
  LONGEST FLOWPATH FROM NODE   1945.00 TO NODE   1943.00 =   510.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1944.00 TO NODE   1943.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.338
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    2.87   SUBAREA RUNOFF(CFS) =    6.37
  TOTAL AREA(ACRES) =      3.12   TOTAL RUNOFF(CFS) =    6.92
  TC(MIN.) =   8.94

****************************************************************************
  FLOW PROCESS FROM NODE   1943.00 TO NODE   1942.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1400.00  DOWNSTREAM(FEET) =  1330.00
  FLOW LENGTH(FEET) =   130.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.04
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      6.92
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   9.03
  LONGEST FLOWPATH FROM NODE   1945.00 TO NODE   1942.00 =   640.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1942.00 TO NODE   1942.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.03
  RAINFALL INTENSITY(INCH/HR) =   6.30
  TOTAL STREAM AREA(ACRES) =     3.12
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.92

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       41.16    11.28        5.456          9.22
     2        6.92     9.03        6.300          3.12

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       39.85     9.03       6.300
     2       47.15    11.28       5.456

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     47.15   Tc(MIN.) =   11.28
  TOTAL AREA(ACRES) =     12.34
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1942.00 =   950.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1942.00 TO NODE   1940.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1330.00  DOWNSTREAM(FEET) =  1290.00
  FLOW LENGTH(FEET) =   693.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  18.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.61
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     47.15
  PIPE TRAVEL TIME(MIN.) =   0.62    Tc(MIN.) =  11.90
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1940.00 =  1643.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1942.00 TO NODE   1940.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.271
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7293
  SUBAREA AREA(ACRES) =    4.02   SUBAREA RUNOFF(CFS) =   17.38
  TOTAL AREA(ACRES) =     16.36   TOTAL RUNOFF(CFS) =   62.89
  TC(MIN.) =  11.90

****************************************************************************
  FLOW PROCESS FROM NODE   1941.00 TO NODE   1940.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.271
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7419
  SUBAREA AREA(ACRES) =    2.65   SUBAREA RUNOFF(CFS) =   11.45
  TOTAL AREA(ACRES) =     19.01   TOTAL RUNOFF(CFS) =   74.34
  TC(MIN.) =  11.90

****************************************************************************
  FLOW PROCESS FROM NODE   1940.00 TO NODE   1940.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.90
  RAINFALL INTENSITY(INCH/HR) =   5.27
  TOTAL STREAM AREA(ACRES) =    19.01
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     74.34

****************************************************************************
  FLOW PROCESS FROM NODE   1908.00 TO NODE   1907.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1335.00
  DOWNSTREAM ELEVATION(FEET) =   1327.00
  ELEVATION DIFFERENCE(FEET) =      8.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.228
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    98.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      3.21
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      3.21

****************************************************************************
  FLOW PROCESS FROM NODE   1907.00 TO NODE   1940.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1327.00  DOWNSTREAM ELEVATION(FEET) = 1295.00
  STREET LENGTH(FEET) =   405.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.32
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.42
    HALFSTREET FLOOD WIDTH(FEET) =   14.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.34
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.97
  STREET FLOW TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =   5.11
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.091
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.850
  SUBAREA AREA(ACRES) =     1.84      SUBAREA RUNOFF(CFS) =   14.22
  TOTAL AREA(ACRES) =       2.25        PEAK FLOW RATE(CFS) =      17.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.48   HALFSTREET FLOOD WIDTH(FEET) =  17.75
  FLOW VELOCITY(FEET/SEC.) =  2.66   DEPTH*VELOCITY(FT*FT/SEC.) =   1.28
  LONGEST FLOWPATH FROM NODE   1908.00 TO NODE   1940.00 =   505.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1940.00 TO NODE   1940.00 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.) =   5.11
  RAINFALL INTENSITY(INCH/HR) =   9.09
  TOTAL STREAM AREA(ACRES) =     2.25
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.39

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       74.34    11.90        5.271         19.01
     2       17.39     5.11        9.091          2.25

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       60.49     5.11       9.091
     2       84.42    11.90       5.271
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     84.42   Tc(MIN.) =   11.90
  TOTAL AREA(ACRES) =     21.26
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1940.00 =  1643.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1940.00 TO NODE   1930.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1290.00  DOWNSTREAM(FEET) =  1260.00
  FLOW LENGTH(FEET) =   335.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.18
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     84.42
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  12.12
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1930.00 =  1978.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1940.00 TO NODE   1930.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.209
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7586
  SUBAREA AREA(ACRES) =    1.22   SUBAREA RUNOFF(CFS) =    5.40
  TOTAL AREA(ACRES) =     22.48   TOTAL RUNOFF(CFS) =   88.83
  TC(MIN.) =  12.12

****************************************************************************
  FLOW PROCESS FROM NODE   1931.00 TO NODE   1930.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.209
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8150
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7705
  SUBAREA AREA(ACRES) =    6.02   SUBAREA RUNOFF(CFS) =   25.56
  TOTAL AREA(ACRES) =     28.50   TOTAL RUNOFF(CFS) =  114.38
  TC(MIN.) =  12.12

****************************************************************************
  FLOW PROCESS FROM NODE   1932.00 TO NODE   1930.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.209
  *USER SPECIFIED(SUBAREA):
  STREETS & ROADS (DITCHES) RUNOFF COEFFICIENT = .5490
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7523
  SUBAREA AREA(ACRES) =    2.55   SUBAREA RUNOFF(CFS) =    7.29
  TOTAL AREA(ACRES) =     31.05   TOTAL RUNOFF(CFS) =  121.67
  TC(MIN.) =  12.12

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

```
  FLOW PROCESS FROM NODE   1930.00 TO NODE   1920.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1260.00  DOWNSTREAM(FEET) =  1195.00
  FLOW LENGTH(FEET) =   660.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  24.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.36
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    121.67
  PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =  12.51
  LONGEST FLOWPATH FROM NODE   1961.00 TO NODE   1920.00 =  2638.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1930.00 TO NODE   1920.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.104
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8490
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7595
  SUBAREA AREA(ACRES) =    2.48   SUBAREA RUNOFF(CFS) =   10.75
  TOTAL AREA(ACRES) =     33.53   TOTAL RUNOFF(CFS) =  129.97
  TC(MIN.) =  12.51

****************************************************************************
  FLOW PROCESS FROM NODE   1920.00 TO NODE   1920.00 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.) =  12.51
  RAINFALL INTENSITY(INCH/HR) =   5.10
  TOTAL STREAM AREA(ACRES) =    33.53
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    129.97

****************************************************************************
  FLOW PROCESS FROM NODE   1927.00 TO NODE   1926.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1397.00
  DOWNSTREAM ELEVATION(FEET) =   1395.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.464
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    75.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.21
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      1.21

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

```
  FLOW PROCESS FROM NODE   1926.00 TO NODE   1925.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1395.00  DOWNSTREAM ELEVATION(FEET) = 1380.00
  STREET LENGTH(FEET) =   380.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.93
    ***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.) =    2.02
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.02
  STREET FLOW TRAVEL TIME(MIN.) =   3.14   Tc(MIN.) =   6.60
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.708
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
  SUBAREA AREA(ACRES) =     4.27      SUBAREA RUNOFF(CFS) =   26.99
  TOTAL AREA(ACRES) =       4.43        PEAK FLOW RATE(CFS) =      28.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.71
  FLOW VELOCITY(FEET/SEC.) =  2.53   DEPTH*VELOCITY(FT*FT/SEC.) =   1.51
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1925.00 =   480.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1925.00 TO NODE   1924.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1380.00  DOWNSTREAM ELEVATION(FEET) = 1340.00
  STREET LENGTH(FEET) =   475.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.20
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   21.55
```

```
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.51
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.01
STREET FLOW TRAVEL TIME(MIN.) =   2.25   Tc(MIN.) =   8.86
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.378
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8190
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.820
SUBAREA AREA(ACRES) =     2.75      SUBAREA RUNOFF(CFS) =   14.36
TOTAL AREA(ACRES) =       7.18        PEAK FLOW RATE(CFS) =      37.53

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.04
FLOW VELOCITY(FEET/SEC.) =  3.59   DEPTH*VELOCITY(FT*FT/SEC.) =   2.09
LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1924.00 =   955.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1924.00 TO NODE   1923.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1335.00  DOWNSTREAM(FEET) =  1240.00
FLOW LENGTH(FEET) =  1101.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  20.61
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     37.53
PIPE TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =   9.75
LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1923.00 =  2056.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1924.00 TO NODE   1923.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.995
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8140
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.8173
SUBAREA AREA(ACRES) =     5.02   SUBAREA RUNOFF(CFS) =   24.50
TOTAL AREA(ACRES) =      12.20   TOTAL RUNOFF(CFS) =   59.78
TC(MIN.) =   9.75

****************************************************************************
FLOW PROCESS FROM NODE   1923.00 TO NODE   1920.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1240.00  DOWNSTREAM(FEET) =  1195.00
FLOW LENGTH(FEET) =   966.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  18.14
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     59.78
PIPE TRAVEL TIME(MIN.) =   0.89    Tc(MIN.) =  10.63
LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1920.00 =  3022.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   1922.00 TO NODE   1920.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.668
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8140
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8161
  SUBAREA AREA(ACRES) =    7.07   SUBAREA RUNOFF(CFS) =   32.62
  TOTAL AREA(ACRES) =     19.27   TOTAL RUNOFF(CFS) =   89.13
  TC(MIN.) =  10.63

********************************************************************************
  FLOW PROCESS FROM NODE   1921.00 TO NODE   1920.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.668
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8040
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8139
  SUBAREA AREA(ACRES) =    4.18   SUBAREA RUNOFF(CFS) =   19.05
  TOTAL AREA(ACRES) =     23.45   TOTAL RUNOFF(CFS) =  108.18
  TC(MIN.) =  10.63

********************************************************************************
  FLOW PROCESS FROM NODE   1920.00 TO NODE   1920.00 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.) =  10.63
  RAINFALL INTENSITY(INCH/HR) =   5.67
  TOTAL STREAM AREA(ACRES) =    23.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    108.18

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      129.97    12.51        5.104         33.53
     2      108.18    10.63        5.668         23.45

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      225.22    10.63       5.668
     2      227.39    12.51       5.104

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    227.39   Tc(MIN.) =   12.51
  TOTAL AREA(ACRES) =     56.98
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1920.00 =  3022.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   1920.00 TO NODE   1910.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1195.00  DOWNSTREAM(FEET) =  1140.00
  FLOW LENGTH(FEET) =   460.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  36.58
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    227.39
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =  12.72
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1910.00 =  3482.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1920.00 TO NODE   1910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.050
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8420
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7834
  SUBAREA AREA(ACRES) =    1.46   SUBAREA RUNOFF(CFS) =    6.21
  TOTAL AREA(ACRES) =     58.44   TOTAL RUNOFF(CFS) =  231.18
  TC(MIN.) =  12.72

****************************************************************************
  FLOW PROCESS FROM NODE   1910.00 TO NODE   1910.00 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.) =  12.72
  RAINFALL INTENSITY(INCH/HR) =   5.05
  TOTAL STREAM AREA(ACRES) =    58.44
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    231.18

****************************************************************************
  FLOW PROCESS FROM NODE   1914.00 TO NODE   1913.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1197.00
  DOWNSTREAM ELEVATION(FEET) =   1195.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.712
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    75.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.62
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      1.62

****************************************************************************
  FLOW PROCESS FROM NODE   1913.00 TO NODE   1911.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
```

```
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1195.00  DOWNSTREAM ELEVATION(FEET) = 1180.00
  STREET LENGTH(FEET) =   935.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.78
    ***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.) =    1.47
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.82
  STREET FLOW TRAVEL TIME(MIN.) =  10.57   Tc(MIN.) =  14.29
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.685
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8140
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.813
  SUBAREA AREA(ACRES) =    5.85      SUBAREA RUNOFF(CFS) =   22.31
  TOTAL AREA(ACRES) =      6.07        PEAK FLOW RATE(CFS) =      23.14

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.85
  FLOW VELOCITY(FEET/SEC.) =  1.77   DEPTH*VELOCITY(FT*FT/SEC.) =   1.13
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  935.0 FT WITH ELEVATION-DROP =  15.0 FT, IS   43.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   1911.00
  LONGEST FLOWPATH FROM NODE   1914.00 TO NODE   1911.00 =  1035.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1912.00 TO NODE   1911.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.685
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8041
  SUBAREA AREA(ACRES) =    4.06   SUBAREA RUNOFF(CFS) =   15.03
  TOTAL AREA(ACRES) =     10.13   TOTAL RUNOFF(CFS) =   38.16
  TC(MIN.) =  14.29

****************************************************************************
  FLOW PROCESS FROM NODE   1911.00 TO NODE   1910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1175.00  DOWNSTREAM(FEET) =  1140.00
  FLOW LENGTH(FEET) =   910.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.17
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
```

```
  PIPE-FLOW(CFS) =     38.16
  PIPE TRAVEL TIME(MIN.) =   1.00    Tc(MIN.) =  15.28
  LONGEST FLOWPATH FROM NODE   1914.00 TO NODE   1910.00 =  1945.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1911.00 TO NODE   1910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.485
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8020
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8032
  SUBAREA AREA(ACRES) =    7.04   SUBAREA RUNOFF(CFS) =   25.32
  TOTAL AREA(ACRES) =     17.17   TOTAL RUNOFF(CFS) =   61.86
  TC(MIN.) =  15.28

****************************************************************************
  FLOW PROCESS FROM NODE   1910.00 TO NODE   1910.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.28
  RAINFALL INTENSITY(INCH/HR) =   4.49
  TOTAL STREAM AREA(ACRES) =    17.17
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     61.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       231.18    12.72        5.050        58.44
     2        61.86    15.28        4.485        17.17

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       282.65    12.72       5.050
     2       267.20    15.28       4.485

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    282.65   Tc(MIN.) =   12.72
  TOTAL AREA(ACRES) =     75.61
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1910.00 =  3482.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1910.00 TO NODE   1902.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1140.00  DOWNSTREAM(FEET) =  1065.00
  FLOW LENGTH(FEET) =   175.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  62.19
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    282.65
```

```
  PIPE TRAVEL TIME(MIN.) =   0.05    Tc(MIN.) =  12.77
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1902.00 =  3657.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1902.00 TO NODE   1901.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1065.00  DOWNSTREAM(FEET) =  1025.00
  FLOW LENGTH(FEET) =  1020.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.27
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    282.65
  PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =  13.44
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1901.00 =  4677.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1902.00 TO NODE   1901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.873
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2520
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7266
  SUBAREA AREA(ACRES) =    9.77   SUBAREA RUNOFF(CFS) =   12.00
  TOTAL AREA(ACRES) =     85.38   TOTAL RUNOFF(CFS) =  302.32
  TC(MIN.) =  13.44

****************************************************************************
  FLOW PROCESS FROM NODE   1901.00 TO NODE   1900.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1025.00  DOWNSTREAM(FEET) =    940.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   475.00   CHANNEL SLOPE =  0.1789
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1495 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    302.32
  FLOW VELOCITY(FEET/SEC) =  14.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.55   Tc(MIN.) =  13.99
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1900.00 =  5152.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1901.00 TO NODE   1900.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.750
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .5000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7092
  SUBAREA AREA(ACRES) =    7.11   SUBAREA RUNOFF(CFS) =   16.89
  TOTAL AREA(ACRES) =     92.49   TOTAL RUNOFF(CFS) =  311.55
  TC(MIN.) =  13.99

****************************************************************************
  FLOW PROCESS FROM NODE   1900.00 TO NODE   1900.00 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.) =  13.99
  RAINFALL INTENSITY(INCH/HR) =   4.75
  TOTAL STREAM AREA(ACRES) =    92.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    311.55

****************************************************************************
  FLOW PROCESS FROM NODE   1999.00 TO NODE   1900.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN) =  10.69   RAIN INTENSITY(INCH/HOUR) =  5.65
  TOTAL AREA(ACRES) =    30.33   TOTAL RUNOFF(CFS) =    138.06

****************************************************************************
  FLOW PROCESS FROM NODE   1900.00 TO NODE   1900.00 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.) =  10.69
  RAINFALL INTENSITY(INCH/HR) =   5.65
  TOTAL STREAM AREA(ACRES) =    30.33
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    138.06

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      311.55    13.99        4.750         92.49
     2      138.06    10.69        5.649         30.33

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      400.03    10.69       5.649
     2      427.64    13.99       4.750

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    427.64   Tc(MIN.) =   13.99
  TOTAL AREA(ACRES) =    122.82
  LONGEST FLOWPATH FROM NODE   1927.00 TO NODE   1900.00 =  5152.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   1900.00 TO NODE     19.00 IS CODE =  41
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   940.00  DOWNSTREAM(FEET) =   931.00
  FLOW LENGTH(FEET) =   459.00   MANNING'S N =  0.013
  ASSUME FULL-FLOWING PIPELINE
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.43
  (PIPE FLOW VELOCITY CORRESPONDING TO NORMAL-DEPTH FLOW
```

```
 AT DEPTH = 0.94 * DIAMETER)
GIVEN PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =    427.64
PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =  14.38
LONGEST FLOWPATH FROM NODE   1927.00 TO NODE     19.00 =  5611.00 FEET.
================================================================================
END OF STUDY SUMMARY:
TOTAL AREA(ACRES)      =    122.82  TC(MIN.) =     14.38
PEAK FLOW RATE(CFS)    =    427.64
================================================================================
================================================================================
END OF RATIONAL METHOD ANALYSIS
```

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Job Name: Merriam Mountains - Proposed Hydrology

Date: March 2007

Job #: 2469.01A

Run Name: MM20PDIV

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Runoff Coeff.	Area (ac.)	Comments
2033	2032	2	1,072.0	1,071.0	100.0	0.82	0.68	
2032	2031	3	1,063.0	1,055.0	428.0			24" RCP
2031	2025	5	1,055.0	995.0	410.0			
2025	2025	10						Memory Bank #1
2022	2021	2	1,160.0	1,140.0	100.0	0.80	0.3	
2021	2020	6	1,140.0	1,100.0	420.0	0.80	3.4	
2020	2001	3	1,095.0	1,065.0	615.0			
2020	2001	8				0.81	4.6	
2001	2001	1						1 of 2
2012	2011	2	1,080.0	1,078.0	100.0	0.80	0.19	
2011	2010	5	1,078.0	1,073.0	450.0			
2011	2010	8				0.80	4.21	
2010	2001	3	1,069.0	1,065.0	575.0			
2010	2001	8				0.81	11.29	
2001	2001	1						2 of 2
2001	2025	3	1,065.0	995.0	560.0			
2025	2025	8				0.80	1.89	
2025	2025	11						Confluence Mem Bank #1
2025	2025	12						Delete Mem Bank #1
2025	2024	5	995.0	975.0	400.0			
2025	2024	8				0.80	1.89	
2024	1999	5	975.0	950.0	270.0			
2024	1999	8				0.80	1.88	Send Results to basin 19 as
								user specified
							30.33	Total Area

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2004 Advanced Engineering Software (aes)
            Ver. 2.0 Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                       Fuscoe Engineering, San Diego
                        6390 Greenwich Dr. Suite 170
                            San Diego, CA 92122
                                858-554-1500

 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                  *
* SUBBASIN # 20 - WITH DIVERSION TO SUBBASIN # 19                         *
* 2469.01A - MARCH 2007                                                   *
 **************************************************************************

  FILE NAME: MM20PDIV.DAT
  TIME/DATE OF STUDY: 08:42 03/22/2007
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2033.00 TO NODE   2032.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1072.00
  DOWNSTREAM ELEVATION(FEET) =   1071.00
  ELEVATION DIFFERENCE(FEET) =      1.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.217
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH =    70.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      5.14
TOTAL AREA(ACRES) =      0.68   TOTAL RUNOFF(CFS) =      5.14

****************************************************************************
FLOW PROCESS FROM NODE   2032.00 TO NODE   2031.00 IS CODE =  41
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING USER-SPECIFIED PIPESIZE (EXISTING ELEMENT)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1063.00  DOWNSTREAM(FEET) =  1055.00
FLOW LENGTH(FEET) =   428.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  24.0 INCH PIPE IS   6.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.02
GIVEN PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      5.14
PIPE TRAVEL TIME(MIN.) =   1.02    Tc(MIN.) =   5.23
LONGEST FLOWPATH FROM NODE   2033.00 TO NODE   2031.00 =   528.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2031.00 TO NODE   2025.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1055.00  DOWNSTREAM(FEET) =    995.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   410.00   CHANNEL SLOPE =  0.1463
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) =      5.14
FLOW VELOCITY(FEET/SEC) =   6.72 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =   6.25
LONGEST FLOWPATH FROM NODE   2033.00 TO NODE   2025.00 =   938.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2025.00 TO NODE   2025.00 IS CODE =  10
----------------------------------------------------------------------------
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE   2022.00 TO NODE   2021.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
S.C.S. CURVE NUMBER (AMC II) =   0
INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
UPSTREAM ELEVATION(FEET) =   1160.00
DOWNSTREAM ELEVATION(FEET) =   1140.00
ELEVATION DIFFERENCE(FEET) =     20.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.507
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      2.21
TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      2.21

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

```
  FLOW PROCESS FROM NODE   2021.00 TO NODE   2020.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1140.00  DOWNSTREAM ELEVATION(FEET) = 1100.00
  STREET LENGTH(FEET) =   420.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.75
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.88
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.21
  STREET FLOW TRAVEL TIME(MIN.) =   1.02   Tc(MIN.) =   3.52
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.800
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =   25.08
  TOTAL AREA(ACRES) =      3.70        PEAK FLOW RATE(CFS) =      27.30

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.38   HALFSTREET FLOOD WIDTH(FEET) =  12.69
  FLOW VELOCITY(FEET/SEC.) =  7.89   DEPTH*VELOCITY(FT*FT/SEC.) =   3.00
  LONGEST FLOWPATH FROM NODE   2022.00 TO NODE   2020.00 =   520.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2020.00 TO NODE   2001.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1095.00  DOWNSTREAM(FEET) =  1065.00
  FLOW LENGTH(FEET) =   615.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.41
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     27.30
  PIPE TRAVEL TIME(MIN.) =   0.67    Tc(MIN.) =   4.19
  LONGEST FLOWPATH FROM NODE   2022.00 TO NODE   2001.00 =  1135.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2020.00 TO NODE   2001.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
```

```
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8055
  SUBAREA AREA(ACRES) =     4.60   SUBAREA RUNOFF(CFS) =   34.36
  TOTAL AREA(ACRES) =       8.30   TOTAL RUNOFF(CFS) =   61.66
  TC(MIN.) =   4.19

****************************************************************************
  FLOW PROCESS FROM NODE   2001.00 TO NODE   2001.00 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.) =   4.19
  RAINFALL INTENSITY(INCH/HR) =   9.22
  TOTAL STREAM AREA(ACRES) =     8.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     61.66

****************************************************************************
  FLOW PROCESS FROM NODE   2012.00 TO NODE   2011.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1080.00
  DOWNSTREAM ELEVATION(FEET) =   1078.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.712
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    75.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.40
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      1.40

****************************************************************************
  FLOW PROCESS FROM NODE   2011.00 TO NODE   2010.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1078.00  DOWNSTREAM(FEET) =   1073.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   450.00   CHANNEL SLOPE =  0.0111
  CHANNEL FLOW THRU SUBAREA(CFS) =      1.40
  FLOW VELOCITY(FEET/SEC) =   1.69 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.44   Tc(MIN.) =   8.16
  LONGEST FLOWPATH FROM NODE   2012.00 TO NODE   2010.00 =   550.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2011.00 TO NODE   2010.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.726
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8000
```

```
  SUBAREA AREA(ACRES) =     4.21   SUBAREA RUNOFF(CFS) =   22.65
  TOTAL AREA(ACRES) =       4.40   TOTAL RUNOFF(CFS) =   23.67
  TC(MIN.) =   8.16

****************************************************************************
  FLOW PROCESS FROM NODE   2010.00 TO NODE   2001.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1069.00  DOWNSTREAM(FEET) =  1065.00
  FLOW LENGTH(FEET) =   575.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  21.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.02
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     23.67
  PIPE TRAVEL TIME(MIN.) =   1.37    Tc(MIN.) =   9.52
  LONGEST FLOWPATH FROM NODE   2012.00 TO NODE   2001.00 =  1125.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2010.00 TO NODE   2001.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.087
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8072
  SUBAREA AREA(ACRES) =   11.29   SUBAREA RUNOFF(CFS) =   55.66
  TOTAL AREA(ACRES) =     15.69   TOTAL RUNOFF(CFS) =   77.09
  TC(MIN.) =   9.52

****************************************************************************
  FLOW PROCESS FROM NODE   2001.00 TO NODE   2001.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.52
  RAINFALL INTENSITY(INCH/HR) =   6.09
  TOTAL STREAM AREA(ACRES) =    15.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     77.09

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       61.66     4.19        9.222          8.30
     2       77.09     9.52        6.087         15.69

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       95.58     4.19       9.222
     2      117.78     9.52       6.087

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    117.78   Tc(MIN.) =    9.52
```

```
  TOTAL AREA(ACRES) =     23.99
  LONGEST FLOWPATH FROM NODE   2022.00 TO NODE   2001.00 =  1135.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2001.00 TO NODE   2025.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1065.00  DOWNSTREAM(FEET) =   995.00
  FLOW LENGTH(FEET) =   560.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  31.49
  ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    117.78
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   9.82
  LONGEST FLOWPATH FROM NODE   2022.00 TO NODE   2025.00 =  1695.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2025.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.968
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8061
  SUBAREA AREA(ACRES) =    1.89   SUBAREA RUNOFF(CFS) =    9.02
  TOTAL AREA(ACRES) =     25.88   TOTAL RUNOFF(CFS) =  124.50
  TC(MIN.) =   9.82

****************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2025.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1      124.50     9.82       5.968       25.88
  LONGEST FLOWPATH FROM NODE   2022.00 TO NODE   2025.00 =  1695.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1        5.14     6.25       7.985        0.68
  LONGEST FLOWPATH FROM NODE   2033.00 TO NODE   2025.00 =   938.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1      84.41       6.25        7.985
     2     128.34       9.82        5.968

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    128.34   Tc(MIN.) =    9.82
  TOTAL AREA(ACRES) =     26.56

****************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2025.00 IS CODE =  12
----------------------------------------------------------------------------
```

```
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2024.00 IS CODE =  52
------------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    995.00  DOWNSTREAM(FEET) =    975.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   400.00   CHANNEL SLOPE =  0.0500
  CHANNEL FLOW THRU SUBAREA(CFS) =    128.34
  FLOW VELOCITY(FEET/SEC) =  11.44 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.58   Tc(MIN.) =  10.40
  LONGEST FLOWPATH FROM NODE   2022.00 TO NODE   2024.00 =  2095.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   2025.00 TO NODE   2024.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.750
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8061
  SUBAREA AREA(ACRES) =    1.89   SUBAREA RUNOFF(CFS) =    8.69
  TOTAL AREA(ACRES) =     28.45   TOTAL RUNOFF(CFS) =  131.86
  TC(MIN.) =  10.40

******************************************************************************
  FLOW PROCESS FROM NODE   2024.00 TO NODE   1999.00 IS CODE =  52
------------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    975.00  DOWNSTREAM(FEET) =    950.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   270.00   CHANNEL SLOPE =  0.0926
  CHANNEL FLOW THRU SUBAREA(CFS) =    131.86
  FLOW VELOCITY(FEET/SEC) =  15.70 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.29   Tc(MIN.) =  10.69
  LONGEST FLOWPATH FROM NODE   2022.00 TO NODE   1999.00 =  2365.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   2024.00 TO NODE   1999.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.650
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8057
  SUBAREA AREA(ACRES) =    1.88   SUBAREA RUNOFF(CFS) =    8.50
  TOTAL AREA(ACRES) =     30.33   TOTAL RUNOFF(CFS) =  138.06
  TC(MIN.) =  10.69
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     30.33  TC(MIN.) =     10.69
  PEAK FLOW RATE(CFS)    =    138.06
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

RATIONAL METHOD HYDROGRAPH PROGRAM
COPYRIGHT 1992, 2001 RICK ENGINEERING COMPANY

RUN DATE 3/22/2007
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 14 MIN.
6 HOUR RAINFALL 3.5 INCHES
B AREA 122.82 ACRES
RU FF COEFFICIENT 0.7092
PEAK DISCHARGE 427.64 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 14	DISCHARGE (CFS) = 18.2
TIME (MIN) = 28	DISCHARGE (CFS) = 19.2
TIME (MIN) = 42	DISCHARGE (CFS) = 19.7
TIME (MIN) = 56	DISCHARGE (CFS) = 20.9
TIME (MIN) = 70	DISCHARGE (CFS) = 21.6
TIME (MIN) = 84	DISCHARGE (CFS) = 23.2
TIME (MIN) = 98	DISCHARGE (CFS) = 24.1
TIME (MIN) = 112	DISCHARGE (CFS) = 26.2
TIME (MIN) = 126	DISCHARGE (CFS) = 27.4
TIME (MIN) = 140	DISCHARGE (CFS) = 30.4
TIME (MIN) = 154	DISCHARGE (CFS) = 32.2
TIME (MIN) = 168	DISCHARGE (CFS) = 36.9
TIME (MIN) = 182	DISCHARGE (CFS) = 40
TIME (MIN) = 196	DISCHARGE (CFS) = 49
TIME (MIN) = 210	DISCHARGE (CFS) = 55.8
TIME (MIN) = 224	DISCHARGE (CFS) = 81.9
TIME (MIN) = 238	DISCHARGE (CFS) = 101.2
TIME (MIN) = 252	DISCHARGE (CFS) = 427.64
TIME (MIN) = 266	DISCHARGE (CFS) = 65.7
TIME (MIN) = 280	DISCHARGE (CFS) = 43.9
TIME (MIN) = 294	DISCHARGE (CFS) = 34.4
TIME (MIN) = 308	DISCHARGE (CFS) = 28.8
TIME (MIN) = 322	DISCHARGE (CFS) = 25.1
TIME (MIN) = 336	DISCHARGE (CFS) = 22.4
TIME (MIN) = 350	DISCHARGE (CFS) = 20.3
TIME (MIN) = 364	DISCHARGE (CFS) = 18.6
TIME (MIN) = 378	DISCHARGE (CFS) = 0

```
****************************************************************************
                HYDRAULICS ELEMENTS - II  PROGRAM PACKAGE

                STORAGE BASIN HYDROGRAPH ROUTING MODEL
****************************************************************************
        (c) Copyright 1983-2004 Advanced Engineering Software (aes)
            Ver. 10.0  Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                      Fuscoe Engineering, San Diego
                       6390 Greenwich Dr. Suite 170
                           San Diego, CA 92122
                               858-554-1500

 ************************* DESCRIPTION OF STUDY *************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                 *
* SUBBASIN # 19 - DETENTION ROUTING 30" RESTRICTOR W/ SUBBASIN #20 DIV   *
* 2469.01A - MARCH 2007                                                  *
 ************************************************************************

    FILE NAME: M19PDIVD.DAT
    TIME/DATE OF STUDY: 10:17 03/22/2007
============================================================================
    ENTERED INFORMATION:
----------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   28
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   14.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
----------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:        0.00*    2:       18.20*    3:       19.20*
    *    4:       19.70*    5:       20.90*    6:       21.60*
    *    7:       23.20*    8:       24.10*    9:       26.20*
    *   10:       27.40*   11:       30.40*   12:       32.20*
    *   13:       36.90*   14:       40.00*   15:       49.00*
    *   16:       55.80*   17:       81.90*   18:      101.20*
    *   19:      427.64*   20:       65.70*   21:       43.90*
    *   22:       34.40*   23:       28.80*   24:       25.10*
    *   25:       22.40*   26:       20.30*   27:       18.60*
    *   28:        0.00*
============================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
----------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   4
----------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *     0.000      0.000     0.000**     5.000      1.750     45.000*
    *    10.000      6.130    70.000**    15.000     13.050     90.000*
****************************************************************************
----------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
----------------------------------------------------------------------------
----------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
```

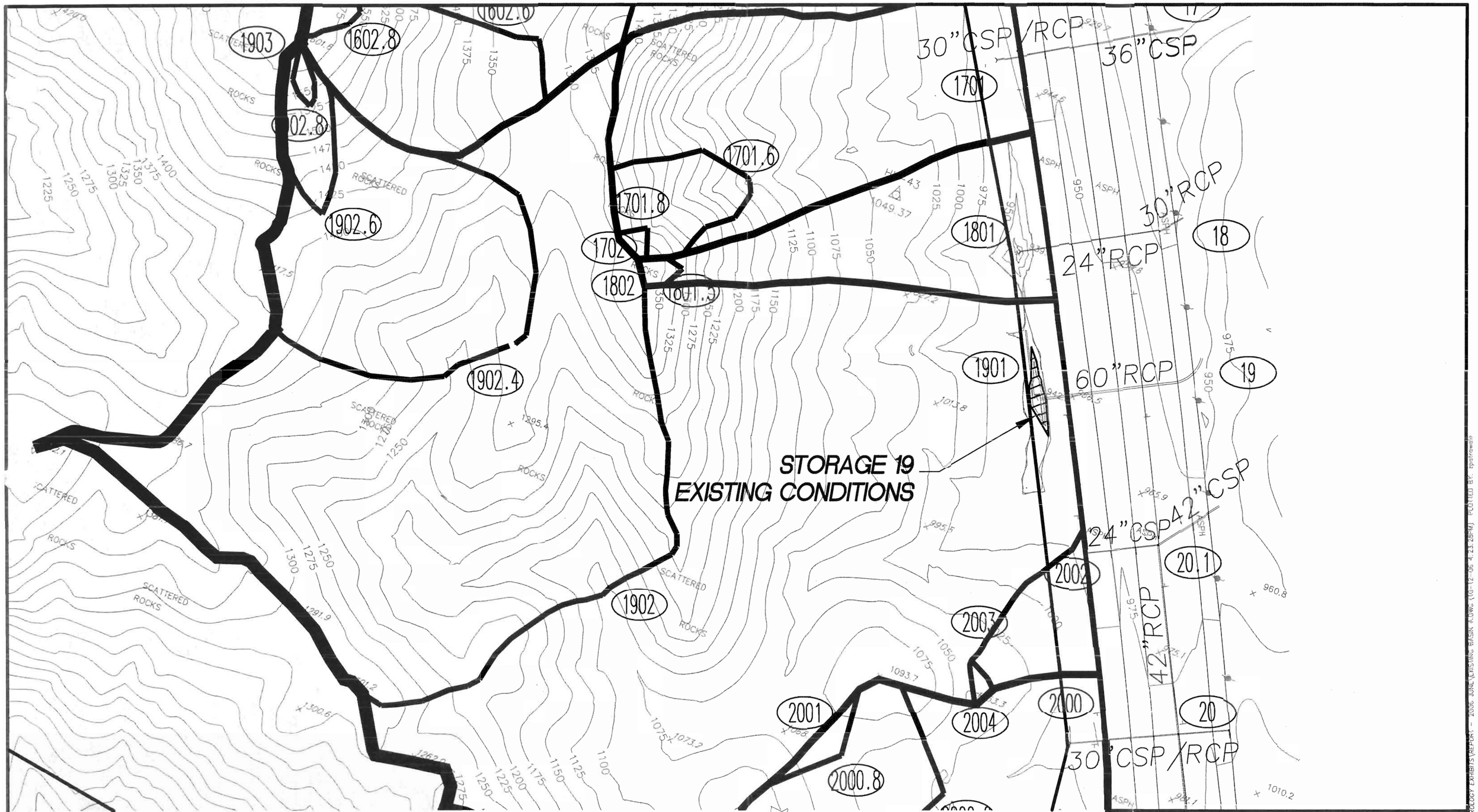
```
        1      0.00000     0.00000
        2      1.31612     2.18388
        3      5.45507     6.80493
        4     12.18223    13.91777
   WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-----------------------------------------------------------------------------
```

```
        *UNIT-HYDROGRAPH STORAGE-BASIN ROUTING*
   NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
         OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
         AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

   GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-----------------------------------------------------------------------------
    TIME   INFLOW  OUTFLOW    STORAGE
   (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.    107.    214.    321.    428.
      0.23     0.00     0.00       0.000 O       .       .       .       .
        [BASIN DEPTH(FEET) =    0.00]
      0.47    18.20     7.23       0.281 OI      .       .       .       .
        [BASIN DEPTH(FEET) =    0.80]
      0.70    19.20    11.99       0.466 OI      .       .       .       .
        [BASIN DEPTH(FEET) =    1.33]
      0.93    19.70    15.05       0.585 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    1.67]
      1.17    20.90    17.38       0.676 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    1.93]
      1.40    21.60    19.05       0.741 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    2.12]
      1.63    23.20    20.70       0.805 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    2.30]
      1.87    24.10    22.05       0.858 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    2.45]
      2.10    26.20    23.70       0.922 .O      .       .       .       .
        [BASIN DEPTH(FEET) =    2.63]
      2.33    27.40    25.17       0.979 .OI     .       .       .       .
        [BASIN DEPTH(FEET) =    2.80]
      2.57    30.40    27.25       1.060 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    3.03]
      2.80    32.20    29.22       1.136 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    3.25]
      3.03    36.90    32.27       1.255 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    3.59]
      3.27    40.00    35.34       1.374 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    3.93]
      3.50    49.00    40.77       1.585 .  O    .       .       .       .
        [BASIN DEPTH(FEET) =    4.53]
      3.73    55.80    45.46       1.830 .  OI   .       .       .       .
        [BASIN DEPTH(FEET) =    5.09]
      3.97    81.90    49.26       2.496 .  O  I .       .       .       .
        [BASIN DEPTH(FEET) =    5.85]
      4.20   101.20    54.68       3.446 .   O  I.       .       .       .
        [BASIN DEPTH(FEET) =    6.94]
      4.43   427.64    82.26      10.372 .     O .       .       .       I
        [BASIN DEPTH(FEET) =   13.06]
      4.67    65.70    81.36      10.061 .   I O .       .       .       .
        [BASIN DEPTH(FEET) =   12.84]
      4.90    43.90    79.33       9.358 .  I O  .       .       .       .
        [BASIN DEPTH(FEET) =   12.33]
      5.13    34.40    76.89       8.515 . I  O  .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    11.72]
 5.37    28.80    74.29       7.613 . I  O  .       .       .       .
   [BASIN DEPTH(FEET) =    11.07]
 5.60    25.10    71.62       6.690 .I   O  .       .       .       .
   [BASIN DEPTH(FEET) =    10.40]
 5.83    22.40    67.98       5.776 .I   O  .       .       .       .
   [BASIN DEPTH(FEET) =     9.60]
 6.07    20.30    63.01       4.905 .I  O   .       .       .       .
   [BASIN DEPTH(FEET) =     8.60]
 6.30    18.60    58.37       4.093 .I  O   .       .       .       .
   [BASIN DEPTH(FEET) =     7.67]
 6.53     0.00    52.28       3.026 I  O    .       .       .       .
   [BASIN DEPTH(FEET) =     6.46]
 6.77     0.00    46.83       2.070 I  O    .       .       .       .
   [BASIN DEPTH(FEET) =     5.37]
 7.00     0.00    33.36       1.297 I O     .       .       .       .
   [BASIN DEPTH(FEET) =     3.71]
 7.23     0.00    20.10       0.782 IO      .       .       .       .
   [BASIN DEPTH(FEET) =     2.23]
 7.47     0.00    12.12       0.471 O       .       .       .       .
   [BASIN DEPTH(FEET) =     1.35]
 7.70     0.00     7.30       0.284 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.81]
 7.93     0.00     4.40       0.171 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.49]
 8.17     0.00     2.65       0.103 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.29]
 8.40     0.00     1.60       0.062 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.18]
 8.63     0.00     0.96       0.037 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.11]
 8.87     0.00     0.58       0.023 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.06]
 9.10     0.00     0.35       0.014 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.04]
 9.33     0.00     0.21       0.008 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.02]
 9.57     0.00     0.13       0.005 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.01]
 9.80     0.00     0.08       0.003 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.01]
10.03     0.00     0.05       0.002 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.01]
10.27     0.00     0.03       0.001 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.00]
10.50     0.00     0.02       0.001 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.00]
10.73     0.00     0.01       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.00]
10.97     0.00     0.01       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.00]
11.20     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.00]
11.43     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.00]
11.67     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.00]
11.90     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.00]
12.13     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.00]
12.37     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =     0.00]
```

```
12.60     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
12.83     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
13.07     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
13.30     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
13.53     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
13.77     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
14.00     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
```



SCALE: 1" = 250'

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MERRIAM MOUNTAINS

FIGURE B5A - EXISTING DETENTION STORAGE

STORAGE 19
EXISTING CONDITION

SCALE: 1" = 100'

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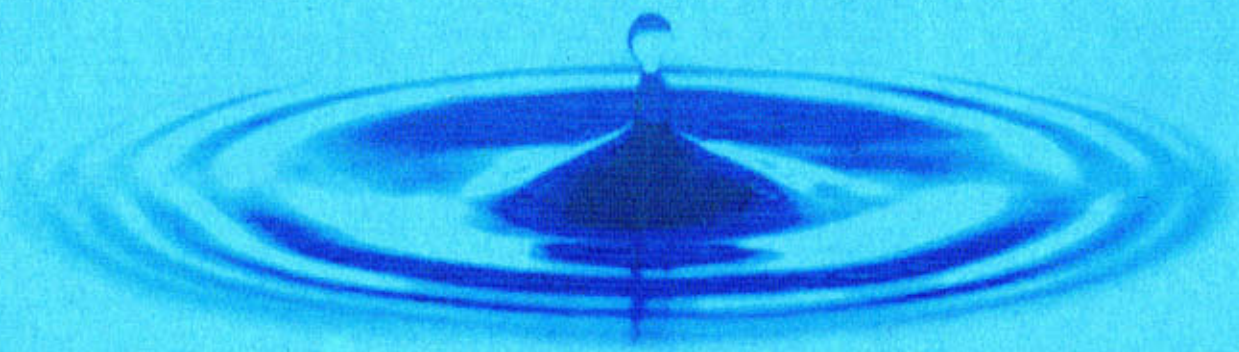
FIGURE B5B - EXISTING DETENTION STORAGE

STORAGE 19
PROPOSED CONDITION

APPENDIX C

Proposed Detention Storage Analysis

SUB-BASIN 21



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Job Name: Merriam Mountains - Proposed Hydrology

Date: October 2006

Job #: 2469.01A

Run Name: MERR21-P

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Runoff Coeff.	Area (ac.)	Comments
2133	2132	2	1,095.0	1,050.0	100.0	0.81	0.36	
2132	2131	5	1,050.0	1,020.0	900.0			
2132	2131	8				0.81	13.01	
2131	2130	5	1,020.0	1,010.0	485.0			
2131	2130	8				0.82	2.27	
2103	2130	8				0.46	6.76	
2130	2101	5	1,010.0	1,000.0	520.0			
2130	2101	8				0.46	3.82	
2101	2101	10						Bank #1
2122	2121	2	1,100.0	1,094.0	100.0	0.81	0.26	
2121	2120	6	1,094.0	1,020.0	880.0	0.81	3.55	
2120	2120	1						1 of 2
2112	2111	2	1,222.0	1,195.0	100.0	0.82	0.24	
2111	2110	5	1,195.0	1,070.0	275.0			
2110	2110	8				0.42	3.86	
2110	2120	3	1,067.0	1,016.0	190.0			
2120	2120	1						2 of 2
2120	2101	3	1,015.9	1,000.0	575.0			
2120	2101	8				0.80	3.67	
2101	2101	11						Add Bank #1
2101	2100	3	1,000.0	980.0	140.0			
2100	21	3	980.0	950.0	620.0			
							37.8	Total Area

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2004 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                    FUSCOE ENGINEERING - SAN DIEGO, INC.
                      6390 GREENWICH DRIVE, SUITE 170
                        SAN DIEGO, CALIFORNIA 92122
                              (858) 554-1500

 ************************* DESCRIPTION OF STUDY *************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                 *
* SUBBASIN # 21 - NO DETENTION STORAGE ROUTING                           *
* 2469.01A - OCTOBER 2006                                                *
 ************************************************************************

  FILE NAME: MERR21-P.DAT
  TIME/DATE OF STUDY: 09:44 10/02/2006
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2133.00 TO NODE   2132.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1095.00
  DOWNSTREAM ELEVATION(FEET) =   1050.00
  ELEVATION DIFFERENCE(FEET) =     45.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.423
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      2.69
TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      2.69

****************************************************************************
FLOW PROCESS FROM NODE   2132.00 TO NODE   2131.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1050.00  DOWNSTREAM(FEET) =   1020.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.0333
CHANNEL FLOW THRU SUBAREA(CFS) =      2.69
FLOW VELOCITY(FEET/SEC) =   3.35 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   4.48   Tc(MIN.) =   6.90
LONGEST FLOWPATH FROM NODE   2133.00 TO NODE   2131.00 =  1000.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2132.00 TO NODE   2131.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.488
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.8100
SUBAREA AREA(ACRES) =   13.01   SUBAREA RUNOFF(CFS) =   78.91
TOTAL AREA(ACRES) =     13.37   TOTAL RUNOFF(CFS) =   81.10
TC(MIN.) =   6.90

****************************************************************************
FLOW PROCESS FROM NODE   2131.00 TO NODE   2130.00 IS CODE =  52
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1020.00  DOWNSTREAM(FEET) =   1010.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   485.00   CHANNEL SLOPE =  0.0206
CHANNEL FLOW THRU SUBAREA(CFS) =     81.10
FLOW VELOCITY(FEET/SEC) =   6.40 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.26   Tc(MIN.) =   8.17
LONGEST FLOWPATH FROM NODE   2133.00 TO NODE   2130.00 =  1485.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2131.00 TO NODE   2130.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.720
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8200
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.8115
SUBAREA AREA(ACRES) =    2.27   SUBAREA RUNOFF(CFS) =   12.51
TOTAL AREA(ACRES) =     15.64   TOTAL RUNOFF(CFS) =   85.28
TC(MIN.) =   8.17

****************************************************************************
FLOW PROCESS FROM NODE   2103.00 TO NODE   2130.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.720
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7054
  SUBAREA AREA(ACRES) =     6.76   SUBAREA RUNOFF(CFS) =   20.90
  TOTAL AREA(ACRES) =      22.40   TOTAL RUNOFF(CFS) =  106.18
  TC(MIN.) =   8.17

****************************************************************************
  FLOW PROCESS FROM NODE   2130.00 TO NODE   2101.00 IS CODE =  52
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1010.00  DOWNSTREAM(FEET) =   1000.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0192
  CHANNEL FLOW THRU SUBAREA(CFS) =    106.18
  FLOW VELOCITY(FEET/SEC) =   6.70 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.29   Tc(MIN.) =   9.46
  LONGEST FLOWPATH FROM NODE   2133.00 TO NODE   2101.00 =  2005.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2130.00 TO NODE   2101.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.112
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6696
  SUBAREA AREA(ACRES) =     3.82   SUBAREA RUNOFF(CFS) =   10.74
  TOTAL AREA(ACRES) =      26.22   TOTAL RUNOFF(CFS) =  107.31
  TC(MIN.) =   9.46

****************************************************************************
  FLOW PROCESS FROM NODE   2101.00 TO NODE   2101.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2122.00 TO NODE   2121.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1100.00
  DOWNSTREAM ELEVATION(FEET) =   1094.00
  ELEVATION DIFFERENCE(FEET) =      6.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.815
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    96.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.94
```

```
  TOTAL AREA(ACRES) =      0.26   TOTAL RUNOFF(CFS) =      1.94

****************************************************************************
  FLOW PROCESS FROM NODE   2121.00 TO NODE   2120.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1094.00  DOWNSTREAM ELEVATION(FEET) = 1020.00
  STREET LENGTH(FEET) =   880.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.20
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.60
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.31
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.33
  STREET FLOW TRAVEL TIME(MIN.) =   2.01   Tc(MIN.) =   4.82
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.810
  SUBAREA AREA(ACRES) =    3.55      SUBAREA RUNOFF(CFS) =   26.52
  TOTAL AREA(ACRES) =      3.81        PEAK FLOW RATE(CFS) =      28.46

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.37   HALFSTREET FLOOD WIDTH(FEET) =  12.43
  FLOW VELOCITY(FEET/SEC.) =  8.55   DEPTH*VELOCITY(FT*FT/SEC.) =   3.21
  LONGEST FLOWPATH FROM NODE   2122.00 TO NODE   2120.00 =   980.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2120.00 TO NODE   2120.00 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.) =   4.82
  RAINFALL INTENSITY(INCH/HR) =   9.22
  TOTAL STREAM AREA(ACRES) =     3.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.46

****************************************************************************
  FLOW PROCESS FROM NODE   2112.00 TO NODE   2111.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .8200
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
```

```
  UPSTREAM ELEVATION(FEET) =   1222.00
  DOWNSTREAM ELEVATION(FEET) =   1195.00
  ELEVATION DIFFERENCE(FEET) =     27.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    2.340
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.81
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      1.81

****************************************************************************
  FLOW PROCESS FROM NODE   2111.00 TO NODE   2110.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1195.00  DOWNSTREAM(FEET) =   1070.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   275.00   CHANNEL SLOPE =  0.4545
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2205 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      1.81
  FLOW VELOCITY(FEET/SEC) =   3.21 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.43   Tc(MIN.) =   3.77
  LONGEST FLOWPATH FROM NODE   2112.00 TO NODE   2110.00 =   375.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2110.00 TO NODE   2110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4434
  SUBAREA AREA(ACRES) =     3.86   SUBAREA RUNOFF(CFS) =   14.95
  TOTAL AREA(ACRES) =       4.10   TOTAL RUNOFF(CFS) =   16.76
  TC(MIN.) =   3.77

****************************************************************************
  FLOW PROCESS FROM NODE   2110.00 TO NODE   2120.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1067.00  DOWNSTREAM(FEET) =  1016.00
  FLOW LENGTH(FEET) =   190.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.10
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     16.76
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =   3.89
  LONGEST FLOWPATH FROM NODE   2112.00 TO NODE   2120.00 =   565.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2120.00 TO NODE   2120.00 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.) =   3.89
RAINFALL INTENSITY(INCH/HR) =   9.22
TOTAL STREAM AREA(ACRES) =     4.10
PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.76

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       28.46     4.82        9.222          3.81
    2       16.76     3.89        9.222          4.10

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

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       39.73     3.89       9.222
    2       45.22     4.82       9.222

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     45.22   Tc(MIN.) =    4.82
TOTAL AREA(ACRES) =      7.91
LONGEST FLOWPATH FROM NODE   2122.00 TO NODE   2120.00 =   980.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2120.00 TO NODE   2101.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1015.90  DOWNSTREAM(FEET) =  1000.00
FLOW LENGTH(FEET) =   575.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.95
ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     45.22
PIPE TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =   5.51
LONGEST FLOWPATH FROM NODE   2122.00 TO NODE   2101.00 =  1555.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2120.00 TO NODE   2101.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.664
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.6770
SUBAREA AREA(ACRES) =    3.67   SUBAREA RUNOFF(CFS) =   25.44
TOTAL AREA(ACRES) =     11.58   TOTAL RUNOFF(CFS) =   67.93
TC(MIN.) =   5.51

****************************************************************************
FLOW PROCESS FROM NODE   2101.00 TO NODE   2101.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF     Tc      INTENSITY     AREA
```

```
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
   1        67.93     5.51        8.664        11.58
LONGEST FLOWPATH FROM NODE   2122.00 TO NODE   2101.00 =  1555.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY     AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
   1       107.31     9.46        6.112       26.22
LONGEST FLOWPATH FROM NODE   2133.00 TO NODE   2101.00 =  2005.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc       INTENSITY
NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
   1      130.40       5.51        8.664
   2      155.23       9.46        6.112

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    155.23   Tc(MIN.) =    9.46
TOTAL AREA(ACRES) =     37.80

****************************************************************************
FLOW PROCESS FROM NODE   2101.00 TO NODE   2100.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1000.00  DOWNSTREAM(FEET) =   980.00
FLOW LENGTH(FEET) =   140.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  35.62
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =    155.23
PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =   9.53
LONGEST FLOWPATH FROM NODE   2133.00 TO NODE   2100.00 =  2145.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2100.00 TO NODE     21.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   980.00  DOWNSTREAM(FEET) =   950.00
FLOW LENGTH(FEET) =   620.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  39.0 INCH PIPE IS  29.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  23.51
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =    155.23
PIPE TRAVEL TIME(MIN.) =   0.44    Tc(MIN.) =   9.97
LONGEST FLOWPATH FROM NODE   2133.00 TO NODE     21.00 =  2765.00 FEET.
============================================================================
END OF STUDY SUMMARY:
TOTAL AREA(ACRES)      =     37.80  TC(MIN.) =      9.97
PEAK FLOW RATE(CFS)    =    155.23
============================================================================
============================================================================
END OF RATIONAL METHOD ANALYSIS
```

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 10/2/2006
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 10 MIN.
6 H ` RAINFALL 3.5 INCHES
BA AREA 37.8 ACRES
RUNOFF COEFFICIENT 0.67
PEAK DISCHARGE 155.23 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 10	DISCHARGE (CFS) = 5.3
TIME (MIN) = 20	DISCHARGE (CFS) = 5.4
TIME (MIN) = 30	DISCHARGE (CFS) = 5.6
TIME (MIN) = 40	DISCHARGE (CFS) = 5.7
TIME (MIN) = 50	DISCHARGE (CFS) = 6
TIME (MIN) = 60	DISCHARGE (CFS) = 6.1
TIME (MIN) = 70	DISCHARGE (CFS) = 6.4
TIME (MIN) = 80	DISCHARGE (CFS) = 6.6
TIME (MIN) = 90	DISCHARGE (CFS) = 6.9
TIME (MIN) = 100	DISCHARGE (CFS) = 7.1
TIME (MIN) = 110	DISCHARGE (CFS) = 7.6
TIME (MIN) = 120	DISCHARGE (CFS) = 7.8
TIME (MIN) = 130	DISCHARGE (CFS) = 8.4
TIME (MIN) = 140	DISCHARGE (CFS) = 8.7
TIME (MIN) = 150	DISCHARGE (CFS) = 9.5
TIME (MIN) = 160	DISCHARGE (CFS) = 9.9
TIME (MIN) = 170	DISCHARGE (CFS) = 11
TIME (MIN) = 180	DISCHARGE (CFS) = 11.6
TIME (MIN) = 190	DISCHARGE (CFS) = 13.3
TIME (MIN) = 200	DISCHARGE (CFS) = 14.5
TIME (MIN) = 210	DISCHARGE (CFS) = 17.7
TIME (MIN) = 220	DISCHARGE (CFS) = 20.1
TIME (MIN) = 230	DISCHARGE (CFS) = 29.6
TIME (MIN) = 240	DISCHARGE (CFS) = 35.8
TIME (MIN) = 250	DISCHARGE (CFS) = 155.23
TIME (MIN) = 260	DISCHARGE (CFS) = 23.7
TIME (MIN) = 270	DISCHARGE (CFS) = 15.9
TIME (MIN) = 280	DISCHARGE (CFS) = 12.4
TIME (MIN) = 290	DISCHARGE (CFS) = 10.4
TIME (MIN) = 300	DISCHARGE (CFS) = 9.1
TIME (MIN) = 310	DISCHARGE (CFS) = 8.1
TIME (MIN) = 320	DISCHARGE (CFS) = 7.3
TIME (MIN) = 330	DISCHARGE (CFS) = 6.7
TIME (MIN) = 340	DISCHARGE (CFS) = 6.3
TIME (MIN) = 350	DISCHARGE (CFS) = 5.8
TIME (MIN) = 360	DISCHARGE (CFS) = 5.5
TIME (MIN) = 370	DISCHARGE (CFS) = 0

```
****************************************************************************
                 HYDRAULICS ELEMENTS - II  PROGRAM PACKAGE

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
****************************************************************************
        (c) Copyright 1983-2004 Advanced Engineering Software (aes)
            Ver. 10.0  Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                   FUSCOE ENGINEERING - SAN DIEGO, INC.
                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                             (858) 554-1500

 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                  *
* SUBBASIN # 21 - DETENTION BASIN STORAGE ROUTING                         *
* 2469.01A - OCTOBER 2006                                                 *
 ***************************************************************************

    FILE NAME: MMDET21.DAT
    TIME/DATE OF STUDY: 09:56 10/02/2006
===============================================================================
    ENTERED INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   38
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   10.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
-------------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:        0.00*    2:        5.30*    3:        5.40*
    *    4:        5.60*    5:        5.70*    6:        6.00*
    *    7:        6.10*    8:        6.40*    9:        6.60*
    *   10:        6.90*   11:        7.10*   12:        7.60*
    *   13:        7.80*   14:        8.40*   15:        8.70*
    *   16:        9.50*   17:        9.90*   18:       11.00*
    *   19:       11.60*   20:       13.30*   21:       14.50*
    *   22:       17.70*   23:       20.10*   24:       29.60*
    *   25:       35.80*   26:      155.23*   27:       23.70*
    *   28:       15.90*   29:       12.40*   30:       10.40*
    *   31:        9.10*   32:        8.10*   33:        7.30*
    *   34:        6.70*   35:        6.30*   36:        5.80*
    *   37:        5.50*   38:        0.00*
===============================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
-------------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *     0.000      0.000     0.000**     2.000      0.960     24.240*
    *     4.000      2.040    39.090**     6.000      3.240     49.710*
    *     8.000      4.570    58.410**    10.000      6.030     65.970*
*******************************************************************************
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
```

```
---------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL    {S-O*DT/2}    {S+O*DT/2}
      NUMBER    (ACRE-FEET)  (ACRE-FEET)
          1       0.00000      0.00000
          2       0.79306      1.12694
          3       1.77079      2.30921
          4       2.89764      3.58236
          5       4.16773      4.97227
          6       5.57566      6.48434
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
---------------------------------------------------------------------------

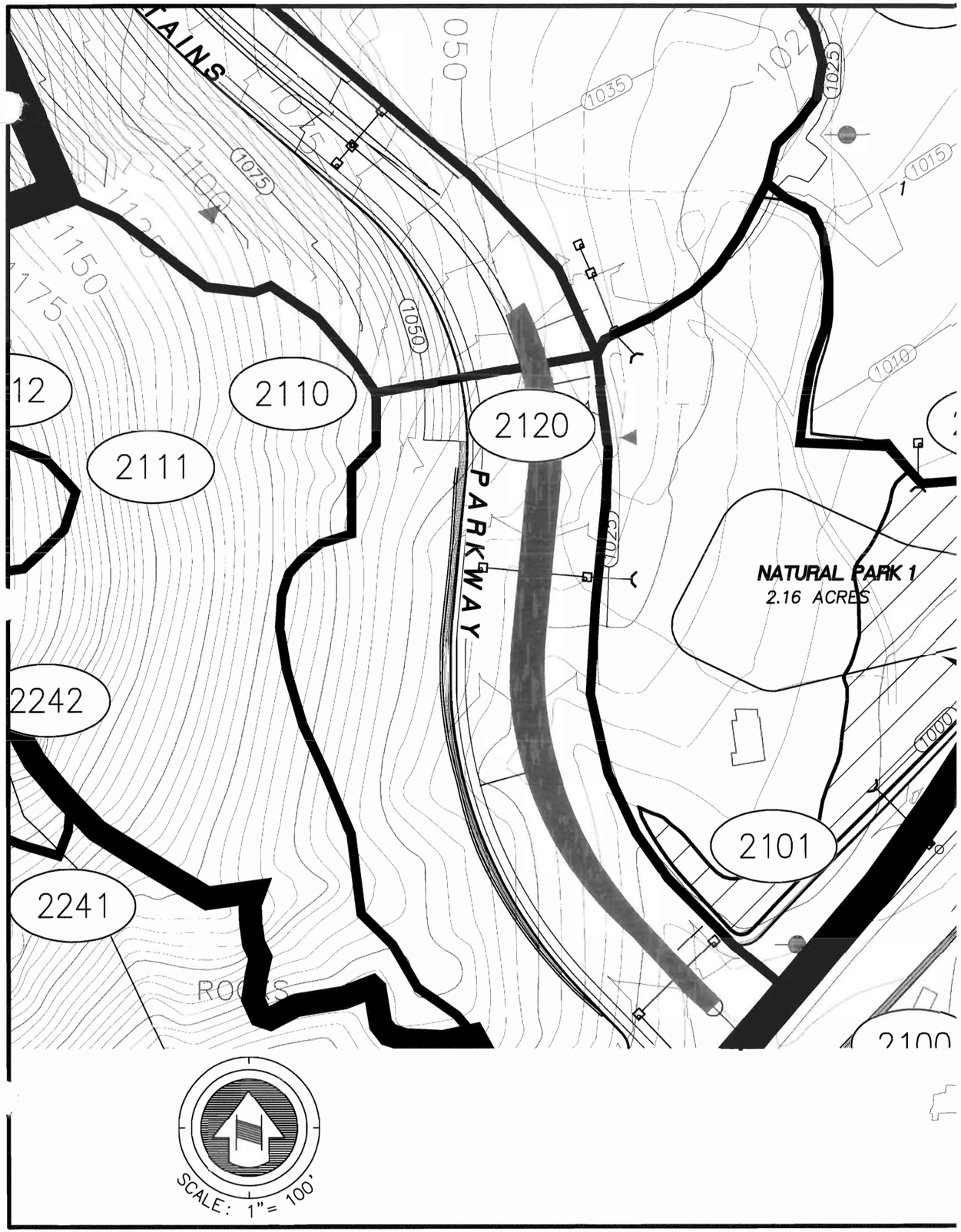


         *UNIT-HYDROGRAPH STORAGE-BASIN ROUTING*
    NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
          OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
          AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
---------------------------------------------------------------------------
     TIME    INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     39.     78.    116.    155.
       0.17     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.33     5.30     1.57       0.062 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.13]
       0.50     5.40     2.70       0.107 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.22]
       0.67     5.60     3.56       0.141 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.29]
       0.83     5.70     4.20       0.166 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.35]
       1.00     6.00     4.73       0.187 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.39]
       1.17     6.10     5.14       0.203 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.42]
       1.33     6.40     5.51       0.218 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.45]
       1.50     6.60     5.83       0.231 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.48]
       1.67     6.90     6.15       0.244 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.51]
       1.83     7.10     6.43       0.255 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.53]
       2.00     7.60     6.78       0.268 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.56]
       2.17     7.80     7.08       0.280 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.58]
       2.33     8.40     7.47       0.296 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.62]
       2.50     8.70     7.84       0.310 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.65]
       2.67     9.50     8.33       0.330 .O      .       .       .       .
         [BASIN DEPTH(FEET) =    0.69]
       2.83     9.90     8.79       0.348 .OI     .       .       .       .
         [BASIN DEPTH(FEET) =    0.73]
       3.00    11.00     9.45       0.374 .OI     .       .       .       .
         [BASIN DEPTH(FEET) =    0.78]
       3.17    11.60    10.09       0.399 . O     .       .       .       .
```

```
  [BASIN DEPTH(FEET) =     0.83]
3.33     13.30     11.04       0.437 . O     .       .       .       .
  [BASIN DEPTH(FEET) =     0.91]
3.50     14.50     12.06       0.478 . O     .       .       .       .
  [BASIN DEPTH(FEET) =     1.00]
3.67     17.70     13.73       0.544 . OI    .       .       .       .
  [BASIN DEPTH(FEET) =     1.13]
3.83     20.10     15.62       0.619 .  OI   .       .       .       .
  [BASIN DEPTH(FEET) =     1.29]
4.00     29.60     19.76       0.783 .   O I .       .       .       .
  [BASIN DEPTH(FEET) =     1.63]
4.17     35.80     24.40       0.972 .    O I.       .       .       .
  [BASIN DEPTH(FEET) =     2.02]
4.33    155.23     44.37       2.636 .       .O      .       .      I.
  [BASIN DEPTH(FEET) =     4.99]
4.50     23.70     41.99       2.368 .   I   O       .       .       .
  [BASIN DEPTH(FEET) =     4.55]
4.67     15.90     38.95       2.029 .  I    O       .       .       .
  [BASIN DEPTH(FEET) =     3.98]
4.83     12.40     34.35       1.695 . I    O.       .       .       .
  [BASIN DEPTH(FEET) =     3.36]
5.00     10.40     30.21       1.394 . I   O .       .       .       .
  [BASIN DEPTH(FEET) =     2.80]
5.17      9.10     26.56       1.128 .I   O  .       .       .       .
  [BASIN DEPTH(FEET) =     2.31]
5.33      8.10     22.74       0.901 .I  O   .       .       .       .
  [BASIN DEPTH(FEET) =     1.88]
5.50      7.30     18.16       0.719 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =     1.50]
5.67      6.70     14.77       0.585 .I O    .       .       .       .
  [BASIN DEPTH(FEET) =     1.22]
5.83      6.30     12.26       0.486 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =     1.01]
6.00      5.80     10.35       0.410 .IO     .       .       .       .
  [BASIN DEPTH(FEET) =     0.85]
6.17      5.50      8.91       0.353 .O      .       .       .       .
  [BASIN DEPTH(FEET) =     0.74]
6.33      0.00      6.27       0.248 IO      .       .       .       .
  [BASIN DEPTH(FEET) =     0.52]
6.50      0.00      4.41       0.175 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.36]
6.67      0.00      3.11       0.123 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.26]
6.83      0.00      2.19       0.087 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.18]
7.00      0.00      1.54       0.061 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.13]
7.17      0.00      1.08       0.043 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.09]
7.33      0.00      0.76       0.030 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.06]
7.50      0.00      0.54       0.021 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.04]
7.67      0.00      0.38       0.015 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.03]
7.83      0.00      0.27       0.011 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.02]
8.00      0.00      0.19       0.007 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.02]
8.17      0.00      0.13       0.005 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.01]
8.33      0.00      0.09       0.004 O       .       .       .       .
  [BASIN DEPTH(FEET) =     0.01]
```

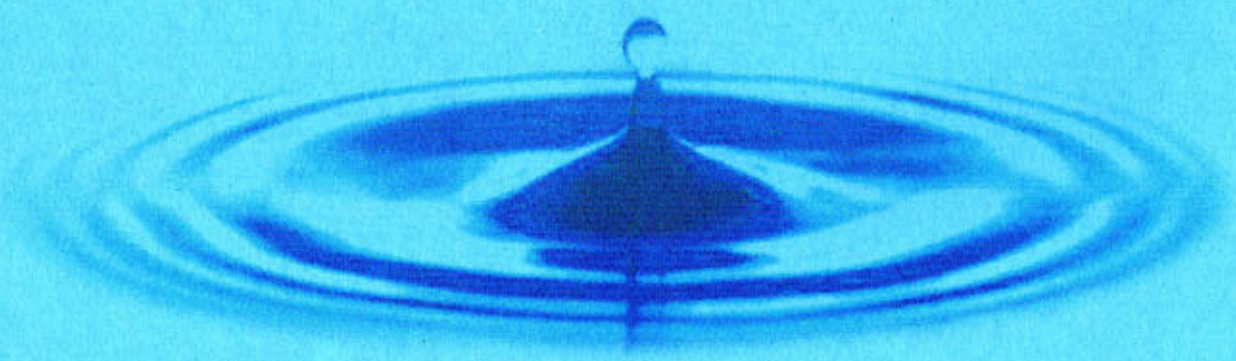
```
 8.50     0.00     0.07       0.003 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.01]
 8.67     0.00     0.05       0.002 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
 8.83     0.00     0.03       0.001 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
 9.00     0.00     0.02       0.001 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
 9.17     0.00     0.02       0.001 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
 9.33     0.00     0.01       0.000 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
 9.50     0.00     0.01       0.000 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
 9.67     0.00     0.01       0.000 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
 9.83     0.00     0.00       0.000 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
10.00     0.00     0.00       0.000 o       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
```


TAINS
1075
1050
1035
1025
1015
1010
1000
1150
2110
2111
2120
2242
2241
2101
2100
PARKWAY
NATURAL PARK 1
2.16 ACRES
ROCKS
SCALE: 1"= 100'

APPENDIX C

Proposed Detention Storage Analysis

SUB-BASIN 25
(Detention Basins 25A and 25B)



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Job Name:
Merriam Mountains - Proposed Hydrology

Job #:
2469.01A

Date:
October 2006

Run Name:
MERR25-P
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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2575.2	2575.1	2	1,292.2	1,292.0	100.0	7	0.77	0.13	
2575.1	2575	6	1,292.0	1,288.0	410.0	7	0.77	2.49	
2575	2573	3	1,282.0	1,280.0	240.0				
2574	2573	8				7	0.77	1.61	
2573	2572	3	1,280.0	1,277.0	340.0				
2573	2572	8				7	0.78	3.24	
2572	2570	3	1,277.0	1,274.0	196.0				
2570.1	2570	8				7	0.78	2.57	
2570	2570	1							1 of 2
2571.2	2571.1	2	1,298.3	1,298.1	100.0	7	0.77	0.14	
2571.1	2571	6	1,298.1	1,291.0	355.0	7	0.77	2.22	
2571	2570	3	1,285.0	1,274.0	410.0				
2571	2570	8				7	0.79	2.66	
2570	2570	1							2 of 2
2570	2561	3	1,274.0	1,271.0	160.0				
2561	2561	10							Bank #1
2564.2	2564.1	2	1,294.6	1,294.4	100.0	7	0.77	0.17	
2564.1	2564	6	1,294.4	1,285.0	587.0	7	0.78	3.41	
2564	2562	3	1,280.0	1,276.0	162.0				
2562	2562	1							1 of 2
2563.2	2563.1	2	1,294.7	1,294.5	100.0	7	0.79	0.12	
2563.1	2563	6	1,294.5	1,284.0	410.0	7	0.79	2.39	
2563	2562	3	1,278.0	1,276.0	65.0				
2562	2562	1							2 of 2
2562	2561	3	1,276.0	1,271.0	160.0				
2561	2561	11							ADD Bank # 1
2561	2561	12							Delete Bank #1
2561	2560	3	1,271.0	1,260.0	360.0				
2561	2560	8				7	0.79	3.51	
2560.1	2560	8				7	0.78	1.66	
2560	2554	3	1,260.0	1,205.0	990.0				
2554	2554	1							1 of 2
2555.4	2555.3	2	1,285.3	1,285.1	100.0	7	0.77	0.18	
2555.3	2555.2	6	1,285.1	1,266.0	415.0	7	0.77	2.36	
2552.2	2555.1	3	1,260.0	1,247.0	230.0				
2552.2	2555.1	8				7	0.77	1.5	
2555.1	2555	3	1,247.0	1,239.0	240.0				
2555.1	2555	8				7	0.77	4.16	
2555	2554	3	1,239.0	1,205.0	215.0				
2554	2554	1							2 of 2
2554	2550	3	1,205.0	1,200.0	215.0				
2550.2	2550	8				7	0.78	3.98	
2550.1	2550	8				7	0.77	3.03	
2550	2550	10							Bank #1

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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2552.4	2552.3	2	1,425.0	1,400.0	100.0	21	0.25	0.2	
2552.4	2552.3	8				21	0.25	2.26	
2552.3	2552.2	5	1,400.0	1,300.0	301.0				
2552.2	2552	3	1,300.0	1,235.0	205.0				
2552.1	2552	8				7	0.77	3.16	
2552	2551	3	1,235.0	1,230.0	330.0				
2551.1	2551	8				7	0.77	2.17	
2551	2551	1							1 of 2
2552.2	2552.1	2	1,263.4	1,263.2	100.0	7	0.77	0.12	
2552.1	2552	6	1,263.2	1,245.0	415.0	7	0.77	2.59	
2552	2551	3	1,240.0	1,230.0	222.0				
2551	2551	1							2 of 2
2551	2550	3	1,230.0	1,200.0	480.0				
2551	2550	8				7	0.77	1.31	
2550	2550	1							1 of 2
2553.2	2553.1	2	1,240.7	1,240.5	100.0	7	0.77	0.11	
2553.1	2553	6	1,240.5	1,236.0	256.0	7	0.77	5.31	
2553	2550	3	1,230.0	1,200.0	800.0				
2250	2250	1							
2550	2550	11							ADD Bank # 1
2550	2550	12							Delete Bank #1
2550	2547	3	1,200.0	1,170.0	340.0				
2550	2547	8				7	0.76	3.6	
2547	2546	5	1,170.0	1,000.0	540.0				
2546	2546	10							Bank #1
2546.7	2546.6	2	1,260.0	1,240.0	100.0	21	0.35	0.11	
2546.6	2546.5	5	1,240.0	1,125.0	265.0				
2546.6	2546.5	8				21	0.30	3.16	
2546.5	2546.1	3	1,120.0	1,080.0	380.0				
2546.1	2546.1	1							1 of 2
2546.4	2546.3	2	1,282.0	1,250.0	100.0	21	0.25	0.16	
2546.3	2546.2	5	1,250.0	1,100.0	345.0				
2546.3	2546.2	8				21	0.25	5.43	
2546.2	2546.1	3	1,100.0	1,080.0	290.0				
2546.1	2546.1	1							2 of 2
2546.1	2546	3	1,080.0	1,000.0	290.0				
2546	2546	11							ADD Bank # 1
2546	2546	12							Delete Bank # 1
2546	2545	5	1,000.0	990.0	345.0				
2547	2545	8				21	0.26	27.06	
2545	2545	1							1 of 2
2545.3	2545.2	2	1,250.0	1,225.0	100.0	21	0.25	0.1	
2545.2	2545.1	5	1,225.0	1,035.0	390.0				
2545.2	2545.1	8				21	0.25	2.19	

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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2245.1	2545	3	1,035.0	990.0	205.0				
2545	2545	1							2 of 2
2545	2544	5	990.0	945.0	225.0				
2544	2543	3	945.0	925.0	250.0				
2543	2543	1							1 of 2
2543.2	2543.1	2	1,175.0	1,125.0	100.0	21	0.25	0.14	
2543.1	2543	5	1,125.0	930.0	510.0				
2543.1	2543	8				21	0.25	2.53	
2543	2543	1							2 of 2
2543	2542	3	925.0	920.0	480.0				
2543	2542	8				8	0.81	5.88	
2542.1	2542	8				0.7	0.81	1.61	
2542	2542	1							1 of 2
2542.5	2542.4	2	1,275.0	1,225.0	100.0	21	0.25	0.39	
2542.4	2542.3	5	1,225.0	1,025.0	460.0				
2542.4	2542.3	8				21	0.25	3.34	
2542.3	2542.2	5	1,025.0	950.0	530.0				
2542.3	2542.2	8					0.26	13.03	
2542.2	2542	3	950.0	920.0	375.0				
2542	2542	1							2 of 2
2542	2541	3	920.0	890.0	555.0				
2541.1	2541	8				7	0.81	7.31	
2541	2541	1							1 of 2
2541.4	2541.3	2	1,225.0	1,225.0	1,175.0	100	0.25	0.47	
2541.3	2541.2	5	1,175.0	920.0	620.0				
2541.3	2541.2	8				21	0.38	8.03	Weighted C
2541.2	2541	6	915.0	900.0	685.0	7	0.81	6.91	
2541	2541	1							2 of 2
2541	2540	3	895.0	870.0	510.0				
2540	2540	1							1 of 2
2540.3	2540.2	2	1,215.0	1,155.0	100.0	7	0.49	0.2	
2540.2	2540.1	5	1,155.0	900.0	705.0				
2540.2	2540.1	8				7	0.50	8.7	
25440.1	2540	6	900.0	885.0	655.0	7	0.81	6.52	
2540	2540	1							2 of 2
2540	2503	3	885.0	840.0	560.0				
2503	2503	10							Bank # 1
2529.2	2529.1	2	1,295.2	1,295.0	100.0	7	0.77	0.17	
2529.1	2529	6	1,295.0	1,277.0	526.0	7	0.77	4.08	
2529	2527	3	1,271.0	1,260.0	396.0				
2527	2527	1							1 of 2
2528.2	2528.1	2	1,293.4	1,293.2	100.0	7	0.78	0.12	
2528.1	2528	6	1,293.2	1,282.0	335.0	7	0.79	3.14	

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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2528	2527	3	1,276.0	1,260.0	266.0				
2527	2527	1							2 of 2
2527	2526	3	1,260.0	1,252.0	191.0				
2527	2526	8	1,317.1	1,316.1	98.1	7	0.77	3.98	
2526	2526	1	1,316.1	1,282.1	803.7				1 of 2
2526.5	2526.4	2	1,324.0	1,323.8	100.0	7	0.77	0.22	
2526.4	2526.3	6	1,323.8	1,296.0	630.0	7	0.77	3.47	
2526.3	2526.2	3	1,296.0	1,270.0	440.0				
2526.3	2526.2	8				7	0.77	3.81	
2526.3	2526.2	3	1,270.0	1,258.0	470.0				
2526.2	2526.1	8				7	0.78	4.65	
2526.1	2526	3	1,258.0	1,252.0	175.0				
2526	2526	1							2 of 2
2526	2522	3	1,252.0	1,240.0	220.0				
2522	2522	10							Memory Bank #2
2524.2	2524.1	2	1,324.2	1,324.0	100.0	7	0.77	0.17	
2524.1	2524	6	1,324.0	1,316.5	345.0	7	0.78	0.98	
2425	2523	3	1,310.0	1,264.0	732.0				
2523	2523	1							1 of 2
2525.2	2525.1	2	1,320.4	1,320.2	100.0	7	0.77	0.13	
2512.1	2525	6	1,320.2	1,311.0	370.0	7	0.77	1.96	
2525	2523	3	1,311.0	1,264.0	545.0				
2523	2523	1							2 of 2
2524	2523	8				7	0.78	6.14	
2523	2522	3	1,264.0	1,240.0	430.0				
2523	2522	8				7	0.77	3.38	
2522	2522	11							Confluence Bank #2
2522	2522	12							Clear Bank #2
2522	2520	3	1,240.0	1,230.0	150.0				
2520	2520	1							1 of 3
2521.2	2521.1	2	1,370.0	1,366.0	100.0	7	0.80	0.29	
2521.1	2521	6	1,366.0	1,285.0	1,015.0	7	0.81	2.21	
2521	2520	3	1,280.0	1,230.0	810.0				
2521	2520	8				7	0.81	2.18	
2520	2520	1							2 of 3
2535	2534	2	1,310.0	1,309.8	100.0	7	0.79	0.32	
2534	2533	6	1,309.8	1,290.0	480.0	7	0.78	5.47	
2533	2531	3	1,283.0	1,267.0	305.0				
2533	2531	8				7	0.77	3.04	
2531	2530	3	1,267.0	1,265.0	70.0				
2530	2520	3	1,265.0	1,230.0	6,150.0				
2520.1	2520	8				7	0.80	3.1	
2520	2520	1							3 of 3
2520	2512	3	1,230.0	1,115.0	565.0				

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Run Name:
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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2512	2512	1							1 of 2
2512.3	2512.2	2	1,600.0	1,575.0	100.0	21	0.35	0.27	
2512.2	2512.1	5	1,575.0	1,385.0	691.0				
2512.2	2512.1	8				21	0.35	4.03	
2512.1	2512	5	1,385.0	1,115.0	1,165.0				
2512.1	2512	8				21	0.77	28.76	
2512	2512	1							2 of 2
2512	2511	5	1,115.0	1,070.0	430.0				
2511	2510	5	1,070.0	960.0	725.0				
2511	2510	8				21	0.32	34.52	
2510	2508.1	3	960.0	918.0	261.0				
2508.1	2508.1	1							1 of 2
2508.4	2508.3	2	1,300.0	1,250.0	100.0	21	0.35	0.32	
2508.3	2508.2	5	1,250.0	1,125.0	340.0				
2508.3	2508.2	8				21	0.31	2.47	
2508.2	2508.1	5	1,125.0	950.0	515.0				
2508.2	2508.1	8				21	0.27	8.05	
2508.1	2508.1	1							2 of 2
2508.1	2508	3	918.0	915.0	245.0				
2508	2508	1							1 of 2
2509.4	2509.3	2	1,600.0	1,575.0	100.0	21	0.35	0.41	
2509.3	2509.2	5	1,575.0	1,375.0	287.0				
2509.3	2509.2	8				21	0.35	2.22	
2509.2	2509.1	5	1,375.0	1,060.0	840.0				
2509.2	2509.1	8				21	0.34	24.69	
2509.1	2509	5	1,060.0	930.0	957.0				
2509.1	2509	8				21	0.31	40.97	
2509	2508	3	930.0	915.0	575.0				
2508	2508	1							2 of 2
2508	2507	3	915.0	905.0	534.0				
2508	2507	8				8	0.81	10.06	
2507	2507	1							1 of 2
2507.4	2507.3	2	1,125.0	1,105.0	100.0	21	0.30	1.05	
2507.3	2507.2	5	1,105.0	975.0	295.0				
2507.3	2507.2	8				21	0.30	2.32	
2507.2	2507.1	5	975.0	925.0	240.0				
2507.2	2507.1	8				21	0.29	7.52	
2507.1	2507	3	925.0	905.0	370.0				
2507	2507	1							2 of 2
2507	2506	3	905.0	890.0	555.0				
2507	2506	8				8	0.81	5.84	
2506.1	2506	8				21	0.27	5.44	
2506	2504	3	890.0	840.0	500.0				
2506	2504	8				8	0.80	10.93	

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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2504	2504	1							1 of 3
2503.3	2503.2	2	1,180.0	1,140.0	100.0	21	0.30	0.33	
2503.2	2503.1	5	1,140.0	875.0	560.0				
2503.2	2503.1	8				21	0.29	10.14	
2503.1	2504	5	875.0	840.0	310.0				
2504	2504	1							2 of 3
2505.2	2505.1	2	1,190.0	1,150.0	100.0	21	0.25	0.3	
2505.1	2505	5	1,150.0	925.0	781.0				
2505.1	2505	8				21	0.26	13.57	
2505	2504	6	880.0	860.0	875.0	8	0.81	8.63	
2504	2504	1							3 of 3
2504	2503	5	840.0	835.0	300.0				Channel
2504	2503	8				17	0.39	4.4	
2503	2503	11							ADD Bank #3
2503	2503	12							CLEAR Bank #3
2503	2502	3	835.0	825.0	165.0				Detention Basin
2502	2502	1							1 of 3
2502.5	2502.4	2	1,175.0	1,150.0	100.0	21	0.25	0.21	
2502.4	2502.3	5	1,150.0	1,075.0	302.0				
2502.4	2502.3	8				21	0.25	2.17	
2502.3	2502.2	5	1,075.0	950.0	640.0				
2502.3	2502.2	8				21	0.25	11.59	
2502.2	2502.1	5	950.0	890.0	430.0				
2502.2	2502.1	8				21	0.25	14.58	
2502.1	2502	5	890.0	830.0	1,040.0				2 of 3
2502	2502	1							
2502.8	2502.7	2	1,180.0	1,175.0	100.0	21	0.30	0.19	
2502.7	2502.6	5	1,175.0	875.0	665.0				
2502.7	2502.6	8				21	0.30	7	
2502.6	2502	6	875.0	830.0	815.0	8	0.81	2.36	
2502	2502	1							3 of 3
2502	2501	5	830.0	825.0	800.0				
2502	2501	8				21	0.28	26.06	
2501	25.01	5	825.0	822.0	490.0				
25.01	25.01	1							1 of 3
25.10	25.09	2	1,180.0	1,160.0	100.0	21	0.30	0.14	
25.09	25.08	5	1,160.0	1,055.0	475.0				
25.09	25.08	8				21	0.30	6.15	
25.08	25.07	5	1,055.0	865.0	675.0				
25.08	25.07	8				21	0.30	10.64	
25.07	25.06	5	865.0	850.0	540.0				
25.07	25.06	8				8	0.81	6.31	
25.06	25.01	5	850.0	822.0	380.0				

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MERR25-P

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
25.01	25.01	1							2 of 3
25.05	25.04	2	1,300.0	1,275.0	100.0	21	0.33	0.09	
25.04	25.03	5	1,275.0	1,050.0	575.0				
25.04	25.03	8				21	0.30	5.1	
25.03	25.02	5	1,050.0	845.0	895.0				
25.03	25.02	8				21	0.30	9.66	
25.02	25.01	3	845.0	822.0	510.0				
25.01	25.01	1							3 of 3
25.01	25	8				21	0.30	8.91	
25.01	25	3	822.0	798.0	375.0				
								557.04	Total Area

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 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                  *
* SUBBASIN # 25 - NO DETENTION STORAGE ROUTING                            *
* 2469.01A - OCTOBER 2006                                                 *
 **************************************************************************

  FILE NAME: MERR25-P.DAT
  TIME/DATE OF STUDY: 12:35 10/03/2006
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

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  FLOW PROCESS FROM NODE   2575.20 TO NODE   2575.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1292.20
  DOWNSTREAM ELEVATION(FEET) =   1292.00
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
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          THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      0.89
  TOTAL AREA(ACRES) =      0.13   TOTAL RUNOFF(CFS) =      0.89

****************************************************************************
  FLOW PROCESS FROM NODE   2575.10 TO NODE   2575.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1292.00  DOWNSTREAM ELEVATION(FEET) = 1288.00
  STREET LENGTH(FEET) =   410.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.13
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   16.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    0.97
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.46
  STREET FLOW TRAVEL TIME(MIN.) =   7.04   Tc(MIN.) =  12.33
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.152
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =    2.49      SUBAREA RUNOFF(CFS) =    9.88
  TOTAL AREA(ACRES) =      2.62        PEAK FLOW RATE(CFS) =      10.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  18.41
  FLOW VELOCITY(FEET/SEC.) =  1.19   DEPTH*VELOCITY(FT*FT/SEC.) =   0.65
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2575.00 =   510.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2575.00 TO NODE   2573.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1282.00  DOWNSTREAM(FEET) =  1280.00
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.27
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     10.39
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =  12.97
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2573.00 =   750.00 FEET.

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  FLOW PROCESS FROM NODE   2574.00 TO NODE   2573.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.987
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7700
  SUBAREA AREA(ACRES) =     1.61   SUBAREA RUNOFF(CFS) =    6.18
  TOTAL AREA(ACRES) =       4.23   TOTAL RUNOFF(CFS) =   16.24
  TC(MIN.) =  12.97

****************************************************************************
  FLOW PROCESS FROM NODE   2573.00 TO NODE   2572.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1280.00  DOWNSTREAM(FEET) =  1277.00
  FLOW LENGTH(FEET) =   340.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.14
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     16.24
  PIPE TRAVEL TIME(MIN.) =   0.79    Tc(MIN.) =  13.76
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2572.00 =  1090.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2573.00 TO NODE   2572.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.800
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7743
  SUBAREA AREA(ACRES) =     3.24   SUBAREA RUNOFF(CFS) =   12.13
  TOTAL AREA(ACRES) =       7.47   TOTAL RUNOFF(CFS) =   27.76
  TC(MIN.) =  13.76

****************************************************************************
  FLOW PROCESS FROM NODE   2572.00 TO NODE   2570.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1277.00  DOWNSTREAM(FEET) =  1274.00
  FLOW LENGTH(FEET) =   196.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  17.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.07
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     27.76
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =  14.09
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2570.00 =  1286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2570.10 TO NODE   2570.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.728
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  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7758
  SUBAREA AREA(ACRES) =    2.57   SUBAREA RUNOFF(CFS) =    9.48
  TOTAL AREA(ACRES) =     10.04   TOTAL RUNOFF(CFS) =   36.83
  TC(MIN.) =  14.09

****************************************************************************
  FLOW PROCESS FROM NODE   2570.00 TO NODE   2570.00 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.) =  14.09
  RAINFALL INTENSITY(INCH/HR) =   4.73
  TOTAL STREAM AREA(ACRES) =    10.04
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     36.83

****************************************************************************
  FLOW PROCESS FROM NODE   2571.20 TO NODE   2571.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1298.30
  DOWNSTREAM ELEVATION(FEET) =   1298.10
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      0.96
  TOTAL AREA(ACRES) =      0.14   TOTAL RUNOFF(CFS) =      0.96

****************************************************************************
  FLOW PROCESS FROM NODE   2571.10 TO NODE   2571.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1298.10  DOWNSTREAM ELEVATION(FEET) = 1291.00
  STREET LENGTH(FEET) =   355.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.14
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
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    HALFSTREET FLOOD WIDTH(FEET) =   15.44
    AVERAGE•FLOW VELOCITY(FEET/SEC.) =    1.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.53
  STREET FLOW TRAVEL TIME(MIN.) =   4.82   Tc(MIN.) =  10.11
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.854
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =     2.22      SUBAREA RUNOFF(CFS) =   10.01
  TOTAL AREA(ACRES) =       2.36        PEAK FLOW RATE(CFS) =      10.64

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  16.03
  FLOW VELOCITY(FEET/SEC.) =  1.50   DEPTH*VELOCITY(FT*FT/SEC.) =   0.75
  LONGEST FLOWPATH FROM NODE   2571.20 TO NODE   2571.00 =   455.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2571.00 TO NODE   2570.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1285.00  DOWNSTREAM(FEET) =  1274.00
  FLOW LENGTH(FEET) =   410.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.84
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     10.64
  PIPE TRAVEL TIME(MIN.) =   0.69    Tc(MIN.) =  10.81
  LONGEST FLOWPATH FROM NODE   2571.20 TO NODE   2570.00 =   865.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2571.00 TO NODE   2570.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.609
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7806
  SUBAREA AREA(ACRES) =     2.66   SUBAREA RUNOFF(CFS) =   11.79
  TOTAL AREA(ACRES) =       5.02   TOTAL RUNOFF(CFS) =   21.98
  TC(MIN.) =  10.81

****************************************************************************
  FLOW PROCESS FROM NODE   2570.00 TO NODE   2570.00 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.) =  10.81
  RAINFALL INTENSITY(INCH/HR) =   5.61
  TOTAL STREAM AREA(ACRES) =      5.02
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.98

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        36.83    14.09        4.728        10.04
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    2        21.98    10.81        5.609          5.02

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        50.24    10.81       5.609
    2        55.35    14.09       4.728

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     55.35   Tc(MIN.) =   14.09
  TOTAL AREA(ACRES) =     15.06
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2570.00 =  1286.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2570.00 TO NODE   2561.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1274.00  DOWNSTREAM(FEET) =  1271.00
  FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.87
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     55.35
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =  14.29
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2561.00 =  1446.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2561.00 TO NODE   2561.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2564.20 TO NODE   2564.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1294.60
  DOWNSTREAM ELEVATION(FEET) =   1294.40
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      1.16
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      1.16

****************************************************************************
  FLOW PROCESS FROM NODE   2564.10 TO NODE   2564.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
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==============================================================================
  UPSTREAM ELEVATION(FEET) = 1294.40  DOWNSTREAM ELEVATION(FEET) = 1285.00
  STREET LENGTH(FEET) =   587.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       8.22
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   16.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.61
  STREET FLOW TRAVEL TIME(MIN.) =   7.70   Tc(MIN.) =  12.99
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.981
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.780
  SUBAREA AREA(ACRES) =     3.41      SUBAREA RUNOFF(CFS) =   13.25
  TOTAL AREA(ACRES) =       3.58        PEAK FLOW RATE(CFS) =      13.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  18.71
  FLOW VELOCITY(FEET/SEC.) =  1.55   DEPTH*VELOCITY(FT*FT/SEC.) =   0.86
  LONGEST FLOWPATH FROM NODE   2564.20 TO NODE   2564.00 =   687.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2564.00 TO NODE   2562.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1280.00  DOWNSTREAM(FEET) =  1276.00
  FLOW LENGTH(FEET) =   162.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.01
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     13.90
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =  13.26
  LONGEST FLOWPATH FROM NODE   2564.20 TO NODE   2562.00 =   849.00 FEET.

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  FLOW PROCESS FROM NODE   2562.00 TO NODE   2562.00 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.) =  13.26
  RAINFALL INTENSITY(INCH/HR) =   4.92
  TOTAL STREAM AREA(ACRES) =     3.58
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     13.90

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  FLOW PROCESS FROM NODE   2563.20 TO NODE   2563.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1294.70
  DOWNSTREAM ELEVATION(FEET) =   1294.50
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.971
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      0.87
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.87

****************************************************************************
  FLOW PROCESS FROM NODE   2563.10 TO NODE   2563.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1294.50  DOWNSTREAM ELEVATION(FEET) = 1284.00
  STREET LENGTH(FEET) =   410.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.68
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.43
    HALFSTREET FLOOD WIDTH(FEET) =   15.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.38
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.59
  STREET FLOW TRAVEL TIME(MIN.) =   4.96   Tc(MIN.) =   9.93
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.925
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    2.39      SUBAREA RUNOFF(CFS) =   11.19
  TOTAL AREA(ACRES) =      2.51        PEAK FLOW RATE(CFS) =      11.75

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  16.00
  FLOW VELOCITY(FEET/SEC.) =  1.68   DEPTH*VELOCITY(FT*FT/SEC.) =   0.84
  LONGEST FLOWPATH FROM NODE   2563.20 TO NODE   2563.00 =   510.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2563.00 TO NODE   2562.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1278.00  DOWNSTREAM(FEET) =  1276.00
  FLOW LENGTH(FEET) =    65.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.61
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     11.75
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  10.03
  LONGEST FLOWPATH FROM NODE   2563.20 TO NODE   2562.00 =   575.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2562.00 TO NODE   2562.00 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.) =  10.03
  RAINFALL INTENSITY(INCH/HR) =   5.89
  TOTAL STREAM AREA(ACRES) =     2.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.75

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       13.90    13.26        4.916          3.58
     2       11.75    10.03        5.886          2.51

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       22.26    10.03       5.886
     2       23.71    13.26       4.916

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     23.71   Tc(MIN.) =   13.26
  TOTAL AREA(ACRES) =      6.09
  LONGEST FLOWPATH FROM NODE   2564.20 TO NODE   2562.00 =   849.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2562.00 TO NODE   2561.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1276.00  DOWNSTREAM(FEET) =  1271.00
  FLOW LENGTH(FEET) =   160.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.49
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     23.71
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =  13.47
  LONGEST FLOWPATH FROM NODE   2564.20 TO NODE   2561.00 =  1009.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2561.00 TO NODE   2561.00 IS CODE =  11
----------------------------------------------------------------------------
```

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

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1        23.71    13.47       4.865        6.09
  LONGEST FLOWPATH FROM NODE   2564.20 TO NODE   2561.00 =  1009.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1        55.35    14.29       4.684       15.06
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2561.00 =  1446.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1       75.90      13.47       4.865
     2       78.18      14.29       4.684

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     78.18   Tc(MIN.) =   14.29
  TOTAL AREA(ACRES) =     21.15

****************************************************************************
  FLOW PROCESS FROM NODE   2561.00 TO NODE   2561.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2561.00 TO NODE   2560.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1271.00  DOWNSTREAM(FEET) =  1260.00
  FLOW LENGTH(FEET) =   360.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.69
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     78.18
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =  14.65
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2560.00 =  1806.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2561.00 TO NODE   2560.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.609
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7808
  SUBAREA AREA(ACRES) =    3.51   SUBAREA RUNOFF(CFS) =   12.78
  TOTAL AREA(ACRES) =     24.66   TOTAL RUNOFF(CFS) =   88.75
  TC(MIN.) =  14.65

****************************************************************************
  FLOW PROCESS FROM NODE   2560.10 TO NODE   2560.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.609
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7807
  SUBAREA AREA(ACRES) =     1.66   SUBAREA RUNOFF(CFS) =     5.97
  TOTAL AREA(ACRES) =      26.32   TOTAL RUNOFF(CFS) =    94.72
  TC(MIN.) =  14.65

********************************************************************************
  FLOW PROCESS FROM NODE   2560.00 TO NODE   2554.00 IS CODE =  31
--------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1260.00  DOWNSTREAM(FEET) =  1205.00
  FLOW LENGTH(FEET) =   990.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.12
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      94.72
  PIPE TRAVEL TIME(MIN.) =   0.75    Tc(MIN.) =  15.40
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2554.00 =  2796.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   2554.00 TO NODE   2554.00 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.) =  15.40
  RAINFALL INTENSITY(INCH/HR) =   4.46
  TOTAL STREAM AREA(ACRES) =    26.32
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     94.72

********************************************************************************
  FLOW PROCESS FROM NODE   2555.40 TO NODE   2555.30 IS CODE =  21
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1285.30
  DOWNSTREAM ELEVATION(FEET) =   1285.10
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      1.23
  TOTAL AREA(ACRES) =      0.18   TOTAL RUNOFF(CFS) =      1.23

********************************************************************************
  FLOW PROCESS FROM NODE   2555.30 TO NODE   2555.20 IS CODE =  61
--------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1285.10  DOWNSTREAM ELEVATION(FEET) = 1266.00
  STREET LENGTH(FEET) =   415.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.96
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.40
    HALFSTREET FLOOD WIDTH(FEET) =   13.72
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.74
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.70
  STREET FLOW TRAVEL TIME(MIN.) =   3.98   Tc(MIN.) =   9.27
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.194
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =     2.36      SUBAREA RUNOFF(CFS) =   11.26
  TOTAL AREA(ACRES) =       2.54        PEAK FLOW RATE(CFS) =      12.11

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  16.00
  FLOW VELOCITY(FEET/SEC.) =  2.03   DEPTH*VELOCITY(FT*FT/SEC.) =   0.95
  LONGEST FLOWPATH FROM NODE   2555.40 TO NODE   2555.20 =   515.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2555.20 TO NODE   2555.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1260.00  DOWNSTREAM(FEET) =  1247.00
  FLOW LENGTH(FEET) =   230.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.48
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     12.11
  PIPE TRAVEL TIME(MIN.) =   0.28    Tc(MIN.) =   9.55
  LONGEST FLOWPATH FROM NODE   2555.40 TO NODE   2555.10 =   745.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2555.20 TO NODE   2555.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.074
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7700
  SUBAREA AREA(ACRES) =     1.50   SUBAREA RUNOFF(CFS) =    7.02
  TOTAL AREA(ACRES) =       4.04   TOTAL RUNOFF(CFS) =   18.90
```

```
  TC(MIN.) =   9.55

****************************************************************************
  FLOW PROCESS FROM NODE   2555.10 TO NODE   2555.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1247.00  DOWNSTREAM(FEET) =  1239.00
  FLOW LENGTH(FEET) =   240.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.30
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     18.90
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   9.88
  LONGEST FLOWPATH FROM NODE   2555.40 TO NODE   2555.00 =   985.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2555.10 TO NODE   2555.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.944
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7700
  SUBAREA AREA(ACRES) =    4.16   SUBAREA RUNOFF(CFS) =   19.04
  TOTAL AREA(ACRES) =      8.20   TOTAL RUNOFF(CFS) =   37.53
  TC(MIN.) =   9.88

****************************************************************************
  FLOW PROCESS FROM NODE   2555.00 TO NODE   2554.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1239.00  DOWNSTREAM(FEET) =  1205.00
  FLOW LENGTH(FEET) =   215.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.51
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     37.53
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  10.02
  LONGEST FLOWPATH FROM NODE   2555.40 TO NODE   2554.00 =  1200.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2554.00 TO NODE   2554.00 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.) =  10.02
  RAINFALL INTENSITY(INCH/HR) =   5.89
  TOTAL STREAM AREA(ACRES) =     8.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.53

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       94.72    15.40        4.464         26.32
```

```
    2       37.53    10.02        5.890          8.20

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1        99.15    10.02       5.890
    2       123.16    15.40       4.464

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    123.16   Tc(MIN.) =   15.40
  TOTAL AREA(ACRES) =     34.52
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2554.00 =  2796.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2554.00 TO NODE   2550.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1205.00  DOWNSTREAM(FEET) =  1200.00
  FLOW LENGTH(FEET) =   215.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.97
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    123.16
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =  15.61
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2550.00 =  3011.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2550.20 TO NODE   2550.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.425
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7784
  SUBAREA AREA(ACRES) =    3.98   SUBAREA RUNOFF(CFS) =   13.74
  TOTAL AREA(ACRES) =     38.50   TOTAL RUNOFF(CFS) =  132.60
  TC(MIN.) =  15.61

****************************************************************************
  FLOW PROCESS FROM NODE   2550.10 TO NODE   2550.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.425
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7778
  SUBAREA AREA(ACRES) =    3.03   SUBAREA RUNOFF(CFS) =   10.32
  TOTAL AREA(ACRES) =     41.53   TOTAL RUNOFF(CFS) =  142.93
  TC(MIN.) =  15.61

****************************************************************************
  FLOW PROCESS FROM NODE   2550.00 TO NODE   2550.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
```

```
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE   2552.40 TO NODE   2552.30 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1425.00
  DOWNSTREAM ELEVATION(FEET) =   1400.00
  ELEVATION DIFFERENCE(FEET) =     25.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =      0.37
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.37

******************************************************************************
  FLOW PROCESS FROM NODE   2552.40 TO NODE   2552.30 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    2.26   SUBAREA RUNOFF(CFS) =    4.15
  TOTAL AREA(ACRES) =      2.46   TOTAL RUNOFF(CFS) =    4.52
  TC(MIN.) =   7.10

******************************************************************************
  FLOW PROCESS FROM NODE   2552.30 TO NODE   2552.20 IS CODE =  53
------------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1400.00  DOWNSTREAM(FEET) =   1300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   301.00   CHANNEL SLOPE =  0.3322
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2021 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      4.52
  FLOW VELOCITY(FEET/SEC) =   4.16 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =   8.31
  LONGEST FLOWPATH FROM NODE   2552.40 TO NODE   2552.20 =   401.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   2552.20 TO NODE   2552.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1300.00  DOWNSTREAM(FEET) =  1235.00
  FLOW LENGTH(FEET) =   205.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.05
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      4.52
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =   8.49
```

```
  LONGEST FLOWPATH FROM NODE   2552.40 TO NODE   2552.00 =   606.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2552.10 TO NODE   2552.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.555
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5424
  SUBAREA AREA(ACRES) =     3.16   SUBAREA RUNOFF(CFS) =   15.95
  TOTAL AREA(ACRES) =       5.62   TOTAL RUNOFF(CFS) =   19.98
  TC(MIN.) =   8.49

****************************************************************************
  FLOW PROCESS FROM NODE   2552.00 TO NODE   2551.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1235.00  DOWNSTREAM(FEET) =  1230.00
  FLOW LENGTH(FEET) =   330.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.24
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     19.98
  PIPE TRAVEL TIME(MIN.) =   0.60    Tc(MIN.) =   9.08
  LONGEST FLOWPATH FROM NODE   2552.40 TO NODE   2551.00 =   936.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2551.10 TO NODE   2551.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.275
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6058
  SUBAREA AREA(ACRES) =     2.17   SUBAREA RUNOFF(CFS) =   10.48
  TOTAL AREA(ACRES) =       7.79   TOTAL RUNOFF(CFS) =   29.61
  TC(MIN.) =   9.08

****************************************************************************
  FLOW PROCESS FROM NODE   2551.00 TO NODE   2551.00 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.) =   9.08
  RAINFALL INTENSITY(INCH/HR) =   6.27
  TOTAL STREAM AREA(ACRES) =     7.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.61

****************************************************************************
  FLOW PROCESS FROM NODE   2552.20 TO NODE   2552.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
```

```
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1263.40
  DOWNSTREAM ELEVATION(FEET) =   1263.20
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      0.82
  TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.82

****************************************************************************
  FLOW PROCESS FROM NODE   2552.10 TO NODE   2552.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1263.20  DOWNSTREAM ELEVATION(FEET) = 1245.00
  STREET LENGTH(FEET) =   415.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.09
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.41
    HALFSTREET FLOOD WIDTH(FEET) =   13.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.69
  STREET FLOW TRAVEL TIME(MIN.) =   4.04   Tc(MIN.) =   9.34
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.164
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =    2.59      SUBAREA RUNOFF(CFS) =   12.29
  TOTAL AREA(ACRES) =      2.71        PEAK FLOW RATE(CFS) =      12.86

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  16.00
  FLOW VELOCITY(FEET/SEC.) =  2.05   DEPTH*VELOCITY(FT*FT/SEC.) =   0.97
  LONGEST FLOWPATH FROM NODE   2552.20 TO NODE   2552.00 =   515.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2552.00 TO NODE   2551.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1240.00  DOWNSTREAM(FEET) =  1230.00
  FLOW LENGTH(FEET) =   222.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
```

```
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.55
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     12.86
  PIPE TRAVEL TIME(MIN.) =   0.29    Tc(MIN.) =   9.63
  LONGEST FLOWPATH FROM NODE   2552.20 TO NODE   2551.00 =   737.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2551.00 TO NODE   2551.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.63
  RAINFALL INTENSITY(INCH/HR) =   6.04
  TOTAL STREAM AREA(ACRES) =     2.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       29.61     9.08        6.275          7.79
     2       12.86     9.63        6.042          2.71

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       41.74     9.08       6.275
     2       41.38     9.63       6.042

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     41.74   Tc(MIN.) =    9.08
  TOTAL AREA(ACRES) =     10.50
  LONGEST FLOWPATH FROM NODE   2552.40 TO NODE   2551.00 =   936.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2551.00 TO NODE   2550.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1230.00  DOWNSTREAM(FEET) =  1200.00
  FLOW LENGTH(FEET) =   480.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.88
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     41.74
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   9.51
  LONGEST FLOWPATH FROM NODE   2552.40 TO NODE   2550.00 =  1416.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2551.00 TO NODE   2550.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.093
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
```

```
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6617
  SUBAREA AREA(ACRES) =     1.31   SUBAREA RUNOFF(CFS) =     6.15
  TOTAL AREA(ACRES) =      11.81   TOTAL RUNOFF(CFS) =    47.61
  TC(MIN.) =   9.51

****************************************************************************
  FLOW PROCESS FROM NODE   2550.00 TO NODE   2550.00 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.) =   9.51
  RAINFALL INTENSITY(INCH/HR) =   6.09
  TOTAL STREAM AREA(ACRES) =    11.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.61

****************************************************************************
  FLOW PROCESS FROM NODE   2553.20 TO NODE   2553.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1240.70
  DOWNSTREAM ELEVATION(FEET) =   1240.50
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      0.75
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.75

****************************************************************************
  FLOW PROCESS FROM NODE   2553.10 TO NODE   2553.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1240.50  DOWNSTREAM ELEVATION(FEET) = 1236.00
  STREET LENGTH(FEET) =   256.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.03
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   19.02
```

```
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.64
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.92
STREET FLOW TRAVEL TIME(MIN.) =   2.61   Tc(MIN.) =   7.90
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.865
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
SUBAREA AREA(ACRES) =     5.31      SUBAREA RUNOFF(CFS) =   28.07
TOTAL AREA(ACRES) =       5.42        PEAK FLOW RATE(CFS) =      28.65

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  24.51
FLOW VELOCITY(FEET/SEC.) =  2.05   DEPTH*VELOCITY(FT*FT/SEC.) =   1.37
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  256.0 FT WITH ELEVATION-DROP =   4.5 FT, IS   37.7 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   2553.00
LONGEST FLOWPATH FROM NODE   2553.20 TO NODE   2553.00 =   356.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2553.00 TO NODE   2550.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1230.00  DOWNSTREAM(FEET) =  1200.00
FLOW LENGTH(FEET) =   800.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  16.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  13.79
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     28.65
PIPE TRAVEL TIME(MIN.) =   0.97    Tc(MIN.) =   8.87
LONGEST FLOWPATH FROM NODE   2553.20 TO NODE   2550.00 =  1156.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2550.00 TO NODE   2550.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   8.87
RAINFALL INTENSITY(INCH/HR) =   6.37
TOTAL STREAM AREA(ACRES) =     5.42
PEAK FLOW RATE(CFS) AT CONFLUENCE =     28.65

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       47.61     9.51        6.093         11.81
    2       28.65     8.87        6.373          5.42

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

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1       74.18     8.87       6.373
    2       75.01     9.51       6.093

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =     75.01   Tc(MIN.) =    9.51
  TOTAL AREA(ACRES) =     17.23
  LONGEST FLOWPATH FROM NODE   2552.40 TO NODE   2550.00 =  1416.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2550.00 TO NODE   2550.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1       75.01     9.51       6.093       17.23
  LONGEST FLOWPATH FROM NODE   2552.40 TO NODE   2550.00 =  1416.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1      142.93    15.61       4.425       41.53
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2550.00 =  3011.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1     162.05       9.51       6.093
     2     197.40      15.61       4.425

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    197.40   Tc(MIN.) =   15.61
  TOTAL AREA(ACRES) =     58.76

****************************************************************************
  FLOW PROCESS FROM NODE   2550.00 TO NODE   2550.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2550.00 TO NODE   2547.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1200.00  DOWNSTREAM(FEET) =  1170.00
  FLOW LENGTH(FEET) =   340.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  31.47
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    197.40
  PIPE TRAVEL TIME(MIN.) =   0.18    Tc(MIN.) =  15.79
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2547.00 =  3351.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2550.00 TO NODE   2547.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.392
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7541
```

```
  SUBAREA AREA(ACRES) =     3.60   SUBAREA RUNOFF(CFS) =    12.02
  TOTAL AREA(ACRES) =      62.36   TOTAL RUNOFF(CFS) =   206.55
  TC(MIN.) =  15.79

****************************************************************************
  FLOW PROCESS FROM NODE   2547.00 TO NODE   2546.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1170.00  DOWNSTREAM(FEET) =   1000.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   540.00   CHANNEL SLOPE =  0.3148
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1987 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    206.55
  FLOW VELOCITY(FEET/SEC) =  14.73 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.61   Tc(MIN.) =  16.40
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2546.00 =  3891.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2546.00 TO NODE   2546.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2546.70 TO NODE   2546.60 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1260.00
  DOWNSTREAM ELEVATION(FEET) =   1240.00
  ELEVATION DIFFERENCE(FEET) =     20.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.972
  SUBAREA RUNOFF(CFS) =      0.31
  TOTAL AREA(ACRES) =      0.11   TOTAL RUNOFF(CFS) =      0.31

****************************************************************************
  FLOW PROCESS FROM NODE   2546.60 TO NODE   2546.50 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1240.00  DOWNSTREAM(FEET) =   1125.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   265.00   CHANNEL SLOPE =  0.4340
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2181 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.31
  FLOW VELOCITY(FEET/SEC) =   2.62 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =   7.96
  LONGEST FLOWPATH FROM NODE   2546.70 TO NODE   2546.50 =   365.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2546.60 TO NODE   2546.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```

```
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.835
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3017
  SUBAREA AREA(ACRES) =     3.16   SUBAREA RUNOFF(CFS) =     6.48
  TOTAL AREA(ACRES) =       3.27   TOTAL RUNOFF(CFS) =    6.74
  TC(MIN.) =   7.96

******************************************************************************
  FLOW PROCESS FROM NODE   2546.50 TO NODE   2546.10 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1120.00  DOWNSTREAM(FEET) =  1080.00
  FLOW LENGTH(FEET) =   380.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.45
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      6.74
  PIPE TRAVEL TIME(MIN.) =   0.44    Tc(MIN.) =   8.39
  LONGEST FLOWPATH FROM NODE   2546.70 TO NODE   2546.10 =   745.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   2546.10 TO NODE   2546.10 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.) =   8.39
  RAINFALL INTENSITY(INCH/HR) =   6.60
  TOTAL STREAM AREA(ACRES) =     3.27
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      6.74

******************************************************************************
  FLOW PROCESS FROM NODE   2546.40 TO NODE   2546.30 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1282.00
  DOWNSTREAM ELEVATION(FEET) =   1250.00
  ELEVATION DIFFERENCE(FEET) =     32.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.29

******************************************************************************
  FLOW PROCESS FROM NODE   2546.30 TO NODE   2546.20 IS CODE =  53
------------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1250.00  DOWNSTREAM(FEET) =   1100.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   345.00   CHANNEL SLOPE =  0.4348
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2182 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.29
  FLOW VELOCITY(FEET/SEC) =   2.62 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.20   Tc(MIN.) =   9.30
  LONGEST FLOWPATH FROM NODE   2546.40 TO NODE   2546.20 =   445.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2546.30 TO NODE   2546.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.180
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    5.43   SUBAREA RUNOFF(CFS) =    8.39
  TOTAL AREA(ACRES) =      5.59   TOTAL RUNOFF(CFS) =    8.64
  TC(MIN.) =   9.30

****************************************************************************
  FLOW PROCESS FROM NODE   2546.20 TO NODE   2546.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1100.00  DOWNSTREAM(FEET) =  1080.00
  FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.29
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.64
  PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   9.66
  LONGEST FLOWPATH FROM NODE   2546.40 TO NODE   2546.10 =   735.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2546.10 TO NODE   2546.10 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.66
  RAINFALL INTENSITY(INCH/HR) =   6.03
  TOTAL STREAM AREA(ACRES) =     5.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.64

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        6.74     8.39        6.602          3.27
     2        8.64     9.66        6.029          5.59

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
```

```
NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
    1       14.24      8.39       6.602
    2       14.79      9.66       6.029

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     14.79   Tc(MIN.) =    9.66
TOTAL AREA(ACRES) =      8.86
LONGEST FLOWPATH FROM NODE   2546.70 TO NODE   2546.10 =   745.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2546.10 TO NODE   2546.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1080.00  DOWNSTREAM(FEET) =  1000.00
FLOW LENGTH(FEET) =   290.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   6.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  25.47
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     14.79
PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   9.85
LONGEST FLOWPATH FROM NODE   2546.70 TO NODE   2546.00 =  1035.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2546.00 TO NODE   2546.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY     AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
    1       14.79     9.85        5.953        8.86
LONGEST FLOWPATH FROM NODE   2546.70 TO NODE   2546.00 =  1035.00 FEET.

** MEMORY BANK #  1 CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY     AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
    1      206.55    16.40        4.286       62.36
LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2546.00 =  3891.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF       Tc       INTENSITY
NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
    1     138.90      9.85        5.953
    2     217.20     16.40        4.286

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    217.20   Tc(MIN.) =   16.40
TOTAL AREA(ACRES) =     71.22

****************************************************************************
FLOW PROCESS FROM NODE   2546.00 TO NODE   2546.00 IS CODE =  12
----------------------------------------------------------------------------
>>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
FLOW PROCESS FROM NODE   2546.00 TO NODE   2545.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1000.00  DOWNSTREAM(FEET) =    990.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   345.00   CHANNEL SLOPE =  0.0290
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0290 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    217.20
  FLOW VELOCITY(FEET/SEC) =   5.72 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =  17.41
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2545.00 =  4236.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2547.00 TO NODE   2545.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.125
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5743
  SUBAREA AREA(ACRES) =   27.06   SUBAREA RUNOFF(CFS) =   29.02
  TOTAL AREA(ACRES) =     98.28   TOTAL RUNOFF(CFS) =  232.82
  TC(MIN.) =  17.41

****************************************************************************
  FLOW PROCESS FROM NODE   2545.00 TO NODE   2545.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.41
  RAINFALL INTENSITY(INCH/HR) =   4.12
  TOTAL STREAM AREA(ACRES) =    98.28
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    232.82

****************************************************************************
  FLOW PROCESS FROM NODE   2545.30 TO NODE   2545.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
================================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1250.00
  DOWNSTREAM ELEVATION(FEET) =   1225.00
  ELEVATION DIFFERENCE(FEET) =     25.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =      0.18
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.18

****************************************************************************
  FLOW PROCESS FROM NODE   2545.20 TO NODE   2545.10 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1225.00  DOWNSTREAM(FEET) =   1035.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   390.00   CHANNEL SLOPE =  0.4872
```

```
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2237 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.18
  FLOW VELOCITY(FEET/SEC) =   2.65 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.45   Tc(MIN.) =   9.56
  LONGEST FLOWPATH FROM NODE   2545.30 TO NODE   2545.10 =   490.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2545.20 TO NODE   2545.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.072
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    2.19   SUBAREA RUNOFF(CFS) =    3.32
  TOTAL AREA(ACRES) =      2.29   TOTAL RUNOFF(CFS) =    3.48
  TC(MIN.) =   9.56

****************************************************************************
  FLOW PROCESS FROM NODE   2545.10 TO NODE   2545.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1035.00  DOWNSTREAM(FEET) =   990.00
  FLOW LENGTH(FEET) =   205.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   3.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.49
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      3.48
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =   9.78
  LONGEST FLOWPATH FROM NODE   2545.30 TO NODE   2545.00 =   695.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2545.00 TO NODE   2545.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.78
  RAINFALL INTENSITY(INCH/HR) =   5.98
  TOTAL STREAM AREA(ACRES) =     2.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.48

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      232.82    17.41        4.125         98.28
     2        3.48     9.78        5.984          2.29

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

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

```
     1      134.25      9.78        5.984
     2      235.22     17.41        4.125

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    235.22   Tc(MIN.) =   17.41
  TOTAL AREA(ACRES) =    100.57
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2545.00 =  4236.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2545.00 TO NODE   2544.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    990.00  DOWNSTREAM(FEET) =    945.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   225.00   CHANNEL SLOPE =  0.2000
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1600 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    235.22
  FLOW VELOCITY(FEET/SEC) =  13.80 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.27   Tc(MIN.) =  17.68
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2544.00 =  4461.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2544.00 TO NODE   2453.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   945.00  DOWNSTREAM(FEET) =   925.00
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  31.61
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    235.22
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  17.81
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2453.00 =  4711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2453.00 TO NODE   2543.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.81
  RAINFALL INTENSITY(INCH/HR) =   4.06
  TOTAL STREAM AREA(ACRES) =   100.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    235.22

****************************************************************************
  FLOW PROCESS FROM NODE   2543.20 TO NODE   2543.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1175.00
  DOWNSTREAM ELEVATION(FEET) =   1125.00
  ELEVATION DIFFERENCE(FEET) =     50.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
```

```
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =       0.26
  TOTAL AREA(ACRES) =       0.14   TOTAL RUNOFF(CFS) =       0.26

****************************************************************************
  FLOW PROCESS FROM NODE   2543.10 TO NODE   2543.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1125.00  DOWNSTREAM(FEET) =    930.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   510.00   CHANNEL SLOPE =  0.3824
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2109 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.26
  FLOW VELOCITY(FEET/SEC) =   2.57 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.31   Tc(MIN.) =  10.41
  LONGEST FLOWPATH FROM NODE   2543.20 TO NODE   2543.00 =   610.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2543.10 TO NODE   2543.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.747
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    2.53   SUBAREA RUNOFF(CFS) =    3.64
  TOTAL AREA(ACRES) =      2.67   TOTAL RUNOFF(CFS) =    3.84
  TC(MIN.) =  10.41

****************************************************************************
  FLOW PROCESS FROM NODE   2543.00 TO NODE   2543.00 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.) =  10.41
  RAINFALL INTENSITY(INCH/HR) =   5.75
  TOTAL STREAM AREA(ACRES) =     2.67
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.84

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      235.22    17.81        4.064        100.57
     2        3.84    10.41        5.747          2.67

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      170.17    10.41       5.747
     2      237.93    17.81       4.064
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    237.93   Tc(MIN.) =   17.81
  TOTAL AREA(ACRES) =    103.24
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2543.00 =  4711.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2543.00 TO NODE   2542.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   925.00  DOWNSTREAM(FEET) =   920.00
  FLOW LENGTH(FEET) =   480.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  60.0 INCH PIPE IS  46.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.61
  ESTIMATED PIPE DIAMETER(INCH) =  60.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    237.93
  PIPE TRAVEL TIME(MIN.) =   0.55    Tc(MIN.) =  18.36
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2542.00 =  5191.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2543.00 TO NODE   2542.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.986
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5723
  SUBAREA AREA(ACRES) =    5.88   SUBAREA RUNOFF(CFS) =   18.98
  TOTAL AREA(ACRES) =    109.12   TOTAL RUNOFF(CFS) =  248.89
  TC(MIN.) =  18.36

****************************************************************************
  FLOW PROCESS FROM NODE   2542.10 TO NODE   2542.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.986
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5757
  SUBAREA AREA(ACRES) =    1.61   SUBAREA RUNOFF(CFS) =    5.20
  TOTAL AREA(ACRES) =    110.73   TOTAL RUNOFF(CFS) =  254.09
  TC(MIN.) =  18.36

****************************************************************************
  FLOW PROCESS FROM NODE   2542.00 TO NODE   2542.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.36
  RAINFALL INTENSITY(INCH/HR) =   3.99
  TOTAL STREAM AREA(ACRES) =   110.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    254.09

****************************************************************************
  FLOW PROCESS FROM NODE   2542.50 TO NODE   2542.40 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1275.00
  DOWNSTREAM ELEVATION(FEET) =   1225.00
  ELEVATION DIFFERENCE(FEET) =     50.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =      0.72
  TOTAL AREA(ACRES) =      0.39   TOTAL RUNOFF(CFS) =      0.72

******************************************************************************
  FLOW PROCESS FROM NODE   2542.40 TO NODE   2542.30 IS CODE =  53
------------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1225.00  DOWNSTREAM(FEET) =   1025.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   460.00   CHANNEL SLOPE =  0.4348
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2182 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.72
  FLOW VELOCITY(FEET/SEC) =   2.62 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.93   Tc(MIN.) =  10.03
  LONGEST FLOWPATH FROM NODE   2542.50 TO NODE   2542.30 =   560.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   2542.40 TO NODE   2542.30 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.885
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    3.34   SUBAREA RUNOFF(CFS) =    4.91
  TOTAL AREA(ACRES) =      3.73   TOTAL RUNOFF(CFS) =    5.49
  TC(MIN.) =  10.03

******************************************************************************
  FLOW PROCESS FROM NODE   2542.30 TO NODE   2542.20 IS CODE =  53
------------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1025.00  DOWNSTREAM(FEET) =    950.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   530.00   CHANNEL SLOPE =  0.1415
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1293 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      5.49
  FLOW VELOCITY(FEET/SEC) =   3.55 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.49   Tc(MIN.) =  12.52
  LONGEST FLOWPATH FROM NODE   2542.50 TO NODE   2542.20 =  1090.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   2542.30 TO NODE   2542.20 IS CODE =  81
------------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.101
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2578
  SUBAREA AREA(ACRES) =   13.03   SUBAREA RUNOFF(CFS) =   17.28
  TOTAL AREA(ACRES) =     16.76   TOTAL RUNOFF(CFS) =   22.04
  TC(MIN.) =  12.52

******************************************************************************
  FLOW PROCESS FROM NODE   2542.20 TO NODE   2542.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   950.00  DOWNSTREAM(FEET) =   920.00
  FLOW LENGTH(FEET) =   375.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.65
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     22.04
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =  12.88
  LONGEST FLOWPATH FROM NODE   2542.50 TO NODE   2542.00 =  1465.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   2542.00 TO NODE   2542.00 IS CODE =   1
------------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.88
  RAINFALL INTENSITY(INCH/HR) =   5.01
  TOTAL STREAM AREA(ACRES) =    16.76
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     22.04

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      254.09    18.36        3.986        110.73
     2       22.04    12.88        5.010         16.76

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      224.17    12.88       5.010
     2      271.62    18.36       3.986

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    271.62   Tc(MIN.) =   18.36
  TOTAL AREA(ACRES) =    127.49
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2542.00 =  5191.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   2542.00 TO NODE   2541.00 IS CODE =  31
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   920.00  DOWNSTREAM(FEET) =   890.00
  FLOW LENGTH(FEET) =   555.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  34.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.34
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    271.62
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =  18.68
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2541.00 =  5746.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2541.10 TO NODE   2541.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.941
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5489
  SUBAREA AREA(ACRES) =    7.31   SUBAREA RUNOFF(CFS) =   23.33
  TOTAL AREA(ACRES) =    134.80   TOTAL RUNOFF(CFS) =  291.57
  TC(MIN.) =  18.68

****************************************************************************
  FLOW PROCESS FROM NODE   2541.00 TO NODE   2541.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.68
  RAINFALL INTENSITY(INCH/HR) =   3.94
  TOTAL STREAM AREA(ACRES) =   134.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    291.57

****************************************************************************
  FLOW PROCESS FROM NODE   2541.40 TO NODE   2541.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1225.00
  DOWNSTREAM ELEVATION(FEET) =   1175.00
  ELEVATION DIFFERENCE(FEET) =     50.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =      0.86
  TOTAL AREA(ACRES) =      0.47   TOTAL RUNOFF(CFS) =      0.86

****************************************************************************
  FLOW PROCESS FROM NODE   2541.30 TO NODE   2541.20 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1175.00  DOWNSTREAM(FEET) =    920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.4113
```

```
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2154 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.86
  FLOW VELOCITY(FEET/SEC) =   2.60 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.98   Tc(MIN.) =  11.08
  LONGEST FLOWPATH FROM NODE   2541.40 TO NODE   2541.20 =   720.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2541.30 TO NODE   2541.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.520
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3728
  SUBAREA AREA(ACRES) =    8.03   SUBAREA RUNOFF(CFS) =   16.84
  TOTAL AREA(ACRES) =      8.50   TOTAL RUNOFF(CFS) =   17.49
  TC(MIN.) =  11.08

****************************************************************************
  FLOW PROCESS FROM NODE   2541.20 TO NODE   2541.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  915.00  DOWNSTREAM ELEVATION(FEET) =  900.00
  STREET LENGTH(FEET) =   685.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.66
    HALFSTREET FLOOD WIDTH(FEET) =   23.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.22
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.45
  STREET FLOW TRAVEL TIME(MIN.) =   5.15   Tc(MIN.) =  16.23
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.315
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.569
  SUBAREA AREA(ACRES) =    6.91      SUBAREA RUNOFF(CFS) =   24.15
  TOTAL AREA(ACRES) =     15.41        PEAK FLOW RATE(CFS) =      37.83

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  26.16
  FLOW VELOCITY(FEET/SEC.) =  2.42   DEPTH*VELOCITY(FT*FT/SEC.) =   1.70
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  685.0 FT WITH ELEVATION-DROP =  15.0 FT, IS   51.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   2541.00
```

```
  LONGEST FLOWPATH FROM NODE   2541.40 TO NODE   2541.00 =  1405.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2541.00 TO NODE   2541.00 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.) =  16.23
  RAINFALL INTENSITY(INCH/HR) =   4.32
  TOTAL STREAM AREA(ACRES) =    15.41
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.83

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       291.57    18.68       3.941        134.80
     2        37.83    16.23       4.315         15.41

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       304.07    16.23       4.315
     2       326.12    18.68       3.941

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    326.12   Tc(MIN.) =   18.68
  TOTAL AREA(ACRES) =    150.21
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2541.00 =  5746.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2541.00 TO NODE   2540.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   895.00  DOWNSTREAM(FEET) =   870.00
  FLOW LENGTH(FEET) =   510.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  38.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.36
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    326.12
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  18.98
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2540.00 =  6256.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2540.00 TO NODE   2540.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.98
  RAINFALL INTENSITY(INCH/HR) =   3.90
  TOTAL STREAM AREA(ACRES) =   150.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    326.12

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

```
  FLOW PROCESS FROM NODE   2540.30 TO NODE   2540.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1215.00
  DOWNSTREAM ELEVATION(FEET) =   1155.00
  ELEVATION DIFFERENCE(FEET) =     60.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.097
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.108
  SUBAREA RUNOFF(CFS) =      0.89
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.89

****************************************************************************
  FLOW PROCESS FROM NODE   2540.20 TO NODE   2540.10 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1155.00  DOWNSTREAM(FEET) =    900.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   705.00   CHANNEL SLOPE =  0.3617
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2073 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.89
  FLOW VELOCITY(FEET/SEC) =   2.55 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.61   Tc(MIN.) =   9.71
  LONGEST FLOWPATH FROM NODE   2540.30 TO NODE   2540.10 =   805.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2540.20 TO NODE   2540.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.012
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .5000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4998
  SUBAREA AREA(ACRES) =    8.70   SUBAREA RUNOFF(CFS) =   26.15
  TOTAL AREA(ACRES) =      8.90   TOTAL RUNOFF(CFS) =   26.74
  TC(MIN.) =   9.71

****************************************************************************
  FLOW PROCESS FROM NODE   2540.10 TO NODE   2540.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  900.00  DOWNSTREAM ELEVATION(FEET) =  885.00
  STREET LENGTH(FEET) =   655.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.16
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.71
  HALFSTREET FLOOD WIDTH(FEET) =   26.28
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.48
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.75
STREET FLOW TRAVEL TIME(MIN.) =   4.40   Tc(MIN.) =  14.10
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.724
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.631
SUBAREA AREA(ACRES) =    6.52      SUBAREA RUNOFF(CFS) =   24.95
TOTAL AREA(ACRES) =     15.42        PEAK FLOW RATE(CFS) =      45.96

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  27.87
FLOW VELOCITY(FEET/SEC.) =  2.63   DEPTH*VELOCITY(FT*FT/SEC.) =   1.94
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  655.0 FT WITH ELEVATION-DROP =  15.0 FT, IS   48.7 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   2540.00
LONGEST FLOWPATH FROM NODE   2540.30 TO NODE   2540.00 =  1460.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2540.00 TO NODE   2540.00 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.) =  14.10
RAINFALL INTENSITY(INCH/HR) =   4.72
TOTAL STREAM AREA(ACRES) =    15.42
PEAK FLOW RATE(CFS) AT CONFLUENCE =     45.96

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      326.12    18.98       3.900        150.21
    2       45.96    14.10       4.724         15.42

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

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      315.20    14.10       4.724
    2      364.06    18.98       3.900

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    364.06   Tc(MIN.) =   18.98
TOTAL AREA(ACRES) =    165.63
LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2540.00 =  6256.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2540.00 TO NODE   2503.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   885.00  DOWNSTREAM(FEET) =   840.00
  FLOW LENGTH(FEET) =   560.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  37.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  34.96
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    364.06
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =  19.25
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2503.00 =  6816.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2503.00 TO NODE   2503.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2529.20 TO NODE   2529.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1295.20
  DOWNSTREAM ELEVATION(FEET) =   1295.00
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      1.16
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      1.16

****************************************************************************
  FLOW PROCESS FROM NODE   2529.10 TO NODE   2529.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1295.00  DOWNSTREAM ELEVATION(FEET) = 1277.00
  STREET LENGTH(FEET) =   526.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.67
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   16.00
```

```
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.77
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.83
STREET FLOW TRAVEL TIME(MIN.) =   4.96   Tc(MIN.) =  10.26
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.802
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
SUBAREA AREA(ACRES) =     4.08      SUBAREA RUNOFF(CFS) =   18.23
TOTAL AREA(ACRES) =       4.25        PEAK FLOW RATE(CFS) =      18.99

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  18.23
FLOW VELOCITY(FEET/SEC.) =  2.21   DEPTH*VELOCITY(FT*FT/SEC.) =   1.20
LONGEST FLOWPATH FROM NODE   2529.20 TO NODE   2529.00 =   626.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2529.00 TO NODE   2527.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1271.00  DOWNSTREAM(FEET) =  1260.00
FLOW LENGTH(FEET) =   396.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  11.45
ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     18.99
PIPE TRAVEL TIME(MIN.) =   0.58    Tc(MIN.) =  10.83
LONGEST FLOWPATH FROM NODE   2529.20 TO NODE   2527.00 =  1022.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2527.00 TO NODE   2527.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  10.83
RAINFALL INTENSITY(INCH/HR) =   5.60
TOTAL STREAM AREA(ACRES) =     4.25
PEAK FLOW RATE(CFS) AT CONFLUENCE =     18.99

****************************************************************************
FLOW PROCESS FROM NODE   2528.20 TO NODE   2528.10 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
S.C.S. CURVE NUMBER (AMC II) =   0
INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
UPSTREAM ELEVATION(FEET) =   1293.40
DOWNSTREAM ELEVATION(FEET) =   1293.20
ELEVATION DIFFERENCE(FEET) =      0.20
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.131
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.068
SUBAREA RUNOFF(CFS) =      0.85
TOTAL AREA(ACRES) =      0.12   TOTAL RUNOFF(CFS) =      0.85
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2528.10 TO NODE   2528.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1293.20  DOWNSTREAM ELEVATION(FEET) = 1282.00
  STREET LENGTH(FEET) =   335.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.18
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.45
    HALFSTREET FLOOD WIDTH(FEET) =   16.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.66
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.75
  STREET FLOW TRAVEL TIME(MIN.) =   3.36   Tc(MIN.) =   8.50
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.551
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =     3.14      SUBAREA RUNOFF(CFS) =   16.25
  TOTAL AREA(ACRES) =       3.26        PEAK FLOW RATE(CFS) =      16.86

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  17.43
  FLOW VELOCITY(FEET/SEC.) =  2.10   DEPTH*VELOCITY(FT*FT/SEC.) =   1.11
  LONGEST FLOWPATH FROM NODE   2528.20 TO NODE   2528.00 =   435.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2528.00 TO NODE   2527.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1276.00  DOWNSTREAM(FEET) =  1260.00
  FLOW LENGTH(FEET) =   266.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.92
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     16.86
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =   8.79
  LONGEST FLOWPATH FROM NODE   2528.20 TO NODE   2527.00 =   701.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2527.00 TO NODE   2527.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
```

```
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.79
  RAINFALL INTENSITY(INCH/HR) =   6.41
  TOTAL STREAM AREA(ACRES) =     3.26
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.86

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       18.99    10.83        5.601          4.25
      2       16.86     8.79        6.407          3.26

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       32.28     8.79       6.407
      2       33.73    10.83       5.601

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     33.73   Tc(MIN.) =   10.83
  TOTAL AREA(ACRES) =      7.51
  LONGEST FLOWPATH FROM NODE   2529.20 TO NODE   2527.00 =  1022.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2527.00 TO NODE   2526.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1260.00  DOWNSTREAM(FEET) =  1257.00
  FLOW LENGTH(FEET) =   191.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.50
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     33.73
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  11.13
  LONGEST FLOWPATH FROM NODE   2529.20 TO NODE   2526.00 =  1213.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2527.00 TO NODE   2526.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.502
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7756
  SUBAREA AREA(ACRES) =    3.98   SUBAREA RUNOFF(CFS) =   16.86
  TOTAL AREA(ACRES) =     11.49   TOTAL RUNOFF(CFS) =   49.03
  TC(MIN.) =  11.13

****************************************************************************
  FLOW PROCESS FROM NODE   2526.00 TO NODE   2526.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.13
```

```
  RAINFALL INTENSITY(INCH/HR) =   5.50
  TOTAL STREAM AREA(ACRES) =    11.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     49.03

****************************************************************************
  FLOW PROCESS FROM NODE   2526.50 TO NODE   2526.40 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1324.00
  DOWNSTREAM ELEVATION(FEET) =   1323.80
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      1.51
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      1.51

****************************************************************************
  FLOW PROCESS FROM NODE   2526.40 TO NODE   2526.30 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1323.80  DOWNSTREAM ELEVATION(FEET) = 1296.00
  STREET LENGTH(FEET) =   630.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.23
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.44
    HALFSTREET FLOOD WIDTH(FEET) =   15.53
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.80
  STREET FLOW TRAVEL TIME(MIN.) =   5.75   Tc(MIN.) =  11.04
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.531
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =     3.47      SUBAREA RUNOFF(CFS) =   14.78
  TOTAL AREA(ACRES) =      3.69        PEAK FLOW RATE(CFS) =      15.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  16.00
  FLOW VELOCITY(FEET/SEC.) =  2.23   DEPTH*VELOCITY(FT*FT/SEC.) =   1.11
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2526.30 =   730.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2526.30 TO NODE   2526.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1296.00  DOWNSTREAM(FEET) =  1270.00
  FLOW LENGTH(FEET) =   440.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.59
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     15.72
  PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =  11.55
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2526.20 =  1170.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2526.30 TO NODE   2526.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.375
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7700
  SUBAREA AREA(ACRES) =    3.81   SUBAREA RUNOFF(CFS) =   15.77
  TOTAL AREA(ACRES) =      7.50   TOTAL RUNOFF(CFS) =   31.04
  TC(MIN.) =  11.55

****************************************************************************
  FLOW PROCESS FROM NODE   2526.20 TO NODE   2526.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1270.00  DOWNSTREAM(FEET) =  1258.00
  FLOW LENGTH(FEET) =   470.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  12.36
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     31.04
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =  12.18
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2526.10 =  1640.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2526.20 TO NODE   2526.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.193
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7738
  SUBAREA AREA(ACRES) =    4.65   SUBAREA RUNOFF(CFS) =   18.83
  TOTAL AREA(ACRES) =     12.15   TOTAL RUNOFF(CFS) =   48.82
  TC(MIN.) =  12.18

****************************************************************************
  FLOW PROCESS FROM NODE   2526.10 TO NODE   2526.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1258.00  DOWNSTREAM(FEET) =  1252.00
  FLOW LENGTH(FEET) =   175.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  20.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.48
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     48.82
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =  12.37
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2526.00 =  1815.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2526.00 TO NODE   2526.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.37
  RAINFALL INTENSITY(INCH/HR) =   5.14
  TOTAL STREAM AREA(ACRES) =    12.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     48.82

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       49.03    11.13        5.502         11.49
     2       48.82    12.37        5.141         12.15

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       92.98    11.13       5.502
     2       94.64    12.37       5.141

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     94.64   Tc(MIN.) =   12.37
  TOTAL AREA(ACRES) =     23.64
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2526.00 =  1815.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2526.00 TO NODE   2522.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1252.00  DOWNSTREAM(FEET) =  1240.00
  FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.95
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     94.64
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =  12.54
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2522.00 =  2035.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2522.00 TO NODE   2522.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
```

```
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE   2524.20 TO NODE   2524.10 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1324.20
  DOWNSTREAM ELEVATION(FEET) =   1324.00
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      1.16
  TOTAL AREA(ACRES) =      0.17   TOTAL RUNOFF(CFS) =      1.16

******************************************************************************
  FLOW PROCESS FROM NODE   2524.10 TO NODE   2524.00 IS CODE =  61
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1324.00  DOWNSTREAM ELEVATION(FEET) = 1316.50
  STREET LENGTH(FEET) =   345.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.39
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.36
    HALFSTREET FLOOD WIDTH(FEET) =   11.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.10
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.40
  STREET FLOW TRAVEL TIME(MIN.) =   5.22   Tc(MIN.) =  10.51
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.710
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.779
  SUBAREA AREA(ACRES) =    0.98      SUBAREA RUNOFF(CFS) =    4.36
  TOTAL AREA(ACRES) =      1.15        PEAK FLOW RATE(CFS) =       5.11

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.41   HALFSTREET FLOOD WIDTH(FEET) =  14.15
  FLOW VELOCITY(FEET/SEC.) =  1.21   DEPTH*VELOCITY(FT*FT/SEC.) =   0.49
  LONGEST FLOWPATH FROM NODE   2524.20 TO NODE   2524.00 =   445.00 FEET.

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

```
  FLOW PROCESS FROM NODE   2524.00 TO NODE   2523.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1310.00  DOWNSTREAM(FEET) =  1264.00
  FLOW LENGTH(FEET) =   732.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.11
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      5.11
  PIPE TRAVEL TIME(MIN.) =   1.10    Tc(MIN.) =  11.61
  LONGEST FLOWPATH FROM NODE   2524.20 TO NODE   2523.00 =  1177.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2523.00 TO NODE   2523.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.61
  RAINFALL INTENSITY(INCH/HR) =   5.36
  TOTAL STREAM AREA(ACRES) =     1.15
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.11

****************************************************************************
  FLOW PROCESS FROM NODE   2525.20 TO NODE   2525.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1320.40
  DOWNSTREAM ELEVATION(FEET) =   1320.20
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      0.89
  TOTAL AREA(ACRES) =      0.13   TOTAL RUNOFF(CFS) =      0.89

****************************************************************************
  FLOW PROCESS FROM NODE   2512.10 TO NODE   2525.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1320.20  DOWNSTREAM ELEVATION(FEET) = 1311.00
  STREET LENGTH(FEET) =   370.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.43
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.41
  HALFSTREET FLOOD WIDTH(FEET) =   14.07
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.30
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.53
STREET FLOW TRAVEL TIME(MIN.) =   4.76   Tc(MIN.) =  10.05
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.877
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
SUBAREA AREA(ACRES) =    1.96      SUBAREA RUNOFF(CFS) =    8.87
TOTAL AREA(ACRES) =      2.09        PEAK FLOW RATE(CFS) =       9.46

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.47   HALFSTREET FLOOD WIDTH(FEET) =  16.00
FLOW VELOCITY(FEET/SEC.) =  1.54   DEPTH*VELOCITY(FT*FT/SEC.) =   0.72
LONGEST FLOWPATH FROM NODE   2525.20 TO NODE   2525.00 =   470.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2525.00 TO NODE   2523.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1311.00  DOWNSTREAM(FEET) =  1264.00
FLOW LENGTH(FEET) =   545.00   MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  14.77
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      9.46
PIPE TRAVEL TIME(MIN.) =   0.61    Tc(MIN.) =  10.67
LONGEST FLOWPATH FROM NODE   2525.20 TO NODE   2523.00 =  1015.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2523.00 TO NODE   2523.00 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.) =  10.67
RAINFALL INTENSITY(INCH/HR) =   5.66
TOTAL STREAM AREA(ACRES) =     2.09
PEAK FLOW RATE(CFS) AT CONFLUENCE =      9.46

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1        5.11    11.61        5.355         1.15
    2        9.46    10.67        5.657         2.09

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

** PEAK FLOW RATE TABLE **
```

```
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1        14.15    10.67       5.657
     2        14.07    11.61       5.355

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     14.15   Tc(MIN.) =   10.67
  TOTAL AREA(ACRES) =      3.24
  LONGEST FLOWPATH FROM NODE   2524.20 TO NODE   2523.00 =  1177.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2524.00 TO NODE   2523.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.657
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7776
  SUBAREA AREA(ACRES) =    6.14   SUBAREA RUNOFF(CFS) =   27.09
  TOTAL AREA(ACRES) =      9.38   TOTAL RUNOFF(CFS) =   41.26
  TC(MIN.) =  10.67

****************************************************************************
  FLOW PROCESS FROM NODE   2523.00 TO NODE   2522.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1264.00  DOWNSTREAM(FEET) =  1240.00
  FLOW LENGTH(FEET) =   430.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.98
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     41.26
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =  11.07
  LONGEST FLOWPATH FROM NODE   2524.20 TO NODE   2522.00 =  1607.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2523.00 TO NODE   2522.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.524
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7756
  SUBAREA AREA(ACRES) =    3.38   SUBAREA RUNOFF(CFS) =   14.38
  TOTAL AREA(ACRES) =     12.76   TOTAL RUNOFF(CFS) =   54.67
  TC(MIN.) =  11.07

****************************************************************************
  FLOW PROCESS FROM NODE   2522.00 TO NODE   2522.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
     1        54.67    11.07       5.524       12.76
```

```
  LONGEST FLOWPATH FROM NODE   2524.20 TO NODE   2522.00 =  1607.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
     1       94.64     12.54        5.097       23.64
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2522.00 =  2035.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc       INTENSITY
  NUMBER     (CFS)     (MIN.)    (INCH/HOUR)
     1      138.20      11.07        5.524
     2      145.08      12.54        5.097

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    145.08   Tc(MIN.) =   12.54
  TOTAL AREA(ACRES) =     36.40

****************************************************************************
  FLOW PROCESS FROM NODE   2522.00 TO NODE   2522.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2522.00 TO NODE   2520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1240.00  DOWNSTREAM(FEET) =  1230.00
  FLOW LENGTH(FEET) =   150.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.11
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    145.08
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  12.63
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2520.00 =  2185.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2520.00 TO NODE   2520.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.63
  RAINFALL INTENSITY(INCH/HR) =   5.07
  TOTAL STREAM AREA(ACRES) =    36.40
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    145.08

****************************************************************************
  FLOW PROCESS FROM NODE   2521.20 TO NODE   2521.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1370.00
  DOWNSTREAM ELEVATION(FEET) =   1366.00
  ELEVATION DIFFERENCE(FEET) =      4.00
```

```
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.316
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    95.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.14
  TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      2.14

****************************************************************************
  FLOW PROCESS FROM NODE   2521.10 TO NODE   2521.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1366.00  DOWNSTREAM ELEVATION(FEET) = 1285.00
  STREET LENGTH(FEET) =  1015.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.24
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.38
    HALFSTREET FLOOD WIDTH(FEET) =   12.52
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.15
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.81
  STREET FLOW TRAVEL TIME(MIN.) =   7.87   Tc(MIN.) =  11.19
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.485
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.809
  SUBAREA AREA(ACRES) =    2.21      SUBAREA RUNOFF(CFS) =    9.82
  TOTAL AREA(ACRES) =      2.50        PEAK FLOW RATE(CFS) =      11.09

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.42   HALFSTREET FLOOD WIDTH(FEET) =  14.84
  FLOW VELOCITY(FEET/SEC.) =  2.39   DEPTH*VELOCITY(FT*FT/SEC.) =   1.01
  LONGEST FLOWPATH FROM NODE   2521.20 TO NODE   2521.00 =  1115.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2521.00 TO NODE   2520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1280.00  DOWNSTREAM(FEET) =  1230.00
  FLOW LENGTH(FEET) =   810.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.63
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     11.09
  PIPE TRAVEL TIME(MIN.) =   0.99    Tc(MIN.) =  12.18
```

```
  LONGEST FLOWPATH FROM NODE   2521.20 TO NODE   2520.00 =  1925.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2521.00 TO NODE   2520.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.193
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.8094
  SUBAREA AREA(ACRES) =     2.18   SUBAREA RUNOFF(CFS) =     9.17
  TOTAL AREA(ACRES) =       4.68   TOTAL RUNOFF(CFS) =    19.67
  TC(MIN.) =  12.18

****************************************************************************
  FLOW PROCESS FROM NODE   2520.00 TO NODE   2520.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  12.18
  RAINFALL INTENSITY(INCH/HR) =   5.19
  TOTAL STREAM AREA(ACRES) =     4.68
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     19.67

****************************************************************************
  FLOW PROCESS FROM NODE   2535.00 TO NODE   2534.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1310.00
  DOWNSTREAM ELEVATION(FEET) =   1309.80
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.971
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.33
  TOTAL AREA(ACRES) =      0.32   TOTAL RUNOFF(CFS) =      2.33

****************************************************************************
  FLOW PROCESS FROM NODE   2534.00 TO NODE   2533.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1309.80  DOWNSTREAM ELEVATION(FEET) = 1290.00
  STREET LENGTH(FEET) =   480.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.64
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   16.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.23
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.14
  STREET FLOW TRAVEL TIME(MIN.) =   3.58   Tc(MIN.) =   8.55
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.522
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.781
  SUBAREA AREA(ACRES) =     5.47      SUBAREA RUNOFF(CFS) =   27.83
  TOTAL AREA(ACRES) =       5.79        PEAK FLOW RATE(CFS) =      29.48

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  20.97
  FLOW VELOCITY(FEET/SEC.) =  2.74   DEPTH*VELOCITY(FT*FT/SEC.) =   1.64
  LONGEST FLOWPATH FROM NODE   2535.00 TO NODE   2533.00 =   580.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2533.00 TO NODE   2531.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1283.00  DOWNSTREAM(FEET) =  1267.00
  FLOW LENGTH(FEET) =   305.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.09
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     29.48
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   8.87
  LONGEST FLOWPATH FROM NODE   2535.00 TO NODE   2531.00 =   885.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2533.00 TO NODE   2531.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.371
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7769
  SUBAREA AREA(ACRES) =     3.04   SUBAREA RUNOFF(CFS) =   14.91
  TOTAL AREA(ACRES) =       8.83   TOTAL RUNOFF(CFS) =   43.71
  TC(MIN.) =   8.87

****************************************************************************
  FLOW PROCESS FROM NODE   2531.00 TO NODE   2530.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1267.00  DOWNSTREAM(FEET) =  1265.00
```

```
  FLOW LENGTH(FEET) =    70.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  27.0 INCH PIPE IS  19.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.09
  ESTIMATED PIPE DIAMETER(INCH) =  27.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     43.71
  PIPE TRAVEL TIME(MIN.) =   0.08    Tc(MIN.) =   8.95
  LONGEST FLOWPATH FROM NODE   2535.00 TO NODE   2530.00 =   955.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2530.00 TO NODE   2520.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1265.00  DOWNSTREAM(FEET) =  1230.00
  FLOW LENGTH(FEET) =   615.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.30
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     43.71
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =   9.51
  LONGEST FLOWPATH FROM NODE   2535.00 TO NODE   2520.00 =  1570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2520.10 TO NODE   2520.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.090
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7829
  SUBAREA AREA(ACRES) =    3.10   SUBAREA RUNOFF(CFS) =   15.10
  TOTAL AREA(ACRES) =     11.93   TOTAL RUNOFF(CFS) =   56.88
  TC(MIN.) =   9.51

****************************************************************************
  FLOW PROCESS FROM NODE   2520.00 TO NODE   2520.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.51
  RAINFALL INTENSITY(INCH/HR) =   6.09
  TOTAL STREAM AREA(ACRES) =    11.93
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     56.88

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       145.08    12.63        5.072         36.40
     2        19.67    12.18        5.193          4.68
     3        56.88     9.51        6.090         11.93

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

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

```
     1      181.51     9.51       6.090
     2      208.04    12.18       5.193
     3      211.67    12.63       5.072

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    211.67   Tc(MIN.) =   12.63
  TOTAL AREA(ACRES) =     53.01
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2520.00 =  2185.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2520.00 TO NODE   2512.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1230.00  DOWNSTREAM(FEET) =  1115.00
  FLOW LENGTH(FEET) =   565.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  25.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  43.31
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    211.67
  PIPE TRAVEL TIME(MIN.) =   0.22    Tc(MIN.) =  12.85
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2512.00 =  2750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2512.00 TO NODE   2512.00 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.) =  12.85
  RAINFALL INTENSITY(INCH/HR) =   5.02
  TOTAL STREAM AREA(ACRES) =    53.01
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    211.67

****************************************************************************
  FLOW PROCESS FROM NODE   2512.30 TO NODE   2512.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1600.00
  DOWNSTREAM ELEVATION(FEET) =   1575.00
  ELEVATION DIFFERENCE(FEET) =     25.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.972
  SUBAREA RUNOFF(CFS) =      0.75
  TOTAL AREA(ACRES) =      0.27   TOTAL RUNOFF(CFS) =      0.75

****************************************************************************
  FLOW PROCESS FROM NODE   2512.20 TO NODE   2512.10 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1575.00  DOWNSTREAM(FEET) =   1385.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   691.00   CHANNEL SLOPE =  0.2750
  SLOPE ADJUSTMENT CURVE USED:
```

```
  EFFECTIVE SLOPE = .1883 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.75
  FLOW VELOCITY(FEET/SEC) =   2.43 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.74   Tc(MIN.) =  11.01
  LONGEST FLOWPATH FROM NODE   2512.30 TO NODE   2512.10 =   791.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2512.20 TO NODE   2512.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.544
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    4.03   SUBAREA RUNOFF(CFS) =    7.82
  TOTAL AREA(ACRES) =      4.30   TOTAL RUNOFF(CFS) =    8.34
  TC(MIN.) =  11.01

****************************************************************************
  FLOW PROCESS FROM NODE   2512.10 TO NODE   2512.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1385.00  DOWNSTREAM(FEET) =   1115.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1165.00   CHANNEL SLOPE =  0.2318
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1739 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      8.34
  FLOW VELOCITY(FEET/SEC) =   4.73 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.10   Tc(MIN.) =  15.11
  LONGEST FLOWPATH FROM NODE   2512.30 TO NODE   2512.00 =  1956.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2512.10 TO NODE   2512.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.519
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7154
  SUBAREA AREA(ACRES) =   28.76   SUBAREA RUNOFF(CFS) =  100.08
  TOTAL AREA(ACRES) =     33.06   TOTAL RUNOFF(CFS) =  106.88
  TC(MIN.) =  15.11

****************************************************************************
  FLOW PROCESS FROM NODE   2512.00 TO NODE   2512.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.11
  RAINFALL INTENSITY(INCH/HR) =   4.52
  TOTAL STREAM AREA(ACRES) =    33.06
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    106.88
```

```
** CONFLUENCE DATA **
STREAM      RUNOFF      Tc       INTENSITY      AREA
NUMBER       (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1       211.67    12.85        5.017         53.01
    2       106.88    15.11        4.519         33.06

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc       INTENSITY
NUMBER       (CFS)    (MIN.)   (INCH/HOUR)
    1       302.57    12.85        5.017
    2       297.56    15.11        4.519

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    302.57   Tc(MIN.) =   12.85
TOTAL AREA(ACRES) =     86.07
LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2512.00 =  2750.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2512.00 TO NODE   2511.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1115.00  DOWNSTREAM(FEET) =   1070.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   430.00   CHANNEL SLOPE =  0.1047
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1035 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =    302.57
FLOW VELOCITY(FEET/SEC) =  12.07 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   0.59   Tc(MIN.) =  13.44
LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2511.00 =  3180.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2511.00 TO NODE   2510.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1070.00  DOWNSTREAM(FEET) =    960.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   725.00   CHANNEL SLOPE =  0.1517
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .1359 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =    302.57
FLOW VELOCITY(FEET/SEC) =  13.83 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   0.87   Tc(MIN.) =  14.32
LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2510.00 =  3905.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2511.00 TO NODE   2510.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.679
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.6305
SUBAREA AREA(ACRES) =   34.52   SUBAREA RUNOFF(CFS) =   51.68
TOTAL AREA(ACRES) =    120.59   TOTAL RUNOFF(CFS) =  355.74
TC(MIN.) =  14.32
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2510.00 TO NODE   2508.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   960.00  DOWNSTREAM(FEET) =   918.00
  FLOW LENGTH(FEET) =   261.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  32.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  45.20
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    355.74
  PIPE TRAVEL TIME(MIN.) =   0.10    Tc(MIN.) =  14.41
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2508.10 =  4166.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2508.10 TO NODE   2508.10 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.) =  14.41
  RAINFALL INTENSITY(INCH/HR) =   4.66
  TOTAL STREAM AREA(ACRES) =   120.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    355.74

****************************************************************************
  FLOW PROCESS FROM NODE   2508.40 TO NODE   2508.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1300.00
  DOWNSTREAM ELEVATION(FEET) =   1250.00
  ELEVATION DIFFERENCE(FEET) =     50.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.972
  SUBAREA RUNOFF(CFS) =      0.89
  TOTAL AREA(ACRES) =      0.32   TOTAL RUNOFF(CFS) =      0.89

****************************************************************************
  FLOW PROCESS FROM NODE   2508.30 TO NODE   2508.20 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1250.00  DOWNSTREAM(FEET) =   1125.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   340.00   CHANNEL SLOPE =  0.3676
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2083 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.89
  FLOW VELOCITY(FEET/SEC) =   2.56 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.22   Tc(MIN.) =   8.48
  LONGEST FLOWPATH FROM NODE   2508.40 TO NODE   2508.20 =   440.00 FEET.

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

```
  FLOW PROCESS FROM NODE   2508.30 TO NODE   2508.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.557
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3146
  SUBAREA AREA(ACRES) =    2.47   SUBAREA RUNOFF(CFS) =    5.02
  TOTAL AREA(ACRES) =      2.79   TOTAL RUNOFF(CFS) =    5.76
  TC(MIN.) =   8.48

****************************************************************************
  FLOW PROCESS FROM NODE   2508.20 TO NODE   2508.10 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1125.00  DOWNSTREAM(FEET) =    950.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   515.00   CHANNEL SLOPE =  0.3398
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2035 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      5.76
  FLOW VELOCITY(FEET/SEC) =   4.52 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.90   Tc(MIN.) =  10.38
  LONGEST FLOWPATH FROM NODE   2508.40 TO NODE   2508.10 =   955.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2508.20 TO NODE   2508.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.757
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2815
  SUBAREA AREA(ACRES) =    8.05   SUBAREA RUNOFF(CFS) =   12.51
  TOTAL AREA(ACRES) =     10.84   TOTAL RUNOFF(CFS) =   17.56
  TC(MIN.) =  10.38

****************************************************************************
  FLOW PROCESS FROM NODE   2508.10 TO NODE   2508.10 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.) =  10.38
  RAINFALL INTENSITY(INCH/HR) =   5.76
  TOTAL STREAM AREA(ACRES) =    10.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.56

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       355.74    14.41        4.658        120.59
     2        17.56    10.38        5.757         10.84

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

```
  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       305.44    10.38       5.757
     2       369.95    14.41       4.658

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    369.95   Tc(MIN.) =   14.41
  TOTAL AREA(ACRES) =    131.43
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2508.10 =  4166.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2508.10 TO NODE   2508.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   918.00  DOWNSTREAM(FEET) =   915.00
  FLOW LENGTH(FEET) =   245.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  69.0 INCH PIPE IS  52.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.36
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    369.95
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =  14.65
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2508.00 =  4411.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2508.00 TO NODE   2508.00 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.) =  14.65
  RAINFALL INTENSITY(INCH/HR) =   4.61
  TOTAL STREAM AREA(ACRES) =   131.43
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    369.95

****************************************************************************
  FLOW PROCESS FROM NODE   2509.40 TO NODE   2509.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1600.00
  DOWNSTREAM ELEVATION(FEET) =   1575.00
  ELEVATION DIFFERENCE(FEET) =     25.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.972
  SUBAREA RUNOFF(CFS) =      1.14
  TOTAL AREA(ACRES) =      0.41   TOTAL RUNOFF(CFS) =      1.14

****************************************************************************
  FLOW PROCESS FROM NODE   2509.30 TO NODE   2509.20 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   1575.00  DOWNSTREAM(FEET) =   1375.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   287.00   CHANNEL SLOPE =  0.6969
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2300 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      1.14
  FLOW VELOCITY(FEET/SEC) =   2.81 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =   7.97
  LONGEST FLOWPATH FROM NODE   2509.40 TO NODE   2509.20 =   387.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2509.30 TO NODE   2509.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.827
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    2.22   SUBAREA RUNOFF(CFS) =    5.30
  TOTAL AREA(ACRES) =      2.63   TOTAL RUNOFF(CFS) =    6.28
  TC(MIN.) =   7.97

****************************************************************************
  FLOW PROCESS FROM NODE   2509.20 TO NODE   2509.10 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1375.00  DOWNSTREAM(FEET) =   1060.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   840.00   CHANNEL SLOPE =  0.3750
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2096 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      6.28
  FLOW VELOCITY(FEET/SEC) =   4.73 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.96   Tc(MIN.) =  10.93
  LONGEST FLOWPATH FROM NODE   2509.40 TO NODE   2509.10 =  1227.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2509.20 TO NODE   2509.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.568
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3400
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3410
  SUBAREA AREA(ACRES) =   24.69   SUBAREA RUNOFF(CFS) =   46.74
  TOTAL AREA(ACRES) =     27.32   TOTAL RUNOFF(CFS) =   51.87
  TC(MIN.) =  10.93

****************************************************************************
  FLOW PROCESS FROM NODE   2509.10 TO NODE   2509.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1060.00  DOWNSTREAM(FEET) =    930.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   957.00   CHANNEL SLOPE =  0.1358
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1256 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     51.87
```

```
  FLOW VELOCITY(FEET/SEC) =   7.39 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.16   Tc(MIN.) =  13.09
  LONGEST FLOWPATH FROM NODE   2509.40 TO NODE   2509.00 =  2184.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2509.10 TO NODE   2509.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.957
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3224
  SUBAREA AREA(ACRES) =   40.97   SUBAREA RUNOFF(CFS) =   62.96
  TOTAL AREA(ACRES) =     68.29   TOTAL RUNOFF(CFS) =  109.14
  TC(MIN.) =  13.09

****************************************************************************
  FLOW PROCESS FROM NODE   2509.00 TO NODE   2508.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   930.00  DOWNSTREAM(FEET) =   915.00
  FLOW LENGTH(FEET) =   575.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.16
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    109.14
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =  13.65
  LONGEST FLOWPATH FROM NODE   2509.40 TO NODE   2508.00 =  2759.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2508.00 TO NODE   2508.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.65
  RAINFALL INTENSITY(INCH/HR) =   4.83
  TOTAL STREAM AREA(ACRES) =    68.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    109.14

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      369.95    14.65        4.610        131.43
     2      109.14    13.65        4.825         68.29

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      462.58    13.65       4.825
     2      474.22    14.65       4.610

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    474.22   Tc(MIN.) =   14.65
```

```
  TOTAL AREA(ACRES) =     199.72
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2508.00 =  4411.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2508.00 TO NODE   2507.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   915.00  DOWNSTREAM(FEET) =   905.00
  FLOW LENGTH(FEET) =   534.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  69.0 INCH PIPE IS  54.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.53
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    474.22
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =  15.06
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2507.00 =  4945.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2508.00 TO NODE   2507.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.528
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5208
  SUBAREA AREA(ACRES) =   10.06   SUBAREA RUNOFF(CFS) =   36.90
  TOTAL AREA(ACRES) =    209.78   TOTAL RUNOFF(CFS) =  494.69
  TC(MIN.) =  15.06

****************************************************************************
  FLOW PROCESS FROM NODE   2507.00 TO NODE   2507.00 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.) =  15.06
  RAINFALL INTENSITY(INCH/HR) =   4.53
  TOTAL STREAM AREA(ACRES) =   209.78
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    494.69

****************************************************************************
  FLOW PROCESS FROM NODE   2507.40 TO NODE   2507.30 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1125.00
  DOWNSTREAM ELEVATION(FEET) =   1105.00
  ELEVATION DIFFERENCE(FEET) =     20.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.647
  SUBAREA RUNOFF(CFS) =      2.41
  TOTAL AREA(ACRES) =      1.05   TOTAL RUNOFF(CFS) =      2.41

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

```
  FLOW PROCESS FROM NODE   2507.30 TO NODE   2507.20 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1105.00  DOWNSTREAM(FEET) =    975.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   295.00   CHANNEL SLOPE =  0.4407
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2189 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      2.41
  FLOW VELOCITY(FEET/SEC) =   3.51 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.40   Tc(MIN.) =   8.08
  LONGEST FLOWPATH FROM NODE   2507.40 TO NODE   2507.20 =   395.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2507.30 TO NODE   2507.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.764
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3000
  SUBAREA AREA(ACRES) =    2.32   SUBAREA RUNOFF(CFS) =    4.71
  TOTAL AREA(ACRES) =      3.37   TOTAL RUNOFF(CFS) =    6.84
  TC(MIN.) =   8.08

****************************************************************************
  FLOW PROCESS FROM NODE   2507.20 TO NODE   2507.10 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    975.00  DOWNSTREAM(FEET) =    925.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   240.00   CHANNEL SLOPE =  0.2083
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1642 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      6.84
  FLOW VELOCITY(FEET/SEC) =   4.30 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =   9.01
  LONGEST FLOWPATH FROM NODE   2507.40 TO NODE   2507.10 =   635.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2507.20 TO NODE   2507.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.305
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2931
  SUBAREA AREA(ACRES) =    7.52   SUBAREA RUNOFF(CFS) =   13.75
  TOTAL AREA(ACRES) =     10.89   TOTAL RUNOFF(CFS) =   20.13
  TC(MIN.) =   9.01

****************************************************************************
  FLOW PROCESS FROM NODE   2507.10 TO NODE   2507.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   925.00  DOWNSTREAM(FEET) =   905.00
  FLOW LENGTH(FEET) =   370.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.77
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     20.13
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   9.43
  LONGEST FLOWPATH FROM NODE   2507.40 TO NODE   2507.00 =  1005.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2507.00 TO NODE   2507.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   9.43
  RAINFALL INTENSITY(INCH/HR) =   6.12
  TOTAL STREAM AREA(ACRES) =    10.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     20.13

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      494.69    15.06        4.528        209.78
     2       20.13     9.43        6.124         10.89

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      385.90     9.43       6.124
     2      509.57    15.06       4.528

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    509.57   Tc(MIN.) =   15.06
  TOTAL AREA(ACRES) =    220.67
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2507.00 =  4945.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2507.00 TO NODE   2506.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   905.00  DOWNSTREAM(FEET) =   890.00
  FLOW LENGTH(FEET) =   555.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  52.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.12
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    509.57
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =  15.43
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2506.00 =  5500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2507.00 TO NODE   2506.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.458
```

```
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5173
  SUBAREA AREA(ACRES) =    5.84   SUBAREA RUNOFF(CFS) =   21.09
  TOTAL AREA(ACRES) =    226.51   TOTAL RUNOFF(CFS) =  522.36
  TC(MIN.) =  15.43

****************************************************************************
  FLOW PROCESS FROM NODE   2506.10 TO NODE   2506.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.458
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5115
  SUBAREA AREA(ACRES) =    5.44   SUBAREA RUNOFF(CFS) =    6.55
  TOTAL AREA(ACRES) =    231.95   TOTAL RUNOFF(CFS) =  528.91
  TC(MIN.) =  15.43

****************************************************************************
  FLOW PROCESS FROM NODE   2506.00 TO NODE   2504.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   890.00  DOWNSTREAM(FEET) =   840.00
  FLOW LENGTH(FEET) =   500.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  39.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  41.96
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    528.91
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  15.63
  LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2504.00 =  6000.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2506.00 TO NODE   2504.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.421
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5245
  SUBAREA AREA(ACRES) =   10.93   SUBAREA RUNOFF(CFS) =   38.66
  TOTAL AREA(ACRES) =    242.88   TOTAL RUNOFF(CFS) =  563.23
  TC(MIN.) =  15.63

****************************************************************************
  FLOW PROCESS FROM NODE   2504.00 TO NODE   2504.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.63
  RAINFALL INTENSITY(INCH/HR) =   4.42
  TOTAL STREAM AREA(ACRES) =   242.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    563.23
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2503.30 TO NODE   2503.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1180.00
  DOWNSTREAM ELEVATION(FEET) =   1140.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.647
  SUBAREA RUNOFF(CFS) =      0.76
  TOTAL AREA(ACRES) =      0.33   TOTAL RUNOFF(CFS) =      0.76

****************************************************************************
  FLOW PROCESS FROM NODE   2503.20 TO NODE   2503.10 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =    875.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   560.00   CHANNEL SLOPE =  0.4732
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2223 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.76
  FLOW VELOCITY(FEET/SEC) =   2.64 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.53   Tc(MIN.) =  10.22
  LONGEST FLOWPATH FROM NODE   2503.30 TO NODE   2503.10 =   660.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2503.20 TO NODE   2503.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.815
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2903
  SUBAREA AREA(ACRES) =   10.14   SUBAREA RUNOFF(CFS) =   17.10
  TOTAL AREA(ACRES) =     10.47   TOTAL RUNOFF(CFS) =   17.68
  TC(MIN.) =  10.22

****************************************************************************
  FLOW PROCESS FROM NODE   2503.10 TO NODE   2504.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    875.00  DOWNSTREAM(FEET) =    840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   310.00   CHANNEL SLOPE =  0.1129
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1097 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     17.68
  FLOW VELOCITY(FEET/SEC) =   4.83 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =  11.29
  LONGEST FLOWPATH FROM NODE   2503.30 TO NODE   2504.00 =   970.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2504.00 TO NODE   2504.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.29
  RAINFALL INTENSITY(INCH/HR) =   5.45
  TOTAL STREAM AREA(ACRES) =    10.47
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.68

****************************************************************************
  FLOW PROCESS FROM NODE   2505.20 TO NODE   2505.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1190.00
  DOWNSTREAM ELEVATION(FEET) =   1150.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =      0.55
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.55

****************************************************************************
  FLOW PROCESS FROM NODE   2505.10 TO NODE   2505.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1150.00  DOWNSTREAM(FEET) =    925.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   781.00   CHANNEL SLOPE =  0.2881
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1920 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.55
  FLOW VELOCITY(FEET/SEC) =   2.45 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   5.30   Tc(MIN.) =  12.41
  LONGEST FLOWPATH FROM NODE   2505.20 TO NODE   2505.00 =   881.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2505.10 TO NODE   2505.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.131
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2598
  SUBAREA AREA(ACRES) =   13.57   SUBAREA RUNOFF(CFS) =   18.10
  TOTAL AREA(ACRES) =     13.87   TOTAL RUNOFF(CFS) =   18.49
  TC(MIN.) =  12.41

****************************************************************************
  FLOW PROCESS FROM NODE   2505.00 TO NODE   2504.00 IS CODE =  61
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) =  880.00  DOWNSTREAM ELEVATION(FEET) =  860.00
  STREET LENGTH(FEET) =   875.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.97
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   24.33
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.54
  STREET FLOW TRAVEL TIME(MIN.) =   6.29   Tc(MIN.) =  18.70
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.938
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.471
  SUBAREA AREA(ACRES) =    8.63      SUBAREA RUNOFF(CFS) =   27.53
  TOTAL AREA(ACRES) =     22.50        PEAK FLOW RATE(CFS) =      41.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  26.89
  FLOW VELOCITY(FEET/SEC.) =  2.54   DEPTH*VELOCITY(FT*FT/SEC.) =   1.82
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  875.0 FT WITH ELEVATION-DROP =  20.0 FT, IS   64.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   2504.00
  LONGEST FLOWPATH FROM NODE   2505.20 TO NODE   2504.00 =  1756.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2504.00 TO NODE   2504.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.70
  RAINFALL INTENSITY(INCH/HR) =   3.94
  TOTAL STREAM AREA(ACRES) =    22.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     41.72

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       563.23    15.63        4.421        242.88
     2        17.68    11.29        5.453         10.47
     3        41.72    18.70        3.938         22.50

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.
```

```
** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc       INTENSITY
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)
    1      499.52    11.29        5.453
    2      612.43    15.63        4.421
    3      556.18    18.70        3.938

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    612.43   Tc(MIN.) =   15.63
TOTAL AREA(ACRES) =    275.85
LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2504.00 =  6000.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2504.00 TO NODE   2503.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =    840.00  DOWNSTREAM(FEET) =    835.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   300.00   CHANNEL SLOPE =  0.0167
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .0167 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =    612.43
FLOW VELOCITY(FEET/SEC) =   6.13 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =  16.44
LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2503.00 =  6300.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2504.00 TO NODE   2503.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.279
*USER SPECIFIED(SUBAREA):
STREETS & ROADS (DITCHES) RUNOFF COEFFICIENT = .3900
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.5093
SUBAREA AREA(ACRES) =    4.40   SUBAREA RUNOFF(CFS) =    7.34
TOTAL AREA(ACRES) =    280.25   TOTAL RUNOFF(CFS) =  612.43
TC(MIN.) =  16.44
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
FLOW PROCESS FROM NODE   2503.00 TO NODE   2503.00 IS CODE =  11
----------------------------------------------------------------------------
>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

** MAIN STREAM CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY     AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
    1      612.43    16.44        4.279      280.25
LONGEST FLOWPATH FROM NODE   2526.50 TO NODE   2503.00 =  6300.00 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
STREAM     RUNOFF      Tc       INTENSITY     AREA
NUMBER      (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
    1      364.06    19.25        3.865      165.63
LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2503.00 =  6816.00 FEET.

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

```
     1     923.44      16.44        4.279
     2     917.34      19.25        3.865

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    923.44   Tc(MIN.) =   16.44
  TOTAL AREA(ACRES) =    445.88

****************************************************************************
  FLOW PROCESS FROM NODE   2503.00 TO NODE   2503.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2503.00 TO NODE   2502.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   835.00  DOWNSTREAM(FEET) =   825.00
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  72.0 INCH PIPE IS  55.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  39.75
  ESTIMATED PIPE DIAMETER(INCH) =  72.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    923.44
  PIPE TRAVEL TIME(MIN.) =   0.07    Tc(MIN.) =  16.51
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2502.00 =  6981.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2502.00 TO NODE   2502.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.51
  RAINFALL INTENSITY(INCH/HR) =   4.27
  TOTAL STREAM AREA(ACRES) =   445.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    923.44

****************************************************************************
  FLOW PROCESS FROM NODE   2502.50 TO NODE   2502.40 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1175.00
  DOWNSTREAM ELEVATION(FEET) =   1150.00
  ELEVATION DIFFERENCE(FEET) =     25.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =      0.39
  TOTAL AREA(ACRES) =      0.21   TOTAL RUNOFF(CFS) =      0.39

****************************************************************************
  FLOW PROCESS FROM NODE   2502.40 TO NODE   2502.30 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1150.00  DOWNSTREAM(FEET) =   1075.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   302.00   CHANNEL SLOPE =  0.2483
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1794 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.39
  FLOW VELOCITY(FEET/SEC) =   2.37 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =   9.22
  LONGEST FLOWPATH FROM NODE   2502.50 TO NODE   2502.30 =   402.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2502.40 TO NODE   2502.30 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.213
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    2.17   SUBAREA RUNOFF(CFS) =    3.37
  TOTAL AREA(ACRES) =      2.38   TOTAL RUNOFF(CFS) =    3.70
  TC(MIN.) =   9.22

****************************************************************************
  FLOW PROCESS FROM NODE   2502.30 TO NODE   2502.20 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1075.00  DOWNSTREAM(FEET) =    950.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   640.00   CHANNEL SLOPE =  0.1953
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1577 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      3.70
  FLOW VELOCITY(FEET/SEC) =   3.44 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.10   Tc(MIN.) =  12.33
  LONGEST FLOWPATH FROM NODE   2502.50 TO NODE   2502.20 =  1042.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2502.30 TO NODE   2502.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.153
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =   11.59   SUBAREA RUNOFF(CFS) =   14.93
  TOTAL AREA(ACRES) =     13.97   TOTAL RUNOFF(CFS) =   18.00
  TC(MIN.) =  12.33

****************************************************************************
  FLOW PROCESS FROM NODE   2502.20 TO NODE   2502.10 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    950.00  DOWNSTREAM(FEET) =    890.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   430.00   CHANNEL SLOPE =  0.1395
  SLOPE ADJUSTMENT CURVE USED:
```

```
  EFFECTIVE SLOPE = .1280 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      18.00
  FLOW VELOCITY(FEET/SEC) =   5.25 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.37   Tc(MIN.) =  13.69
  LONGEST FLOWPATH FROM NODE   2502.50 TO NODE   2502.10 =  1472.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2502.20 TO NODE   2502.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.815
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =   14.58   SUBAREA RUNOFF(CFS) =   17.55
  TOTAL AREA(ACRES) =     28.55   TOTAL RUNOFF(CFS) =   34.37
  TC(MIN.) =  13.69

****************************************************************************
  FLOW PROCESS FROM NODE   2502.10 TO NODE   2502.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    890.00  DOWNSTREAM(FEET) =    830.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1040.00   CHANNEL SLOPE =  0.0577
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0577 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      34.37
  FLOW VELOCITY(FEET/SEC) =   4.37 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.97   Tc(MIN.) =  17.66
  LONGEST FLOWPATH FROM NODE   2502.50 TO NODE   2502.00 =  2512.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2502.00 TO NODE   2502.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  17.66
  RAINFALL INTENSITY(INCH/HR) =   4.09
  TOTAL STREAM AREA(ACRES) =    28.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     34.37

****************************************************************************
  FLOW PROCESS FROM NODE   2502.80 TO NODE   2502.70 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1180.00
  DOWNSTREAM ELEVATION(FEET) =   1175.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.422
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.588
  SUBAREA RUNOFF(CFS) =      0.38
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      0.38
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2502.70 TO NODE   2502.60 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1175.00  DOWNSTREAM(FEET) =    875.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   665.00   CHANNEL SLOPE =  0.4511
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2201 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.38
  FLOW VELOCITY(FEET/SEC) =   2.63 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.22   Tc(MIN.) =  12.64
  LONGEST FLOWPATH FROM NODE   2502.80 TO NODE   2502.60 =   765.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2502.70 TO NODE   2502.60 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.070
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3000
  SUBAREA AREA(ACRES) =     7.00   SUBAREA RUNOFF(CFS) =   10.65
  TOTAL AREA(ACRES) =       7.19   TOTAL RUNOFF(CFS) =   10.94
  TC(MIN.) =  12.64

****************************************************************************
  FLOW PROCESS FROM NODE   2502.60 TO NODE   2502.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) =  875.00  DOWNSTREAM ELEVATION(FEET) =  830.00
  STREET LENGTH(FEET) =   815.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 16.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
  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) =   0.0500
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.68
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   16.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.33
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.11
  STREET FLOW TRAVEL TIME(MIN.) =   5.84   Tc(MIN.) =  18.48
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.968
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.426
```

```
  SUBAREA AREA(ACRES) =     2.36      SUBAREA RUNOFF(CFS) =     7.59
  TOTAL AREA(ACRES) =       9.55        PEAK FLOW RATE(CFS) =       16.15

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.49   HALFSTREET FLOOD WIDTH(FEET) =  16.00
  FLOW VELOCITY(FEET/SEC.) =  2.41   DEPTH*VELOCITY(FT*FT/SEC.) =   1.18
  LONGEST FLOWPATH FROM NODE   2502.80 TO NODE   2502.00 =  1580.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2502.00 TO NODE   2502.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  18.48
  RAINFALL INTENSITY(INCH/HR) =   3.97
  TOTAL STREAM AREA(ACRES) =      9.55
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.15

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       923.44    16.51       4.267        445.88
     2        34.37    17.66       4.086         28.55
     3        16.15    18.48       3.968          9.55

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       970.00    16.51       4.267
     2       934.05    17.66       4.086
     3       908.32    18.48       3.968

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    970.00   Tc(MIN.) =   16.51
  TOTAL AREA(ACRES) =    483.98
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2502.00 =  6981.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2502.00 TO NODE   2501.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    830.00  DOWNSTREAM(FEET) =    825.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   800.00   CHANNEL SLOPE =  0.0063
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0063 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    970.00
  FLOW VELOCITY(FEET/SEC) =   4.37 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.05   Tc(MIN.) =  19.56
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE   2501.00 =  7781.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2502.00 TO NODE   2501.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.825
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2800
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.4975
SUBAREA AREA(ACRES) =   26.06   SUBAREA RUNOFF(CFS) =   27.91
TOTAL AREA(ACRES) =    510.04   TOTAL RUNOFF(CFS) =  970.56
TC(MIN.) =  19.56

****************************************************************************
FLOW PROCESS FROM NODE   2501.00 TO NODE     25.01 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =    825.00  DOWNSTREAM(FEET) =    822.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   490.00   CHANNEL SLOPE =  0.0061
SLOPE ADJUSTMENT CURVE USED:
EFFECTIVE SLOPE = .0061 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
CHANNEL FLOW THRU SUBAREA(CFS) =    970.56
FLOW VELOCITY(FEET/SEC) =   4.33 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =  21.45
LONGEST FLOWPATH FROM NODE   2575.20 TO NODE     25.01 =  8271.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     25.01 TO NODE     25.01 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  21.45
RAINFALL INTENSITY(INCH/HR) =   3.60
TOTAL STREAM AREA(ACRES) =   510.04
PEAK FLOW RATE(CFS) AT CONFLUENCE =    970.56

****************************************************************************
FLOW PROCESS FROM NODE     25.10 TO NODE     25.09 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
S.C.S. CURVE NUMBER (AMC II) =   0
INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
UPSTREAM ELEVATION(FEET) =   1180.00
DOWNSTREAM ELEVATION(FEET) =   1160.00
ELEVATION DIFFERENCE(FEET) =     20.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.647
SUBAREA RUNOFF(CFS) =      0.32
TOTAL AREA(ACRES) =      0.14   TOTAL RUNOFF(CFS) =      0.32

****************************************************************************
FLOW PROCESS FROM NODE     25.09 TO NODE     25.08 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   1160.00  DOWNSTREAM(FEET) =   1055.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   475.00   CHANNEL SLOPE =  0.2211
SLOPE ADJUSTMENT CURVE USED:
```

```
  EFFECTIVE SLOPE = .1704 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.32
  FLOW VELOCITY(FEET/SEC) =   2.31 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.43   Tc(MIN.) =  10.11
  LONGEST FLOWPATH FROM NODE     25.10 TO NODE     25.08 =   575.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.09 TO NODE     25.08 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.856
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3000
  SUBAREA AREA(ACRES) =    6.15   SUBAREA RUNOFF(CFS) =   10.80
  TOTAL AREA(ACRES) =      6.29   TOTAL RUNOFF(CFS) =   11.05
  TC(MIN.) =  10.11

****************************************************************************
  FLOW PROCESS FROM NODE     25.08 TO NODE     25.07 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1055.00  DOWNSTREAM(FEET) =    865.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   675.00   CHANNEL SLOPE =  0.2815
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1904 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     11.05
  FLOW VELOCITY(FEET/SEC) =   5.44 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.07   Tc(MIN.) =  12.18
  LONGEST FLOWPATH FROM NODE     25.10 TO NODE     25.07 =  1250.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.08 TO NODE     25.07 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.193
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3000
  SUBAREA AREA(ACRES) =   10.64   SUBAREA RUNOFF(CFS) =   16.58
  TOTAL AREA(ACRES) =     16.93   TOTAL RUNOFF(CFS) =   26.38
  TC(MIN.) =  12.18

****************************************************************************
  FLOW PROCESS FROM NODE     25.07 TO NODE     25.06 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    865.00  DOWNSTREAM(FEET) =    850.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   540.00   CHANNEL SLOPE =  0.0278
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0278 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     26.38
  FLOW VELOCITY(FEET/SEC) =   2.78 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.24   Tc(MIN.) =  15.42
```

```
  LONGEST FLOWPATH FROM NODE     25.10 TO NODE     25.06 =  1790.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.07 TO NODE     25.06 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.460
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (24. DU/AC OR LESS) RUNOFF COEFFICIENT = .8100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4385
  SUBAREA AREA(ACRES) =    6.31   SUBAREA RUNOFF(CFS) =   22.79
  TOTAL AREA(ACRES) =     23.24   TOTAL RUNOFF(CFS) =   45.44
  TC(MIN.) =  15.42

****************************************************************************
  FLOW PROCESS FROM NODE     25.06 TO NODE     25.01 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    850.00  DOWNSTREAM(FEET) =    822.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   380.00   CHANNEL SLOPE =  0.0737
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0737 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     45.44
  FLOW VELOCITY(FEET/SEC) =   5.42 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.17   Tc(MIN.) =  16.59
  LONGEST FLOWPATH FROM NODE     25.10 TO NODE     25.01 =  2170.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.01 TO NODE     25.01 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  16.59
  RAINFALL INTENSITY(INCH/HR) =   4.25
  TOTAL STREAM AREA(ACRES) =    23.24
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     45.44

****************************************************************************
  FLOW PROCESS FROM NODE     25.05 TO NODE     25.04 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1300.00
  DOWNSTREAM ELEVATION(FEET) =   1275.00
  ELEVATION DIFFERENCE(FEET) =     25.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.434
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.838
  SUBAREA RUNOFF(CFS) =      0.23
  TOTAL AREA(ACRES) =      0.09   TOTAL RUNOFF(CFS) =      0.23

****************************************************************************
  FLOW PROCESS FROM NODE     25.04 TO NODE     25.03 IS CODE =  53
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1275.00  DOWNSTREAM(FEET) =   1050.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   575.00   CHANNEL SLOPE =  0.3913
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2125 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.23
  FLOW VELOCITY(FEET/SEC) =   2.58 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.71   Tc(MIN.) =  10.15
  LONGEST FLOWPATH FROM NODE     25.05 TO NODE     25.03 =   675.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.04 TO NODE     25.03 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.842
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3005
  SUBAREA AREA(ACRES) =    5.10   SUBAREA RUNOFF(CFS) =    8.94
  TOTAL AREA(ACRES) =      5.19   TOTAL RUNOFF(CFS) =    9.11
  TC(MIN.) =  10.15

****************************************************************************
  FLOW PROCESS FROM NODE     25.03 TO NODE     25.02 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1050.00  DOWNSTREAM(FEET) =    845.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.00   CHANNEL SLOPE =  0.2291
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1730 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      9.11
  FLOW VELOCITY(FEET/SEC) =   4.86 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.07   Tc(MIN.) =  13.21
  LONGEST FLOWPATH FROM NODE     25.05 TO NODE     25.02 =  1570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.03 TO NODE     25.02 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.927
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3002
  SUBAREA AREA(ACRES) =    9.66   SUBAREA RUNOFF(CFS) =   14.28
  TOTAL AREA(ACRES) =     14.85   TOTAL RUNOFF(CFS) =   21.96
  TC(MIN.) =  13.21

****************************************************************************
  FLOW PROCESS FROM NODE     25.02 TO NODE     25.01 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =   845.00  DOWNSTREAM(FEET) =   822.00
  FLOW LENGTH(FEET) =   510.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.31
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     21.96
  PIPE TRAVEL TIME(MIN.) =   0.59    Tc(MIN.) =  13.81
  LONGEST FLOWPATH FROM NODE     25.05 TO NODE     25.01 =  2080.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.01 TO NODE     25.01 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.81
  RAINFALL INTENSITY(INCH/HR) =   4.79
  TOTAL STREAM AREA(ACRES) =    14.85
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.96

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       970.56    21.45       3.605        510.04
     2        45.44    16.59       4.254         23.24
     3        21.96    13.81       4.789         14.85

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  3 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       790.34    13.81       4.789
     2       887.31    16.59       4.254
     3      1025.60    21.45       3.605

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   1025.60   Tc(MIN.) =   21.45
  TOTAL AREA(ACRES) =    548.13
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE     25.01 =  8271.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.01 TO NODE     25.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.605
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4866
  SUBAREA AREA(ACRES) =    8.91   SUBAREA RUNOFF(CFS) =    9.64
  TOTAL AREA(ACRES) =    557.04   TOTAL RUNOFF(CFS) = 1025.60
  TC(MIN.) =  21.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE     25.01 TO NODE     25.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
```

```
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   822.00  DOWNSTREAM(FEET) =   798.00
  FLOW LENGTH(FEET) =   375.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  75.0 INCH PIPE IS  55.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  41.83
  ESTIMATED PIPE DIAMETER(INCH) =  75.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =   1025.60
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  21.60
  LONGEST FLOWPATH FROM NODE   2575.20 TO NODE     25.00 =  8646.00 FEET.
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    557.04  TC(MIN.) =     21.60
  PEAK FLOW RATE(CFS)   =   1025.60
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 10/3/2006
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 17 MIN.
6 H[illegible] RAINFALL 3.5 INCHES
B[illegible]REA 100.57 ACRES
RUNOFF COEFFICIENT 0.57
PEAK DISCHARGE 235.22 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 17	DISCHARGE (CFS) = 12.1
TIME (MIN) = 34	DISCHARGE (CFS) = 12.5
TIME (MIN) = 51	DISCHARGE (CFS) = 13.5
TIME (MIN) = 68	DISCHARGE (CFS) = 14
TIME (MIN) = 85	DISCHARGE (CFS) = 15.2
TIME (MIN) = 102	DISCHARGE (CFS) = 15.9
TIME (MIN) = 119	DISCHARGE (CFS) = 17.6
TIME (MIN) = 136	DISCHARGE (CFS) = 18.7
TIME (MIN) = 153	DISCHARGE (CFS) = 21.4
TIME (MIN) = 170	DISCHARGE (CFS) = 23.3
TIME (MIN) = 187	DISCHARGE (CFS) = 28.4
TIME (MIN) = 204	DISCHARGE (CFS) = 32.4
TIME (MIN) = 221	DISCHARGE (CFS) = 47.5
TIME (MIN) = 238	DISCHARGE (CFS) = 71.8
TIME (MIN) = 255	DISCHARGE (CFS) = 235.22
TIME (MIN) = 272	DISCHARGE (CFS) = 38.1
TIME (MIN) = 289	DISCHARGE (CFS) = 25.5
TIME (MIN) = 306	DISCHARGE (CFS) = 20
TIME (MIN) = 323	DISCHARGE (CFS) = 16.7
TIME (MIN) = 340	DISCHARGE (CFS) = 14.6
TIME (MIN) = 357	DISCHARGE (CFS) = 13
TIME (MIN) = 374	DISCHARGE (CFS) = 0

```
****************************************************************************
                HYDRAULICS ELEMENTS - II  PROGRAM PACKAGE

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
****************************************************************************
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            Ver. 10.0  Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                   FUSCOE ENGINEERING - SAN DIEGO, INC.
                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                            (858) 554-1500

 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                  *
* SUBBASIN # 25 - PROPOSED DETENTION BASIN 25A ROUTING                    *
* 2469.01A - OCTOBER 2006                                                 *
 ***************************************************************************

    FILE NAME: MM25DETA.DAT
    TIME/DATE OF STUDY: 12:47 10/03/2006
===============================================================================
    ENTERED INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   23
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   17.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
-------------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:        0.00*    2:       12.10*    3:       12.50*
    *    4:       13.50*    5:       14.00*    6:       15.20*
    *    7:       15.90*    8:       17.60*    9:       18.70*
    *   10:       21.40*   11:       23.30*   12:       28.40*
    *   13:       32.40*   14:       47.50*   15:       71.80*
    *   16:      235.22*   17:       38.10*   18:       25.50*
    *   19:       20.00*   20:       16.70*   21:       14.60*
    *   22:       13.00*   23:        0.00*
===============================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   7
-------------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *     0.000      0.000     0.000**     5.000      0.525     38.890*
    *    10.000      2.690    59.410**    15.000      7.085     74.480*
    *    20.000     13.710    86.970**    25.000     22.560     97.880*
    *    30.000     33.650   107.690**
*******************************************************************************
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
```

1	0.00000	0.00000
2	0.06968	0.98032
3	1.99443	3.38557
4	6.21299	7.95701
5	12.69176	14.72824
6	21.41402	23.70598
7	32.38917	34.91084

WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)

UNIT-HYDROGRAPH STORAGE-BASIN ROUTING

NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME

```
 TIME   INFLOW  OUTFLOW    STORAGE
(HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     59.    118.    176.    235.
   0.28     0.00     0.00       0.000 o       .       .       .       .
     [BASIN DEPTH(FEET) =    0.00]
   0.57    12.10    11.24       0.152 .o      .       .       .       .
     [BASIN DEPTH(FEET) =    1.45]
   0.85    12.50    12.41       0.168 .o      .       .       .       .
     [BASIN DEPTH(FEET) =    1.60]
   1.13    13.50    13.42       0.181 .o      .       .       .       .
     [BASIN DEPTH(FEET) =    1.73]
   1.42    14.00    13.96       0.188 .o      .       .       .       .
     [BASIN DEPTH(FEET) =    1.79]
   1.70    15.20    15.11       0.204 . o     .       .       .       .
     [BASIN DEPTH(FEET) =    1.94]
   1.98    15.90    15.84       0.214 . o     .       .       .       .
     [BASIN DEPTH(FEET) =    2.04]
   2.27    17.60    17.48       0.236 . o     .       .       .       .
     [BASIN DEPTH(FEET) =    2.25]
   2.55    18.70    18.61       0.251 . o     .       .       .       .
     [BASIN DEPTH(FEET) =    2.39]
   2.83    21.40    21.20       0.286 . o     .       .       .       .
     [BASIN DEPTH(FEET) =    2.73]
   3.12    23.30    23.15       0.313 .  o    .       .       .       .
     [BASIN DEPTH(FEET) =    2.98]
   3.40    28.40    28.03       0.378 .  o    .       .       .       .
     [BASIN DEPTH(FEET) =    3.60]
   3.68    32.40    32.09       0.433 .   o   .       .       .       .
     [BASIN DEPTH(FEET) =    4.13]
   3.97    47.50    40.51       0.696 .    OI .       .       .       .
     [BASIN DEPTH(FEET) =    5.39]
   4.25    71.80    46.76       1.355 .     o .I      .       .       .
     [BASIN DEPTH(FEET) =    6.92]
   4.53   235.22    69.07       5.507 .       .o      .       .      I.
     [BASIN DEPTH(FEET) =   13.20]
   4.82    38.10    66.68       4.810 .    I  .o      .       .       .
     [BASIN DEPTH(FEET) =   12.41]
   5.10    25.50    63.50       3.883 .  I    o       .       .       .
     [BASIN DEPTH(FEET) =   11.36]
   5.38    20.00    60.14       2.903 . I     o       .       .       .
     [BASIN DEPTH(FEET) =   10.24]
   5.67    16.70    52.63       1.974 . I    o.       .       .       .
     [BASIN DEPTH(FEET) =    8.35]
```

```
 5.95    14.60    45.03        1.173 .I    O .        .        .        .
   [BASIN DEPTH(FEET) =    6.50]
 6.23    13.00    37.68        0.509 .I   O  .        .        .        .
   [BASIN DEPTH(FEET) =    4.85]
 6.52     0.00     2.68        0.036 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.34]
 6.80     0.00     0.19        0.003 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.02]
 7.08     0.00     0.01        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
 7.37     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
 7.65     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
 7.93     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
 8.22     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
 8.50     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
 8.78     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
 9.07     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
 9.35     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
 9.63     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
 9.92     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
10.20     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
10.48     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
10.77     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
11.05     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
11.33     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
11.62     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
11.90     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
12.18     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
12.47     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
12.75     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
13.03     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
13.32     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
13.60     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
13.88     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
14.17     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
14.45     0.00     0.00        0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =    0.00]
14.73     0.00     0.00        0.000 O        .        .        .        .
```

```
   [BASIN DEPTH(FEET) =    0.00]
15.02     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
15.30     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
15.58     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
15.87     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
16.15     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
16.43     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
16.72     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
17.00     0.00     0.00       0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
```

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RUN DATE 10/3/2006
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 16 MIN.
6 H ` RAINFALL 3.5 INCHES
BA .REA 445.88 ACRES
RUNOFF COEFFICIENT 0.53
PEAK DISCHARGE 780.2 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 16	DISCHARGE (CFS) = 49
TIME (MIN) = 32	DISCHARGE (CFS) = 52.1
TIME (MIN) = 48	DISCHARGE (CFS) = 53.8
TIME (MIN) = 64	DISCHARGE (CFS) = 57.7
TIME (MIN) = 80	DISCHARGE (CFS) = 59.9
TIME (MIN) = 96	DISCHARGE (CFS) = 65.1
TIME (MIN) = 112	DISCHARGE (CFS) = 68.2
TIME (MIN) = 128	DISCHARGE (CFS) = 75.6
TIME (MIN) = 144	DISCHARGE (CFS) = 80.2
TIME (MIN) = 160	DISCHARGE (CFS) = 91.9
TIME (MIN) = 176	DISCHARGE (CFS) = 99.7
TIME (MIN) = 192	DISCHARGE (CFS) = 121.8
TIME (MIN) = 208	DISCHARGE (CFS) = 138.8
TIME (MIN) = 224	DISCHARGE (CFS) = 203.8
TIME (MIN) = 240	DISCHARGE (CFS) = 536.1
TIME (MIN) = 256	DISCHARGE (CFS) = 780.2
TIME (MIN) = 272	DISCHARGE (CFS) = 163.4
TIME (MIN) = 288	DISCHARGE (CFS) = 109.4
TIME (MIN) = 304	DISCHARGE (CFS) = 85.6
TIME (MIN) = 320	DISCHARGE (CFS) = 71.7
TIME (MIN) = 336	DISCHARGE (CFS) = 62.4
TIME (MIN) = 352	DISCHARGE (CFS) = 55.6
TIME (MIN) = 368	DISCHARGE (CFS) = 50.5
TIME (MIN) = 384	DISCHARGE (CFS) = 0

```
****************************************************************************
                HYDRAULICS ELEMENTS - II  PROGRAM PACKAGE

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
****************************************************************************
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            Ver. 10.0  Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                   FUSCOE ENGINEERING - SAN DIEGO, INC.
                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                             (858) 554-1500

 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                  *
* SUBBASIN # 25 - DETENTION STORAGE ROUTING                               *
* 2469.01A - OCTOBER 2006                                                 *
 ***************************************************************************

    FILE NAME: MM25DETC.DAT
    TIME/DATE OF STUDY: 13:41 10/03/2006
===============================================================================
    ENTERED INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   25
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   16.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
-------------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:        0.00*    2:       49.00*    3:       52.10*
    *    4:       53.80*    5:       57.70*    6:       59.90*
    *    7:       65.10*    8:       68.20*    9:       75.60*
    *   10:       80.20*   11:       91.90*   12:       99.70*
    *   13:      121.80*   14:      138.80*   15:      203.80*
    *   16:      536.10*   17:      780.20*   18:      163.40*
    *   19:      109.40*   20:       85.60*   21:       71.70*
    *   22:       62.40*   23:       55.60*   24:       50.50*
    *   25:        0.00*
===============================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   5
-------------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *     0.000      0.000     0.000**     2.000      5.190    123.000*
    *     5.000     12.975   404.000**    10.000     25.950    692.000*
    *    12.000     31.140   792.000**
*******************************************************************************
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL    {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
```

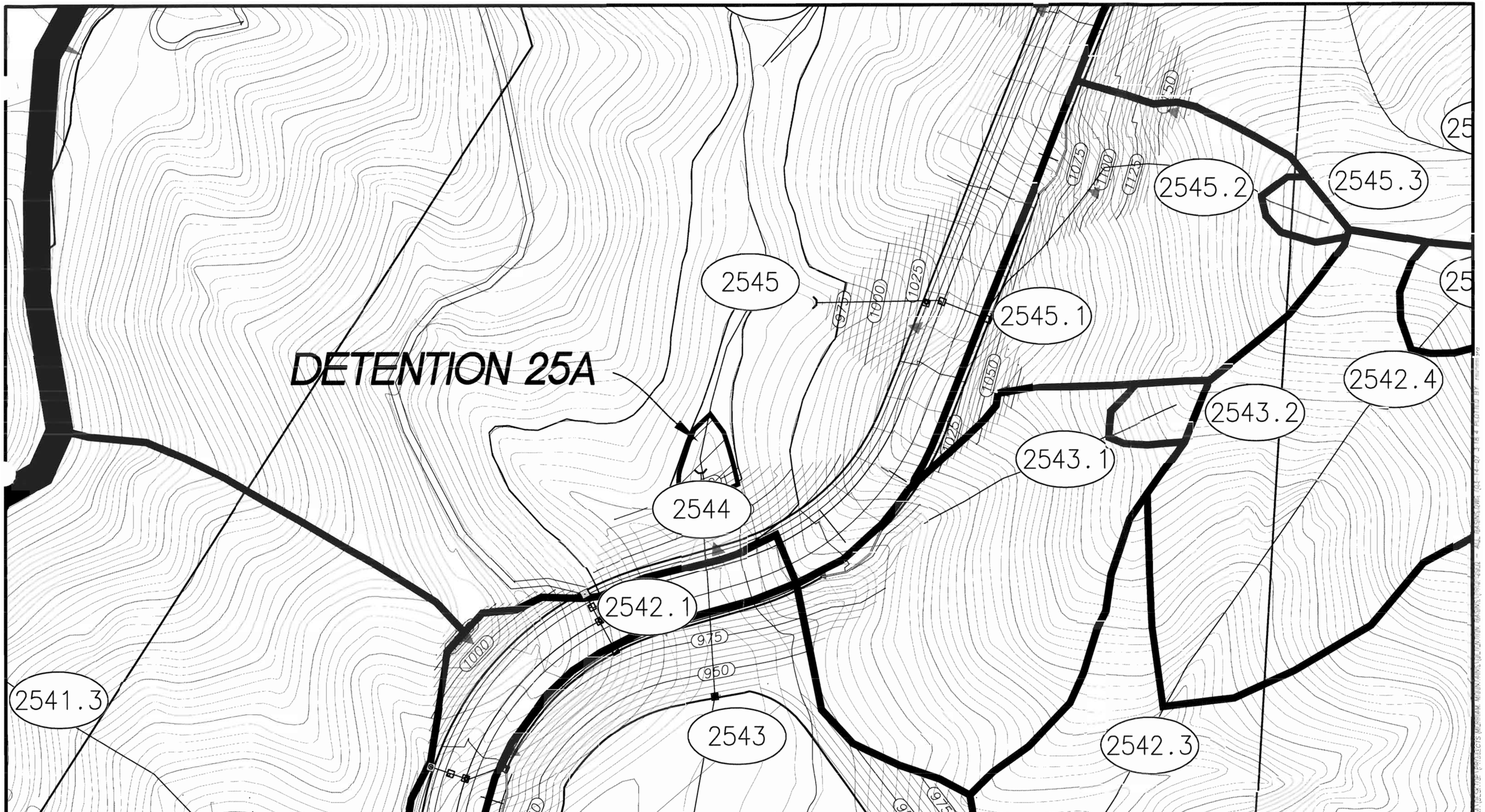
```
        1      0.00000     0.00000
        2      3.83463     6.54537
        3      8.52321    17.42679
        4     18.32466    33.57534
        5     22.41273    39.86727
   WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-----------------------------------------------------------------------------
```

```
        *UNIT-HYDROGRAPH STORAGE-BASIN ROUTING*
   NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
         OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
         AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

   GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-----------------------------------------------------------------------------
    TIME   INFLOW  OUTFLOW    STORAGE
   (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.    195.    390.    585.    780.
      0.27     0.00     0.00       0.000 O       .       .       .       .
        [BASIN DEPTH(FEET) =    0.00]
      0.53    49.00    20.29       0.856 O I     .       .       .       .
        [BASIN DEPTH(FEET) =    0.33]
      0.80    52.10    33.47       1.412 .OI     .       .       .       .
        [BASIN DEPTH(FEET) =    0.54]
      1.07    53.80    41.89       1.767 .OI     .       .       .       .
        [BASIN DEPTH(FEET) =    0.68]
      1.33    57.70    48.44       2.044 .OI     .       .       .       .
        [BASIN DEPTH(FEET) =    0.79]
      1.60    59.90    53.18       2.244 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    0.86]
      1.87    65.10    58.12       2.452 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    0.95]
      2.13    68.20    62.29       2.628 . O     .       .       .       .
        [BASIN DEPTH(FEET) =    1.01]
      2.40    75.60    67.80       2.861 . OI    .       .       .       .
        [BASIN DEPTH(FEET) =    1.10]
      2.67    80.20    72.94       3.078 . OI    .       .       .       .
        [BASIN DEPTH(FEET) =    1.19]
      2.93    91.90    80.79       3.409 .  O    .       .       .       .
        [BASIN DEPTH(FEET) =    1.31]
      3.20    99.70    88.62       3.739 .  OI   .       .       .       .
        [BASIN DEPTH(FEET) =    1.44]
      3.47   121.80   102.36       4.319 .   O   .       .       .       .
        [BASIN DEPTH(FEET) =    1.66]
      3.73   138.80   117.45       4.956 .   OI  .       .       .       .
        [BASIN DEPTH(FEET) =    1.91]
      4.00   203.80   164.52       6.340 .     O I       .       .       .
        [BASIN DEPTH(FEET) =    2.44]
      4.27   536.10   375.99      12.199 .       .      O.    I  .       .
        [BASIN DEPTH(FEET) =    4.70]
      4.53   780.20   543.53      19.261 .       .       .     O .      I.
        [BASIN DEPTH(FEET) =    7.42]
      4.80   163.40   389.70      12.579 .     I .      O.       .       .
        [BASIN DEPTH(FEET) =    4.85]
      5.07   109.40   230.17       8.159 .   I   .O      .       .       .
        [BASIN DEPTH(FEET) =    3.14]
      5.33    85.60   147.89       5.880 .  I  O .       .       .       .
        [BASIN DEPTH(FEET) =    2.27]
      5.60    71.70   109.56       4.623 . I O   .       .       .       .
        [BASIN DEPTH(FEET) =    1.78]
```

```
 5.87    62.40    90.03        3.799 . IO    .       .       .       .
   [BASIN DEPTH(FEET) =    1.46]
 6.13    55.60    75.77        3.197 . IO    .       .       .       .
   [BASIN DEPTH(FEET) =    1.23]
 6.40    50.50    65.30        2.756 . O     .       .       .       .
   [BASIN DEPTH(FEET) =    1.06]
 6.67     0.00    38.26        1.614 IO      .       .       .       .
   [BASIN DEPTH(FEET) =    0.62]
 6.93     0.00    22.41        0.946 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.36]
 7.20     0.00    13.13        0.554 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.21]
 7.47     0.00     7.69        0.325 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.13]
 7.73     0.00     4.51        0.190 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.07]
 8.00     0.00     2.64        0.111 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.04]
 8.27     0.00     1.55        0.065 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.03]
 8.53     0.00     0.91        0.038 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.01]
 8.80     0.00     0.53        0.022 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.01]
 9.07     0.00     0.31        0.013 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.01]
 9.33     0.00     0.18        0.008 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
 9.60     0.00     0.11        0.005 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
 9.87     0.00     0.06        0.003 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
10.13     0.00     0.04        0.002 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
10.40     0.00     0.02        0.001 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
10.67     0.00     0.01        0.001 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
10.93     0.00     0.01        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
11.20     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
11.47     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
11.73     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
12.00     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
12.27     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
12.53     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
12.80     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
13.07     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
13.33     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
13.60     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
13.87     0.00     0.00        0.000 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
14.13     0.00     0.00        0.000 O       .       .       .       .
```

```
   [BASIN DEPTH(FEET) =     0.00]
14.40      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
14.67      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
14.93      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
15.20      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
15.47      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
15.73      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
16.00      0.00      0.00       0.000 O        .        .        .        .
   [BASIN DEPTH(FEET) =     0.00]
```



SCALE: 1" = 100'

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MERRIAM MOUNTAINS

FIGURE C2 - PROPOSED DETENTION STORAGE

DETENTION 25A

25
ONDOMINIUM
SES
OMINIUMS

23
FOR CONDOMINIUM
PURPOSES
188 CONDOMINIUMS

875
850
900
925
950
975
1000
1025
1050
1075
1100
1125

2504

2503

PARK
A
3.34 ACRES

MM

DETENTION 25B

2503.1

2502

2503.2

SCALE: 1" = 100'

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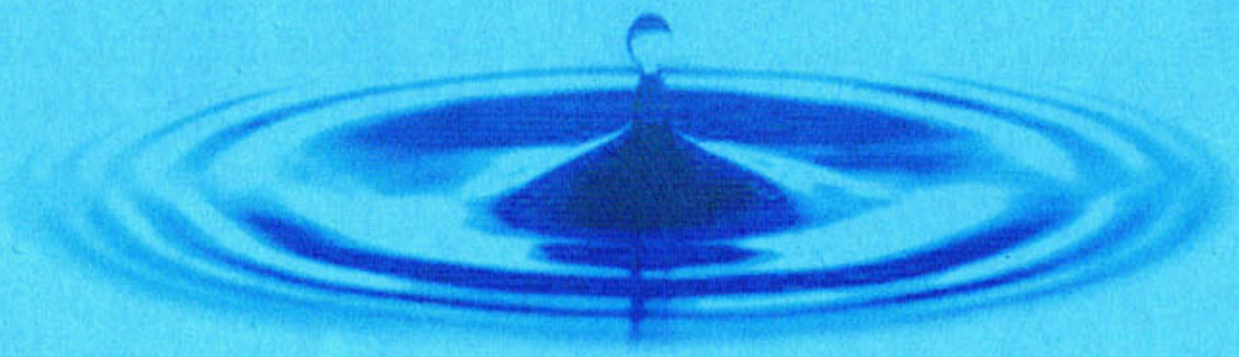
FIGURE C3 - PROPOSED DETENTION STORAGE

DETENTION 25B

APPENDIX C

Proposed Detention Storage Analysis

SUB-BASIN 26



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Job #:
2469.01A

Date:
October 2006

Run Name:
MERR26-P
Page 1

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2637	2636	2	1,439.2	1,439.0	100.0	7	0.79	0.45	
2636	2635	6	1,439.0	1,432.0	615.0	7	0.79	5.94	
2635.1	2635	8				7	0.79	1.72	
2635	2634	3	1,425.0	1,390.0	410.0				
2635	2634	8				7	0.79	1.82	
2634	2630	3	1,390.0	1,335.0	625.0				
2634	2630	8				7	0.79	5.14	
2630	2630	1							1 of 2
2633	2632	2	1,605.0	1,580.0	100.0	21	0.35	0.24	
2632	2631	5	1,580.0	1,425.0	545.0				
2632	2631	8				21	0.35	5.48	
2631	2630	3	1,425.0	1,335.0	250.0				
2630	2630	1							2 of 2
2630	2620	3	1,335.0	1,330.0	225.0				
2620	2620	10							Bank # 1
2627	2626	2	1,423.2	1,423.0	100.0	7	0.79	0.22	
2626	2621	6	1,423.0	1,385.0	370.0	7	0.79	2.42	
2621	2621	1							1 of 2
2624	2623	2	1,450.0	1,440.0	100.0	21	0.298	1.12	
2624	2623	5	1,440.0	1,400.0	250.0				
2624	2623	8				21	0.298	2.78	
2623	2622	3	1,400.0	1,390.0	220.0				
2622	2621	3	1,390.0	1,380.0	265.0				
2625	2621	8				7	0.781	4.42	
2621	2621	1							2 of 2
2621	2620	3	1,380.0	1,350.0	440.0				
2620.1	2620	8				7	0.782	7.9	
2620	2620	11							ADD Bank #1
2620	2620	12							Delete Bank #1
2620	2612	3	1,350.0	1,306.0	560.0				
2612	2612	1							1 of 2
2619	2618	2	1,412.5	1,412.3	95.0	7	0.77	0.13	
2618	2617	6	1,412.3	1,395.0	615.0	7	0.77	3.45	
2617	2616	3	1,390.0	1,375.0	400.0				
2617	2616	8				7	0.77	1.26	
2616	2615	3	1,373.0	1,350.0	390.0				
2616	2615	8				7	0.77	2.51	
2615	2613	3	1,350.0	1,315.0	665.0				
2613.1	2613	8				7	0.77	3.68	
2614	2613	8				7	0.775	1.95	
2615	2613	8				7	0.785	4.22	
2613	2612	3	1,315.0	1,306.0	255.0				
2612	2612	1							2 of 2
2612	2611	3	1,306.0	1,268.0	615.0				
2612	2611	8				7	0.781	8.27	

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Date:
October 2006

Run Name:
MERR26-P
Page 2

		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2611	2610	3	1,268.0	1,250.0	450.0				
2611	2610	8				7	0.77	2.72	
2610	2610	1							1 of 2
2610.2	2610.1	2	1,375.0	1,350.0	100.0	21	0.25	0.27	
2610.1	2610	5	1,350.0	1,245.0	520.0				
2610.1	2610	8				21	0.25	2.45	
2610	2610	1							2 of 2
2610	2607.6	3	1,250.0	1,231.0	275.0				
2610	2607.6	8				7	0.77	1.85	
2607.6	2607.5	3	1,231.0	1,225.0	315.0				
2607.6	2607.5	8				7	0.77	2.08	
2607.5	2607.4	3	1,225.0	1,215.0	235.0				
2607.5	2607.4	8				7	0.77	2.24	
2607.4	2607	3	1,215.0	1,201.0	175.0				
2607	2607	1							1 of 2
2607.3	2607.2	2	1,390.0	1,350.0	100.0	21	0.25	0.42	
2607.2	2607.1	5	1,350.0	1,210.0	440.0				
2607.2	2607.1	8				21	0.25	5.09	
2607.1	2607	3	1,204.0	1,201.0	380.0				
2607	2607	1							2 of 2
2607	2606	3	1,201.0	1,188.0	200.0				
2606.1	2606	8				7	0.77	3.22	
2606	2604	3	1,188.0	1,187.0	115.0				
2604	2604	10							Bank #1
2609.3	2609.2	2	1,380.0	1,340.0	100.0	21	0.314	0.14	
2609.2	2609	5	1,340.0	1,250.0	250.0				
2609.2	2609	8				21	0.262	1.28	
2609.1	2609	8				7	0.773	1.46	
2609	2608	3	1,240.0	1,238.0	180.0				
2608	2608	1							1 of 2
2608.3	2608.2	2	1,340.0	1,336.0	100.0	7	0.79	0.34	
2608.2	2608.1	6	1,336.0	1,280.0	545.0	7	0.79	1.18	
2608.4	2608.1	8				21	0.35	4.4	
2608.1	2608	3	1,274.0	1,238.0	255.0				
2608	2608	1							2 of 2
2608	2605.5	3	1,238.0	1,234.0	640.0				
2608	2605.5	8				7	0.77	6.01	
2605.5	2605.4	3	1,234.0	1,232.0	350.0				
2605.5	2605.4	8				7	0.77	5.82	
2605.4	2605.3	3	1,232.0	1,228.0	700.0				
2605.4	2605.3	8				7	0.77	9.74	
2605.3	2605.2	3	1,228.0	1,223.0	355.0				
2605.3	2605.2	8				7	0.77	2.2	
2605.2	2605.1	3	1,223.0	1,205.0	340.0				

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Date:
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Run Name:
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Page 3

		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2605.2	2605.1	8				7	0.77	1.95	
2605.1	2605	3	1,205.0	1,193.0	305.0				
2605.1	2605	8				7	0.77	2.28	
2605	2604	3	1,193.0	1,187.0	380.0				
2604	2604	1							1 of 2
2604.3	2604.2	2	1,237.0	1,235.0	100.0	7	0.77	0.19	
2604.2	2604.1	6	1,235.0	1,217.0	485.0	7	0.77	2.43	
2604.1	2604	3	1,211.0	1,187.0	400.0				
2604	2604	1							2 of 2
2604.1	2604	8				7	0.77	6.43	
2604	2604	11							Add Bank #1
2604	2602	3	1,187.0	1,145.0	140.0				
2602	2601	5	1,145.0	1,140.0	250.0				
2602	2601	8				21	0.486	4.46	
2603	2601	8				21	0.25	10.59	Pre-Detention Area
2601	26	5	1,140.0	975.0	1,430.0				Post-Detention Flow
2601	26	8				21	0.25	32.01	
								178.37	Total Area

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                        2003,1985,1981 HYDROLOGY MANUAL
        (c) Copyright 1982-2004 Advanced Engineering Software (aes)
            Ver. 2.0 Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

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                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                             (858) 554-1500

 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                  *
* SUBBASIN # 26 - NO DETENTION STORAGE ROUTING                            *
* 2469.01A - OCTOBER 2006                                                 *
 **************************************************************************

  FILE NAME: MERR26-P.DAT
  TIME/DATE OF STUDY: 13:55 10/02/2006
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  =====  ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2637.00 TO NODE   2636.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1439.20
  DOWNSTREAM ELEVATION(FEET) =   1439.00
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.971
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      3.28
TOTAL AREA(ACRES) =      0.45   TOTAL RUNOFF(CFS) =      3.28

****************************************************************************
FLOW PROCESS FROM NODE   2636.00 TO NODE   2635.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1439.00  DOWNSTREAM ELEVATION(FEET) = 1432.00
STREET LENGTH(FEET) =   615.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

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

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.76
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.45
  HALFSTREET FLOOD WIDTH(FEET) =   16.14
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.63
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.63
STREET FLOW TRAVEL TIME(MIN.) =   2.82   Tc(MIN.) =   7.79
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.925
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
SUBAREA AREA(ACRES) =    5.94      SUBAREA RUNOFF(CFS) =   32.50
TOTAL AREA(ACRES) =      6.39        PEAK FLOW RATE(CFS) =      34.96

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  19.05
FLOW VELOCITY(FEET/SEC.) =  4.37   DEPTH*VELOCITY(FT*FT/SEC.) =   2.28
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  615.0 FT WITH ELEVATION-DROP =   7.0 FT, IS   43.3 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   2635.00
LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2635.00 =   715.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2635.10 TO NODE   2635.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.925
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.7900
SUBAREA AREA(ACRES) =    1.72   SUBAREA RUNOFF(CFS) =    9.41
TOTAL AREA(ACRES) =      8.11   TOTAL RUNOFF(CFS) =   44.37
TC(MIN.) =   7.79
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2635.00 TO NODE   2634.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1425.00  DOWNSTREAM(FEET) =  1390.00
  FLOW LENGTH(FEET) =   410.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.64
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     44.37
  PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   8.11
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2634.00 =  1125.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2635.00 TO NODE   2634.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.750
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7900
  SUBAREA AREA(ACRES) =    1.82   SUBAREA RUNOFF(CFS) =    9.71
  TOTAL AREA(ACRES) =      9.93   TOTAL RUNOFF(CFS) =   52.95
  TC(MIN.) =   8.11

****************************************************************************
  FLOW PROCESS FROM NODE   2634.00 TO NODE   2630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1390.00  DOWNSTREAM(FEET) =  1335.00
  FLOW LENGTH(FEET) =   625.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  16.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.67
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     52.95
  PIPE TRAVEL TIME(MIN.) =   0.46    Tc(MIN.) =   8.57
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2630.00 =  1750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2634.00 TO NODE   2630.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.514
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7900
  SUBAREA AREA(ACRES) =    5.14   SUBAREA RUNOFF(CFS) =   26.45
  TOTAL AREA(ACRES) =     15.07   TOTAL RUNOFF(CFS) =   77.56
  TC(MIN.) =   8.57

****************************************************************************
  FLOW PROCESS FROM NODE   2630.00 TO NODE   2630.00 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.) =   8.57
  RAINFALL INTENSITY(INCH/HR) =   6.51
  TOTAL STREAM AREA(ACRES) =    15.07
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     77.56

****************************************************************************
  FLOW PROCESS FROM NODE   2633.00 TO NODE   2632.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1605.00
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =     25.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.972
  SUBAREA RUNOFF(CFS) =      0.67
  TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      0.67

****************************************************************************
  FLOW PROCESS FROM NODE   2632.00 TO NODE   2631.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1425.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   545.00   CHANNEL SLOPE =  0.2844
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1911 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.67
  FLOW VELOCITY(FEET/SEC) =   2.45 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.71   Tc(MIN.) =   9.98
  LONGEST FLOWPATH FROM NODE   2633.00 TO NODE   2631.00 =   645.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2632.00 TO NODE   2631.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.906
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    5.48   SUBAREA RUNOFF(CFS) =   11.33
  TOTAL AREA(ACRES) =      5.72   TOTAL RUNOFF(CFS) =   11.82
  TC(MIN.) =   9.98

****************************************************************************
  FLOW PROCESS FROM NODE   2631.00 TO NODE   2630.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1425.00  DOWNSTREAM(FEET) =  1335.00
```

```
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   5.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.33
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     11.82
  PIPE TRAVEL TIME(MIN.) =   0.16    Tc(MIN.) =  10.14
  LONGEST FLOWPATH FROM NODE   2633.00 TO NODE   2630.00 =   895.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2630.00 TO NODE   2630.00 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.) =  10.14
  RAINFALL INTENSITY(INCH/HR) =   5.85
  TOTAL STREAM AREA(ACRES) =     5.72
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     11.82

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       77.56     8.57        6.514         15.07
     2       11.82    10.14        5.846          5.72

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       87.55     8.57       6.514
     2       81.42    10.14       5.846

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     87.55   Tc(MIN.) =    8.57
  TOTAL AREA(ACRES) =     20.79
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2630.00 =  1750.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2630.00 TO NODE   2620.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1335.00  DOWNSTREAM(FEET) =  1330.00
  FLOW LENGTH(FEET) =   225.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.15
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     87.55
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =   8.82
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2620.00 =  1975.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2620.00 TO NODE   2620.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2627.00 TO NODE   2626.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1423.20
  DOWNSTREAM ELEVATION(FEET) =   1423.00
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.971
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.60
  TOTAL AREA(ACRES) =      0.22   TOTAL RUNOFF(CFS) =      1.60

****************************************************************************
  FLOW PROCESS FROM NODE   2626.00 TO NODE   2621.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1423.00  DOWNSTREAM ELEVATION(FEET) = 1385.00
  STREET LENGTH(FEET) =   370.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.59
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.28
    HALFSTREET FLOOD WIDTH(FEET) =    7.45
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.96
  STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =   5.84
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.346
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    2.42      SUBAREA RUNOFF(CFS) =   15.96
  TOTAL AREA(ACRES) =      2.64        PEAK FLOW RATE(CFS) =      17.41

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   9.74
  FLOW VELOCITY(FEET/SEC.) =  8.16   DEPTH*VELOCITY(FT*FT/SEC.) =   2.62
  LONGEST FLOWPATH FROM NODE   2627.00 TO NODE   2621.00 =   470.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2621.00 TO NODE   2621.00 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.) =   5.84
  RAINFALL INTENSITY(INCH/HR) =   8.35
  TOTAL STREAM AREA(ACRES) =     2.64
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     17.41

****************************************************************************
  FLOW PROCESS FROM NODE   2624.00 TO NODE   2623.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1450.00
  DOWNSTREAM ELEVATION(FEET) =   1440.00
  ELEVATION DIFFERENCE(FEET) =     10.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.684
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.647
  SUBAREA RUNOFF(CFS) =      2.57
  TOTAL AREA(ACRES) =      1.12   TOTAL RUNOFF(CFS) =      2.57

****************************************************************************
  FLOW PROCESS FROM NODE   2624.00 TO NODE   2623.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1400.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00   CHANNEL SLOPE =  0.1600
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1400 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      2.57
  FLOW VELOCITY(FEET/SEC) =   2.87 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =   8.14
  LONGEST FLOWPATH FROM NODE   2624.00 TO NODE   2623.00 =   350.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2624.00 TO NODE   2623.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.736
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3000
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3000
  SUBAREA AREA(ACRES) =    2.78   SUBAREA RUNOFF(CFS) =    5.62
  TOTAL AREA(ACRES) =      3.90   TOTAL RUNOFF(CFS) =    7.88
  TC(MIN.) =   8.14

****************************************************************************
  FLOW PROCESS FROM NODE   2623.00 TO NODE   2622.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =  1400.00  DOWNSTREAM(FEET) =  1390.00
  FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   7.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  11.13
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      7.88
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   8.47
  LONGEST FLOWPATH FROM NODE   2624.00 TO NODE   2622.00 =   570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2622.00 TO NODE   2621.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1390.00  DOWNSTREAM(FEET) =  1380.00
  FLOW LENGTH(FEET) =   265.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   8.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  10.39
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      7.88
  PIPE TRAVEL TIME(MIN.) =   0.42    Tc(MIN.) =   8.89
  LONGEST FLOWPATH FROM NODE   2624.00 TO NODE   2621.00 =   835.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2625.00 TO NODE   2621.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.362
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5550
  SUBAREA AREA(ACRES) =    4.42   SUBAREA RUNOFF(CFS) =   21.93
  TOTAL AREA(ACRES) =      8.32   TOTAL RUNOFF(CFS) =   29.38
  TC(MIN.) =   8.89

****************************************************************************
  FLOW PROCESS FROM NODE   2621.00 TO NODE   2621.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   8.89
  RAINFALL INTENSITY(INCH/HR) =   6.36
  TOTAL STREAM AREA(ACRES) =     8.32
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     29.38

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       17.41     5.84        8.346          2.64
     2       29.38     8.89        6.362          8.32

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

  ** PEAK FLOW RATE TABLE **
```

```
  STREAM      RUNOFF       Tc       INTENSITY
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
     1        36.69      5.84        8.346
     2        42.64      8.89        6.362

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      42.64   Tc(MIN.) =     8.89
  TOTAL AREA(ACRES) =      10.96
  LONGEST FLOWPATH FROM NODE   2624.00 TO NODE   2621.00 =   835.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2621.00 TO NODE   2620.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1380.00  DOWNSTREAM(FEET) =  1350.00
  FLOW LENGTH(FEET) =   440.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.63
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      42.64
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =   9.26
  LONGEST FLOWPATH FROM NODE   2624.00 TO NODE   2620.00 =  1275.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2620.10 TO NODE   2620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.195
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6821
  SUBAREA AREA(ACRES) =     7.90   SUBAREA RUNOFF(CFS) =   38.17
  TOTAL AREA(ACRES) =      18.86   TOTAL RUNOFF(CFS) =   79.70
  TC(MIN.) =   9.26

****************************************************************************
  FLOW PROCESS FROM NODE   2620.00 TO NODE   2620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        79.70      9.26        6.195        18.86
  LONGEST FLOWPATH FROM NODE   2624.00 TO NODE   2620.00 =  1275.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM      RUNOFF       Tc       INTENSITY      AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        87.55      8.82        6.396        20.79
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2620.00 =  1975.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc       INTENSITY
  NUMBER      (CFS)     (MIN.)    (INCH/HOUR)
     1      163.40       8.82        6.396
     2      164.50       9.26        6.195
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    164.50   Tc(MIN.) =    9.26
  TOTAL AREA(ACRES) =     39.65

****************************************************************************
  FLOW PROCESS FROM NODE   2620.00 TO NODE   2620.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2620.00 TO NODE   2612.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1350.00  DOWNSTREAM(FEET) =  1306.00
  FLOW LENGTH(FEET) =   560.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  28.49
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    164.50
  PIPE TRAVEL TIME(MIN.) =   0.33    Tc(MIN.) =   9.59
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2612.00 =  2535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2612.00 TO NODE   2612.00 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.) =   9.59
  RAINFALL INTENSITY(INCH/HR) =   6.06
  TOTAL STREAM AREA(ACRES) =    39.65
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    164.50

****************************************************************************
  FLOW PROCESS FROM NODE   2619.00 TO NODE   2618.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    95.00
  UPSTREAM ELEVATION(FEET) =   1412.50
  DOWNSTREAM ELEVATION(FEET) =   1412.30
  ELEVATION DIFFERENCE(FEET) =      0.20
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.292
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    50.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.890
  SUBAREA RUNOFF(CFS) =      0.89
  TOTAL AREA(ACRES) =      0.13   TOTAL RUNOFF(CFS) =      0.89

****************************************************************************
  FLOW PROCESS FROM NODE   2618.00 TO NODE   2617.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
```

```
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1412.30  DOWNSTREAM ELEVATION(FEET) = 1395.00
  STREET LENGTH(FEET) =   615.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.31
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.33
    HALFSTREET FLOOD WIDTH(FEET) =   10.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.46
  STREET FLOW TRAVEL TIME(MIN.) =   2.32   Tc(MIN.) =   7.61
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.034
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
  SUBAREA AREA(ACRES) =     3.45      SUBAREA RUNOFF(CFS) =   18.69
  TOTAL AREA(ACRES) =       3.58        PEAK FLOW RATE(CFS) =      19.39

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.39   HALFSTREET FLOOD WIDTH(FEET) =  13.32
  FLOW VELOCITY(FEET/SEC.) =  5.12   DEPTH*VELOCITY(FT*FT/SEC.) =   2.01
  LONGEST FLOWPATH FROM NODE   2619.00 TO NODE   2617.00 =   710.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2617.00 TO NODE   2616.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1390.00  DOWNSTREAM(FEET) =  1373.00
  FLOW LENGTH(FEET) =   400.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.22
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     19.39
  PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =   8.11
  LONGEST FLOWPATH FROM NODE   2619.00 TO NODE   2616.00 =  1110.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2617.00 TO NODE   2616.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.749
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7700
  SUBAREA AREA(ACRES) =     1.26   SUBAREA RUNOFF(CFS) =    6.55
  TOTAL AREA(ACRES) =       4.84   TOTAL RUNOFF(CFS) =   25.15
  TC(MIN.) =   8.11
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2616.00 TO NODE   2615.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1373.00  DOWNSTREAM(FEET) =  1350.00
  FLOW LENGTH(FEET) =   390.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.36
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     25.15
  PIPE TRAVEL TIME(MIN.) =   0.40    Tc(MIN.) =   8.51
  LONGEST FLOWPATH FROM NODE   2619.00 TO NODE   2615.00 =  1500.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2616.00 TO NODE   2615.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.544
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7700
  SUBAREA AREA(ACRES) =    2.51   SUBAREA RUNOFF(CFS) =   12.65
  TOTAL AREA(ACRES) =      7.35   TOTAL RUNOFF(CFS) =   37.04
  TC(MIN.) =   8.51

****************************************************************************
  FLOW PROCESS FROM NODE   2615.00 TO NODE   2613.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1350.00  DOWNSTREAM(FEET) =  1315.00
  FLOW LENGTH(FEET) =   665.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.21
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     37.04
  PIPE TRAVEL TIME(MIN.) =   0.64    Tc(MIN.) =   9.15
  LONGEST FLOWPATH FROM NODE   2619.00 TO NODE   2613.00 =  2165.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2613.10 TO NODE   2613.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.243
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7700
  SUBAREA AREA(ACRES) =    3.68   SUBAREA RUNOFF(CFS) =   17.69
  TOTAL AREA(ACRES) =     11.03   TOTAL RUNOFF(CFS) =   53.03
  TC(MIN.) =   9.15

****************************************************************************
  FLOW PROCESS FROM NODE   2614.00 TO NODE   2613.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.243
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.7700
SUBAREA AREA(ACRES) =    1.95   SUBAREA RUNOFF(CFS) =    9.37
TOTAL AREA(ACRES) =     12.98   TOTAL RUNOFF(CFS) =   62.40
TC(MIN.) =   9.15

****************************************************************************
FLOW PROCESS FROM NODE   2615.00 TO NODE   2613.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.243
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.7749
SUBAREA AREA(ACRES) =    4.22   SUBAREA RUNOFF(CFS) =   20.81
TOTAL AREA(ACRES) =     17.20   TOTAL RUNOFF(CFS) =   83.21
TC(MIN.) =   9.15

****************************************************************************
FLOW PROCESS FROM NODE   2613.00 TO NODE   2612.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1315.00  DOWNSTREAM(FEET) =  1306.00
FLOW LENGTH(FEET) =   255.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  33.0 INCH PIPE IS  24.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  17.91
ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     83.21
PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   9.39
LONGEST FLOWPATH FROM NODE   2619.00 TO NODE   2612.00 =  2420.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2612.00 TO NODE   2612.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   9.39
RAINFALL INTENSITY(INCH/HR) =   6.14
TOTAL STREAM AREA(ACRES) =    17.20
PEAK FLOW RATE(CFS) AT CONFLUENCE =     83.21

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      164.50     9.59        6.058         39.65
    2       83.21     9.39        6.141         17.20

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

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

```
     1      244.26     9.39       6.141
     2      246.58     9.59       6.058

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    246.58   Tc(MIN.) =    9.59
  TOTAL AREA(ACRES) =     56.85
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2612.00 =  2535.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2612.00 TO NODE   2611.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1306.00  DOWNSTREAM(FEET) =  1268.00
  FLOW LENGTH(FEET) =   615.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  29.06
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    246.58
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   9.94
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2611.00 =  3150.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2612.00 TO NODE   2611.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.918
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7149
  SUBAREA AREA(ACRES) =    8.27   SUBAREA RUNOFF(CFS) =   38.18
  TOTAL AREA(ACRES) =     65.12   TOTAL RUNOFF(CFS) =  275.50
  TC(MIN.) =   9.94

****************************************************************************
  FLOW PROCESS FROM NODE   2611.00 TO NODE   2610.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1268.00  DOWNSTREAM(FEET) =  1250.00
  FLOW LENGTH(FEET) =   450.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  36.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  25.39
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    275.50
  PIPE TRAVEL TIME(MIN.) =   0.30    Tc(MIN.) =  10.24
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2610.00 =  3600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2611.00 TO NODE   2610.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.807
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7171
  SUBAREA AREA(ACRES) =    2.72   SUBAREA RUNOFF(CFS) =   12.16
```

```
  TOTAL AREA(ACRES) =      67.84   TOTAL RUNOFF(CFS) =  282.51
  TC(MIN.) =  10.24

****************************************************************************
  FLOW PROCESS FROM NODE   2610.00 TO NODE   2610.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.24
  RAINFALL INTENSITY(INCH/HR) =   5.81
  TOTAL STREAM AREA(ACRES) =    67.84
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    282.51

****************************************************************************
  FLOW PROCESS FROM NODE   2610.20 TO NODE   2610.10 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1375.00
  DOWNSTREAM ELEVATION(FEET) =   1350.00
  ELEVATION DIFFERENCE(FEET) =     25.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =      0.50
  TOTAL AREA(ACRES) =      0.27   TOTAL RUNOFF(CFS) =      0.50

****************************************************************************
  FLOW PROCESS FROM NODE   2610.10 TO NODE   2610.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1245.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.2019
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1610 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.50
  FLOW VELOCITY(FEET/SEC) =   2.25 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.86   Tc(MIN.) =  10.96
  LONGEST FLOWPATH FROM NODE   2610.20 TO NODE   2610.00 =   620.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2610.10 TO NODE   2610.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.559
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =     2.45   SUBAREA RUNOFF(CFS) =     3.40
  TOTAL AREA(ACRES) =      2.72   TOTAL RUNOFF(CFS) =    3.78
  TC(MIN.) =  10.96
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2610.00 TO NODE   2610.00 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.) =  10.96
  RAINFALL INTENSITY(INCH/HR) =   5.56
  TOTAL STREAM AREA(ACRES) =     2.72
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      3.78

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      282.51    10.24        5.807         67.84
     2        3.78    10.96        5.559          2.72

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      286.04    10.24       5.807
     2      274.19    10.96       5.559

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    286.04   Tc(MIN.) =   10.24
  TOTAL AREA(ACRES) =     70.56
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2610.00 =  3600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2610.00 TO NODE   2607.60 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1250.00  DOWNSTREAM(FEET) =  1231.00
  FLOW LENGTH(FEET) =   275.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  35.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  31.07
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    286.04
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  10.39
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2607.60 =  3875.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2610.00 TO NODE   2607.60 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.754
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7009
  SUBAREA AREA(ACRES) =    1.85   SUBAREA RUNOFF(CFS) =    8.20
  TOTAL AREA(ACRES) =     72.41   TOTAL RUNOFF(CFS) =  292.03
  TC(MIN.) =  10.39

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

```
  FLOW PROCESS FROM NODE   2607.60 TO NODE   2607.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1231.00  DOWNSTREAM(FEET) =  1225.00
  FLOW LENGTH(FEET) =   315.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  45.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.13
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    292.03
  PIPE TRAVEL TIME(MIN.) =   0.27    Tc(MIN.) =  10.66
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2607.50 =  4190.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2607.60 TO NODE   2607.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.658
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7028
  SUBAREA AREA(ACRES) =    2.08   SUBAREA RUNOFF(CFS) =    9.06
  TOTAL AREA(ACRES) =     74.49   TOTAL RUNOFF(CFS) =  296.22
  TC(MIN.) =  10.66

****************************************************************************
  FLOW PROCESS FROM NODE   2607.50 TO NODE   2607.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1225.00  DOWNSTREAM(FEET) =  1215.00
  FLOW LENGTH(FEET) =   235.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  51.0 INCH PIPE IS  37.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  26.35
  ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    296.22
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =  10.81
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2607.40 =  4425.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2607.50 TO NODE   2607.40 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.608
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7048
  SUBAREA AREA(ACRES) =    2.24   SUBAREA RUNOFF(CFS) =    9.67
  TOTAL AREA(ACRES) =     76.73   TOTAL RUNOFF(CFS) =  303.26
  TC(MIN.) =  10.81

****************************************************************************
  FLOW PROCESS FROM NODE   2607.40 TO NODE   2607.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =  1215.00  DOWNSTREAM(FEET) =  1201.00
  FLOW LENGTH(FEET) =   175.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  34.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  33.39
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    303.26
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =  10.90
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2607.00 =  4600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2607.00 TO NODE   2607.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.90
  RAINFALL INTENSITY(INCH/HR) =   5.58
  TOTAL STREAM AREA(ACRES) =    76.73
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    303.26

****************************************************************************
  FLOW PROCESS FROM NODE   2607.30 TO NODE   2607.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1390.00
  DOWNSTREAM ELEVATION(FEET) =   1350.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =      0.77
  TOTAL AREA(ACRES) =      0.42   TOTAL RUNOFF(CFS) =      0.77

****************************************************************************
  FLOW PROCESS FROM NODE   2607.20 TO NODE   2607.10 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1210.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   440.00   CHANNEL SLOPE =  0.3182
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1995 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.77
  FLOW VELOCITY(FEET/SEC) =   2.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.93   Tc(MIN.) =  10.03
  LONGEST FLOWPATH FROM NODE   2607.30 TO NODE   2607.10 =   540.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2607.20 TO NODE   2607.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.884
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
```

```
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =     5.09   SUBAREA RUNOFF(CFS) =     7.49
  TOTAL AREA(ACRES) =       5.51   TOTAL RUNOFF(CFS) =     8.11
  TC(MIN.) =  10.03

****************************************************************************
  FLOW PROCESS FROM NODE   2607.10 TO NODE   2607.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1204.00  DOWNSTREAM(FEET) =  1201.00
  FLOW LENGTH(FEET) =   380.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.68
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      8.11
  PIPE TRAVEL TIME(MIN.) =   1.11    Tc(MIN.) =  11.15
  LONGEST FLOWPATH FROM NODE   2607.30 TO NODE   2607.00 =   920.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2607.00 TO NODE   2607.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  11.15
  RAINFALL INTENSITY(INCH/HR) =   5.50
  TOTAL STREAM AREA(ACRES) =     5.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      8.11

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      303.26    10.90        5.579         76.73
     2        8.11    11.15        5.498          5.51

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      311.18    10.90       5.579
     2      306.95    11.15       5.498

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    311.18   Tc(MIN.) =   10.90
  TOTAL AREA(ACRES) =     82.24
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2607.00 =  4600.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2607.00 TO NODE   2606.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1201.00  DOWNSTREAM(FEET) =  1188.00
  FLOW LENGTH(FEET) =   200.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  35.5 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  31.27
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     311.18
  PIPE TRAVEL TIME(MIN.) =   0.11    Tc(MIN.) =  11.00
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2606.00 =  4800.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2606.10 TO NODE   2606.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.544
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6779
  SUBAREA AREA(ACRES) =     3.22   SUBAREA RUNOFF(CFS) =   13.75
  TOTAL AREA(ACRES) =      85.46   TOTAL RUNOFF(CFS) =  321.18
  TC(MIN.) =  11.00

****************************************************************************
  FLOW PROCESS FROM NODE   2606.00 TO NODE   2604.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1188.00  DOWNSTREAM(FEET) =  1187.00
  FLOW LENGTH(FEET) =   115.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  69.0 INCH PIPE IS  54.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.67
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     321.18
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =  11.14
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2604.00 =  4915.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2604.00 TO NODE   2604.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2609.30 TO NODE   2609.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3100
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1380.00
  DOWNSTREAM ELEVATION(FEET) =   1340.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.601
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.709
  SUBAREA RUNOFF(CFS) =      0.33
  TOTAL AREA(ACRES) =      0.14   TOTAL RUNOFF(CFS) =      0.33

****************************************************************************
  FLOW PROCESS FROM NODE   2609.20 TO NODE   2609.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1340.00  DOWNSTREAM(FEET) =   1250.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00   CHANNEL SLOPE =  0.3600
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2070 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.33
  FLOW VELOCITY(FEET/SEC) =   2.55 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.64   Tc(MIN.) =   8.24
  LONGEST FLOWPATH FROM NODE   2609.30 TO NODE   2609.00 =   350.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2609.20 TO NODE   2609.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.683
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2649
  SUBAREA AREA(ACRES) =    1.28   SUBAREA RUNOFF(CFS) =    2.22
  TOTAL AREA(ACRES) =      1.42   TOTAL RUNOFF(CFS) =    2.51
  TC(MIN.) =   8.24

****************************************************************************
  FLOW PROCESS FROM NODE   2609.10 TO NODE   2609.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.683
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5210
  SUBAREA AREA(ACRES) =    1.46   SUBAREA RUNOFF(CFS) =    7.51
  TOTAL AREA(ACRES) =      2.88   TOTAL RUNOFF(CFS) =   10.03
  TC(MIN.) =   8.24

****************************************************************************
  FLOW PROCESS FROM NODE   2609.00 TO NODE   2608.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1240.00  DOWNSTREAM(FEET) =  1238.00
  FLOW LENGTH(FEET) =   180.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.77
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     10.03
  PIPE TRAVEL TIME(MIN.) =   0.44    Tc(MIN.) =   8.68
  LONGEST FLOWPATH FROM NODE   2609.30 TO NODE   2608.00 =   530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2608.00 TO NODE   2608.00 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.) =   8.68
```

```
  RAINFALL INTENSITY(INCH/HR) =   6.46
  TOTAL STREAM AREA(ACRES) =     2.88
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.03

****************************************************************************
  FLOW PROCESS FROM NODE   2608.30 TO NODE   2608.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1340.00
  DOWNSTREAM ELEVATION(FEET) =   1336.00
  ELEVATION DIFFERENCE(FEET) =      4.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.426
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    95.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      2.48
  TOTAL AREA(ACRES) =      0.34   TOTAL RUNOFF(CFS) =      2.48

****************************************************************************
  FLOW PROCESS FROM NODE   2608.20 TO NODE   2608.10 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1336.00  DOWNSTREAM ELEVATION(FEET) = 1280.00
  STREET LENGTH(FEET) =   545.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.78
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.25
    HALFSTREET FLOOD WIDTH(FEET) =    6.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.71
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.68
  STREET FLOW TRAVEL TIME(MIN.) =   1.35   Tc(MIN.) =   4.78
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
  SUBAREA AREA(ACRES) =    1.18      SUBAREA RUNOFF(CFS) =    8.60
  TOTAL AREA(ACRES) =      1.52        PEAK FLOW RATE(CFS) =      11.07

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.28   HALFSTREET FLOOD WIDTH(FEET) =   7.92
```

```
  FLOW VELOCITY(FEET/SEC.) =  7.43   DEPTH*VELOCITY(FT*FT/SEC.) =   2.12
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2608.10 =   645.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2608.40 TO NODE   2608.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4630
  SUBAREA AREA(ACRES) =     4.40   SUBAREA RUNOFF(CFS) =   14.20
  TOTAL AREA(ACRES) =       5.92   TOTAL RUNOFF(CFS) =   25.27
  TC(MIN.) =   4.78

****************************************************************************
  FLOW PROCESS FROM NODE   2608.10 TO NODE   2608.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1274.00  DOWNSTREAM(FEET) =  1238.00
  FLOW LENGTH(FEET) =   255.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.75
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      25.27
  PIPE TRAVEL TIME(MIN.) =   0.19    Tc(MIN.) =   4.97
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2608.00 =   900.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2608.00 TO NODE   2608.00 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.) =   4.97
  RAINFALL INTENSITY(INCH/HR) =   9.22
  TOTAL STREAM AREA(ACRES) =     5.92
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     25.27

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       10.03     8.68        6.461          2.88
     2       25.27     4.97        9.222          5.92

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       31.01     4.97       9.222
     2       27.74     8.68       6.461

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     31.01   Tc(MIN.) =    4.97
```

```
  TOTAL AREA(ACRES) =       8.80
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2608.00 =   900.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2608.00 TO NODE   2605.50 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1238.00  DOWNSTREAM(FEET) =  1234.00
  FLOW LENGTH(FEET) =   640.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  22.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.39
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     31.01
  PIPE TRAVEL TIME(MIN.) =   1.44    Tc(MIN.) =   6.41
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2605.50 =  1540.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2608.00 TO NODE   2605.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.856
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5988
  SUBAREA AREA(ACRES) =     6.01   SUBAREA RUNOFF(CFS) =   36.36
  TOTAL AREA(ACRES) =      14.81   TOTAL RUNOFF(CFS) =   69.68
  TC(MIN.) =   6.41

****************************************************************************
  FLOW PROCESS FROM NODE   2605.50 TO NODE   2605.40 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1234.00  DOWNSTREAM(FEET) =  1232.00
  FLOW LENGTH(FEET) =   350.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   8.54
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     69.68
  PIPE TRAVEL TIME(MIN.) =   0.68    Tc(MIN.) =   7.09
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2605.40 =  1890.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2605.50 TO NODE   2605.40 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.360
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6471
  SUBAREA AREA(ACRES) =     5.82   SUBAREA RUNOFF(CFS) =   32.98
  TOTAL AREA(ACRES) =      20.63   TOTAL RUNOFF(CFS) =   98.25
  TC(MIN.) =   7.09

****************************************************************************
  FLOW PROCESS FROM NODE   2605.40 TO NODE   2605.30 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1232.00  DOWNSTREAM(FEET) =  1228.00
  FLOW LENGTH(FEET) =   700.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  37.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.33
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     98.25
  PIPE TRAVEL TIME(MIN.) =   1.25    Tc(MIN.) =   8.34
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2605.30 =  2590.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2605.40 TO NODE   2605.30 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.628
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6865
  SUBAREA AREA(ACRES) =    9.74   SUBAREA RUNOFF(CFS) =   49.71
  TOTAL AREA(ACRES) =     30.37   TOTAL RUNOFF(CFS) =  138.19
  TC(MIN.) =   8.34

****************************************************************************
  FLOW PROCESS FROM NODE   2605.30 TO NODE   2605.20 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1228.00  DOWNSTREAM(FEET) =  1223.00
  FLOW LENGTH(FEET) =   355.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  34.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  14.46
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    138.19
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   8.75
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2605.20 =  2945.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2605.30 TO NODE   2605.20 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.426
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6922
  SUBAREA AREA(ACRES) =    2.20   SUBAREA RUNOFF(CFS) =   10.89
  TOTAL AREA(ACRES) =     32.57   TOTAL RUNOFF(CFS) =  144.88
  TC(MIN.) =   8.75

****************************************************************************
  FLOW PROCESS FROM NODE   2605.20 TO NODE   2605.10 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1223.00  DOWNSTREAM(FEET) =  1205.00
```

```
  FLOW LENGTH(FEET) =   340.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  29.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.48
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    144.88
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   8.99
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2605.10 =  3285.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2605.20 TO NODE   2605.10 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.315
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6966
  SUBAREA AREA(ACRES) =    1.95   SUBAREA RUNOFF(CFS) =    9.48
  TOTAL AREA(ACRES) =     34.52   TOTAL RUNOFF(CFS) =  151.84
  TC(MIN.) =   8.99

****************************************************************************
  FLOW PROCESS FROM NODE   2605.10 TO NODE   2605.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1205.00  DOWNSTREAM(FEET) =  1193.00
  FLOW LENGTH(FEET) =   305.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  31.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  21.35
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    151.84
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =   9.23
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2605.00 =  3590.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2605.10 TO NODE   2605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.209
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7011
  SUBAREA AREA(ACRES) =    2.28   SUBAREA RUNOFF(CFS) =   10.90
  TOTAL AREA(ACRES) =     36.80   TOTAL RUNOFF(CFS) =  160.20
  TC(MIN.) =   9.23

****************************************************************************
  FLOW PROCESS FROM NODE   2605.00 TO NODE   2604.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1193.00  DOWNSTREAM(FEET) =  1187.00
  FLOW LENGTH(FEET) =   380.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  36.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.49
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    160.20
```

```
  PIPE TRAVEL TIME(MIN.) =   0.41    Tc(MIN.) =   9.64
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2604.00 =  3970.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2604.00 TO NODE   2604.00 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.) =   9.64
  RAINFALL INTENSITY(INCH/HR) =   6.04
  TOTAL STREAM AREA(ACRES) =    36.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    160.20

****************************************************************************
  FLOW PROCESS FROM NODE   2604.30 TO NODE   2604.20 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1237.00
  DOWNSTREAM ELEVATION(FEET) =   1235.00
  ELEVATION DIFFERENCE(FEET) =      2.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    4.217
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
  NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
  SUBAREA RUNOFF(CFS) =      1.35
  TOTAL AREA(ACRES) =      0.19   TOTAL RUNOFF(CFS) =      1.35

****************************************************************************
  FLOW PROCESS FROM NODE   2604.20 TO NODE   2604.10 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1235.00  DOWNSTREAM ELEVATION(FEET) = 1217.00
  STREET LENGTH(FEET) =   485.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

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

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0130
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.12
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.31
    HALFSTREET FLOOD WIDTH(FEET) =    9.18
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.75
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.47
  STREET FLOW TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =   5.92
```

```
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.271
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.770
SUBAREA AREA(ACRES) =     2.43      SUBAREA RUNOFF(CFS) =   15.48
TOTAL AREA(ACRES) =       2.62        PEAK FLOW RATE(CFS) =      16.69

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.36   HALFSTREET FLOOD WIDTH(FEET) =  11.85
FLOW VELOCITY(FEET/SEC.) =  5.48   DEPTH*VELOCITY(FT*FT/SEC.) =   1.99
LONGEST FLOWPATH FROM NODE   2604.30 TO NODE   2604.10 =   585.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2604.10 TO NODE   2604.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1211.00  DOWNSTREAM(FEET) =  1187.00
FLOW LENGTH(FEET) =   400.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  14.87
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     16.69
PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =   6.37
LONGEST FLOWPATH FROM NODE   2604.30 TO NODE   2604.00 =   985.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2604.00 TO NODE   2604.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   6.37
RAINFALL INTENSITY(INCH/HR) =   7.89
TOTAL STREAM AREA(ACRES) =     2.62
PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.69

** CONFLUENCE DATA **
STREAM     RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
    1      160.20     9.64        6.038         36.80
    2       16.69     6.37        7.890          2.62

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

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc      INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      139.27     6.37       7.890
    2      172.97     9.64       6.038

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    172.97   Tc(MIN.) =    9.64
TOTAL AREA(ACRES) =     39.42
LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2604.00 =  3970.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2604.10 TO NODE   2604.00 IS CODE =  81
```

```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.038
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7700
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7147
  SUBAREA AREA(ACRES) =    6.43   SUBAREA RUNOFF(CFS) =   29.89
  TOTAL AREA(ACRES) =     45.85   TOTAL RUNOFF(CFS) =  197.86
  TC(MIN.) =   9.64

****************************************************************************
  FLOW PROCESS FROM NODE   2604.00 TO NODE   2604.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1      197.86     9.64       6.038       45.85
  LONGEST FLOWPATH FROM NODE   2608.30 TO NODE   2604.00 =  3970.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1      321.18    11.14       5.502       85.46
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2604.00 =  4915.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1     475.93       9.64        6.038
     2     501.48      11.14        5.502

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    501.48   Tc(MIN.) =   11.14
  TOTAL AREA(ACRES) =    131.31

****************************************************************************
  FLOW PROCESS FROM NODE   2604.00 TO NODE   2602.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1187.00  DOWNSTREAM(FEET) =  1145.00
  FLOW LENGTH(FEET) =   140.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  61.87
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    501.48
  PIPE TRAVEL TIME(MIN.) =   0.04    Tc(MIN.) =  11.17
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2602.00 =  5055.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2602.00 TO NODE   2601.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1145.00  DOWNSTREAM(FEET) =   1140.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00   CHANNEL SLOPE =  0.0200
```

```
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0200 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    501.48
  FLOW VELOCITY(FEET/SEC) =   6.28 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.66   Tc(MIN.) =  11.84
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE   2601.00 =  5305.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2602.00 TO NODE   2601.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.289
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6842
  SUBAREA AREA(ACRES) =    4.46   SUBAREA RUNOFF(CFS) =   11.56
  TOTAL AREA(ACRES) =    135.77   TOTAL RUNOFF(CFS) =  501.48
  TC(MIN.) =  11.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE   2603.00 TO NODE   2601.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.289
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.6527
  SUBAREA AREA(ACRES) =   10.59   SUBAREA RUNOFF(CFS) =   14.00
  TOTAL AREA(ACRES) =    146.36   TOTAL RUNOFF(CFS) =  505.33
  TC(MIN.) =  11.84

****************************************************************************
  FLOW PROCESS FROM NODE   2601.00 TO NODE     26.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1140.00  DOWNSTREAM(FEET) =    975.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1430.00   CHANNEL SLOPE =  0.1154
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1115 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    505.33
  FLOW VELOCITY(FEET/SEC) =  14.87 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =  13.44
  LONGEST FLOWPATH FROM NODE   2637.00 TO NODE     26.00 =  6735.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2601.00 TO NODE     26.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.873
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5805
  SUBAREA AREA(ACRES) =   32.01   SUBAREA RUNOFF(CFS) =   39.00
  TOTAL AREA(ACRES) =    178.37   TOTAL RUNOFF(CFS) =  505.33
```

```
  TC(MIN.) =  13.44
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    178.37  TC(MIN.) =     13.44
  PEAK FLOW RATE(CFS)    =    505.33
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

RATIONAL METHOD HYDROGRAPH PROGRAM
COPYRIGHT 1992, 2001 RICK ENGINEERING COMPANY

RUN DATE 10/2/2006
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 12 MIN.
6 HOUR RAINFALL 3.5 INCHES
BASIN AREA 146.36 ACRES
RUNOFF COEFFICIENT 0.65
PEAK DISCHARGE 505.33 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 12	DISCHARGE (CFS) = 20
TIME (MIN) = 24	DISCHARGE (CFS) = 20.4
TIME (MIN) = 36	DISCHARGE (CFS) = 21.4
TIME (MIN) = 48	DISCHARGE (CFS) = 21.9
TIME (MIN) = 60	DISCHARGE (CFS) = 23.1
TIME (MIN) = 72	DISCHARGE (CFS) = 23.8
TIME (MIN) = 84	DISCHARGE (CFS) = 25.2
TIME (MIN) = 96	DISCHARGE (CFS) = 26.1
TIME (MIN) = 108	DISCHARGE (CFS) = 28
TIME (MIN) = 120	DISCHARGE (CFS) = 29
TIME (MIN) = 132	DISCHARGE (CFS) = 31.6
TIME (MIN) = 144	DISCHARGE (CFS) = 33.1
TIME (MIN) = 156	DISCHARGE (CFS) = 36.7
TIME (MIN) = 168	DISCHARGE (CFS) = 38.9
TIME (MIN) = 180	DISCHARGE (CFS) = 44.6
TIME (MIN) = 192	DISCHARGE (CFS) = 48.3
TIME (MIN) = 204	DISCHARGE (CFS) = 59.1
TIME (MIN) = 216	DISCHARGE (CFS) = 67.3
TIME (MIN) = 228	DISCHARGE (CFS) = 98.8
TIME (MIN) = 240	DISCHARGE (CFS) = 132.6
TIME (MIN) = 252	DISCHARGE (CFS) = 505.33
TIME (MIN) = 264	DISCHARGE (CFS) = 79.2
TIME (MIN) = 276	DISCHARGE (CFS) = 53
TIME (MIN) = 288	DISCHARGE (CFS) = 41.5
TIME (MIN) = 300	DISCHARGE (CFS) = 34.7
TIME (MIN) = 312	DISCHARGE (CFS) = 30.2
TIME (MIN) = 324	DISCHARGE (CFS) = 27
TIME (MIN) = 336	DISCHARGE (CFS) = 24.5
TIME (MIN) = 348	DISCHARGE (CFS) = 22.5
TIME (MIN) = 360	DISCHARGE (CFS) = 20.9
TIME (MIN) = 372	DISCHARGE (CFS) = 0

```
****************************************************************************
                HYDRAULICS ELEMENTS - II  PROGRAM PACKAGE

                STORAGE BASIN HYDROGRAPH ROUTING MODEL
****************************************************************************
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            Ver. 10.0  Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                   FUSCOE ENGINEERING - SAN DIEGO, INC.
                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                             (858) 554-1500

 ************************** DESCRIPTION OF STUDY **************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                  *
* SUBBASIN # 26 - DETENTION BASIN STORAGE ROUTING                         *
* 2469.01A - OCTOBER 2006                                                 *
 ***************************************************************************

    FILE NAME: MMDET26.DAT
    TIME/DATE OF STUDY: 15:46 10/02/2006
===============================================================================
    ENTERED INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   32
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =   12.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
-------------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:        0.00*    2:       20.00*    3:       20.40*
    *    4:       21.40*    5:       21.90*    6:       23.10*
    *    7:       23.80*    8:       25.20*    9:       26.10*
    *   10:       28.00*   11:       29.00*   12:       31.60*
    *   13:       33.10*   14:       36.70*   15:       38.90*
    *   16:       44.60*   17:       48.30*   18:       59.10*
    *   19:       67.30*   20:       98.80*   21:      132.60*
    *   22:      505.33*   23:       79.20*   24:       53.00*
    *   25:       41.50*   26:       34.70*   27:       30.20*
    *   28:       27.00*   29:       24.50*   30:       22.50*
    *   31:       20.90*   32:        0.00*
===============================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
-------------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   4
-------------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *     0.000      0.000     0.000**     5.000      7.950    107.910*
    *    10.000     17.680   181.160**    15.000     29.200    232.360*
*******************************************************************************
-------------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
```

NUMBER	(ACRE-FEET)	(ACRE-FEET)
1	0.00000	0.00000
2	7.05818	8.84182
3	16.18281	19.17719
4	27.27967	31.12033

WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)

UNIT-HYDROGRAPH STORAGE-BASIN ROUTING

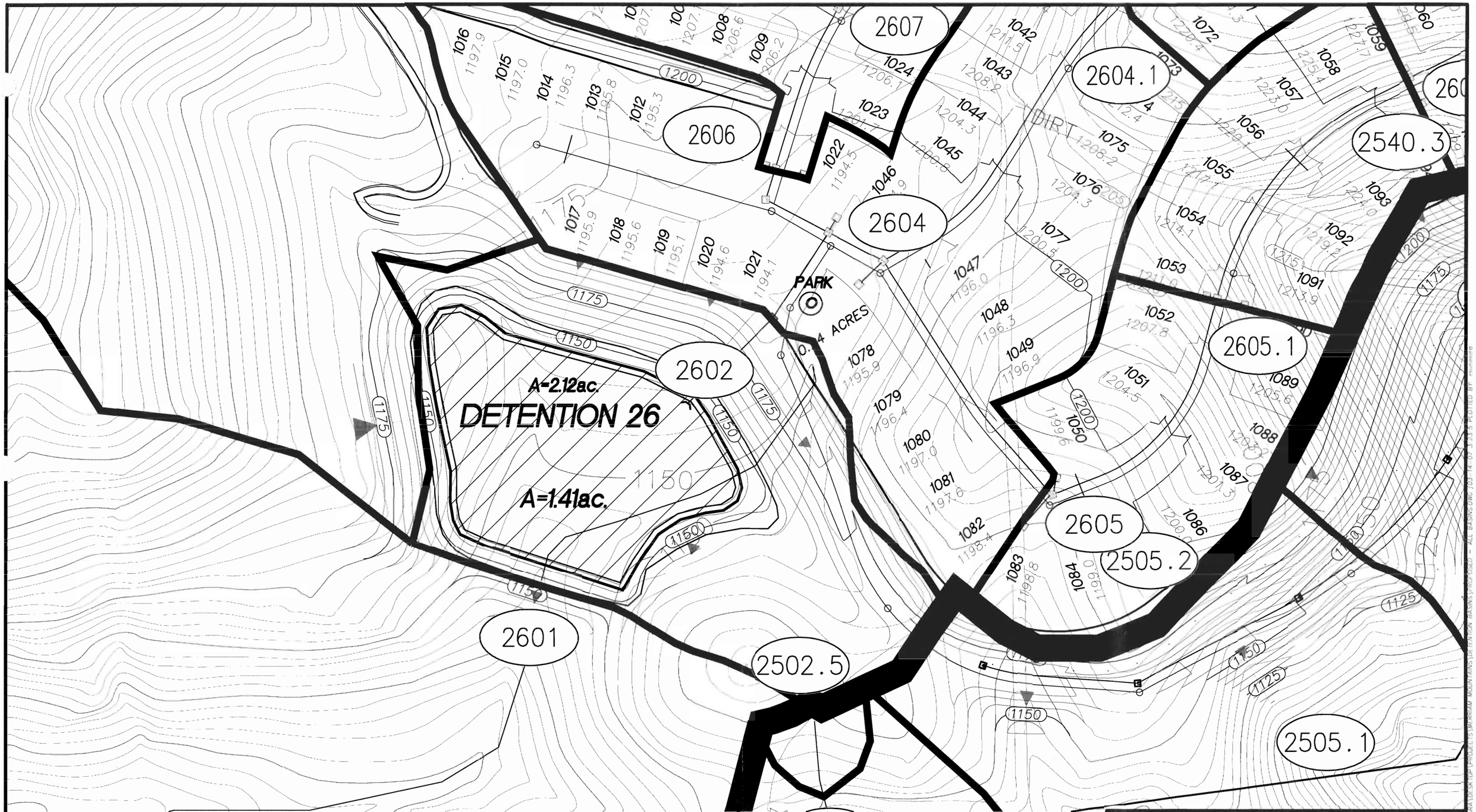
NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME

```
 TIME   INFLOW  OUTFLOW    STORAGE
(HOURS) (CFS)    (CFS)    (ACRE-FT)  0.    126.    253.    379.    505.
   0.20     0.00     0.00       0.000 O       .       .       .       .
     [BASIN DEPTH(FEET) =    0.00]
   0.40    20.00     4.03       0.297 OI      .       .       .       .
     [BASIN DEPTH(FEET) =    0.19]
   0.60    20.40     7.34       0.540 OI      .       .       .       .
     [BASIN DEPTH(FEET) =    0.34]
   0.80    21.40    10.17       0.749 OI      .       .       .       .
     [BASIN DEPTH(FEET) =    0.47]
   1.00    21.90    12.54       0.924 OI      .       .       .       .
     [BASIN DEPTH(FEET) =    0.58]
   1.20    23.10    14.67       1.081 OI      .       .       .       .
     [BASIN DEPTH(FEET) =    0.68]
   1.40    23.80    16.51       1.216 .O      .       .       .       .
     [BASIN DEPTH(FEET) =    0.77]
   1.60    25.20    18.26       1.346 .O      .       .       .       .
     [BASIN DEPTH(FEET) =    0.85]
   1.80    26.10    19.84       1.462 .O      .       .       .       .
     [BASIN DEPTH(FEET) =    0.92]
   2.00    28.00    21.49       1.583 .O      .       .       .       .
     [BASIN DEPTH(FEET) =    1.00]
   2.20    29.00    23.00       1.695 .O      .       .       .       .
     [BASIN DEPTH(FEET) =    1.07]
   2.40    31.60    24.74       1.823 .OI     .       .       .       .
     [BASIN DEPTH(FEET) =    1.15]
   2.60    33.10    26.43       1.947 .OI     .       .       .       .
     [BASIN DEPTH(FEET) =    1.22]
   2.80    36.70    28.50       2.100 .OI     .       .       .       .
     [BASIN DEPTH(FEET) =    1.32]
   3.00    38.90    30.60       2.254 .OI     .       .       .       .
     [BASIN DEPTH(FEET) =    1.42]
   3.20    44.60    33.42       2.462 . O     .       .       .       .
     [BASIN DEPTH(FEET) =    1.55]
   3.40    48.30    36.42       2.683 . OI    .       .       .       .
     [BASIN DEPTH(FEET) =    1.69]
   3.60    59.10    41.00       3.020 . OI    .       .       .       .
     [BASIN DEPTH(FEET) =    1.90]
   3.80    67.30    46.30       3.411 . O I   .       .       .       .
     [BASIN DEPTH(FEET) =    2.15]
   4.00    98.80    56.89       4.191 .  O  I .       .       .       .
     [BASIN DEPTH(FEET) =    2.64]
   4.20   132.60    72.17       5.317 .   O   I       .       .       .
     [BASIN DEPTH(FEET) =    3.34]
```

```
 4.40   505.33   137.90      11.933 .       O       .       .       I
   [BASIN DEPTH(FEET) =    7.05]
 4.60    79.20   131.02      11.020 .    I  O       .       .       .
   [BASIN DEPTH(FEET) =    6.58]
 4.80    53.00   121.88       9.806 .  I   O.       .       .       .
   [BASIN DEPTH(FEET) =    5.95]
 5.00    41.50   112.46       8.555 . I    O.       .       .       .
   [BASIN DEPTH(FEET) =    5.31]
 5.20    34.70   100.07       7.372 . I   O .       .       .       .
   [BASIN DEPTH(FEET) =    4.64]
 5.40    30.20    85.97       6.334 .I   O  .       .       .       .
   [BASIN DEPTH(FEET) =    3.98]
 5.60    27.00    74.08       5.457 .I  O   .       .       .       .
   [BASIN DEPTH(FEET) =    3.43]
 5.80    24.50    64.07       4.721 .I  O   .       .       .       .
   [BASIN DEPTH(FEET) =    2.97]
 6.00    22.50    55.69       4.103 .I O    .       .       .       .
   [BASIN DEPTH(FEET) =    2.58]
 6.20    20.90    48.67       3.586 .I O    .       .       .       .
   [BASIN DEPTH(FEET) =    2.26]
 6.40     0.00    38.85       2.862 I O     .       .       .       .
   [BASIN DEPTH(FEET) =    1.80]
 6.60     0.00    31.01       2.285 IO      .       .       .       .
   [BASIN DEPTH(FEET) =    1.44]
 6.80     0.00    24.76       1.824 IO      .       .       .       .
   [BASIN DEPTH(FEET) =    1.15]
 7.00     0.00    19.76       1.456 IO      .       .       .       .
   [BASIN DEPTH(FEET) =    0.92]
 7.20     0.00    15.78       1.162 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.73]
 7.40     0.00    12.59       0.928 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.58]
 7.60     0.00    10.05       0.741 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.47]
 7.80     0.00     8.03       0.591 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.37]
 8.00     0.00     6.41       0.472 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.30]
 8.20     0.00     5.11       0.377 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.24]
 8.40     0.00     4.08       0.301 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.19]
 8.60     0.00     3.26       0.240 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.15]
 8.80     0.00     2.60       0.192 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.12]
 9.00     0.00     2.08       0.153 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.10]
 9.20     0.00     1.66       0.122 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.08]
 9.40     0.00     1.32       0.097 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.06]
 9.60     0.00     1.06       0.078 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.05]
 9.80     0.00     0.84       0.062 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.04]
10.00     0.00     0.67       0.050 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.03]
10.20     0.00     0.54       0.040 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.02]
10.40     0.00     0.43       0.032 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.02]
10.60     0.00     0.34       0.025 O       .       .       .       .
```

```
   [BASIN DEPTH(FEET) =    0.02]
10.80     0.00     0.27       0.020 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.01]
11.00     0.00     0.22       0.016 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.01]
11.20     0.00     0.17       0.013 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.01]
11.40     0.00     0.14       0.010 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.01]
11.60     0.00     0.11       0.008 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.01]
11.80     0.00     0.09       0.007 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
12.00     0.00     0.07       0.005 O       .       .       .       .
   [BASIN DEPTH(FEET) =    0.00]
```



SCALE: 1" = 100'

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MERRIAM MOUNTAINS

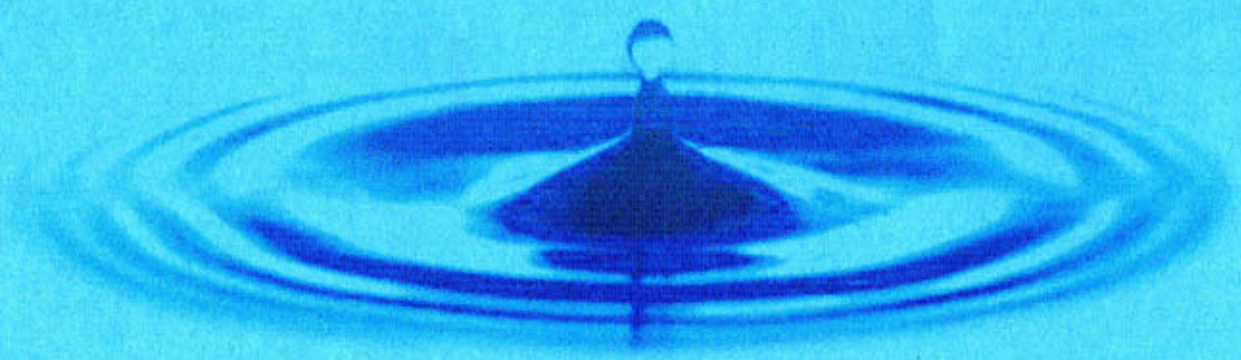
FIGURE C4 - PROPOSED DETENTION STORAGE

DETENTION 26

APPENDIX C

Proposed Detention Storage Analysis

SUB-BASIN 27



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Job Name:
Merriam Mountains - Proposed Hydrology

Job #:
2469.01A

Date:
October 2006

Run Name:
MERR27-P
Page 1

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2747	2746	2	1,508.0	1,505.5	100.0	7	0.79	0.24	
2746	2745	6	1,505.0	1,486.5	505.0	7	0.79	3.28	
2745	2744	3	1,482.0	1,447.0	400.0				
2745	2744	8					0.79	2.83	
2744	2740	3	1,446.9	1,417.0	275.0				
2744	2740	8					0.79	2.47	
2740	2740	1							1 of 2
2743	2742	2	1,607.0	1,580.0	100.0	21	0.35	0.2	
2742	2741	5	1,580.0	1,440.0	455.0				
2742	2741	8				21	0.35	7.3	
2741	2740	3	1,437.0	1,418.0	250.0				
2740	2740	1							2 of 2
2740	2734	3	1,417.9	1,350.0	272.0				
2735	2734	8				21	0.32	2.44	
2734	2731	5	1,350.0	1,300.0	445.0				
2734	2731	8				21	0.25	4	
2731	2731	1							1 of 2
2733	2732	2	1,750.0	1,728.0	100.0	21	0.35	0.2	
2732	2731	5	1,728.0	1,300.0	1,250.0				
2731	2731	8				21	0.33	15.61	
2731	2731	1							2 of 2
2731	2730	5	1,300.0	1,175.0	1,195.0				
2731	2730	8				21	0.33	25.26	
2730	2724	5	1,175.0	1,042.0	945.0				
2730	2724	8				21	0.25	11.85	
2724	2724	1							1 of 2
2728	2727	2	1,437.5	1,435.0	100.0	21	0.25	0.14	
2727	2726	5	1,435.0	1,398.0	320.0				
2727	2726	8				21	0.25	1.76	
2726	2725	5	1,398.0	1,305.0	600.0				
2726	2725	8				21	0.25	5.55	
2725	2724	5	1,305.0	1,042.0	1,342.0				
2725	2724	8				21	0.25	16.86	
2724	2724	1							2 of 2
2724	2723	5	1,042.0	973.0	1,200.0				
2724	2723	8				21	0.28	21.23	
2723	2719	5	973.0	973.0	925.0				
2723	2719	8				21	0.29	16.81	
2719	2719	1							1 of 2
2722	2721	2	1,160.0	1,137.5	100.0	21	0.25	0.16	
2721	2720	5	1,137.5	1,037.0	436.0				
2721	2720	8				21	0.25	14.39	

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Job Name:
Merriam Mountains - Proposed Hydrology

Job #:
2469.01A

Date:
October 2006

Run Name:
MERR27-P
Page 2

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	Land Use	Runoff Coeff.	Area (ac.)	Comments
2720	2719	5	1,037.0	937.0	986.0				
2720	2719	8				21	0.26	14.24	
2719	2719	1							2 of 2
2719	27	5	937.0	920.0	390.0				
2719	27	8				21	0.33	3.57	
27	27	10							Bank #1
2718	2717	2	1,445.0	1,440.0	100.0	21	0.25	0.35	
2717	2716	5	1,440.0	1,391.0	318.0				
2717	2716	8				21	0.25	1.97	
2716	2712	5	1,391.0	1,173.0	845.0				
2716	2712	8				21	0.25	8.79	
2712	2712	1							1 of 2
2715	2714	2	1,300.0	1,295.0	100.0	21	0.25	0.31	
2714	2713	5	1,295.0	1,225.0	430.0				
2714	2713	8				21	0.25	5.52	
2713	2712	5	1,225.0	1,173.0	660.0				
2713	2712	8				21	0.25	15.96	
2712	2712	1							2 of 2
2712	2711	5	1,173.0	1,105.0	665.0				
2712	2711	8				21	0.25	10.99	
2711	27	5	1,105.0	920.0	1,560.0				
2711	27	8				21	0.26	18.2	
27	27	11							Add Bank #1
								232.48	Total Area

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                          2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2004 Advanced Engineering Software (aes)
             Ver. 2.0 Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                   FUSCOE ENGINEERING - SAN DIEGO, INC.
                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                             (858) 554-1500

 ************************* DESCRIPTION OF STUDY *************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                 *
* SUBBASIN # 27 - NO DETENTION STORAGE ROUTING                           *
* 2469.01A - OCTOBER 2006                                                *
 ************************************************************************

  FILE NAME: MERR27-P.DAT
  TIME/DATE OF STUDY: 16:24 10/02/2006
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  18.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE   2747.00 TO NODE   2746.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1508.00
  DOWNSTREAM ELEVATION(FEET) =   1505.50
  ELEVATION DIFFERENCE(FEET) =      2.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.791
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
```

```
          THE MAXIMUM OVERLAND FLOW LENGTH =    85.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  9.222
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      1.75
TOTAL AREA(ACRES) =      0.24   TOTAL RUNOFF(CFS) =      1.75

****************************************************************************
FLOW PROCESS FROM NODE   2746.00 TO NODE   2745.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1505.00  DOWNSTREAM ELEVATION(FEET) = 1486.50
STREET LENGTH(FEET) =   505.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  11.00
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) =   0.0130
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.10
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.34
  HALFSTREET FLOOD WIDTH(FEET) =   10.71
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.17
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.76
STREET FLOW TRAVEL TIME(MIN.) =   1.63   Tc(MIN.) =   5.42
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.756
*USER SPECIFIED(SUBAREA):
RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
S.C.S. CURVE NUMBER (AMC II) =   0
AREA-AVERAGE RUNOFF COEFFICIENT =  0.790
SUBAREA AREA(ACRES) =    3.28      SUBAREA RUNOFF(CFS) =   22.69
TOTAL AREA(ACRES) =      3.52        PEAK FLOW RATE(CFS) =      24.35

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.40   HALFSTREET FLOOD WIDTH(FEET) =  13.89
FLOW VELOCITY(FEET/SEC.) =  5.94   DEPTH*VELOCITY(FT*FT/SEC.) =   2.40
LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2745.00 =   605.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE   2745.00 TO NODE   2744.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  1482.00  DOWNSTREAM(FEET) =  1447.00
FLOW LENGTH(FEET) =   400.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  12.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  18.63
ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     24.35
PIPE TRAVEL TIME(MIN.) =   0.36    Tc(MIN.) =   5.78
LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2744.00 =  1005.00 FEET.

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

```
  FLOW PROCESS FROM NODE   2745.00 TO NODE   2744.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.402
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7900
  SUBAREA AREA(ACRES) =     2.83   SUBAREA RUNOFF(CFS) =   18.78
  TOTAL AREA(ACRES) =       6.35   TOTAL RUNOFF(CFS) =   42.15
  TC(MIN.) =   5.78

****************************************************************************
  FLOW PROCESS FROM NODE   2744.00 TO NODE   2740.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1446.90  DOWNSTREAM(FEET) =  1417.00
  FLOW LENGTH(FEET) =   275.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  23.13
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     42.15
  PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =   5.97
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2740.00 =  1280.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2744.00 TO NODE   2740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.221
  *USER SPECIFIED(SUBAREA):
  RESIDENTAIL (14.5 DU/AC OR LESS) RUNOFF COEFFICIENT = .7900
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.7900
  SUBAREA AREA(ACRES) =     2.47   SUBAREA RUNOFF(CFS) =   16.04
  TOTAL AREA(ACRES) =       8.82   TOTAL RUNOFF(CFS) =   57.29
  TC(MIN.) =   5.97

****************************************************************************
  FLOW PROCESS FROM NODE   2740.00 TO NODE   2740.00 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.) =   5.97
  RAINFALL INTENSITY(INCH/HR) =   8.22
  TOTAL STREAM AREA(ACRES) =     8.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     57.29

****************************************************************************
  FLOW PROCESS FROM NODE   2743.00 TO NODE   2742.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
```

```
  UPSTREAM ELEVATION(FEET) =   1607.00
  DOWNSTREAM ELEVATION(FEET) =   1580.00
  ELEVATION DIFFERENCE(FEET) =     27.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.972
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE   2742.00 TO NODE   2741.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1580.00  DOWNSTREAM(FEET) =   1440.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   455.00   CHANNEL SLOPE =  0.3077
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1969 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.56
  FLOW VELOCITY(FEET/SEC) =   2.49 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.05   Tc(MIN.) =   9.32
  LONGEST FLOWPATH FROM NODE   2743.00 TO NODE   2741.00 =   555.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2742.00 TO NODE   2741.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.172
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3500
  SUBAREA AREA(ACRES) =    7.30   SUBAREA RUNOFF(CFS) =   15.77
  TOTAL AREA(ACRES) =      7.50   TOTAL RUNOFF(CFS) =   16.20
  TC(MIN.) =   9.32

****************************************************************************
  FLOW PROCESS FROM NODE   2741.00 TO NODE   2740.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1437.00  DOWNSTREAM(FEET) =  1418.00
  FLOW LENGTH(FEET) =   250.00   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
  DEPTH OF FLOW IN  18.0 INCH PIPE IS   9.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.18
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     16.20
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   9.58
  LONGEST FLOWPATH FROM NODE   2743.00 TO NODE   2740.00 =   805.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2740.00 TO NODE   2740.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
```

```
  TIME OF CONCENTRATION(MIN.) =   9.58
  RAINFALL INTENSITY(INCH/HR) =   6.06
  TOTAL STREAM AREA(ACRES) =     7.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     16.20

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
      1       57.29     5.97        8.221          8.82
      2       16.20     9.58        6.064          7.50

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc       INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       67.39     5.97       8.221
      2       58.46     9.58       6.064

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     67.39   Tc(MIN.) =    5.97
  TOTAL AREA(ACRES) =     16.32
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2740.00 =  1280.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2740.00 TO NODE   2734.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1417.90  DOWNSTREAM(FEET) =  1350.00
  FLOW LENGTH(FEET) =   272.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  35.32
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     67.39
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   6.10
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2734.00 =  1552.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2735.00 TO NODE   2734.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.109
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3200
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.5530
  SUBAREA AREA(ACRES) =    2.44   SUBAREA RUNOFF(CFS) =    6.33
  TOTAL AREA(ACRES) =     18.76   TOTAL RUNOFF(CFS) =   84.12
  TC(MIN.) =   6.10

****************************************************************************
  FLOW PROCESS FROM NODE   2734.00 TO NODE   2731.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1350.00  DOWNSTREAM(FEET) =   1300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   445.00   CHANNEL SLOPE =  0.1124
  SLOPE ADJUSTMENT CURVE USED:
```

```
  EFFECTIVE SLOPE = .1093 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      84.12
  FLOW VELOCITY(FEET/SEC) =   8.10 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =   7.02
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2731.00 =  1997.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2734.00 TO NODE   2731.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.410
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.4997
  SUBAREA AREA(ACRES) =    4.00   SUBAREA RUNOFF(CFS) =    7.41
  TOTAL AREA(ACRES) =     22.76   TOTAL RUNOFF(CFS) =   84.28
  TC(MIN.) =   7.02

****************************************************************************
  FLOW PROCESS FROM NODE   2731.00 TO NODE   2731.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   7.02
  RAINFALL INTENSITY(INCH/HR) =   7.41
  TOTAL STREAM AREA(ACRES) =    22.76
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     84.28

****************************************************************************
  FLOW PROCESS FROM NODE   2733.00 TO NODE   2732.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1750.00
  DOWNSTREAM ELEVATION(FEET) =   1728.00
  ELEVATION DIFFERENCE(FEET) =     22.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.972
  SUBAREA RUNOFF(CFS) =      0.56
  TOTAL AREA(ACRES) =      0.20   TOTAL RUNOFF(CFS) =      0.56

****************************************************************************
  FLOW PROCESS FROM NODE   2732.00 TO NODE   2731.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1728.00  DOWNSTREAM(FEET) =   1300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1250.00   CHANNEL SLOPE =  0.3424
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .2039 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.56
  FLOW VELOCITY(FEET/SEC) =   2.53 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
```

```
  TRAVEL TIME(MIN.) =   8.24   Tc(MIN.) =  14.50
  LONGEST FLOWPATH FROM NODE   2733.00 TO NODE   2731.00 =  1350.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2731.00 TO NODE   2731.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.639
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3303
  SUBAREA AREA(ACRES) =   15.61   SUBAREA RUNOFF(CFS) =   23.90
  TOTAL AREA(ACRES) =     15.81   TOTAL RUNOFF(CFS) =   24.22
  TC(MIN.) =  14.50

****************************************************************************
  FLOW PROCESS FROM NODE   2731.00 TO NODE   2731.00 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.) =  14.50
  RAINFALL INTENSITY(INCH/HR) =   4.64
  TOTAL STREAM AREA(ACRES) =    15.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     24.22

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       84.28     7.02        7.410         22.76
     2       24.22    14.50        4.639         15.81

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       96.00     7.02       7.410
     2       76.99    14.50       4.639

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     96.00   Tc(MIN.) =    7.02
  TOTAL AREA(ACRES) =     38.57
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2731.00 =  1997.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2731.00 TO NODE   2730.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1300.00  DOWNSTREAM(FEET) =   1175.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1195.00   CHANNEL SLOPE =  0.1046
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1035 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     96.00
  FLOW VELOCITY(FEET/SEC) =   8.23 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.42   Tc(MIN.) =   9.44
```

```
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2730.00 =  3192.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2731.00 TO NODE   2730.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.122
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3906
  SUBAREA AREA(ACRES) =   25.26   SUBAREA RUNOFF(CFS) =   51.03
  TOTAL AREA(ACRES) =     63.83   TOTAL RUNOFF(CFS) =  152.62
  TC(MIN.) =   9.44

****************************************************************************
  FLOW PROCESS FROM NODE   2730.00 TO NODE   2724.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1175.00  DOWNSTREAM(FEET) =   1042.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   945.00   CHANNEL SLOPE =  0.1407
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1288 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    152.62
  FLOW VELOCITY(FEET/SEC) =  10.72 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.47   Tc(MIN.) =  10.91
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2724.00 =  4137.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2730.00 TO NODE   2724.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.576
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3686
  SUBAREA AREA(ACRES) =   11.85   SUBAREA RUNOFF(CFS) =   16.52
  TOTAL AREA(ACRES) =     75.68   TOTAL RUNOFF(CFS) =  155.55
  TC(MIN.) =  10.91

****************************************************************************
  FLOW PROCESS FROM NODE   2724.00 TO NODE   2724.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  10.91
  RAINFALL INTENSITY(INCH/HR) =   5.58
  TOTAL STREAM AREA(ACRES) =    75.68
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    155.55

****************************************************************************
  FLOW PROCESS FROM NODE   2728.00 TO NODE   2727.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
```

```
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1437.50
  DOWNSTREAM ELEVATION(FEET) =   1435.00
  ELEVATION DIFFERENCE(FEET) =      2.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =   10.842
  WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
           THE MAXIMUM OVERLAND FLOW LENGTH =    92.50
           (Reference: Table 3-1B of Hydrology Manual)
           THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.597
  SUBAREA RUNOFF(CFS) =      0.20
  TOTAL AREA(ACRES) =      0.14   TOTAL RUNOFF(CFS) =      0.20

****************************************************************************
  FLOW PROCESS FROM NODE   2727.00 TO NODE   2726.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1435.00  DOWNSTREAM(FEET) =   1398.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   320.00   CHANNEL SLOPE =  0.1156
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1117 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.20
  FLOW VELOCITY(FEET/SEC) =   1.87 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.85   Tc(MIN.) =  13.69
  LONGEST FLOWPATH FROM NODE   2728.00 TO NODE   2726.00 =   420.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2727.00 TO NODE   2726.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.815
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    1.76   SUBAREA RUNOFF(CFS) =    2.12
  TOTAL AREA(ACRES) =      1.90   TOTAL RUNOFF(CFS) =    2.29
  TC(MIN.) =  13.69

****************************************************************************
  FLOW PROCESS FROM NODE   2726.00 TO NODE   2725.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1398.00  DOWNSTREAM(FEET) =   1305.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   600.00   CHANNEL SLOPE =  0.1550
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1375 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      2.29
  FLOW VELOCITY(FEET/SEC) =   2.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.66   Tc(MIN.) =  17.35
  LONGEST FLOWPATH FROM NODE   2728.00 TO NODE   2725.00 =  1020.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2726.00 TO NODE   2725.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.134
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =     5.55   SUBAREA RUNOFF(CFS) =     5.74
  TOTAL AREA(ACRES) =       7.45   TOTAL RUNOFF(CFS) =     7.70
  TC(MIN.) =  17.35

******************************************************************************
  FLOW PROCESS FROM NODE   2725.00 TO NODE   2724.00 IS CODE =  53
------------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1305.00  DOWNSTREAM(FEET) =   1042.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1342.00   CHANNEL SLOPE =  0.1960
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1580 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =       7.70
  FLOW VELOCITY(FEET/SEC) =   4.39 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   5.09   Tc(MIN.) =  22.44
  LONGEST FLOWPATH FROM NODE   2728.00 TO NODE   2724.00 =  2362.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE   2725.00 TO NODE   2724.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.501
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    16.86   SUBAREA RUNOFF(CFS) =    14.76
  TOTAL AREA(ACRES) =      24.31   TOTAL RUNOFF(CFS) =    21.28
  TC(MIN.) =  22.44

******************************************************************************
  FLOW PROCESS FROM NODE   2724.00 TO NODE   2724.00 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.) =  22.44
  RAINFALL INTENSITY(INCH/HR) =   3.50
  TOTAL STREAM AREA(ACRES) =    24.31
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     21.28

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      155.55    10.91        5.576         75.68
     2       21.28    22.44        3.501         24.31

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

  ** PEAK FLOW RATE TABLE **
```

```
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       165.89    10.91       5.576
     2       118.94    22.44       3.501

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    165.89   Tc(MIN.) =   10.91
  TOTAL AREA(ACRES) =     99.99
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2724.00 =  4137.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2724.00 TO NODE   2723.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1042.00  DOWNSTREAM(FEET) =    973.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1200.00   CHANNEL SLOPE =  0.0575
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0575 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    165.89
  FLOW VELOCITY(FEET/SEC) =   7.37 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.72   Tc(MIN.) =  13.62
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2723.00 =  5337.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2724.00 TO NODE   2723.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.831
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2800
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3293
  SUBAREA AREA(ACRES) =   21.23   SUBAREA RUNOFF(CFS) =   28.72
  TOTAL AREA(ACRES) =    121.22   TOTAL RUNOFF(CFS) =  192.85
  TC(MIN.) =  13.62

****************************************************************************
  FLOW PROCESS FROM NODE   2723.00 TO NODE   2719.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    973.00  DOWNSTREAM(FEET) =    937.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.00   CHANNEL SLOPE =  0.0389
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0389 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    192.85
  FLOW VELOCITY(FEET/SEC) =   6.37 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.42   Tc(MIN.) =  16.04
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2719.00 =  6262.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2723.00 TO NODE   2719.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.348
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =   0
```

```
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3245
  SUBAREA AREA(ACRES) =    16.81   SUBAREA RUNOFF(CFS) =    21.20
  TOTAL AREA(ACRES) =     138.03   TOTAL RUNOFF(CFS) =   194.74
  TC(MIN.) =  16.04

****************************************************************************
  FLOW PROCESS FROM NODE   2719.00 TO NODE   2719.00 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.) =  16.04
  RAINFALL INTENSITY(INCH/HR) =   4.35
  TOTAL STREAM AREA(ACRES) =   138.03
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    194.74

****************************************************************************
  FLOW PROCESS FROM NODE   2722.00 TO NODE   2721.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1160.00
  DOWNSTREAM ELEVATION(FEET) =   1137.50
  ELEVATION DIFFERENCE(FEET) =     22.50
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.102
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.353
  SUBAREA RUNOFF(CFS) =      0.29
  TOTAL AREA(ACRES) =      0.16   TOTAL RUNOFF(CFS) =      0.29

****************************************************************************
  FLOW PROCESS FROM NODE   2721.00 TO NODE   2720.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1137.50  DOWNSTREAM(FEET) =   1037.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   436.00   CHANNEL SLOPE =  0.2305
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1735 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.29
  FLOW VELOCITY(FEET/SEC) =   2.33 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.12   Tc(MIN.) =  10.22
  LONGEST FLOWPATH FROM NODE   2722.00 TO NODE   2720.00 =   536.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2721.00 TO NODE   2720.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.816
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    14.39   SUBAREA RUNOFF(CFS) =    20.92
  TOTAL AREA(ACRES) =      14.55   TOTAL RUNOFF(CFS) =   21.16
```

```
  TC(MIN.) =  10.22

****************************************************************************
  FLOW PROCESS FROM NODE   2720.00 TO NODE   2719.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1037.00  DOWNSTREAM(FEET) =    937.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   986.00   CHANNEL SLOPE =  0.1014
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1011 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     21.16
  FLOW VELOCITY(FEET/SEC) =   4.92 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.34   Tc(MIN.) =  13.56
  LONGEST FLOWPATH FROM NODE   2722.00 TO NODE   2719.00 =  1522.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2720.00 TO NODE   2719.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.846
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2549
  SUBAREA AREA(ACRES) =   14.24   SUBAREA RUNOFF(CFS) =   17.94
  TOTAL AREA(ACRES) =     28.79   TOTAL RUNOFF(CFS) =   35.57
  TC(MIN.) =  13.56

****************************************************************************
  FLOW PROCESS FROM NODE   2719.00 TO NODE   2719.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  13.56
  RAINFALL INTENSITY(INCH/HR) =   4.85
  TOTAL STREAM AREA(ACRES) =    28.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     35.57

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1      194.74    16.04        4.348        138.03
     2       35.57    13.56        4.846         28.79

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1      210.30    13.56       4.846
     2      226.65    16.04       4.348

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    226.65   Tc(MIN.) =   16.04
  TOTAL AREA(ACRES) =    166.82
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE   2719.00 =  6262.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE   2719.00 TO NODE     27.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    937.00  DOWNSTREAM(FEET) =    920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   390.00   CHANNEL SLOPE =  0.0436
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0436 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =    226.65
  FLOW VELOCITY(FEET/SEC) =   7.12 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   0.91   Tc(MIN.) =  16.95
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE     27.00 =  6652.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2719.00 TO NODE     27.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.195
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3300
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.3129
  SUBAREA AREA(ACRES) =    3.57   SUBAREA RUNOFF(CFS) =    4.94
  TOTAL AREA(ACRES) =    170.39   TOTAL RUNOFF(CFS) =  226.65
  TC(MIN.) =  16.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE     27.00 TO NODE     27.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   2718.00 TO NODE   2717.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1445.00
  DOWNSTREAM ELEVATION(FEET) =   1440.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.948
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.335
  SUBAREA RUNOFF(CFS) =      0.55
  TOTAL AREA(ACRES) =      0.35   TOTAL RUNOFF(CFS) =      0.55

****************************************************************************
  FLOW PROCESS FROM NODE   2717.00 TO NODE   2716.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1440.00  DOWNSTREAM(FEET) =   1391.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   318.00   CHANNEL SLOPE =  0.1541
  SLOPE ADJUSTMENT CURVE USED:
```

```
  EFFECTIVE SLOPE = .1370 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =       0.55
  FLOW VELOCITY(FEET/SEC) =   2.07 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.56   Tc(MIN.) =  11.50
  LONGEST FLOWPATH FROM NODE   2718.00 TO NODE   2716.00 =   418.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2717.00 TO NODE   2716.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.387
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    1.97   SUBAREA RUNOFF(CFS) =    2.65
  TOTAL AREA(ACRES) =      2.32   TOTAL RUNOFF(CFS) =    3.12
  TC(MIN.) =  11.50

****************************************************************************
  FLOW PROCESS FROM NODE   2716.00 TO NODE   2712.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1391.00  DOWNSTREAM(FEET) =   1173.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   845.00   CHANNEL SLOPE =  0.2580
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1827 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =       3.12
  FLOW VELOCITY(FEET/SEC) =   3.50 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.03   Tc(MIN.) =  15.53
  LONGEST FLOWPATH FROM NODE   2718.00 TO NODE   2712.00 =  1263.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2716.00 TO NODE   2712.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.439
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =    8.79   SUBAREA RUNOFF(CFS) =    9.76
  TOTAL AREA(ACRES) =     11.11   TOTAL RUNOFF(CFS) =   12.33
  TC(MIN.) =  15.53

****************************************************************************
  FLOW PROCESS FROM NODE   2712.00 TO NODE   2712.00 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.) =  15.53
  RAINFALL INTENSITY(INCH/HR) =   4.44
  TOTAL STREAM AREA(ACRES) =    11.11
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.33

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

```
  FLOW PROCESS FROM NODE   2715.00 TO NODE   2714.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   100.00
  UPSTREAM ELEVATION(FEET) =   1300.00
  DOWNSTREAM ELEVATION(FEET) =   1295.00
  ELEVATION DIFFERENCE(FEET) =      5.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    8.948
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.335
  SUBAREA RUNOFF(CFS) =      0.49
  TOTAL AREA(ACRES) =      0.31   TOTAL RUNOFF(CFS) =      0.49

****************************************************************************
  FLOW PROCESS FROM NODE   2714.00 TO NODE   2713.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1295.00  DOWNSTREAM(FEET) =   1225.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   430.00   CHANNEL SLOPE =  0.1628
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1414 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  NOTE: CHANNEL FLOW OF 1. CFS WAS ASSUMED IN VELOCITY ESTIMATION
  CHANNEL FLOW THRU SUBAREA(CFS) =      0.49
  FLOW VELOCITY(FEET/SEC) =   2.11 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.40   Tc(MIN.) =  12.35
  LONGEST FLOWPATH FROM NODE   2715.00 TO NODE   2713.00 =   530.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2714.00 TO NODE   2713.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.146
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =     5.52   SUBAREA RUNOFF(CFS) =    7.10
  TOTAL AREA(ACRES) =      5.83   TOTAL RUNOFF(CFS) =    7.50
  TC(MIN.) =  12.35

****************************************************************************
  FLOW PROCESS FROM NODE   2713.00 TO NODE   2712.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1225.00  DOWNSTREAM(FEET) =   1173.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   660.00   CHANNEL SLOPE =  0.0788
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .0788 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =      7.50
  FLOW VELOCITY(FEET/SEC) =   3.07 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.58   Tc(MIN.) =  15.93
  LONGEST FLOWPATH FROM NODE   2715.00 TO NODE   2712.00 =  1190.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2713.00 TO NODE   2712.00 IS CODE =  81
```

```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.368
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =   15.96   SUBAREA RUNOFF(CFS) =   17.43
  TOTAL AREA(ACRES) =     21.79   TOTAL RUNOFF(CFS) =   23.79
  TC(MIN.) =  15.93

****************************************************************************
  FLOW PROCESS FROM NODE   2712.00 TO NODE   2712.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  15.93
  RAINFALL INTENSITY(INCH/HR) =   4.37
  TOTAL STREAM AREA(ACRES) =    21.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     23.79

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1       12.33    15.53        4.439         11.11
     2       23.79    15.93        4.368         21.79

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       35.53    15.53       4.439
     2       35.92    15.93       4.368

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     35.92   Tc(MIN.) =   15.93
  TOTAL AREA(ACRES) =     32.90
  LONGEST FLOWPATH FROM NODE   2718.00 TO NODE   2712.00 =  1263.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2712.00 TO NODE   2711.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1173.00  DOWNSTREAM(FEET) =   1105.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   665.00   CHANNEL SLOPE =  0.1023
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1017 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     35.92
  FLOW VELOCITY(FEET/SEC) =   5.89 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.88   Tc(MIN.) =  17.81
  LONGEST FLOWPATH FROM NODE   2718.00 TO NODE   2711.00 =  1928.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE   2712.00 TO NODE   2711.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.064
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2500
  SUBAREA AREA(ACRES) =   10.99   SUBAREA RUNOFF(CFS) =   11.17
  TOTAL AREA(ACRES) =     43.89   TOTAL RUNOFF(CFS) =   44.59
  TC(MIN.) =  17.81

********************************************************************************
  FLOW PROCESS FROM NODE   2711.00 TO NODE     27.00 IS CODE =  53
--------------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1105.00  DOWNSTREAM(FEET) =    920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1560.00   CHANNEL SLOPE =  0.1186
  SLOPE ADJUSTMENT CURVE USED:
  EFFECTIVE SLOPE = .1139 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  CHANNEL FLOW THRU SUBAREA(CFS) =     44.59
  FLOW VELOCITY(FEET/SEC) =   6.69 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.88   Tc(MIN.) =  21.70
  LONGEST FLOWPATH FROM NODE   2718.00 TO NODE     27.00 =  3488.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE   2711.00 TO NODE     27.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.578
  *USER SPECIFIED(SUBAREA):
  NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .2600
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT = 0.2529
  SUBAREA AREA(ACRES) =   18.20   SUBAREA RUNOFF(CFS) =   16.93
  TOTAL AREA(ACRES) =     62.09   TOTAL RUNOFF(CFS) =   56.20
  TC(MIN.) =  21.70

********************************************************************************
  FLOW PROCESS FROM NODE     27.00 TO NODE     27.00 IS CODE =  11
--------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1       56.20    21.70       3.578       62.09
  LONGEST FLOWPATH FROM NODE   2718.00 TO NODE     27.00 =  3488.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF     Tc      INTENSITY     AREA
  NUMBER      (CFS)   (MIN.)   (INCH/HOUR)   (ACRE)
     1      226.65    16.95       4.195      170.39
  LONGEST FLOWPATH FROM NODE   2747.00 TO NODE     27.00 =  6652.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
     1     270.57      16.95        4.195
     2     249.52      21.70        3.578
```

```
  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    270.57   Tc(MIN.) =   16.95
  TOTAL AREA(ACRES) =    232.48
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =    232.48  TC(MIN.) =     16.95
  PEAK FLOW RATE(CFS)    =    270.57
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

RATIONAL METHOD HYDROGRAPH PROGRAM
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RUN DATE 10/3/2006
HYDROGRAPH FILE NAME Text1
TIME OF CONCENTRATION 6 MIN.
6 H[illegible]R RAINFALL 3.5 INCHES
B[illegible]REA 18.76 ACRES
RU[illegible]F COEFFICIENT 0.553
PEAK DISCHARGE 84.12 CFS

TIME (MIN) = 0	DISCHARGE (CFS) = 0
TIME (MIN) = 6	DISCHARGE (CFS) = 2.2
TIME (MIN) = 12	DISCHARGE (CFS) = 2.2
TIME (MIN) = 18	DISCHARGE (CFS) = 2.2
TIME (MIN) = 24	DISCHARGE (CFS) = 2.3
TIME (MIN) = 30	DISCHARGE (CFS) = 2.3
TIME (MIN) = 36	DISCHARGE (CFS) = 2.3
TIME (MIN) = 42	DISCHARGE (CFS) = 2.4
TIME (MIN) = 48	DISCHARGE (CFS) = 2.4
TIME (MIN) = 54	DISCHARGE (CFS) = 2.5
TIME (MIN) = 60	DISCHARGE (CFS) = 2.5
TIME (MIN) = 66	DISCHARGE (CFS) = 2.6
TIME (MIN) = 72	DISCHARGE (CFS) = 2.6
TIME (MIN) = 78	DISCHARGE (CFS) = 2.7
TIME (MIN) = 84	DISCHARGE (CFS) = 2.8
TIME (MIN) = 90	DISCHARGE (CFS) = 2.9
TIME (MIN) = 96	DISCHARGE (CFS) = 2.9
TIME (MIN) = 102	DISCHARGE (CFS) = 3
TIME (MIN) = 108	DISCHARGE (CFS) = 3.1
TIME (MIN) = 114	DISCHARGE (CFS) = 3.2
TIME (MIN) = 120	DISCHARGE (CFS) = 3.3
TIME (MIN) = 126	DISCHARGE (CFS) = 3.4
TIME (MIN) = 132	DISCHARGE (CFS) = 3.5
TIME (MIN) = 138	DISCHARGE (CFS) = 3.6
TIME (MIN) = 144	DISCHARGE (CFS) = 3.7
TIME (MIN) = 150	DISCHARGE (CFS) = 3.9
TIME (MIN) = 156	DISCHARGE (CFS) = 4.1
TIME (MIN) = 162	DISCHARGE (CFS) = 4.3
TIME (MIN) = 168	DISCHARGE (CFS) = 4.4
TI[illegible]IN) = 174	DISCHARGE (CFS) = 4.8
TI[illegible]IN) = 180	DISCHARGE (CFS) = 5
TIME (MIN) = 186	DISCHARGE (CFS) = 5.4
TIME (MIN) = 192	DISCHARGE (CFS) = 5.6
TIME (MIN) = 198	DISCHARGE (CFS) = 6.3
TIME (MIN) = 204	DISCHARGE (CFS) = 6.6
TIME (MIN) = 210	DISCHARGE (CFS) = 7.6
TIME (MIN) = 216	DISCHARGE (CFS) = 8.2
TIME (MIN) = 222	DISCHARGE (CFS) = 10.1
TIME (MIN) = 228	DISCHARGE (CFS) = 11.5
TIME (MIN) = 234	DISCHARGE (CFS) = 16.8
TIME (MIN) = 240	DISCHARGE (CFS) = 24.7
TIME (MIN) = 246	DISCHARGE (CFS) = 84.12
TIME (MIN) = 252	DISCHARGE (CFS) = 13.5
TIME (MIN) = 258	DISCHARGE (CFS) = 9
TIME (MIN) = 264	DISCHARGE (CFS) = 7.1
TIME (MIN) = 270	DISCHARGE (CFS) = 5.9
TIME (MIN) = 276	DISCHARGE (CFS) = 5.2
TIME (MIN) = 282	DISCHARGE (CFS) = 4.6
TIME (MIN) = 288	DISCHARGE (CFS) = 4.2
TIME (MIN) = 294	DISCHARGE (CFS) = 3.8
TIME (MIN) = 300	DISCHARGE (CFS) = 3.6
TIME (MIN) = 306	DISCHARGE (CFS) = 3.3
TIME (MIN) = 312	DISCHARGE (CFS) = 3.1
TIME (MIN) = 318	DISCHARGE (CFS) = 3
TIME (MIN) = 324	DISCHARGE (CFS) = 2.8
TIME (MIN) = 330	DISCHARGE (CFS) = 2.7
TIME (MIN) = 336	DISCHARGE (CFS) = 2.6
TIME (MIN) = 342	DISCHARGE (CFS) = 2.5
TIME (MIN) = 348	DISCHARGE (CFS) = 2.4
TIME (MIN) = 354	DISCHARGE (CFS) = 2.3
TIME (MIN) = 360	DISCHARGE (CFS) = 2.2
TIME (MIN) = 366	DISCHARGE (CFS) = 0

```
****************************************************************************
                HYDRAULICS ELEMENTS - II  PROGRAM PACKAGE

                 STORAGE BASIN HYDROGRAPH ROUTING MODEL
****************************************************************************
        (c) Copyright 1983-2004 Advanced Engineering Software (aes)
            Ver. 10.0  Release Date: 01/01/2004  License ID 1355

                          Analysis prepared by:

                   FUSCOE ENGINEERING - SAN DIEGO, INC.
                     6390 GREENWICH DRIVE, SUITE 170
                       SAN DIEGO, CALIFORNIA 92122
                             (858) 554-1500

 ************************* DESCRIPTION OF STUDY *************************
* MERRIAM MOUNTAINS - PROPOSED HYDROLOGY                                 *
* SUBBASIN # 27 - PROPOSED DETENTION BASIN ROUTING                       *
* 2469.01A - OCTOBER 2006                                                *
 ************************************************************************

    FILE NAME: MMDET27.DAT
    TIME/DATE OF STUDY: 08:17 10/03/2006
============================================================================
    ENTERED INFORMATION:
----------------------------------------------------------------------------
    TOTAL NUMBER OF INFLOW HYDROGRAPH INTERVALS =   62
    CONSTANT HYDROGRAPH TIME UNIT(MINUTES) =    6.000
    ASSUMED INITIAL DEPTH(FEET) IN STORAGE BASIN =    0.00
----------------------------------------------------------------------------
    ENTERED INFLOW HYDROGRAPH ORDINATES(CFS):
    *INTERVAL    FLOW   *INTERVAL    FLOW   *INTERVAL    FLOW   *
    * NUMBER     (CFS)  * NUMBER     (CFS)  * NUMBER     (CFS)  *
    *    1:        0.00*    2:        2.20*    3:        2.20*
    *    4:        2.20*    5:        2.30*    6:        2.30*
    *    7:        2.30*    8:        2.40*    9:        2.40*
    *   10:        2.50*   11:        2.50*   12:        2.60*
    *   13:        2.60*   14:        2.70*   15:        2.80*
    *   16:        2.90*   17:        2.90*   18:        3.00*
    *   19:        3.10*   20:        3.20*   21:        3.30*
    *   22:        3.40*   23:        3.50*   24:        3.60*
    *   25:        3.70*   26:        3.90*   27:        4.10*
    *   28:        4.30*   29:        4.40*   30:        4.80*
    *   31:        5.00*   32:        5.40*   33:        5.60*
    *   34:        6.30*   35:        6.60*   36:        7.60*
    *   37:        8.20*   38:       10.10*   39:       11.50*
    *   40:       16.80*   41:       24.70*   42:       84.12*
    *   43:       13.50*   44:        9.00*   45:        7.10*
    *   46:        5.90*   47:        5.20*   48:        4.60*
    *   49:        4.20*   50:        3.80*   51:        3.60*
    *   52:        3.30*   53:        3.10*   54:        3.00*
    *   55:        2.80*   56:        2.70*   57:        2.60*
    *   58:        2.50*   59:        2.40*   60:        2.30*
    *   61:        2.20*   62:        0.00*
============================================================================
    DEPTH-VS.-STORAGE AND DEPTH-VS.-DISCHARGE INFORMATION:
----------------------------------------------------------------------------
    TOTAL NUMBER OF BASIN DEPTH INFORMATION ENTRIES =   6
----------------------------------------------------------------------------
    *BASIN-DEPTH  STORAGE    OUTFLOW  **BASIN-DEPTH  STORAGE    OUTFLOW  *
    *   (FEET)  (ACRE-FEET)   (CFS)   **   (FEET)  (ACRE-FEET)   (CFS)   *
    *     0.000      0.000     0.000**     1.000      0.300      3.300*
```

```
    *      2.000      0.750      9.000**      3.000      1.350     13.000*
    *      4.000      2.050     16.000**      5.000      2.825     18.000*
*****************************************************************************
-----------------------------------------------------------------------------
    INITIAL BASIN DEPTH(FEET) =    0.00
    INITIAL BASIN STORAGE(ACRE-FEET) =       0.00
    INITIAL BASIN OUTFLOW(CFS) =       0.00
-----------------------------------------------------------------------------
-----------------------------------------------------------------------------
    BASIN STORAGE, OUTFLOW AND DEPTH ROUTING VALUES:
     INTERVAL   {S-O*DT/2}   {S+O*DT/2}
      NUMBER   (ACRE-FEET) (ACRE-FEET)
          1      0.00000     0.00000
          2      0.28636     0.31364
          3      0.71281     0.78719
          4      1.29628     1.40372
          5      1.98388     2.11612
          6      2.75062     2.89938
    WHERE S=STORAGE(AF);O=OUTFLOW(AF/MIN.);DT=UNIT(MIN.)
-----------------------------------------------------------------------------
```

```
         *UNIT-HYDROGRAPH STORAGE-BASIN ROUTING*
    NOTE: COMPUTED BASIN DEPTH, OUTFLOW, AND STORAGE QUANTITIES
          OCCUR AT THE GIVEN TIME. BASIN INFLOW VALUES REPRESENT THE
          AVERAGE INFLOW DURING THE RECENT HYDROGRAPH UNIT INTERVAL.

    GRAPH NOTATION: "I"=MEAN UNIT INFLOW; "O"=OUTFLOW AT GIVEN TIME
-----------------------------------------------------------------------------
     TIME   INFLOW  OUTFLOW    STORAGE
    (HOURS) (CFS)    (CFS)    (ACRE-FT)  0.     21.     42.     63.     84.
       0.10     0.00     0.00       0.000 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.00]
       0.20     2.20     0.19       0.017 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.06]
       0.30     2.20     0.37       0.033 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.11]
       0.40     2.20     0.53       0.048 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.16]
       0.50     2.30     0.68       0.062 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.21]
       0.60     2.30     0.82       0.075 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.25]
       0.70     2.30     0.95       0.086 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.29]
       0.80     2.40     1.08       0.098 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.33]
       0.90     2.40     1.19       0.108 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.36]
       1.00     2.50     1.30       0.119 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.40]
       1.10     2.50     1.41       0.128 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.43]
       1.20     2.60     1.51       0.137 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.46]
       1.30     2.60     1.61       0.146 O       .       .       .       .
         [BASIN DEPTH(FEET) =    0.49]
       1.40     2.70     1.70       0.155 OI      .       .       .       .
         [BASIN DEPTH(FEET) =    0.52]
       1.50     2.80     1.80       0.163 OI      .       .       .       .
```

```
  [BASIN DEPTH(FEET) =     0.54]
1.60      2.90      1.89       0.172 OI       .        .        .        .
  [BASIN DEPTH(FEET) =     0.57]
1.70      2.90      1.98       0.180 OI       .        .        .        .
  [BASIN DEPTH(FEET) =     0.60]
1.80      3.00      2.07       0.188 OI       .        .        .        .
  [BASIN DEPTH(FEET) =     0.63]
1.90      3.10      2.16       0.196 OI       .        .        .        .
  [BASIN DEPTH(FEET) =     0.65]
2.00      3.20      2.25       0.204 OI       .        .        .        .
  [BASIN DEPTH(FEET) =     0.68]
2.10      3.30      2.34       0.213 OI       .        .        .        .
  [BASIN DEPTH(FEET) =     0.71]
2.20      3.40      2.43       0.221 OI       .        .        .        .
  [BASIN DEPTH(FEET) =     0.74]
2.30      3.50      2.53       0.230 OI       .        .        .        .
  [BASIN DEPTH(FEET) =     0.77]
2.40      3.60      2.62       0.238 OI       .        .        .        .
  [BASIN DEPTH(FEET) =     0.79]
2.50      3.70      2.71       0.247 .O       .        .        .        .
  [BASIN DEPTH(FEET) =     0.82]
2.60      3.90      2.82       0.256 .O       .        .        .        .
  [BASIN DEPTH(FEET) =     0.85]
2.70      4.10      2.93       0.266 .O       .        .        .        .
  [BASIN DEPTH(FEET) =     0.89]
2.80      4.30      3.05       0.277 .O       .        .        .        .
  [BASIN DEPTH(FEET) =     0.92]
2.90      4.40      3.16       0.288 .O       .        .        .        .
  [BASIN DEPTH(FEET) =     0.96]
3.00      4.80      3.31       0.301 .O       .        .        .        .
  [BASIN DEPTH(FEET) =     1.00]
3.10      5.00      3.48       0.314 .O       .        .        .        .
  [BASIN DEPTH(FEET) =     1.03]
3.20      5.40      3.67       0.329 .OI      .        .        .        .
  [BASIN DEPTH(FEET) =     1.06]
3.30      5.60      3.86       0.344 .OI      .        .        .        .
  [BASIN DEPTH(FEET) =     1.10]
3.40      6.30      4.10       0.363 .OI      .        .        .        .
  [BASIN DEPTH(FEET) =     1.14]
3.50      6.60      4.35       0.383 .OI      .        .        .        .
  [BASIN DEPTH(FEET) =     1.18]
3.60      7.60      4.67       0.408 .OI      .        .        .        .
  [BASIN DEPTH(FEET) =     1.24]
3.70      8.20      5.03       0.436 .O I     .        .        .        .
  [BASIN DEPTH(FEET) =     1.30]
3.80     10.10      5.53       0.476 . OI     .        .        .        .
  [BASIN DEPTH(FEET) =     1.39]
3.90     11.50      6.12       0.523 . O I    .        .        .        .
  [BASIN DEPTH(FEET) =     1.50]
4.00     16.80      7.19       0.607 . O   I  .        .        .        .
  [BASIN DEPTH(FEET) =     1.68]
4.10     24.70      8.93       0.744 .  O    .I        .        .        .
  [BASIN DEPTH(FEET) =     1.99]
4.20     84.12     12.99       1.349 .   O    .        .        .       I.
  [BASIN DEPTH(FEET) =     3.00]
4.30     13.50     13.01       1.353 .   OI   .        .        .        .
  [BASIN DEPTH(FEET) =     3.00]
4.40      9.00     12.80       1.321 .  IO    .        .        .        .
  [BASIN DEPTH(FEET) =     2.95]
4.50      7.10     12.50       1.275 . I O    .        .        .        .
  [BASIN DEPTH(FEET) =     2.87]
4.60      5.90     12.15       1.222 . I O    .        .        .        .
  [BASIN DEPTH(FEET) =     2.79]
```

```
4.70      5.20     11.77        1.166 .I  O    .        .        .        .
  [BASIN DEPTH(FEET) =     2.69]
4.80      4.60     11.39        1.108 .I  O    .        .        .        .
  [BASIN DEPTH(FEET) =     2.60]
4.90      4.20     11.00        1.050 .I  O    .        .        .        .
  [BASIN DEPTH(FEET) =     2.50]
5.00      3.80     10.62        0.992 .I  O    .        .        .        .
  [BASIN DEPTH(FEET) =     2.40]
5.10      3.60     10.24        0.936 .I O     .        .        .        .
  [BASIN DEPTH(FEET) =     2.31]
5.20      3.30      9.87        0.880 .I O     .        .        .        .
  [BASIN DEPTH(FEET) =     2.22]
5.30      3.10      9.51        0.826 .I O     .        .        .        .
  [BASIN DEPTH(FEET) =     2.13]
5.40      3.00      9.16        0.773 .I O     .        .        .        .
  [BASIN DEPTH(FEET) =     2.04]
5.50      2.80      8.66        0.723 .I O     .        .        .        .
  [BASIN DEPTH(FEET) =     1.94]
5.60      2.70      8.07        0.676 .I O     .        .        .        .
  [BASIN DEPTH(FEET) =     1.84]
5.70      2.60      7.52        0.633 I O      .        .        .        .
  [BASIN DEPTH(FEET) =     1.74]
5.80      2.50      7.02        0.594 I O      .        .        .        .
  [BASIN DEPTH(FEET) =     1.65]
5.90      2.40      6.56        0.558 I O      .        .        .        .
  [BASIN DEPTH(FEET) =     1.57]
6.00      2.30      6.14        0.524 I O      .        .        .        .
  [BASIN DEPTH(FEET) =     1.50]
```

SCALE: 1" = 100'

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MERRIAM MOUNTAINS

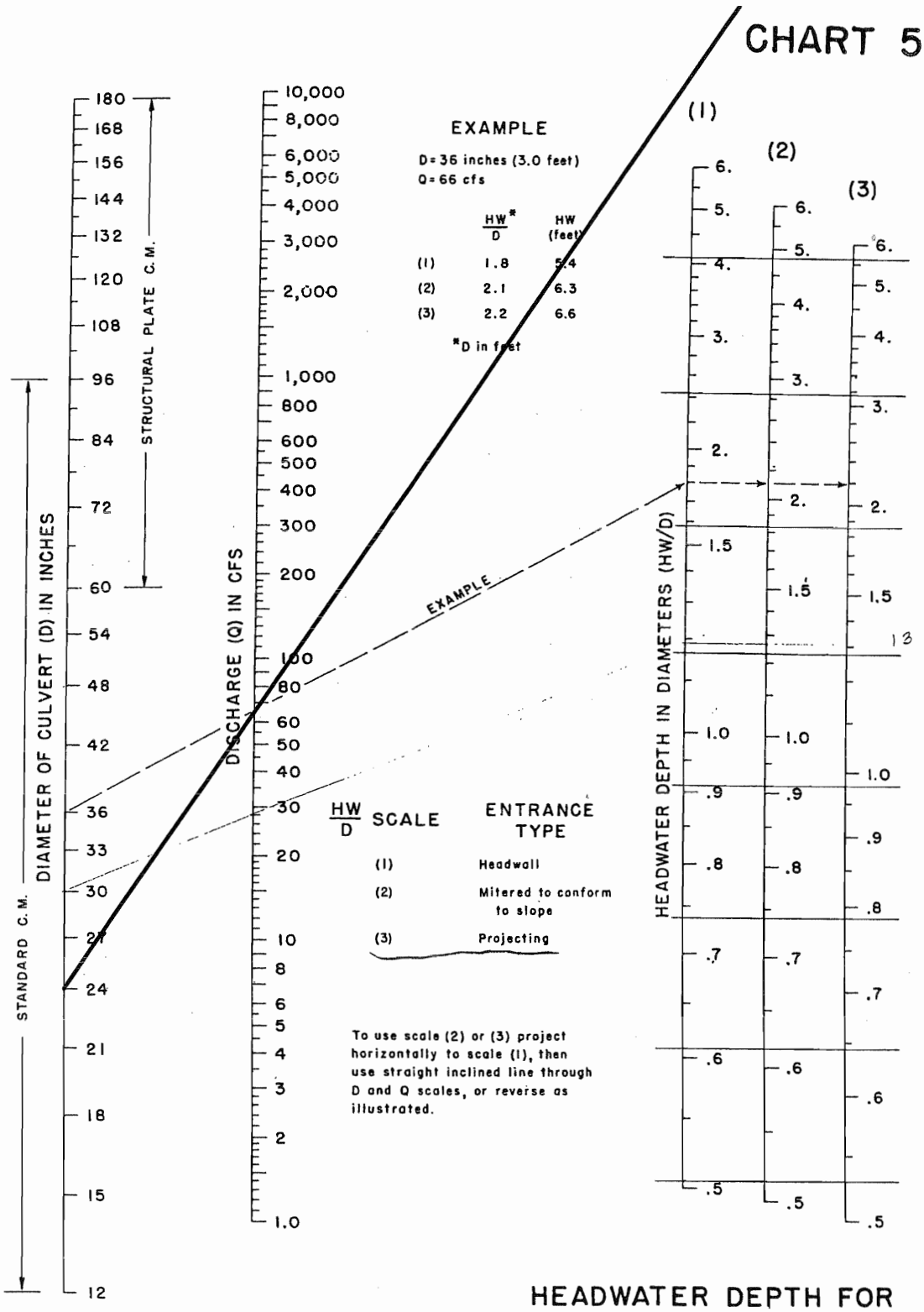
FIGURE C5 - PROPOSED DETENTION STORAGE

DETENTION 27

Appendix D

San Marcos Creek
Headwater Depth for CMP
Culverts with Inlet Control

CHART 5



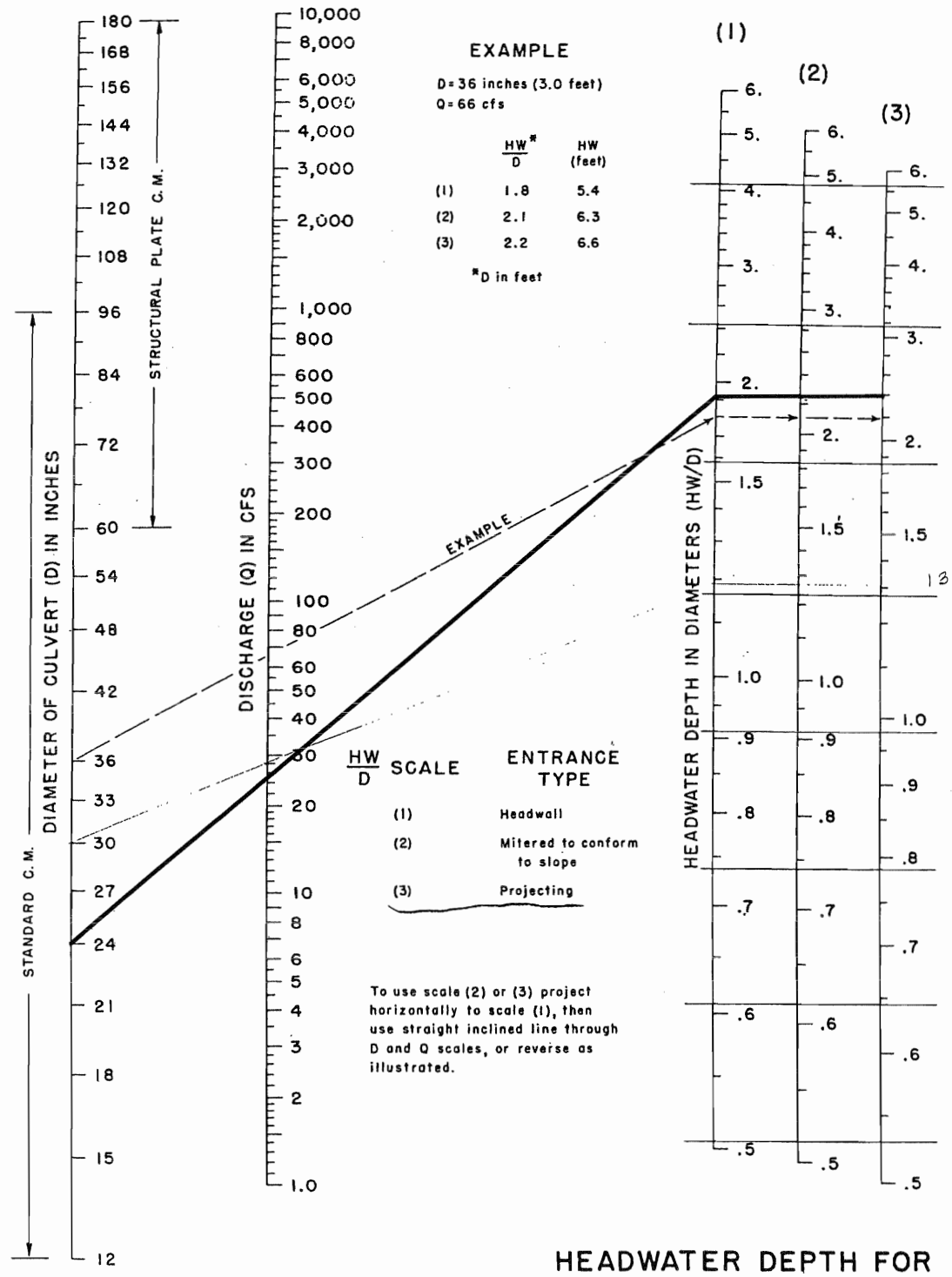
HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 22

DEER SPRINGS ROAD, STA 50+25

CHART 5



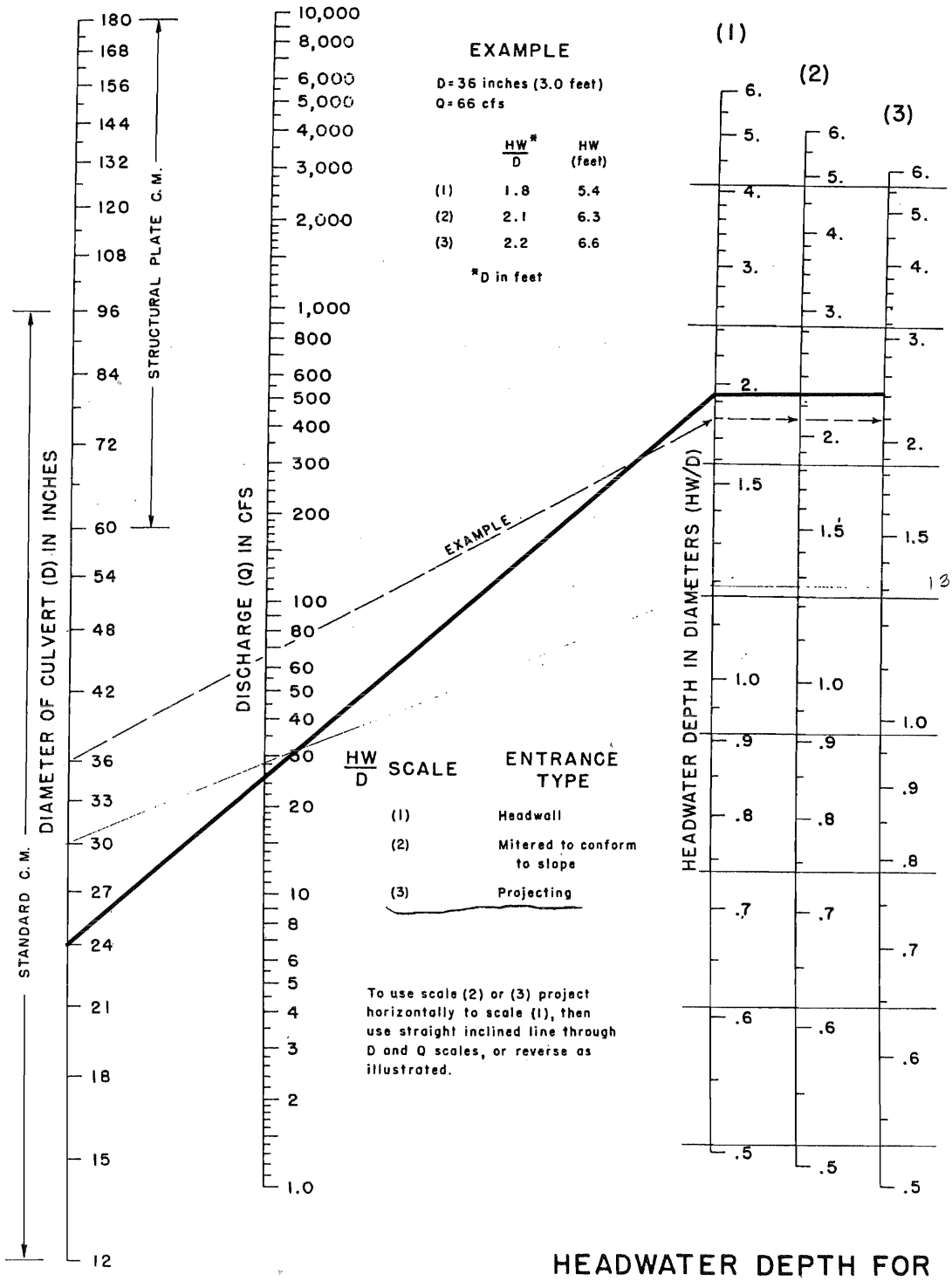
HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 22.1

DEER SPRINGS ROAD, STA 54+70

CHART 5



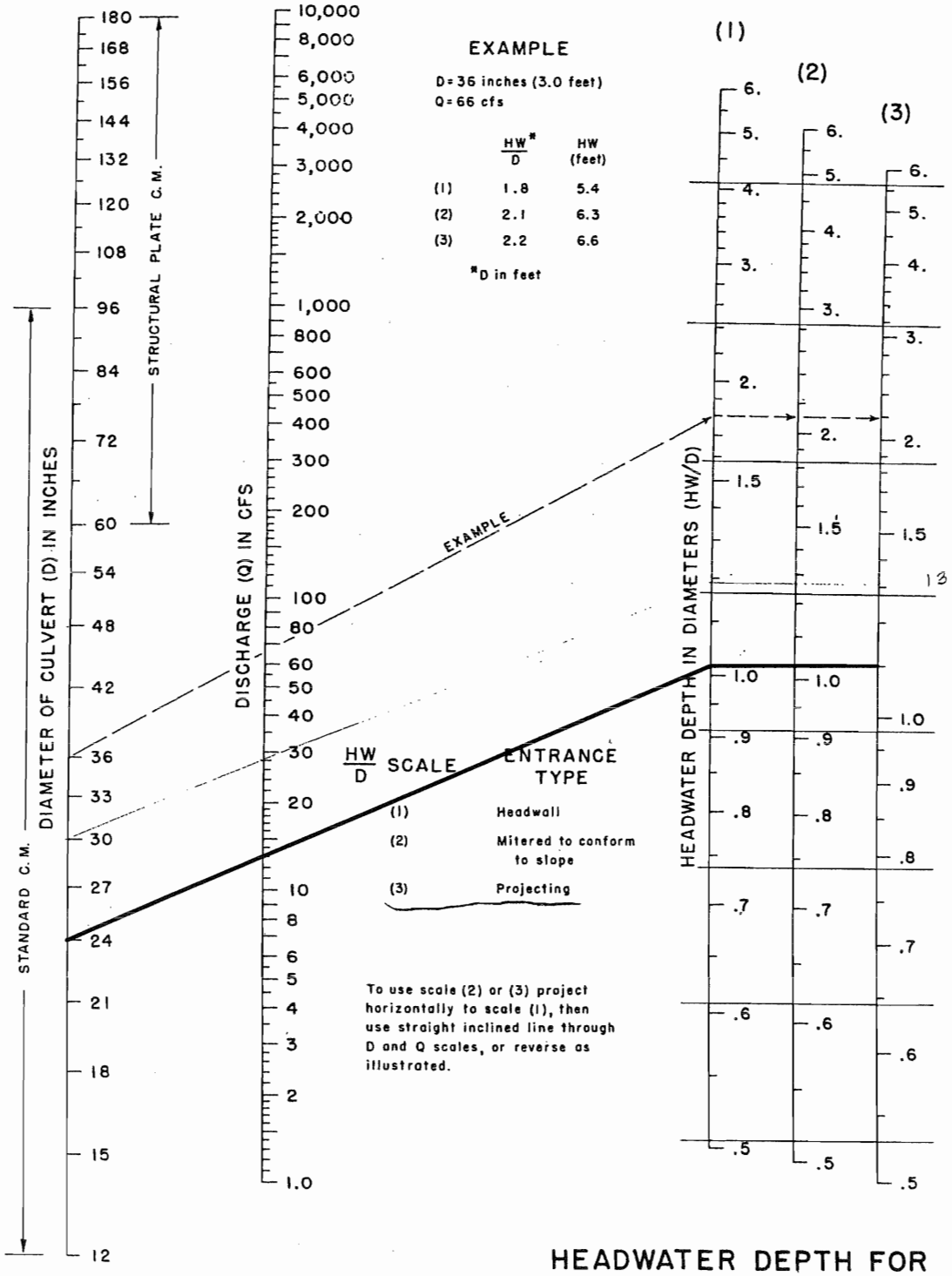
HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 22.2

DEER SPRINGS ROAD, STA 60+30

CHART 5



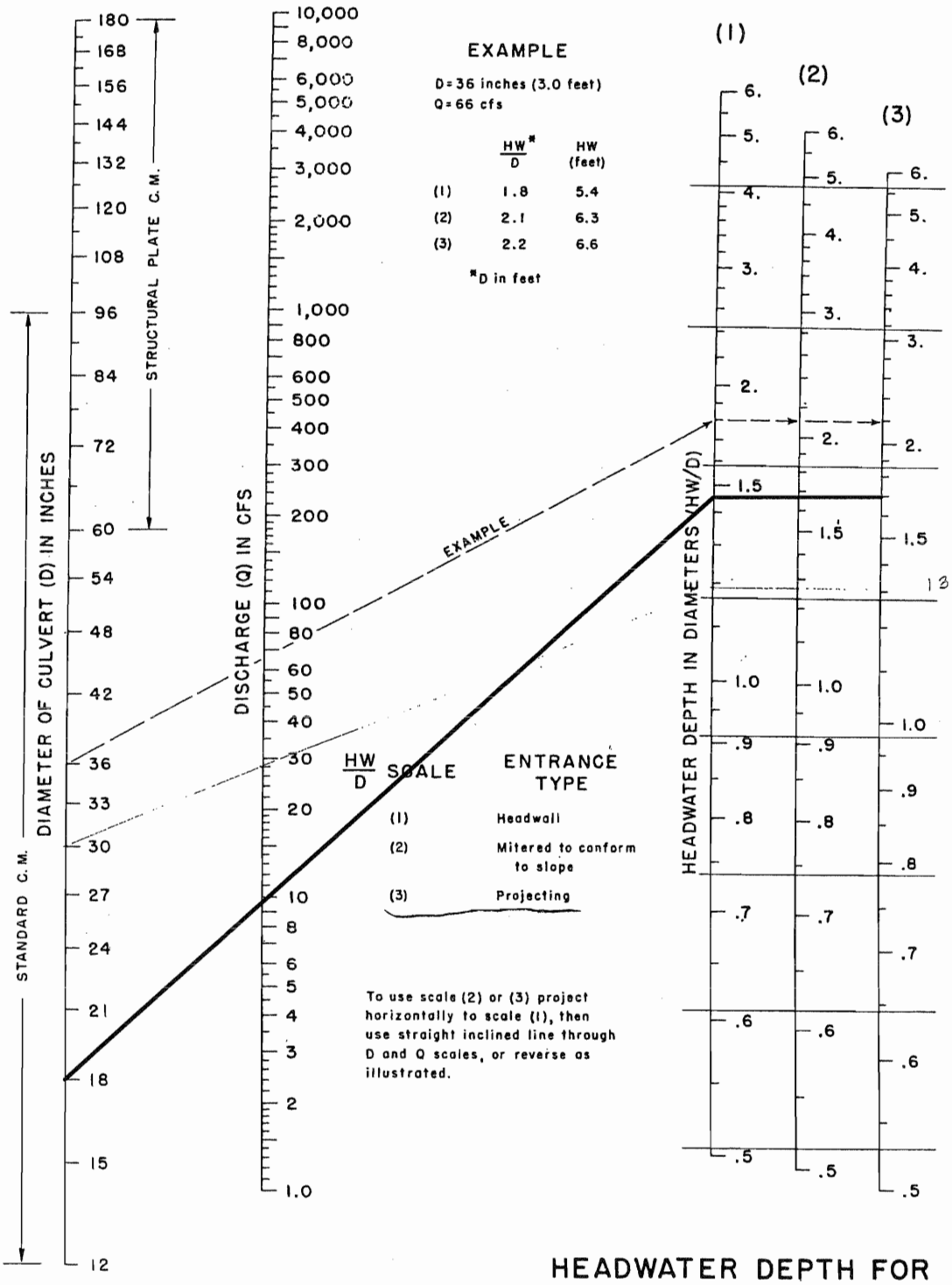
HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 22.3

DEER SPRINGS ROAD, STA 63+50

CHART 5



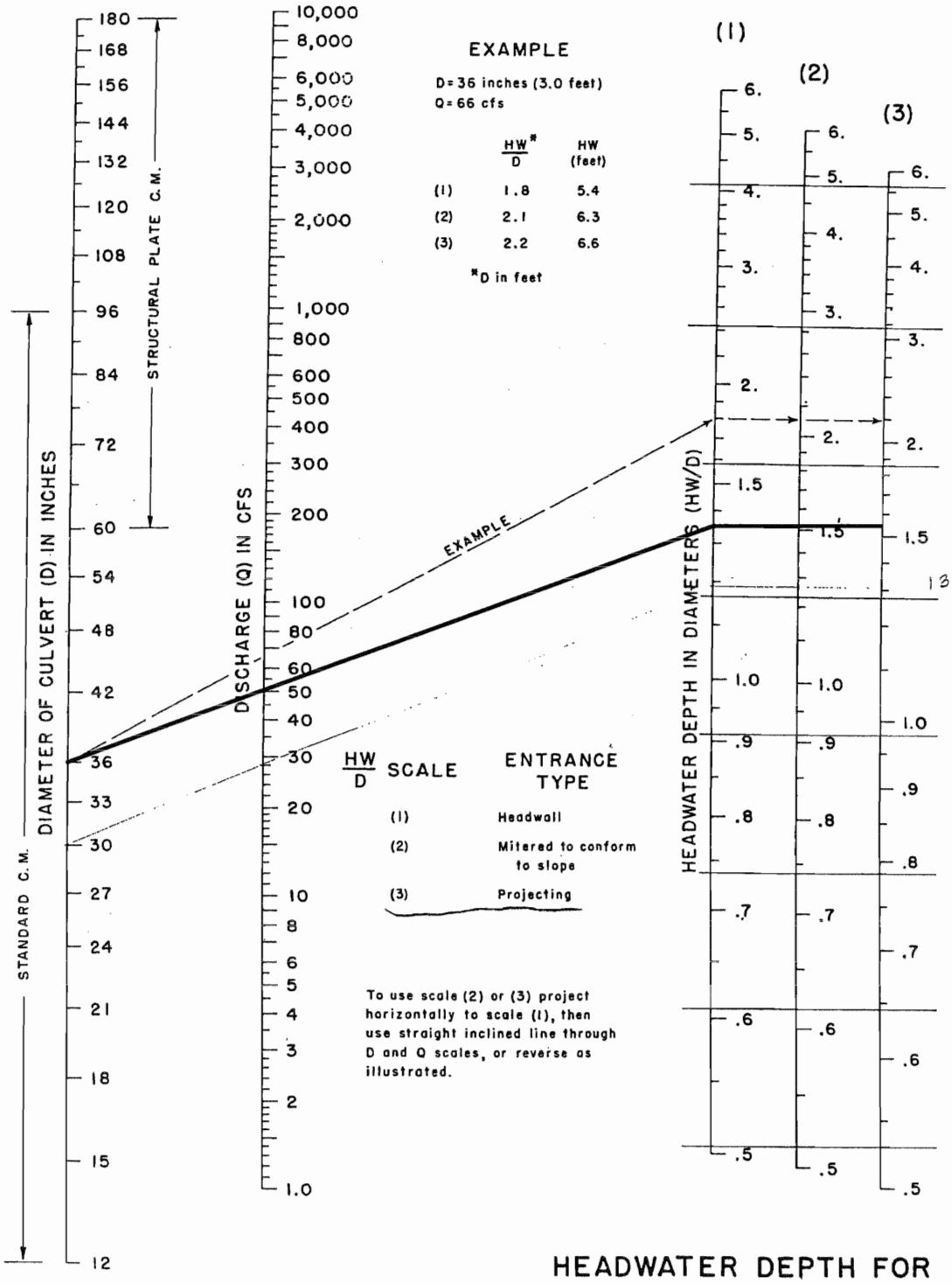
HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 22.4

DEER SPRINGS ROAD, STA 66+30

CHART 5



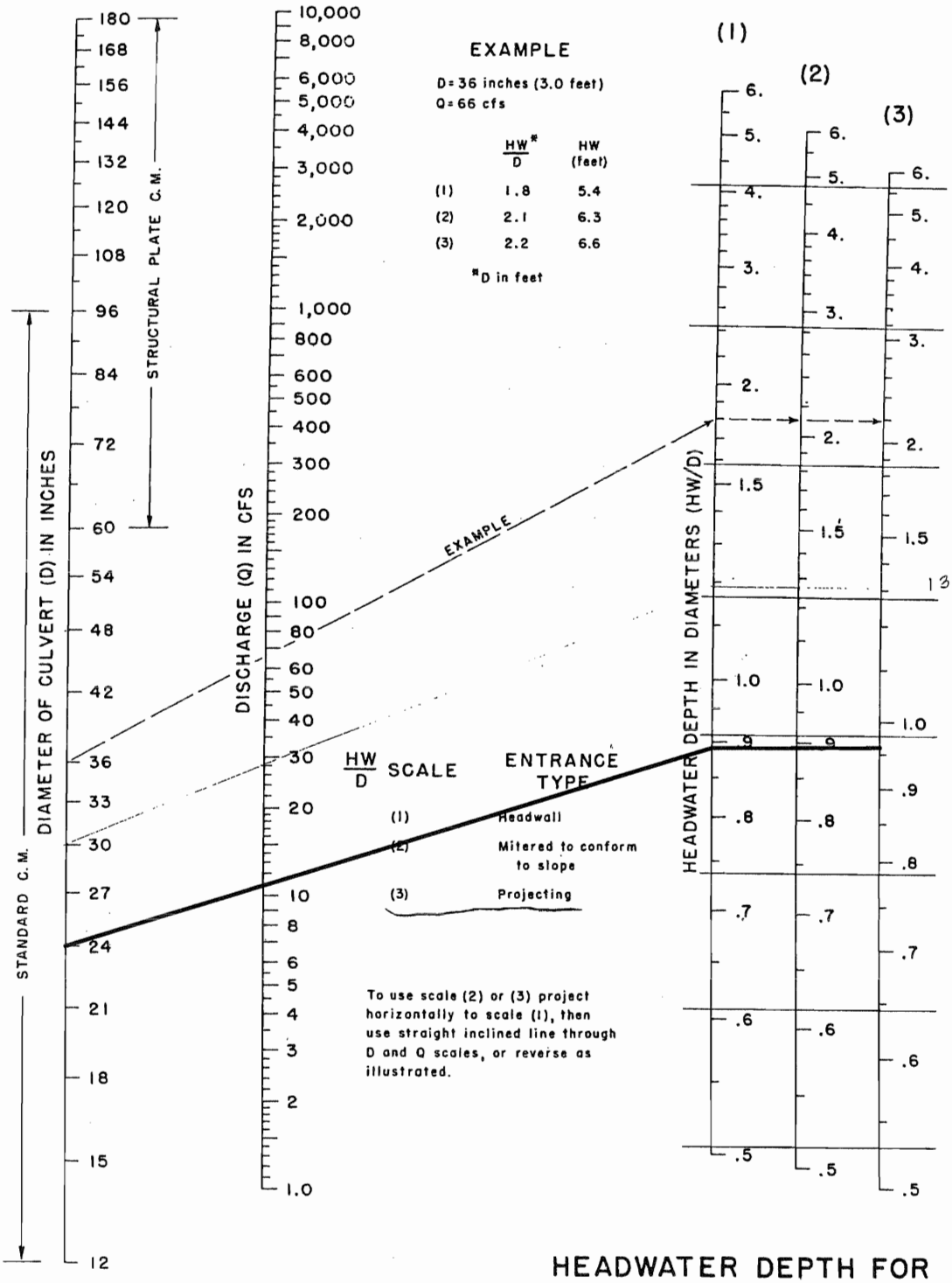
HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 23

DEER SPRINGS ROAD, STA 41+60

CHART 5



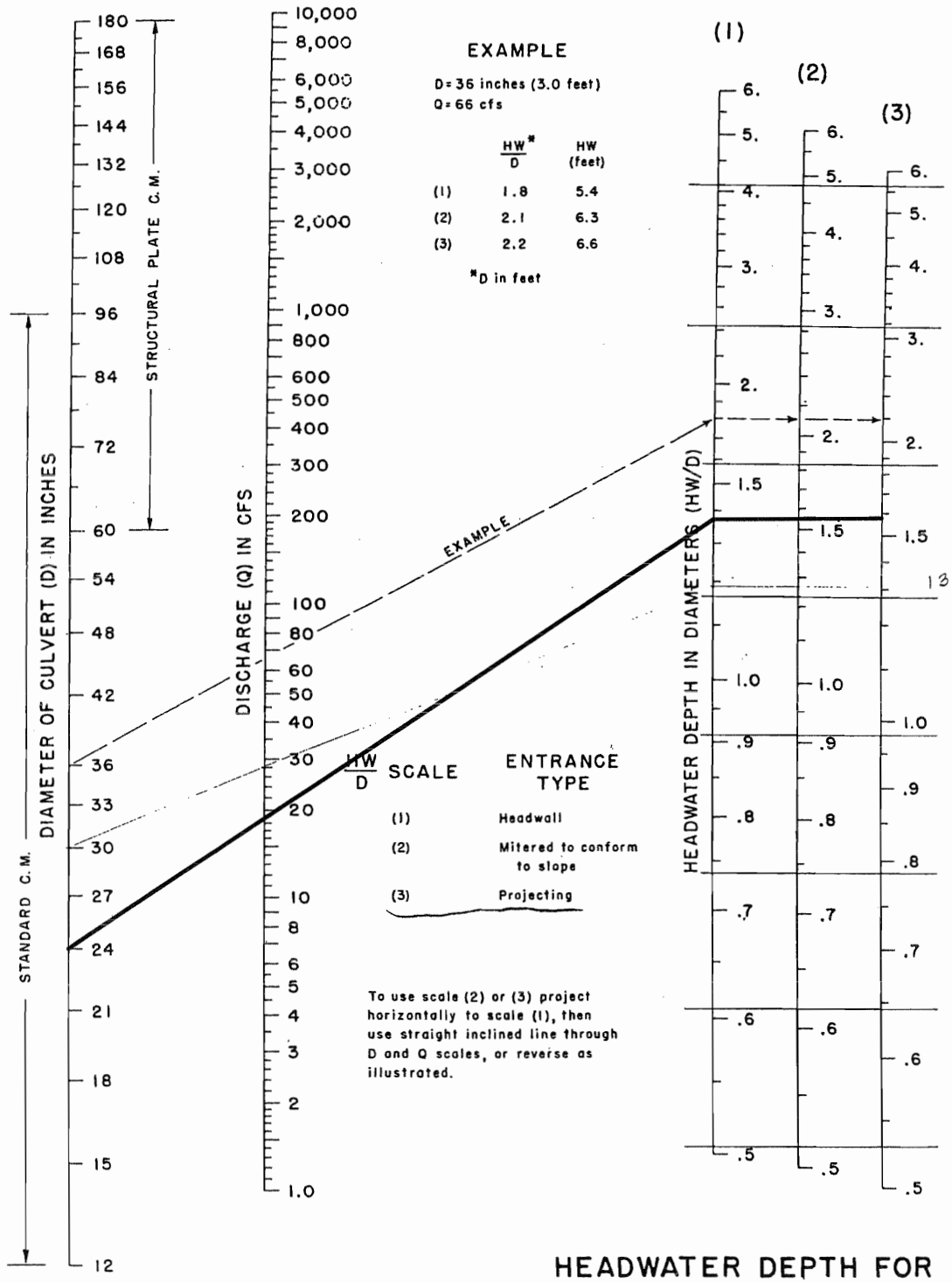
HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 23.1

DEER SPRINGS ROAD, STA 32+40

CHART 5



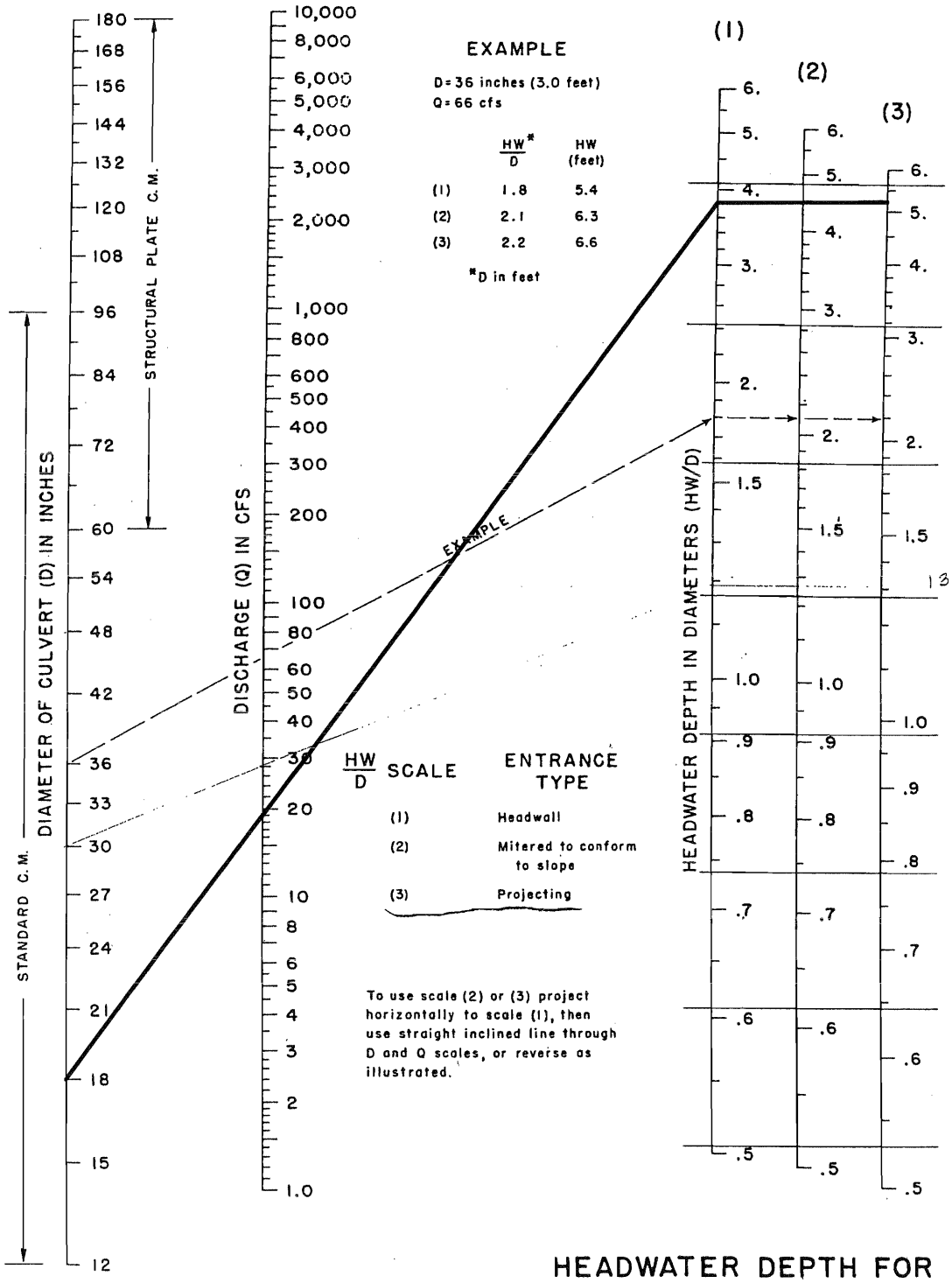
HEADWATER DEPTH FOR C. M. PIPE CULVERTS WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 23.2

DEER SPRINGS ROAD, STA 37+35

CHART 5



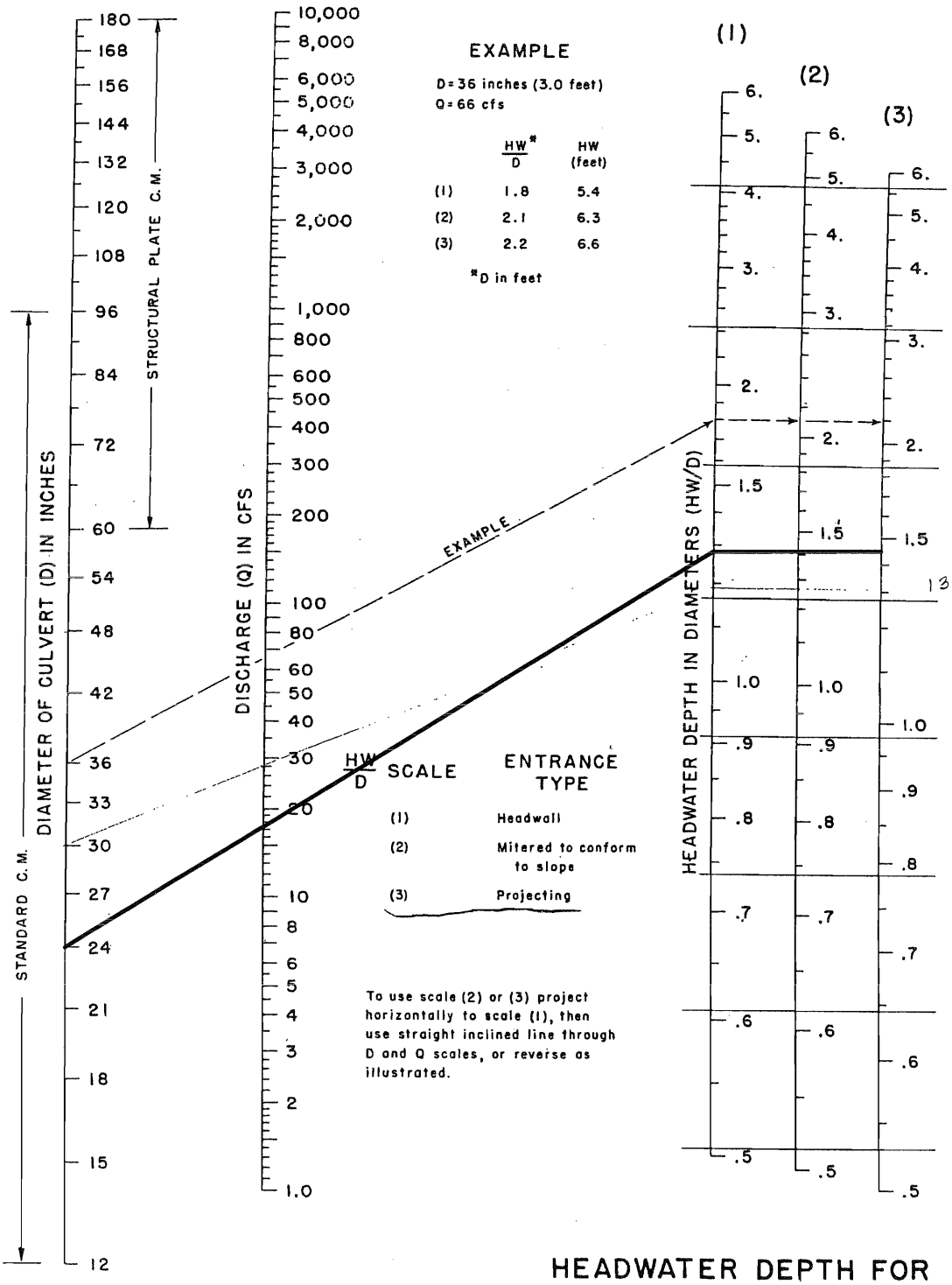
HEADWATER DEPTH FOR C. M. PIPE CULVERTS WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 23.3

DEER SPRINGS ROAD, STA 39+40

CHART 5



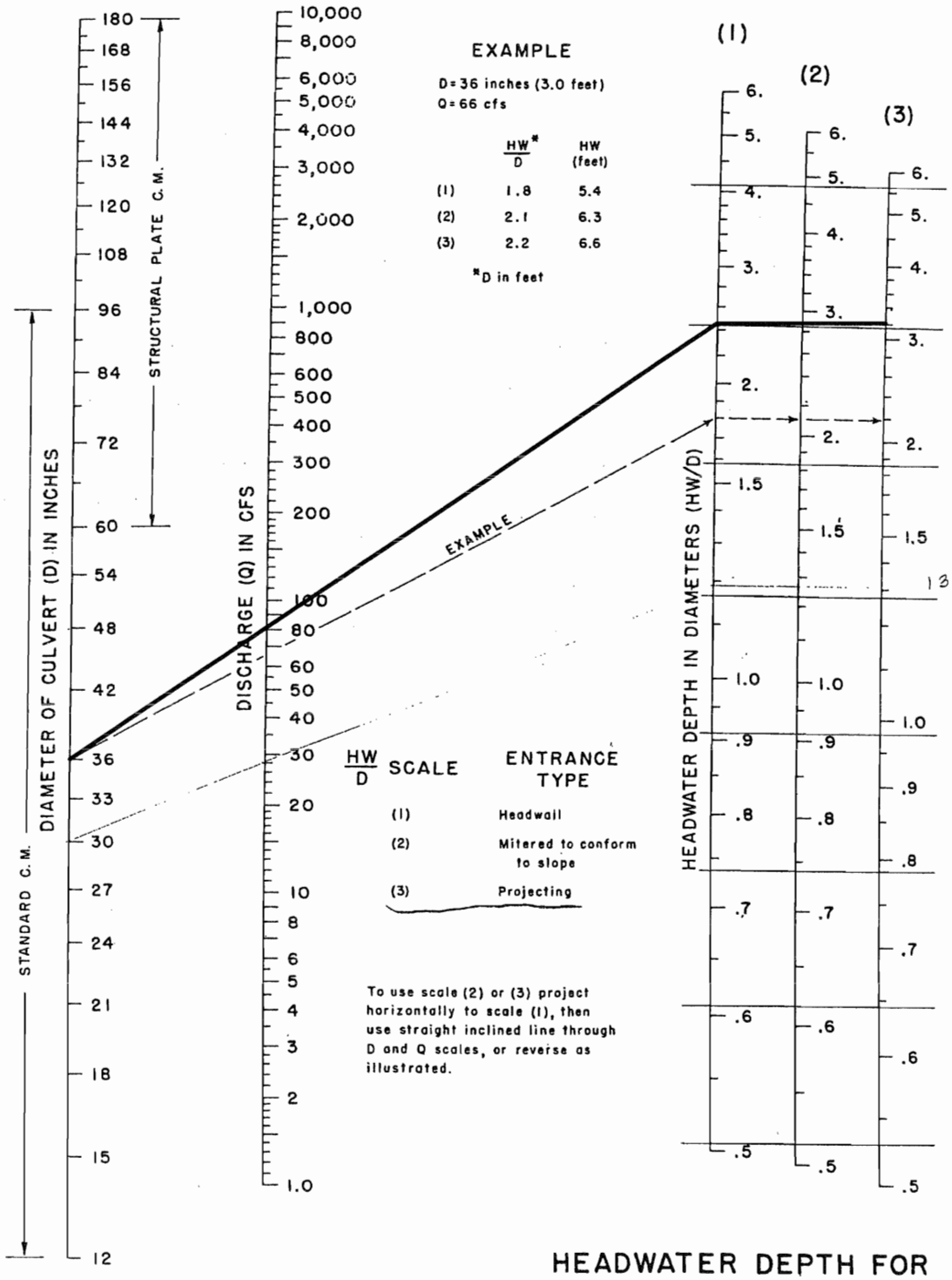
HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 23.4

DEER SPRINGS ROAD, STA 44+64

CHART 5



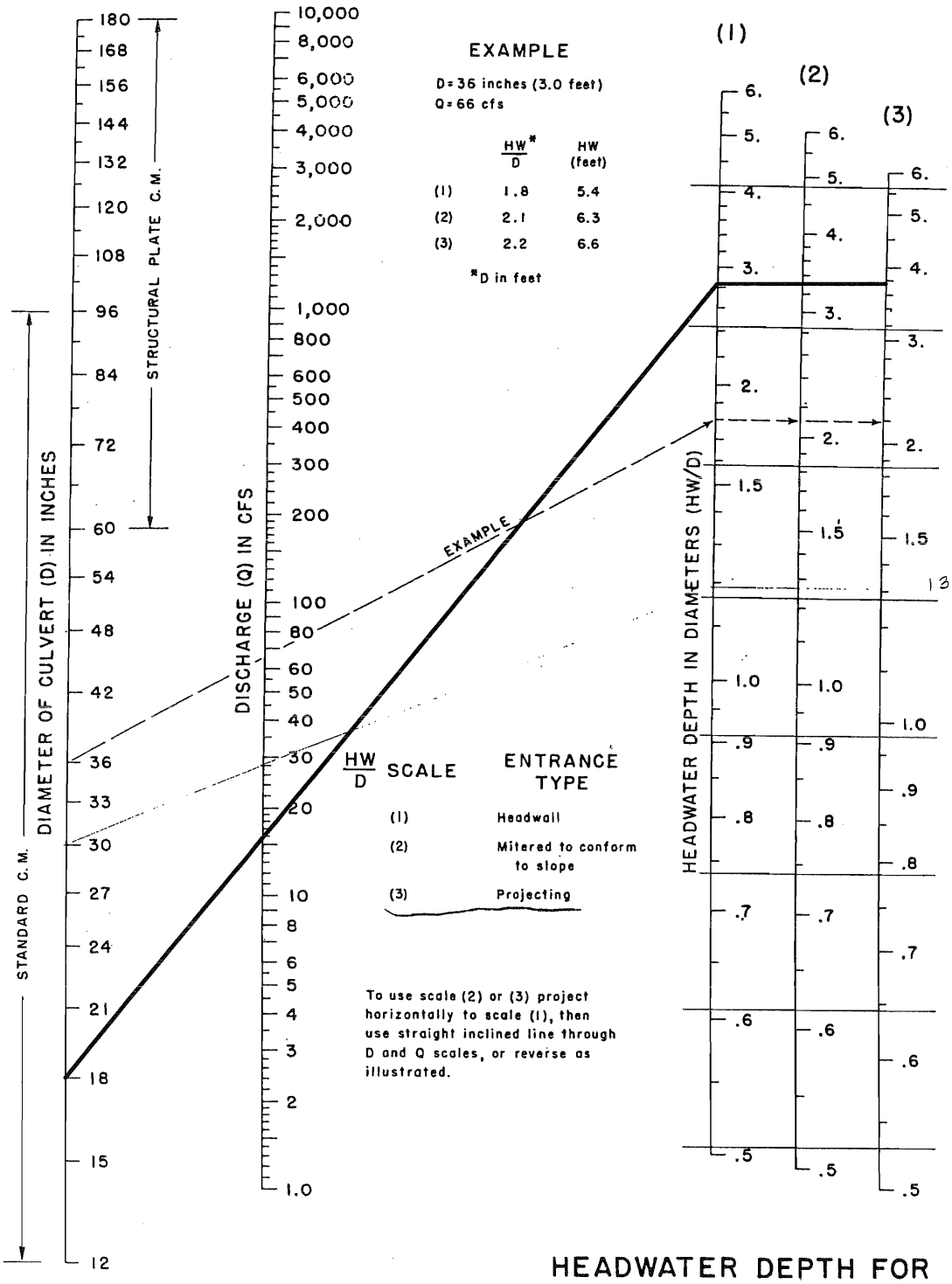
HEADWATER DEPTH FOR
C. M. PIPE CULVERTS
WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 24

DEER SPRINGS ROAD, STA 23+75

CHART 5



HEADWATER DEPTH FOR C. M. PIPE CULVERTS WITH INLET CONTROL

BUREAU OF PUBLIC ROADS JAN. 1963

BASIN 24.2

DEER SPRINGS ROAD, STA 21+35

Volume 4 Available Upon Request

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